

AN EDUCATION ENVIRONMENT FOR WEB BASED TRAINING

By

Hacı Hakan KILINÇ

**A Dissertation Submitted to the
Graduate School in Partial Fulfillment of the
Requirements for the Degree of**

MASTER OF SCIENCE

**Department : Computer Engineering
Major : Computer Software**

**İzmir Institute of Technology
İzmir, Turkey**

September, 2001

We approve the thesis of Hacı Hakan KILINÇ.

Date of Signature

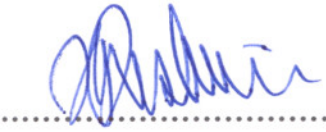


.....

Prof.Dr. Sıtkı AYTAC

Supervisor
Department of Computer Engineering

19.09.2001



.....

Prof.Dr. Halis PÜSKÜLCÜ

Department of Computer Engineering

19.09.2001

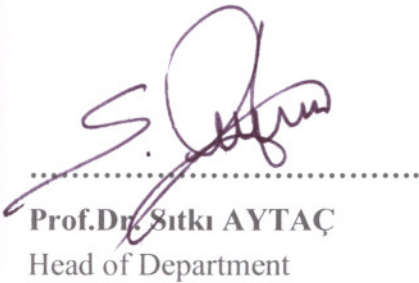


.....

Assoc.Prof.Dr. Mustafa TÜRKSEVER

Ege University
Department of Computer Engineering

19.09.2001



.....

Prof.Dr. Sıtkı AYTAC

Head of Department

19.09.2001

ACKNOWLEDGEMENT

Thanks to all who gave a great support to prepare and examine this work. Especially, I would like to thank to my advisor Prof. Dr. Sıtkı AYTAÇ for encouraging me to write this thesis and for his endurance.

Thanks to my family and all my friends.

ABSTRACT

The purpose of this thesis is to prepare of an interactive education environment and to represent to the available courses in Izmir Institute Of Technology, on the Web and to contribute to the studies about distance education in our country.

An interactive education environment, which is called the Virtual Campus, had been created using internet technologies such as ASP, VBScript, JavaScript and HTML. The Virtual Campus is an independent education environment of time and location.

Keywords : Distance Education, Web Based Training, Virtual Campus

ÖZ

Bu tez çalışmasının amacı, etkileşimli bir eğitim ortamı hazırlamak ve İzmir Yüksek Teknoloji Enstitüsü'nde verilmekte olan dersleri web üzerinde sunmak ve ülkemizdeki uzaktan eğitim hakkındaki çalışmalara katkıda bulunmaktır.

ASP, VBScript, JavaScript ve HTML gibi internet teknolojileri kullanarak Virtual Campus adında etkileşimli bir eğitim ortamı yapılmıştır. Virtual Campus zamandan ve mekandan bağımsız bir eğitim ortamıdır.

Anahtar Kelimeler: Uzaktan Eğitim, Web Tabanlı Eğitim, Sanal Kampus

TABLE OF CONTENTS

LIST OF FIGURES	x
CHAPTER 1. INTRODUCTION	1
CHAPTER 2. DISTANCE EDUCATION	4
2.1 What Is Distance Education?	4
2.2 Effective Distance Education	4
2.3 How Is Distance Education Delivered	5
2.4 Distance Education Models	6
2.4.1 Printed Material	6
2.4.1.1 Advantages of Print	6
2.4.1.2 Limitations of Print	6
2.4.2 Audio conferencing	7
2.4.2.1 Advantages of Audio conferencing	7
2.4.2.2 Limitations of Audio conferencing	7
2.4.3 Instructional Television	7
2.4.3.1 Advantages of Instructional Television	7
2.4.3.2 Limitations of Instructional Television	8
2.4.4 Computers	8
2.4.4.1 Advantages of Computers	9
2.4.4.2 Limitations of Computers	9
2.5 Distance Education In Turkey	9
CHAPTER 3. WEB BASED TRAINING	11
3.1 Advantages And Disadvantages Of Web Based Training	11
3.2 Usage Of The Web in Training	11
3.2.1 Catalogs	12
3.2.2 Frequently Asked Questions (FAQs)	12
3.2.3 Lesson Plans, Courseware, and Curriculum Materials	12
3.2.4 Forms	13
3.2.5 Electronic mail (e-mail)	13
3.2.6 Bulletin boards	13
3.2.7 Videos and Sound clips	14
3.2.8 Presentations	14
3.3 The Student	14
3.3.1 Profile of the Distant Student	15
3.3.2 How To Motivate The Student	15

3.4 Mistakes To Avoid In Training	15
3.4.1 Improper Handling of Questions	15
3.4.2 Not Covering the Objectives	16
3.4.3 Not Involving the Students	16
3.4.4 Too Many Graphics	16
3.4.5 Not Checking the Environment	16
3.4.6 Being a "Know-it-all" and Not Admitting Mistakes	16
3.4.7 Outdated Material	17
3.4.8 Neglecting to Present a Positive Image	17
3.4.9 Rapport Not Established	17
3.5 Web Based Training Design and Development	17
3.5.1 Course Design	18
3.5.2 Course Development	19
3.5.3 Course Evaluation	20
3.5.3.1 Formative Evaluation	21
3.5.3.2 Summative Evaluation	21
3.5.4 Course Revision	21
3.5.5 Criteria For Online Text	22
3.6 Modular Design Of Web Pages	22
3.6.1 Motivational Web Pages	23
3.6.2 Orientation Web Pages	24
3.6.3 Guidance Web Pages	24
3.6.4 Reference Web Pages	24
3.7 Web Pages Maintenance	26
3.7.1 Maintaining Web Pages: An Overview	26
3.7.2 Maintaining Web Pages: A Plan	27
3.8 The Maintenance Pages On The Server	27
3.8.1 Organizing Pages	27
3.8.2 Create Pages Locally	28
3.8.3 Test Pages	28
CHAPTER 4. A VIRTUAL CAMPUS	
FOR IZMIR INSTITUTE OF TECHNOLOGY	29
4.1 Objective Of The Virtual Campus	29
4.2 Scope Of The Virtual Campus	29
4.3 The Relationships Between Pages In The Virtual Campus	31
4.4 The Data Model Of The Virtual Campus	35

4.5 Database Design of The Virtual Campus	36
4.6 Implementation Tools Of The Virtual Campus	45
4.6.1 Windows 2000	46
4.6.2 Internet Information Services 5.0 (IIS)	46
4.6.3 ASP - Active Server Pages	48
4.6.4 SQL Server v7.0	49
CHAPTER 5. PRESENTATION OF THE VIRTUAL CAMPUS	50
5.1 Login Page	50
5.2 Student And Instructor Services Page	51
5.2.1 Create New Account Page	52
5.2.2 Forgotten Password Page	55
5.2.3 More Information About Logging In Page	56
5.2.4 Features Page	57
5.2.5 Frequently Asked Questions (FAQs) Page	58
5.2.6 About Courses Page	59
5.3 Courses	60
5.3.1 Course Listings and Registration Page (Student View)	62
5.3.2 Selected Course Listings and Login Page (Student View)	63
5.3.3 Edit User Information Page (Student View and Instructor View)	64
5.3.4 Course Listings Page (Instructor View)	65
5.3.5 Create New Courses Page (Instructor Page)	66
5.3.6 Delete An Existing Course Page (Instructor Page)	67
5.4 Course Main Page	68
5.4.1 Syllabus Page	68
5.4.1.1 View Syllabus Page (Student and Instructor View)	68
5.4.1.2 View Readings (Student and Instructor View)	69
5.4.1.3 Create Syllabus Page (Instructor View)	70
5.4.1.4 Create Readings Page (Instructor View)	71
5.4.2 Outline Page	72
5.4.2.1 Sessions Page (Student and Instructor View)	72
5.4.2.2 View Session Page (Student and Instructor View)	73
5.4.2.3 Assignments Page (Student and Instructor View)	74
5.4.2.4 Create Session Page (Instructor View)	75
5.4.2.5 Delete Session Page (Instructor View)	76

5.4.3 Files Page	77
5.4.3.1 Lectures, Tutorials and Presentations Pages (Student and Instructor View)	77
5.4.3.2 Create Files Page (Instructor View)	78
5.4.3.3 Delete Files Page (Instructor View)	79
5.4.4 Projects Page (Student and Instructor View)	80
5.4.4.1 Create Project Page (Instructor View)	81
5.4.4.2 Delete Projects Page (Instructor View)	82
5.4.5 Testings Page	83
5.4.5.1 Exams and Homeworks Page (Student and Instructor View)	83
5.4.5.2 Create Exam and Homework Page (Instructor View)	84
5.4.5.3 Delete Exam and Homework Page (Instructor View)	85
5.4.6 Grade Book Page (Student and Instructor View)	86
5.4.7 The Information Registrated Students' Pages (Student and Instructor View)	87
5.5 Discussions Page	88
5.5.1 Forum Topic Listings Page	88
5.5.2 Forum Topic Create Page	89
5.5.3 Related Messages With Forum Topic Page	90
5.6 Messages Page	91
5.6.1 Individual Email Page	92
5.6.2 Group Email Page	93
5.6.3 Announcement Page	95
5.7 Library Page	96
5.8 Café Page	97
5.9 Chat Page	98
CHAPTER 6. CONCLUSION	100
REFERENCES	102

LIST OF FIGURES

Figure 4.1 : Login Page Graphic Of The Virtual Campus	32
Figure 4.2 : Course Listings Graphic Of The Virtual Campus	32
Figure 4.3 : Course Main Page (Student View) Graphic Of The Virtual Campus	33
Figure 4.4 : Course Main Page (Instructor View) Graphic Of The Virtual Campus	33
Figure 4.5 : Discussions Page Graphic Of The Virtual Campus	34
Figure 4.6 : Messages Page Graphic Of The Virtual Campus	34
Figure 4.7 : Library Page Graphic Of The Virtual Campus	34
Figure 4.8 : Cafe Page Graphic Of The Virtual Campus	34
Figure 4.9 : A picture of the data model for the Virtual Campus	35
Figure 4.10 : The structure of the Student table in the Virtual Campus	36
Figure 4.11 : The structure of the csRelation table in the Virtual Campus	37
Figure 4.12 : The structure of the Course table in the Virtual Campus	38
Figure 4.13 : The structure of the Sessions table in the Virtual Campus	39
Figure 4.14 : The structure of the Files table in the Virtual Campus	40
Figure 4.15 : The structure of the Projects table in the Virtual Campus	41
Figure 4.16 : The structure of the Testings table in the Virtual Campus	42
Figure 4.17 : The structure of the Forums table in the Virtual Campus	43
Figure 4.18 : The structure of the Messages table in the Virtual Campus	43
Figure 4.19 : The structure of the Libraries table in the Virtual Campus	44
Figure 4.20 : The structure of the Cafe table in the Virtual Campus	44
Figure 5.1 : Login Page of the Virtual Campus	50
Figure 5.2 : Student and Instructor Services Page	51
Figure 5.3 : Create New Account Page	52
Figure 5.4 : Enable Screen For Create New Account Page	53
Figure 5.5 : User's Email Screen For Create New Account Page	54
Figure 5.6 : Disable Screen For Create New Account Page	54
Figure 5.7 : Forgotten Password Page	55
Figure 5.8 : Approval Screen For Forgotten Password Page	55
Figure 5.9 : User's Email Screen For Forgotten Password Page	56
Figure 5.10 : More Information About Logging In Page	56
Figure 5.11 : Features Page	57
Figure 5.12 : Frequently Asked Questions (FAQs) Page	58
Figure 5.13 : About Courses Page	59
Figure 5.14 : Courses Page (Student View)	60

Figure 5.15 : Courses Page (Instructor View)	61
Figure 5.16 : Course Listings and Registration Page (Student View)	62
Figure 5.17 : Selected Course Listings and Login Page (Student View)	63
Figure 5.18 : Edit User Information Page (Student View and Instructor View)	64
Figure 5.19 : Course Listings Page (Instructor View)	65
Figure 5.20 : Create New Courses Page (Instructor Page)	66
Figure 5.21 : Delete An Existing Course Page (Instructor Page)	67
Figure 5.22 : View Syllabus Page (Student and Instructor View)	68
Figure 5.23 : View Readings Page (Student and Instructor View)	60
Figure 5.24 : Create Syllabus Page (Instructor View)	70
Figure 5.25 : Create Readings Page (Instructor View)	71
Figure 5.26 : Sessions Page (Student and Instructor View)	72
Figure 5.27 : View Session Page (Student and Instructor View)	73
Figure 5.28 : Assignments Page (Student and Instructor View)	74
Figure 5.29 : Create Session Page (Instructor View)	75
Figure 5.30 : Delete Session Page (Instructor View)	76
Figure 5.31 : Lectures, Tutorials and Presentations Pages (Student and Instructor View)	77
Figure 5.32 : Create Files Page (Instructor View)	78
Figure 5.33 : Delete Files Page (Instructor View)	79
Figure 5.34 : Projects Page (Student and Instructor View)	80
Figure 5.35 : Create Project Page (Instructor View)	81
Figure 5.36 : Delete Project Page (Instructor View)	82
Figure 5.37 : Exams and Homeworks Page (Student and Instructor View)	83
Figure 5.38 : Create Exam and Homework Page (Instructor View)	84
Figure 5.39 : Delete Exam and Homework Page (Instructor View)	85
Figure 5.40 : Grade Book Page (Student and Instructor View)	86
Figure 5.41 : Edit Grades Page (Student and Instructor View)	87
Figure 5.42 : The Information Registered Students' Pages	87
Figure 5.43 : Forum Topic Listings Page	88
Figure 5.44 : Forum Topic Create Page	89
Figure 5.45 : Related Messages With Forum Topic Page	90
Figure 5.46 : Messages Page	91
Figure 5.47 : Individual Email Page	92
Figure 5.48 : Group Email Page – 1	93
Figure 5.49 : Group Email Page – 2	94

Figure 5.50 : Announcement Page	95
Figure 5.51 : Library Page – 1	96
Figure 5.52 : Library Page – 2	96
Figure 5.53 : Cafe Page – 1	97
Figure 5.54 : Cafe Page – 2	97
Figure 5.55 : Chat Page – 1	98
Figure 5.56 : Chat Page – 2	98
Figure 5.57 : Chat Page – 3	99
Figure 5.58 : Chat Page – 4	99

CHAPTER 1

INTRODUCTION

The nature of teaching a course that is offered purely by distance education requires alternative approaches to fulfil the fundamentals of face to face teaching such as student/instructor interaction. Distance education technologies are expanding at rapid rate to make distance education a viable option for many university institutions.

Distance education is a non-contiguous communication between student and instructor, mediated by print or some form of technology. Distance education instructional media evolved from print to instructional television, to current interactive technologies. The major drawback of radio and broadcast television for instruction is the lack of two way communications between instructor and student. The current popular distance education media are computer based communication tools such as e-mail, bulletin board, web pages, tele-conferencing, video conferencing. Distance education is common for mature age students and in areas where student population is widely distributed. However, in some developing countries like Turkey the distance education can be employed to accommodate more students in university education. (Yazıcı and Altaş , 1999)

The Internet is one of the most important tools in the teacher's toolbox, with the World Wide Web, the Web, as the easiest and most popular way to access it. The possibilities of Web based training are endless.

In the Web based training, there are four components required for effective instruction:

- Information presentation
- Learner guidance
- Practice with feedback
- Learning assessment

These four functions should be fulfilled for effective teaching whether it is the Web or classroom based. Internet based media can be introduced to support any or all of these elements of effective instruction.

The most common use of Internet for educational purpose is to fulfil "information presentation" at the moment. Many instructors in higher education have been establishing a web site as information container to supplement classroom education with text such as course notes, assignments, pointers to external web sites and other media types such as graphics, videos. However, this approach is not suitable for distance education since learner guidance, practice with feedback and learning assessment are left to the classroom teaching. Thus, this approach can be interpreted as replacement for the course syllabus.

Internet can be used to support all four functions for effective instruction to deliver courses in distance mode. Information is presented using web pages embedded media files.

Communication and collaborative tools like email, discussion list, live chat and forms are used for “learners guidance”, dialogue and practice activities. The instructor also prepares self-instructional tutorials/practicals and follows up students’ work for “feedback”. An Internet application can be used to track student activity and assessment. Students can electronically submit their assignments and can write some test online.

This approach is based on the tradition of classroom, collaborative education. The electronic environment attempts to mirror and enhance the classroom model. Some instructors also make available their power point classroom lecture notes on the Web site for external students.

The advantage of the web based distance education over traditional distance education is that it alleviates some problems encountered by students of distance education that internal students do not normally face them. Some of these problems are:

- Absence of face to face contact, and isolation of students;
- Reluctance of students to contact instructors;
- Feeling of not belonging or being part of the university;
- Absence of friendship atmosphere;
- Late delivery of course materials;
- Inadequate feedback from instructors.

A carefully designed web based distance education provides tools to eliminate or alleviate some of the problems above. For example, students can access a “form/bulletin board” to generate a collegiate atmosphere with their fellow students. In fact, the most popular and most used feature of the Web sites is the communication section for a number of courses. In particular, external students found access to instructors, the library and to other students to be very useful, and several commented on how it made them feel more involved in with the course and the University (Yazıcı and Altas , 1999).

This thesis describes an interactive education environment, the Virtual Campus, designed to provide the advantages of the Web based training. The Virtual Campus offers an approach for presenting courses on the Web. The Virtual Campus provides modules required for effective instruction above. These modules are course module, discussions module, messages module, library module, chat module and cafe module. It eliminates some of the problems above.

The rest of this work is organized as follows:

- Chapter 2 introduces the concept of Distance education. It discusses distance education models and advantages and disadvantages of these models. Especially Dr. Barry Willis’ books had been taken as reference. For instance; *Distance Education - Strategies and Tools* and *Distance Education - A Practical Guide*. (Willis, 1993)

- Chapter 3 discusses Web based training, advantages and disadvantages of Web based training, usage of the Web in training, distant students, Web based training design and development, Web pages maintenance, maintaining pages on the server. This chapter helps to instructors in using the Web in education. Especially Dyro's WBT Site had been taken as reference. (URL: <http://www.dyroweb.com>)
- Chapter 4 presents objective, scope, data model, implementations tools and the relationships among the pages of the Virtual Campus.
- Chapter 5 gives a process and picture of the Virtual Campus. As reference in the Virtual Campus, Prometheus that is a web based education environment developed by the George Washington University has been taken. (URL: <http://www.prometheus.com>)
- Chapter 6 is the conclusion.

CHAPTER 2

DISTANCE EDUCATION

2.1 What Is Distance Education?

Distance education is a non-contiguous communication between student and instructor, mediated by print or some form of technology. (Keegan, 1986)

Several key features define distance education (Willis, 1993). They are:

- the separation of teacher and learner during at least a majority of each instructional process;
- the use of educational media to unite teacher and learner and carry course content;
- the provision of two-way communication between teacher, tutor, or educational agency and learner;
- separation of teacher and learner in space and/or time;
- volitional control of learning by student rather than distance instructor.

2.2 Effective Distance Education

Without exception, effective distance education programs begin with careful planning and a focused understanding of course requirements and student needs. Appropriate technology can only be selected once these elements are understood in detail. There is no mystery to the way effective distance education programs develop. They don't happen spontaneously; they evolve through the hard work and dedicated efforts of many individuals and organizations. In fact, successful distance education programs rely on the consistent and integrated efforts of students, faculty, facilitators, support staff, and administrators.

Three elements are of paramount importance to any successful distance education program (Willis, 1993):

1. **Instructional Design** : Traditional instruction methods do not always transfer over to distance learning methods. New instructional designs need to be created and implemented to reap the benefits of the new technologies.
2. **Technology** : The proper type and usage of technology can make or break a successful instructional program. Knowing the educational outcomes before acquiring the technology will help saving time and money as well as streamline the instructional delivery.
3. **Support**: Receiving help from a number of different sources can encourage new users (both teachers and students) to develop and expand upon effective and efficient ways of creating distance learning methods.

2.3 How Is Distance Education Delivered

There are two distance education delivery system categories - *synchronous* and *asynchronous*.

Synchronous instruction requires the simultaneous participation of all students and instructors. The advantage of synchronous instruction is that interaction is done in "real time" and includes interactiveTV, teleconferencing, computer conferencing and/or Internet relay chats (IRC).

Asynchronous instruction does not require the simultaneous participation of all students and instructors. Students so don't need to be gathered together in the same location at the same time. Rather, students may choose their own instructional time frame and gather learning materials according to their schedules. Asynchronous instruction is more flexible than synchronous instruction. Moreover, in the case of telecommunications such as e-mail, asynchronous instruction allows and even may encourage community development. Forms of asynchronous delivery include e-mail, listserves, audiocassette courses, video taped courses, correspondence courses, and Internet courses. The advantages of asynchronous delivery include student choice of location and time, and, in the case of telecommunications such as e-mail, interaction opportunities for all students.

A wide range of technological options is available to the distance educator. They fall into four major categories (Willis, 1993):

- **Print** : is a foundational element of distance education programs and the basis from which all other delivery systems have evolved. Various print formats are available including: textbooks, study guides, workbooks, course syllabi, and case studies.
- **Voice** : Instructional audio tools include the interactive technologies of telephone, audio conferencing, and short-wave radio. Passive (i.e., one-way) audio tools include tapes and radio.
- **Video** : Instructional video tools include still images such as slides, pre-produced moving images (e.g., film, videotape), and real-time moving images combined with audio conferencing (one-way or two-way video with two-way audio).
- **Data** : Computers send and receive information electronically. For this reason, the term "data" is used to describe this broad category of instructional tools. Computer applications for distance education are varied and include:

Computer-assisted instruction (CAI) - uses the computer as a self-contained teaching machine to present individual lessons.

Computer-managed instruction (CMI) - uses the computer to organize instruction and track student records and progress. The instruction itself need not be delivered via a computer, although CAI is often combined with CMI.

Computer-mediated education (CME) - describes computer applications that facilitate the delivery of instruction. Examples include electronic mail, fax, real-time computer conferencing, and World-Wide Web applications.

2.4 Distance Education Models

Instructors have delivered education to remote students in various forms. Radio, television, computer, videotapes, audiotapes and printed materials are examples of models that are used. (Willis, 1993)

2.4.1 Printed Material

Print is the foundation of distance education and the basis from which all other delivery systems have evolved. The first distance-delivered courses were offered by correspondence study, with print materials sent and returned to students by mail. While technological developments have added to the repertoire of tools available to the distance educator, print continues to be a significant component of all distance education programs.

2.4.1.1 Advantages of Print

- **Spontaneous print:** materials can be used in any setting without the need for sophisticated presentation equipment.
- **Instructionally transparent:** the medium of delivery should enhance, not compete with, the content for the learner's attention.
- **Non-threatening:** reading is second nature to most students. As a result, they are easily able to focus on the content, without becoming mesmerized or frustrated by the process of reading itself.
- **Easy to use:** given adequate light, print materials can be used any time and any place without the aid of supplemental resources such as electricity, viewing screen, and specially designed electronic classrooms. The portability of print is especially important for rural learners with limited access to advanced technology.
- **Easily reviewed and referenced:** print materials are typically learner-controlled. As a result, the student rapidly moves through redundant sections, while focusing on areas demanding additional attention.
- **Cost-effective:** no instructional tool is less expensive to produce than print.
- **Time-effective:** when instructional print materials are created, the developer's primary focus remains on content concerns, not the technical requirements of the delivery system

2.4.1.2 Limitations of Print

- **Limited view of reality:** Print, by its reliance on the written word, offers a vicarious view of reality. Despite the use of excellent sequential illustrations or photos, for example, it is impossible to adequately recreate motion in print.
- **Passive and self-directed:** Numerous studies have shown that higher learner motivation is required to successfully complete print-based courses.

- **Feedback and interaction:** Without feedback and interaction, instruction suffers, regardless of the delivery system in use. By nature, print materials are passive and self-directed.

2.4.2 Audio conferencing

Interactive instructional audio tools for the distance educator include the telephone, audio conferencing, and short-wave radio.

2.4.2.1 Advantages of Audio conferencing

- Audio conferencing is inexpensive to install, operate, and maintain.
- It uses available telephone technology and can therefore reach many students.
- It is a generally familiar technology to teachers and students and is relatively easy to use.
- It is an interactive medium, allowing direct student and instructor participation. Students have many opportunities for give and take with other students, the instructor, and outside experts.
- It can be very effective when used in combination with other media including print, video, and computers.

2.4.2.2 Limitations of Audio conferencing

- Places restrictions on the type of content that can be delivered in an oral format.
- Can be impersonal because it eliminates nonverbal cues and body language such as smiles, frowns, arm and hand movements, etc.

2.4.3 Instructional Television

Instructional television is an effective distance education delivery system. Instructional television may be either passive or interactive. Passive Instructional television typically involves pre-produced programs, which are distributed by videocassette or by video-based technologies such as broadcast, cable, or satellite. In contrast, interactive Instructional television provides opportunities for viewer interaction, either with a live instructor or a participating student site.

2.4.3.1 Advantages of Instructional Television

- Since most people have watched television, the medium is familiar.
- Motion and visuals can be combined in a single format so that complex or abstract concepts can be illustrated through visual simulation. The old cliché "a picture is worth a thousand words" rings true.
- Instructional television is an effective way to take students to new environments (the moon, a foreign country, or through the lens of a microscope).
- Time and space can be collapsed, so that events can be captured and relayed as they happen.

- It is very effective for introducing, summarizing, and reviewing concepts.
- It can be used effectively as a motivational tool.

2.4.3.2 Limitations of Instructional Television

- Broadcast quality Instructional television is expensive to create.
- Video production is time consuming and can be technically demanding, often requiring relatively sophisticated production facilities and equipment.
- Sites choosing to interactively participate in an Instructional television program may require specialized equipment, facilities, and staffing.
- Most prepackaged Instructional television courses use a mass media approach to instruction aimed at the average student. As a result, they can be ineffective in serving students with special needs.
- When used passively, without interaction, its instructional effectiveness can be limited.
- Unless professionally produced, completed Instructional television programs often look amateurish.

2.4.4 Computers

In recent years, educators have witnessed the rapid development of computer networks, dramatic improvements in the processing power of personal computers, and striking advances in magnetic storage technology. These developments have made the computer a dynamic force in distance education, providing a new and interactive means of overcoming time and distance to reach learners.

Computer applications for distance education fall into four broad categories:

- **Computer Assisted Instruction (CAI)** - uses the computer as a self-contained teaching machine to present discrete lessons to achieve specific but limited educational objectives. There are several CAI modes, including: drill and practice, tutorial, simulations and games, and problem solving.
- **Computer Managed Instruction (CMI)** - uses the computer's branching, storage, and retrieval capabilities to organize instruction and track student records and progress. The instruction need not be delivered via computer, although often CAI (the instructional component) is combined with CMI.
- **Computer Mediated Communication (CMC)**- describes computer applications that facilitate communication. Examples include electronic mail, computer conferencing, and electronic bulletin boards.
- **Computer-Based Multimedia**- HyperCard, hypermedia, and a still-developing generation of powerful, sophisticated, and flexible computing tools have gained the attention of distance educators in recent years. The goal of computer-based multimedia is to integrate various voice, video, and computer technologies into a single, easily accessible delivery system.

2.4.4.1 Advantages of Computers

- Computers increase access. Local, regional, and national networks link resources and individuals, wherever they might be. In fact, many institutions now offer complete undergraduate and graduate programs relying almost exclusively on computer-based resources.
- Computers are interactive. Microcomputer systems incorporating various software packages are extremely flexible and maximize learner control.
- Computer technology is rapidly advancing. Innovations are constantly emerging, while related costs drop. By understanding their present needs and future technical requirements, the cost-conscious educator can effectively navigate the volatile computer hardware and software market.
- Computers can facilitate self-paced learning.
- Computers are multimedia tools. With integrated graphic, print, audio, and video capabilities, computers can effectively link various technologies. Interactive video and CD-ROM technologies can be incorporated into computer-based instructional units, lessons, and learning environments.

2.4.4.2 Limitations of Computers

Students must be highly motivated and proficient in computer operation before they can successfully function in a computer-based distance-learning environment.

2.5 Distance Education In Turkey

In Turkey, technologies used to deliver distance education programs are typically one-way and are designed to reach the masses. The two primary forms of distance education are the Open Education Faculty (OEF) at Anadolu University in Eskisehir and the Open High School (OHS) through the Ministry of National Education. The OEF, which has been operating since 1982, delivers undergraduate degree programs and other programs to Turks throughout Turkey, Europe, and the Turkish Republic of Northern Cyprus. The OHS is a widespread secondary education program, which has been operating since 1992. The purpose of the OHS is to allow traditional and non-traditional students, who for one reason or another have not completed secondary school, with an opportunity to earn a high school diploma. The OHS curriculum is the same as for traditional high school students. The technologies for both programs include specially designed textbooks and other printed materials including newsletters and bulletins, television and radio broadcasts; technologies for the OEF include videotapes and face-to-face lectures at universities throughout the country. Examinations for both programs are offered in a variety of locations, usually in cities and larger towns. (Murphy, 1996)

In addition to these, distance education is performed by Fırat TV programs in Fırat TV programs in Fırat University. Their main aim is to perform some studies using e-mail and education with WWW through Internet. (Varol, 1996)

In the last four years, Turkey's leading universities also give great importance in online distance education. There are studies about using Internet in distance education in a serious way. Many lectures are offered on the Internet and it seems that it will spread to all universities in the near future. For examples;

METU-Online is an educational service of Middle East Technical University, developed by the Informatics Institute. It is a web-based software system, which provides on-line courses for students with the opportunity for active learning inside and outside the campus. Each course consists of on-line lecture notes that include equations, animations, and graphics; on-line interactive assignments; interactive discussion list, and course administration tool both for students and for instructors.

(URL: <http://euclid.ii.metu.edu.tr/metuonline/>)

Saneg is an online educational service of Istanbul Technical University, developed by the Informatics Institute Virtual Education Center. Saneg has been developed to create a new education model on the Internet. (URL: <http://www.saneg.itu.edu.tr/>)

SAÜİDO (Sakarya Üniversitesi İnternet Destekli Öğretim) is an asynchronous distance education service of Sakarya University, developed by the Informatics Department. SAÜİDO has begun with real application in Spring Semester in 2000/2001 education year and offered three courses. In Spring Semester, it has serviced more than 1000 students. (URL: <http://www.ido.sakarya.edu.tr/>)

BİLGİ e-mba is a virtual MBA program of Bilgi University. It is first and unique web based graduate education program of our country that has approved by Council of Higher Education. (URL: <http://www.bilgiemba.net>)

CHAPTER 3

WEB BASED TRAINING

3.1 Advantages And Disadvantages Of Web Based Training

The Web offers many benefits and has the following advantages:

- Enhanced communication between training staff and/or students
- Increased freedom of time and location for learners
- Rapid revision and dissemination of instructional programs
- World-wide network expansion
- Increased instructor – student interaction and feedback
- Collaboration between instructors on site and with instructors at other institutions
- Up-to-date information is available much faster
- Greater ease and low expense in delivering course materials
- Documents and other training sites can be cross-referenced with hyperlinks
- Courseware can be used on systems with different operating systems
- Controllable access
- Less technical support is required
- Reduced printing costs since the information is available electronically
- No longer restricted to text alone; interactivity, color, and depth to coursework are easily created

At the same time, the Web isn't perfect. There are some problems with it. These problems are:

- Instructors and students must be trained in the use of the selected Web-based tools.
- Instructional methods may be restricted bandwidth limitations. Because, slower performance for sound, video, and intense graphics due to limited bandwidth
- A trained staff is needed in order to administer the server and provide server access
- Links outside of course material can change
 - Content in external documents can change or disappear altogether
 - Too many links can cause the student to get lost
- It is too easy to focus on the technology than on the needs of the student.

3.2 Usage Of The Web in Training

The web can be used the following things but there are many more possibilities.

- catalogs
- class schedules
- reading lists
- videos and sound clips
- courseware and curriculum materials

- lesson plans
- training manuals
- registration and order forms
- Frequently Asked Questions (FAQs)
- questionnaires
- instructor and student lists

3.2.1 Catalogs

In order to reflect changes in printed catalogs a new batch must be printed. For example, instructor changes may occur and courses canceled. Online catalogs can contain such last-minute changes and at the same time reducing the costs required to print new copies. Catalogs normally contain the course name, course number, the instructor, times, etc. They can also contain graphics and links. Links can be made to related information, instructor home pages, and texts.

3.2.2 Frequently Asked Questions (FAQs)

This is one tool that will benefit students, instructors, and the administrative staff. A FAQ is a list of commonly asked questions and their answers. Posting FAQs provide ready answers to the student. FAQs also reduce the amount of time spent in answering questions.

Some of the items may be wanted to post are:

- procedures for registering to a course
- procedures for dropping a course and penalties that may be incurred
- any fees that may be required
- dates to be aware of
 - last date to register
 - cutoff dates for adding, dropping or changing a course
 - dates that fees are due
 - class start and stop dates
- information as to whether registration to a class, outside of the student's discipline is allowed
- financial aid policies
- library services
- office hours of administration and instructors

3.2.3 Lesson Plans, Courseware and Curriculum Materials

Keeping courseware, lesson plans and other curriculum materials online encourages collaboration and simplifies the design and revision of materials. Also, for courses taught at several sites, corrections and additions to material on the server ensures that up-to-date information is always available to all sites. Printing and shipping costs are reduced and time-lag is eliminated. Also, consistency is achieved.

A small list of what can be made available:

- create libraries of video and sound clips for use in courses
- provide links to:
 - subject-related sites
 - research sites
 - newsgroups
 - libraries
 - databases
 - lesson plan repositories
- in-house written plans and texts
- product manuals

3.2.4 Forms

Less expensive than printing hardcopy forms, and certainly more efficient than paper shuffling, online forms are a great way to increase productivity.

Some of the forms to consider using are:

- course registration and withdrawal forms
- questionnaires
- bookstore ordering forms
- library checkout forms
- course review forms

Using online forms eliminates a trip to administration and time on the phone. Also, costs in printing several types of forms are reduced. Online questionnaires encourage feedback from students and faculty alike.

3.2.5 Electronic mail (e-mail)

Like postal mail, e-mail is used to exchange messages or other information with people. It is the principle tool of the Internet. Instead of being delivered by the postal service to a postal address, e-mail is delivered by Internet software through a computer network to a computer address that makes it a simple, portable, inexpensive mechanism for rapid communication between individuals and groups. It serves as the foundation for almost all other network tools.

3.2.6 Bulletin boards

Many bulletin boards can be accessed through the Internet. Two common public bulletin boards on the Internet are USENET and LISTSERV.

USENET is a collection of thousands of topically organized newsgroups, covering everything from supercomputer design to bungee cord jumping, and ranging in distribution

from the whole world to single institutions. USENET News discussions as well as other Internet educational resources that pertain to alive subject can be downloaded and used in a course. Students, as well as staff, while reducing cruising time, will keep up with current trends in their field of interest.

LISTSERV also provides discussion forums on a variety of topics broken out by topic or area of special interest.

3.2.7 Videos and Sound clips

Presentations and courseware can come alive with the addition of videos and sound clips, enhancing the learning experience. For example, a history class covering World War II could contain a video of MacArthur's beach landing or a speech from General Eisenhower.

3.2.8 Presentations

Presentations can be easily created, updated, and shared with a considerable savings in time and effort. A presentation can be put to great use as a supplement in lectures and the same material can be used in summary.

3.3 The Student

Students are people who must be satisfied. People take a Web-based course with some goals, in pursuit of advantages they feel important to them. Generally, students are the ones who must be convinced that their goals have been met and the advantages realized. Web-based training is effective when it helps these students get the fullest benefit possible from the instruction with the help of technology.

Depending on the Web-based course, people from all types of backgrounds and educational levels will mostly likely visit. For students to be satisfied, they must believe that their objectives have been met, with acceptable effort and cost. The end matters more than the means; the outcome more than the output.

In well-planned Web-based instruction, the needs of students change. Web-based instruction should not only help the student get started but also stay at a pace of their evolving interests, ultimately reducing the student's dependence on the instructor.

Students need the following from instruction:

- lose shyness
- learn terms and elements
- learn necessary procedures
- receive often-used facts
- receive rarely-used facts

These five points can serve as a beginning blueprint in designing Web-based training.

3.3.1 Profile of the Distant Student

The primary role of the student is to learn. Under the best of circumstances, this challenging task requires motivation, planning, and the ability to analyze and apply the information being taught. In a distance education setting, the process of student learning is more complex for several reasons (Schuemer, 1993) :

- Many distance-education students are older, have jobs, and families. They must coordinate the different areas of their lives, which influence each other — their families, jobs, spare time, and studies.
- Distant students have a variety of reasons for taking courses. Some students are interested in obtaining a degree to qualify for a better job. Many take courses to broaden their education and are not really interested in completing a degree.
- In distance education, the learner is usually isolated. The motivational factors arising from the contact or competition with other students is absent. The student also lacks the immediate support of a teacher who is present and able to motivate and, if necessary, give attention to actual needs and difficulties that crop up during study.
- Distant students and their teachers often have little in common in terms of background and day-to-day experiences and therefore, it takes longer for student-teacher rapport to develop. Without face-to-face contact distant students may feel ill at ease with their teacher as an "individual" and uncomfortable with their learning situation.
- In distance education settings, technology is typically the conduit through which information and communication flow. Until the teacher and students become comfortable with the technical delivery system, communication will be inhibited.

3.3.2 How To Motivate The Student

- Create a Need
- Develop a Sense of Responsibility
- Create and Maintain Interest
- Structure Experiences to Apply Content to Life
- Give recognition, Encouragement, and Approval
- Establish Long-range Objectives
- See the Value of Internal Motives
- Intensify Internal Relationships
- Give Them a Choice

3.4 Mistakes To Avoid In Training

3.4.1 Improper Handling of Questions

Students asking questions via electronic mail or a listserv are no different than those in a classroom. It's fairly easy to forget that there is a real person on a remote machine. The

electronic question should be answered directly to the student, even if the questions and answers in a FAQ are collected.

It's hard enough to maintain the personal feel to an online course, so spend a few minutes with the student via mail and do not forward the answer to any other student. Once the question has been answered, instructor can cut and paste the question and answer and create a FAQ entry, making sure that the student's name or e-mail address is not on the entry. Remember that many students will be uncomfortable with online training.

3.4.2 Not Covering the Objectives

The course material should be a perfect match to the outline. Once complete, instructor can add more. For example, add links to related sites of interest, add practice tests, or create sessions.

3.4.3 Not Involving the Students

Students can add to the discussion as well, including their experiences, thoughts, or concerns. Students will have experiences that will prove useful in the discussion. Allow their contribution.

There are Web-based tools, such as phone and conferencing software. Phone and conferencing software enables voice and/or text communication with several people at once. Use forms, not just those directly related to coursework, but for other areas of support. Forms for requesting services from administration or technical support should be made available.

3.4.4 Too Many Graphics

One of the fastest ways to irritate a student is to overload a Web page with graphics. Graphics add to the download time - time that the student would rather spend studying. Depending on the subject, several images may have to be used in Web pages.

3.4.5 Not Checking the Environment

Inspect the room setting, the equipment, and materials that will be used. Make sure that e-mail accounts are made and that the online forms work as well. Online text must also be accessible.

3.4.6 Being a "Know-it-all" and Not Admitting Mistakes

No matter what level of experience and professional standing, Mistakes will be made and there will be questions to which won't be knew the answer. Should be admitted when mistakes are made or when an answer to a question is been lacking. Admission should be made to a single individual or to the entire class, depending on the situation. For questions that cannot be answered, find the answer and get back to the student who asked the question.

3.4.7 Outdated Material

Many Web pages contain a "page last modified" statement. Keep current and constantly revise both the material and the delivery of instruction.

3.4.8 Neglecting to Present a Positive Image

Instructor can achieve a positive image in his/her own online text. Start off with a good welcome message and introduction. Instructor may want to post a Web page outlining his/her own experience. A well-written syllabus tells the student exactly what to expect and a policy statement tells what is expected of the student.

3.4.9 Rapport Not Established

With online texts, writing style of instructor can play a big part in developing and maintaining rapport. The creation of services such as a discussion, e-mail accounts, online forms, also contribute. Take care of problems swiftly and for those problems that will take some time to clear up, provide updates. This will let students know that instructor is on top of things and that they aren't forgotten - they feel important.

3.5 Web Based Training Design and Development

It's easy to simply throw a few Web pages on to a server and call it an online course. When instructor teaches in a classroom, instructor is purposely organizing and presenting information in order to reach a specific learning goal. The same is true in Web-based training.

To say that instruction describes a system or gives information about a procedure is *not* to define its purpose. Very few students want a "description" or "general information". The overall purpose of Web-based training is to help students learn a subject while getting full value from the system. Categorically, online text has been expected to help in two ways:

- **Instruction** - teaching people how to do something.
- **Reference** - giving people definitions, facts, and codes that would be difficult to memorize.

Instruction can be split into two parts:

- **Orientation** - contains material, such as tutorials, used to train the beginning student. Orientation traditionally begins "at the bottom", with the basic definitions and concepts.
- **Guidance** - includes process demonstrations or activities directed toward the competent or experienced student. Guidance is teaching by the demonstration and

showing of whole procedures and transactions and is aimed at a person who has a general knowledge of the subject material.

References are a compressed presentation of facts and information, and are useful mainly to people who know what they already need to know. Highly experienced people may need nothing else while beginning and intermediate students need more.

The change in the type of students attracted to the Web has created a need for a fourth function and this is motivation. Motivation is the art of getting people to do what they are reluctant to do; it is the selling of ideas and methods. Put simply, many problems in learning can be blamed on reluctance, not ignorance.

There are many models of instructional development and processes. The Web is so dynamic that it is difficult to create a standard.

As with any other complex undertaking, Web-based training development has a life cycle. Whether all of materials are online, or just the lesson plan, development is never really finished. Again, new tools and improvements to existing tools become available and they may affect the delivery of the instruction. New findings in the subject may be added to the material, and any errors in the existing text will need to be corrected.

Basically, the process of planning requires four steps:

- Design
- Development
- Evaluation
- Revision

3.5.1 Course Design

In Web-based education, the students are harder to define. With purpose of instructor defined and a good idea of the type of students instructor would have, instructor could then start on the goal statement and a map of objectives. Goals are broad statements of instructional intent, while objectives are the specific steps leading to the accomplishment of the goal.

Instructors may get a better picture as to how a goal fits in by seeing course development as a project. A project is a sequence of events directed to achieve a defined goal. The characteristics of a project are:

- it has a defined goal
- it is unique
- it has multiple related tasks
- it has a beginning and end
- it has multiple resources
- it has constraints such as time, quality, and budget

The goal is part of the project and it describes the desired result. Obviously, the goal in Web-based training, as with any other form of training, is student learning. As a goal statement, "student learning" is too vague. Instructors need specifics, so in writing his/her goal statement, it may help to make a *smart* goal:

- Specific
 - What exactly does instructor want to achieve?
 - What is the exact outcome instructor see?
- Measurable
 - How will instructor know when instructor has reached his/her goal?
 - How will instructor measure his/her progress?
- Achievable
 - Is instructor really able to reach this goal?
 - What must instructor overcome?
- Realistic
 - Is the goal realistic?
 - Does instructor has the tools and knowledge required?
- Time
 - When does instructor want to have this goal met?

Objectives are the steps taken to accomplish the goal. Objectives provide information to the students as to what they should get out of the course. Objectives assist the instructor ensuring that the correct material is delivered and that assignments and exams are in line with the topics.

3.5.2 Course Development

A goal statement, a list of the content needed in the course, and class analysis in hand, work can begin on a content outline. Once the outline is complete, review existing printed material.

To create a Web page, instructors have his/her own outline, notes, and references. As instructor fashion his/her own course, he/she should use examples that his/her students will understand. Since a Web-based classroom will hold students of varied backgrounds and experiences, this will not be easy and the hard way.

In order for the students to use the metarial, their computers needed a browser to view the pages, email accounts so that they could send and reseive mail. The usage of other tools for course may require. For example, if there are sound clips and video, each student must have the software needed to take advantage of these things. Instructor may want each student to be online at a specified time so scheduled discussions can take place. Each student will need conferencing software. In short, whatever tools instructor use, ensure that each student has the necessary equipment and software to take advantage of them. The student who is missing something will not get the full experience.

Web pages will be able to pass three tests:

- The course material is:
 - well-defined
 - in tune to the targeted audiences
 - in keeping to meet planned outcomes
- The materials are in the most accessible, reliable sequence
- Sentences and diagrams are free from distracting errors and awkward style

Designing is never static. It is an ongoing process in which instructor experiment, edit, and revise according to the results from evaluations or feedback that instructor obtain from others. The design process is challenging, but it is also creative, reinforcing, and exhilarating. The final product is something in which instructor can be extremely proud, but even better, a real benefit for the people instructor is teaching.

3.5.3 Course Evaluation

Evaluation is a measurement tool. Effective evaluation will provide invaluable information which instructor can use to accomplish the desired goals and objectives. Create a plan as to how instructor is going to evaluate the effectiveness of his/her instruction.

Some items to consider when creating his/her plan are:

- what are going to be evaluated
- when are going to be evaluated
- how are going to be solicited and received responses
- how are going to be analyzed data

Doing evaluation will reduce the number of problems will be seen during implementation. As implementation is the first real test to determine effectiveness, pre-test, is ideal.

During implementation evaluate such things as:

- How clear is the material?
- How is effectiveness of instructor?
- Is student participation to expectations of instructor?
- How can be made the course better?
- Do the assignments and exams go with the material?

There are different types of evaluation. For example, two forms of evaluation are *formative* and *summative* evaluation.(Willis, 1993)

3.5.3.1 Formative Evaluation

- Is an on-going process to be considered at all stages of instruction.
- Will enable the instructor to improve the course as he/she proceeds.
- Facilitates course and content adaptation.
- Will identify major gaps in the instructional plan or the need for minor adjustments.

For example ; Instructor can use to collect formative data from their distant students with electronic mail.

3.5.3.2 Summative Evaluation

- Assesses overall effectiveness of the finished product or course.
- Can be a springboard in developing a revision plan.
- Can be a baseline of information for designing a new plan, program, or course.
- Will not help current students since it is conducted upon course completion.

Some questions that instructors may want to ask students when collecting summative data include:

- List five weaknesses of the course.
- List three (or five) strengths of the course.
- If you were teaching the course, what would you do differently?
- Student background information: age, level in school, number of distance delivered courses taken prior to this one.
- What would you recommend to a friend planning to take this course?
- What did you think would be covered in this course but was not?
- Would you recommend this course to a friend? Why or why not?

3.5.4 Course Revision

In any course, classroom, Web-based, or otherwise, questions can consider as a chance to improve the content. There will always be a question and it's next to impossible to write or lecture in a way that everyone will understand the first time through, but it could be something to strive for.

Course changes will need to be made depending on what instructor find during his/her evaluations. Once this data has been analyzed, instructor can begin his/her rewrite plans. Minor rewrites such as clearing up a vague paragraph, can be made while the course is in progress. FAQs and electronic mail can use for course changes. Once revisions are made, the material is made available to other instructors and subject masters.

Rewrite plans will change. Some of the factors that will affect the plans are:

- **Changes in policies** - new rules on what must or may be done, and by whom. Institution of instructor will probably make such changes.

- **System enhancements and changes** - *Enhancements* are major changes and new features that are added to the server, whether it be scheduled or unannounced. *Changes* are minor modifications in the server environment that will affect pages.
- **Errors in communication** - vague, unclear, or misleading text and diagrams on pages. This also includes errors in mechanics and grammar.
- **Technical errors** - incorrect or incomplete technical information about the subject being taught.
- **Technical changes** - the addition of new material or the removal of dated content.
- **Changes in delivery** - for example, from online only and self-paced, to classroom with an instructor. The text may have to be changed to fit the environment. Then again, the text may require little change as there is now an instructor available to add to the material in lecture.

3.5.5 Criteria For Online Text

The online, remote nature of Web-based training, depending on how it's being delivered, prevents visual contact between the instructor and the students. Accuracy of the online material and the stability and ease-of-use of the technology become the standards of how instructors are judged.

Each page then, must be of sound, high quality. The quality of Web pages can be measured by the four formal criteria. An agreement must be made on the criteria before measurements of quality can be made. The four criteria used are:

- availability
- suitability
- accessibility
- readability

3.6 Modular Design Of Web Pages

Modular courseware is made up of several files that are functional, small, and independent units. Courseware designed in a modular style are as easy to read, as they are to write and maintain.

For a large training group, courseware writers can be assigned specific portions to write. Each writer knows exactly what to write and what to cover since scope and content are clearly defined. Modularity eliminates duplication of effort and allows writers to work together with a minimum of friction.

Modular texts, because they are independent, can be made part of a library. Instructors and writers can add these modules to another course with little or no change (further decreasing duplicated effort). Even easier, since we're dealing with the Web, a link can be inserted into the online text that points to the module in the library.

There are times when a Web page needs to be large and contain several subtopics. White papers are a good example of this. These pages can keep a modular "feel" by adding a small table of contents at the beginning of the Web page. The table of contents is links to the different subtopics in the document. This way, the student can click on a specific subtopic and read just that portion. It's a good idea to add a link, to allow the student to return to the table of contents, at the end of each sub-topic.

For modular texts to be effective, a module addresses only one theme and performs only one of four functions. The four functions of modules are:

- Motivation
 - compares new ideas with the old
 - shows how features are benefits
 - encourages action
- Orientation
 - one topic at a time is explained
 - fundamentals are taught
 - prepares the new student
- Guidance
 - entire processes are demonstrated
 - building on the fundamentals
 - productivity is promoted
- Reference
 - frequently asked questions are answered
 - extends the student's memory
 - enhances the student's efficiency

3.6.1 Motivational Web Pages

Web pages that are motivational serve to get students to do what they are reluctant to do. In other words, motivational pages *sell*. Such pages must convince students that they will benefit from the material being covered and that they will gain far more by doing.

People take a course for more than one reason; they want more than what they see. They have a deeper, internal motive and the course they're taking will help them achieve their goals whether they be short- or long-term. Unless they can see that their real goal can be met, chances are good that they will not complete the course.

It is up to the student to accomplish their goals. It is also their responsibility to stay motivated so that they can meet their goals. It is, however, the instructor's job to create an environment for motivation. A motivational environment can get even those students who may be required to take a course to motivate themselves to learn and produce outstanding work. Well-worded pages can quickly put students into a productive state, a frame of reference that urges them to act.

Instructors can appeal to other desires the student may have, such as:

- respect
- skill
- affection
- enlightenment
- rectitude (doing something because it's right)
- well-being

Appeals such as these can persuade students to eagerly try new things. In writing the motivating page, be very specific as to how learning a new step or performing a new procedure will provide material benefits.

3.6.2 Orientation Web Pages

With the orientation Web page, instructors can begin to teach. Orientation pages are geared more toward new students, but are useful as a refresher for more experienced students. Each page teaches only one item; a single concept or task and then tests the student to see if the item has been learned by answering a question or performing an operation. The student continues along a string of pages, each page building upon the previous one.

If the student can answer the question or complete a task, the page is a success. To design such a page, the instructor has to be able to say exactly what they want the student to learn from it.

The Web is nothing short of outstanding when it comes to orientation-type training. The Web makes it easy to provide online testing and providing the student with instant feedback. If videos and sound clips are used in the instruction, the same videos and sound clips can be used in test questions.

Web pages are perfect for programmed texts designed to allow the student to branch, skip, and jump to other texts. The problem with this is that new, inexperienced, or insecure students who get lost may never find their way back. To minimize this:

- instruct the student on the use of the browser, especially how to use the "back" and "forward" buttons
- provide links back to the table of contents and the course home (introduction) page

3.6.3 Guidance Web Pages

Guidance-type pages contain much more information than the orientation-type teach as they cover entire functions or processes. These pages, because of the amount of material they can contain, must be clear and ordered. Accuracy is a must and will be a major concern with students. If the information isn't accurate, the student will tend to blame the author of the page, the instructor, or both.

Planning is vital when designing this type of page. Instruction should be slanted toward an experienced student without the characteristics of an orientation-type page. The texts start out with a very brief introduction, followed by a detailed presentation of the procedure. Trailing behind the instruction is a summary. The summary should be brief and to the point and is an excellent place to provide a list of instructions and conditions.

Many procedures are multi-level so instructor may want to consider breaking the procedure into several parts, creating a separate Web page for each part. There are many ways that any procedure can be broken down, so play with it. Study the different combinations and choose the one that has the least amount of branches, skips, and loops.

If instructor designs his/her course to where each component in a multi-level process will have its own Web page, create an overview page and add links to the pages dealing with the components. It's also a good idea to put a link, on each component page that will bring the student back to the overview page.

For very complex procedures and processes, there may be a need to create several levels of Web pages. Each page regardless of its function has a link to the course home page, links to any overview pages, and the table of contents. These links, added to each page gives the student a chance to "back up and regroup" and then get back on track.

Before using the pages in a learning environment the summary must be tested. For an existing process, the test is easy. If the page is written correctly, the person testing the instructions will see an exact duplicate, on a "live" system, as shown the examples on the page.

3.6.4 Reference Web Pages

References are lists, tables, charts, inventories, summaries, and anything else to be looked up. References do not teach, nor do they try. The function of a reference is to provide a convenient place to access those long lists and charts that no one wants to memorize and to locate items that were learned before but forgotten. References are "to the point", containing a short headline, a very terse summary list or chart, and rarely any additional text.

Since references are not good for teaching, a Web-based course could exist without them since they are for people who already have a solid grounding in the subject. References can play a big part in adding value to an online course, however. For example, the student may have to learn how to use certain charts and lists in order to be proficient in a certain field. Orientation pages can teach what the reference is and guidance pages can show how the reference is used. References can be used as a service.

In creating references, there are a few things to be aware of:

- References should always be easy to find.

- *Do not* try to teach within a reference. This will cause a great inconvenience to a researcher as well as undermine the purpose of a reference - to get the needed information quickly.

3.7 Web Pages Maintenance

All Web pages will need to be changed eventually so a policy must be in place for their proper maintenance. As subject matter changes, the courseware must also be changed. Without a plan, maintenance will be random or haphazard at best.

Web page maintenance is more than just changing content. Maintainability is an aggregate measure of the ease and speed with which errors, flaws, and other inadequacies in a set of pages can be located, defined, and corrected. Courseware maintainability is often the best predictor of its cost-effectiveness.

3.7.1 Maintaining Web Pages: An Overview

All of the Web pages have to be maintained. The most important step in handling the process of updating the pages is to give the responsibility to someone. The person assigned this task will be responsible for updating the pages and that they're placed on the server. Depending on the institution, this person may be the instructor of the course or a person assigned to oversee all course documents.

Advantages of proper page maintenance are:

- **limits the updates to a single, authorized source** - reducing confusion and resolving conflicts.
- **puts as much documentation as possible into the system itself** - reducing the quantity of obsolete "hard copy".
- **limits the number of supplements and releases** - keeping them in large batches, will reduce the "noise" in the documentation channel.

Tips for the maintenance of pages during the life of the course:

- Keep a master file. The master file is audit trail of instructor. This file should contain a printed copy of the Web pages that notes all corrections and changes. Each change and correction should be dated as well a note explaining the change. Besides notes concerning communication and mechanics, the master file should also include information such as:
 - **policy changes** - new rules on what must or may be done, and by whom.
 - **technical changes** - minor modifications in the server environment that will affect pages.
 - **system enhancements** - major changes and new features added to the server, whether it is scheduled or spontaneous.

- Create and maintain a document distribution list. This list identifies all of the people needing the pages.

3.7.2 Maintaining Web Pages: A Plan

The most simple way to maintain a set of Web pages is to find those that need changing and then make repairs or replace them altogether. Material to be added will require that instructor find the right place to insert the new information. Without a tracking system, this can become difficult and instructor may find himself/herself constantly re-reading each page just to see if it needs a change or not. It is also likely that the same Web page will be in another course and that page, too, will need the change.

The amount of time and effort spent in re-reading and changing Web pages is variable as it depends on the scope and content of the course. Add more time and effort if there are more courses to maintain. Maintenance costs, however, are usually a constant. The amount of time, resources, and money rarely changes.

These side effects can be reduced by creating a Web page *profile*. The profile tells, at a glance, what the page is about, any subordinate pages, all of the courses affected by this page, and other relevant descriptions. The profile gives the added benefit of allowing instructor to create new material from existing Web pages.

For Web pages to be maintainable and modifiable, they must be designed that way. If Web pages are tested while they are still models, the need for subsequent changes are reduced as well as simplifying the process of making and controlling any changes that must be made.

3.8 Maintaining Pages On The Server

3.8.1 Organizing Pages

Instructor may have several graphics, image maps, forms, schedules, charts, and so on that are also needed. Instructor can keep all of his/her files in one directory (also called a folder).

A directory is a special type of file that allows instructor to group files on his/her disk much like instructor would papers in a folder. With directories, instructor can group files and other directories to organize his/her work. Directories contain files, subdirectories, or a blending of both. A *subdirectory* is a directory within a directory. The directory containing the subdirectory is the *parent* directory.

The directory is organized into an inverted tree structure with the beginning, or *root*, at the top, branching downward. The root directory can contain files or other directories. Directories and subdirectories are sometimes called *folders* or *branch nodes*, while the files in the directories are sometimes called *leaf nodes*.

3.8.2 Create Pages Locally

Instructor can create all of the pages on his/her system, not the server. By doing the work on his/her own computer, instructor can write code, create (or modify) graphics, experiment, make changes, and perfect the pages before anyone else sees it. Once his/her pages are tested, instructor can upload them to the server.

Working locally gives the benefit of protecting the pages on the Web. Also, the pages on the server can be viewed by others and not experience interruptions through edits. A browser works with Web pages on the local disk just as well as if they were on a Web server.

3.8.3 Test Pages

Every page and every link should be tested. There are tools that will validate code.

Advantages of testing pages:

- Instructor sees what his/her students will see.
- Instructor is confident that his/her courseware is stable. Instructor sees that his/her pages can be referenced, the graphics can be found, links to other sites are correct, and so on.
- Errors are often found that a validator didn't catch and instructor can make corrections.
- Instructor has spent a lot of time and effort on his/her project; instructor has a right to relax and enjoy the results.

CHAPTER 4

A VIRTUAL CAMPUS FOR IZMIR INSTITUTE OF TECHNOLOGY

4.1 Objective Of The Virtual Campus

The purpose of this thesis is to prepare of an interactive education environment and to represent to the available courses in Izmir Institute Of Technology, on the Web and to contribute to the studies about distance education in our country.

The Virtual Campus can be considered as an example of online distance education. It is independent from time and location and it is also interactive distance education, individual and economical.

4.2 Scope Of The Virtual Campus

- Synchronous and asynchronous learning methods have been supported.
- Creatiable course and content quickly and easily
- The Virtual Campus uses modules. There are syllabus, outline, files, projects, testing, grade, discussions, library and café modules.
- There are communication tools as discussions, messages and chat.

- **Users**
 - Instructors
 - Students

- **Login Page**
 - Login
 - Student and Instructor Services
 - Login Help

- **Student and Instructor Services**
 - Create New Account
 - Forgotten Password
 - More Information About Logging In
 - Features
 - Frequently Asked Questions (FAQs)
 - About Courses

- **Courses**
 - Course Listing And Registration (Student View)
 - Selected Course Listing and Login (Student View)
 - Edit User Information (Student and Instructor View)
 - Course Listing (Instructor View)
 - Create New Course (Instructor View)

- Delete An Existing Course (Instructor View)
- Help (Student and Instructor View)

- **Main Page**

- Course Main Page
- Discussions
- Messages
- Library
- Cafe
- Chat

- **Course Main Page**

- **Syllabus**

- View Syllabus (Student and Instructor View)
- View Readings (Student and Instructor View)
- Create Syllabus (Instructor View)
- Create Readings (Instructor View)

- **Outline**

- Sessions (Student and Instructor View)
- View Session (Student and Instructor View)
- Assignments (Student and Instructor View)
- Create Session (Instructor View)
- Delete Session (Instructor View)

- **Files**

- Lectures (Student and Instructor View)
- Tutorials (Student and Instructor View)
- Presentations (Student and Instructor View)
- Create Files (Instructor View)
- Delete Files (Instructor View)

- **Projects**

- Projects (Student and Instructor View)
- Create Project (Instructor View)
- Delete Project (Instructor View)

- **Testing**

- Exams (Student and Instructor View)
- Homeworks (Student and Instructor View)
- Create Exam and Homework (Instructor View)
- Delete Exam and Homework (Instructor View)

- **Grade**

- Grade Book (Student and Instructor View)
- View and Edit Grade (Student and Instructor View)

- **Students**
- **Course General Help**
- **Discussions**
 - Forum Topic Listing
 - Create Forum Topic
 - Related Messages With Forum Topic
 - Discussions Help
- **Messages**
 - Individual E-mail
 - Group E-mail
 - Announcement
 - Messages Help
- **Library**
 - Online Libraries
 - Bookstores
 - Create Bookstores and Online Libraries
- **Cafe**
 - Create Cafe
 - Art
 - Book
 - Music
 - Cinema
 - Newspapers
 - Magazines
 - Various Links
- **Chat**
 - Create Room
 - Enter Chat

4.3 The Relationships Between Pages In The Virtual Campus

The Virtual Campus can be understood by representing the relationship between pages in a graphical way.

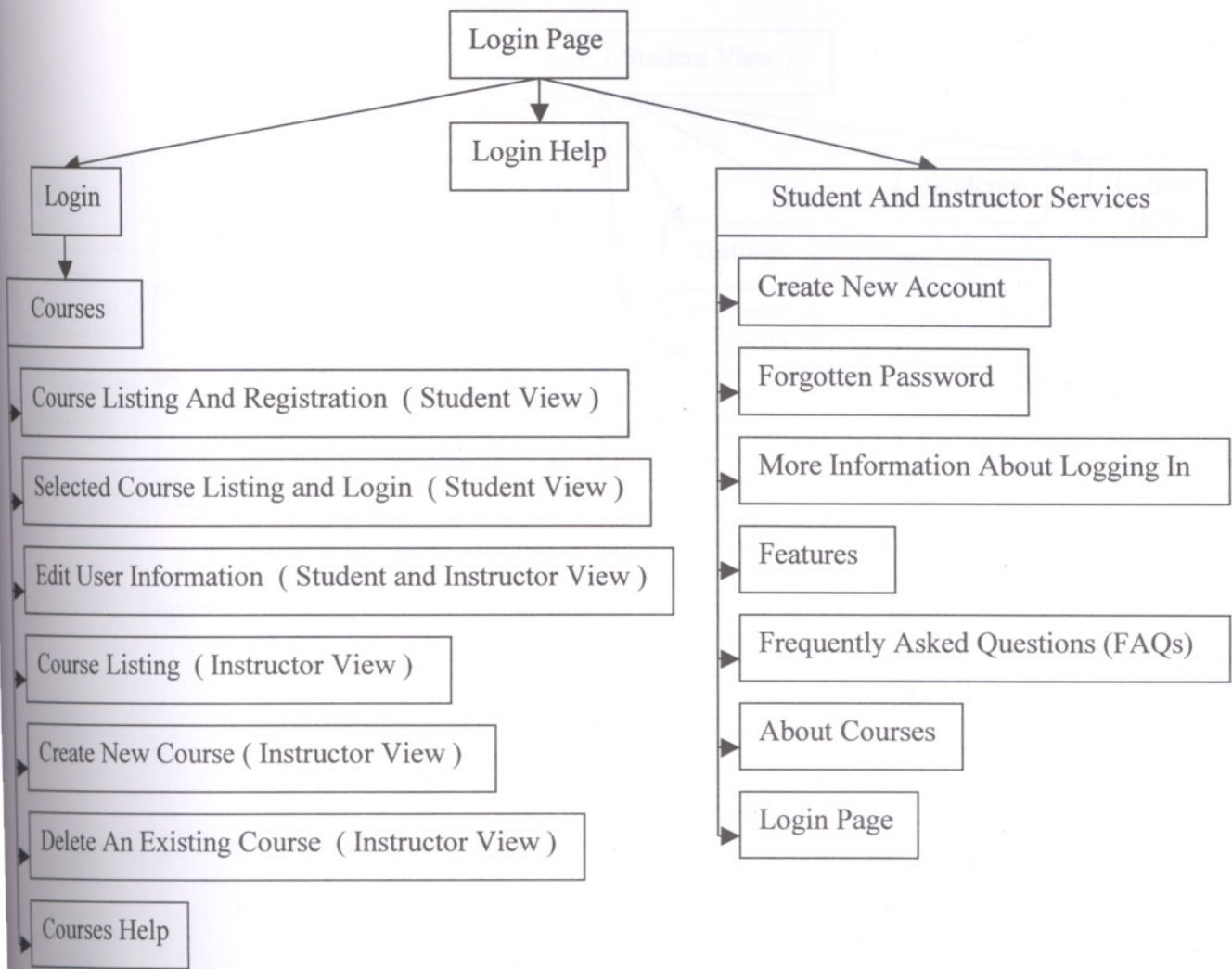


Figure 4.1 : Login Page Graphic Of The Virtual Campus

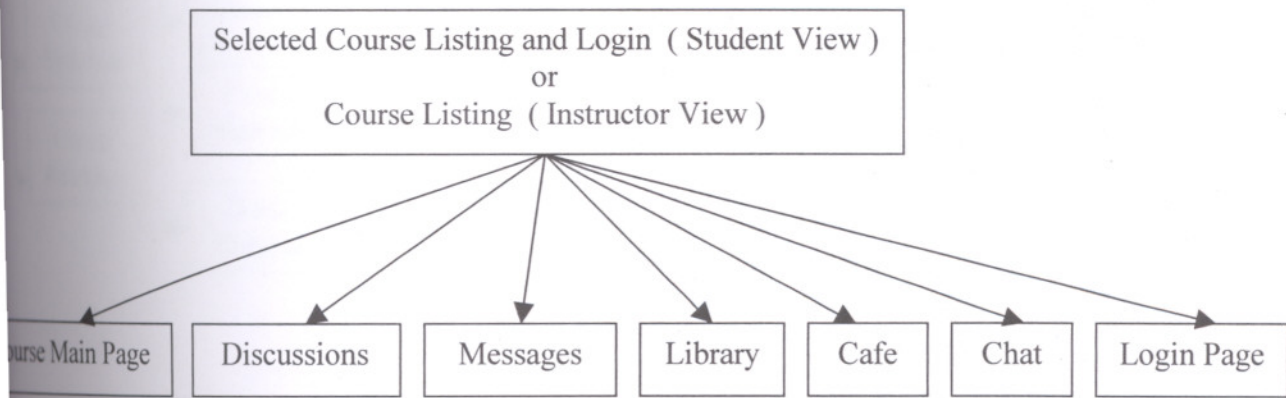


Figure 4.2 : Course Listings Graphic Of The Virtual Campus

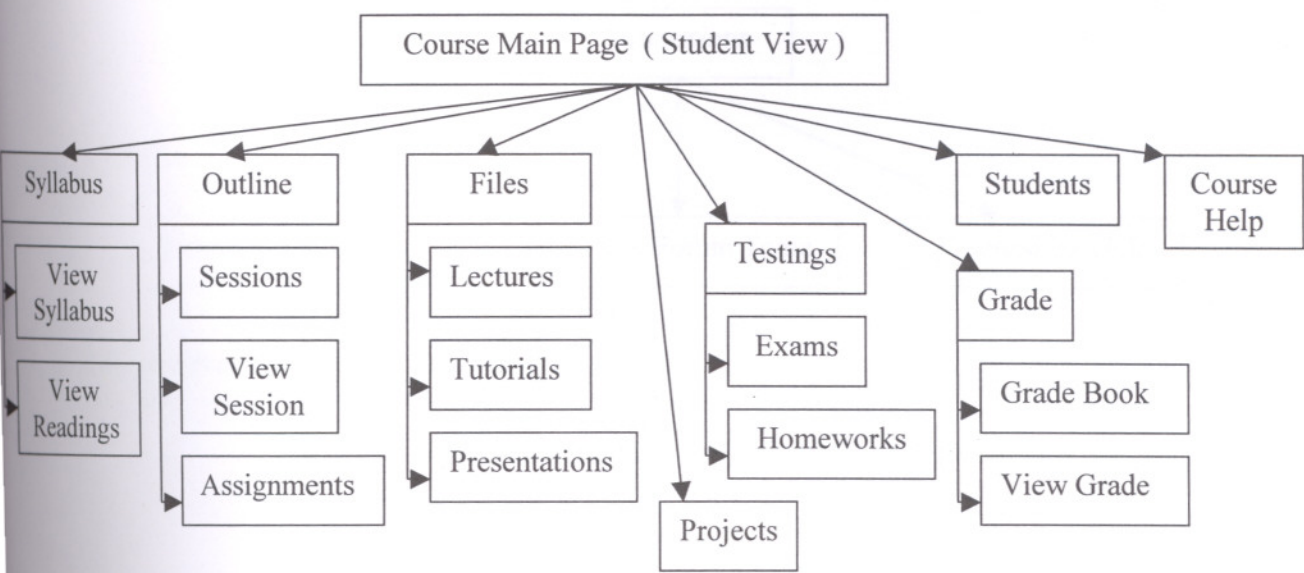


Figure 4.3 : Course Main Page (Student View) Graphic Of The Virtual Campus

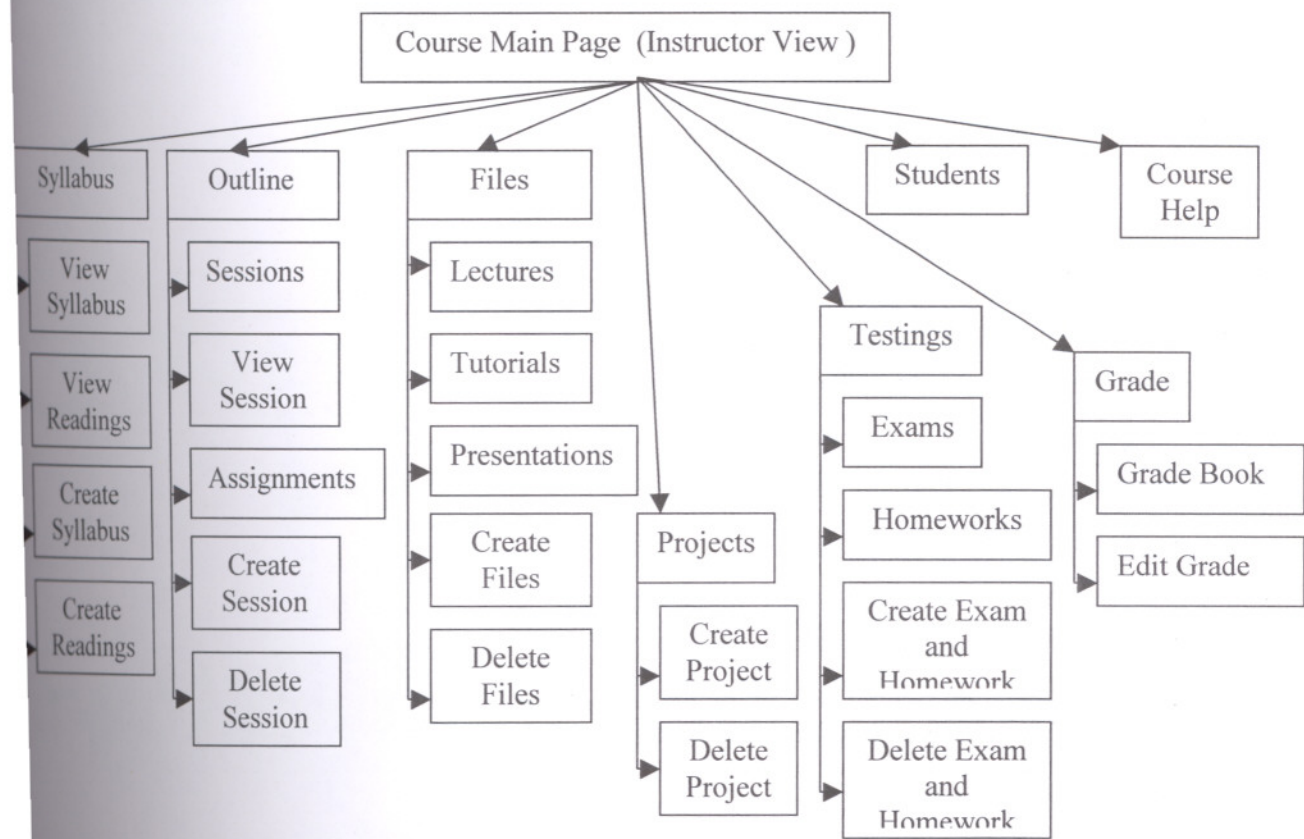


Figure 4.4 : Course Main Page (Instructor View) Graphic Of The Virtual Campus

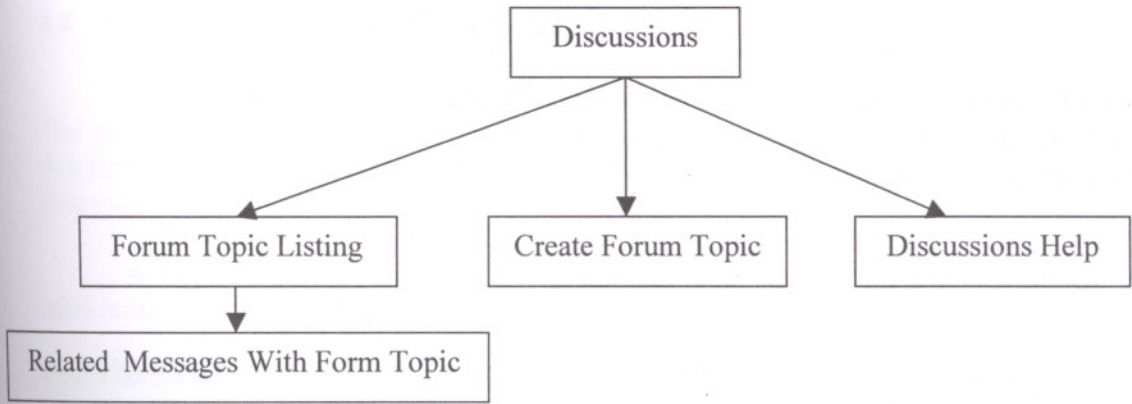


Figure 4.5 : Discussions Page Graphic Of The Virtual Campus

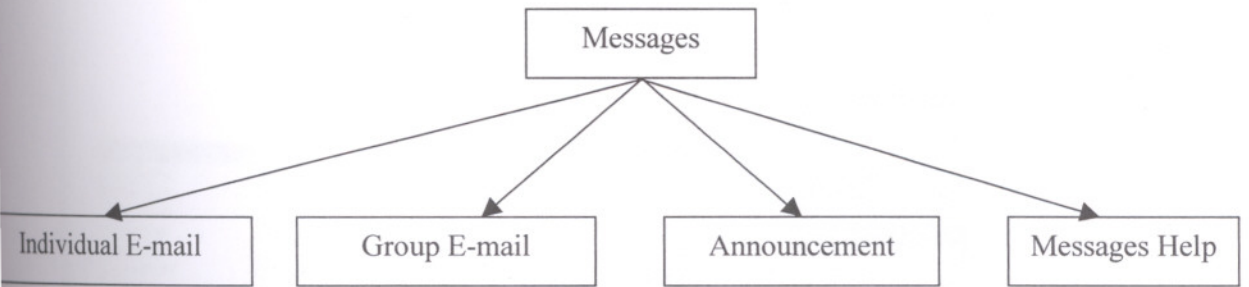


Figure 4.6 : Messages Page Graphic Of The Virtual Campus

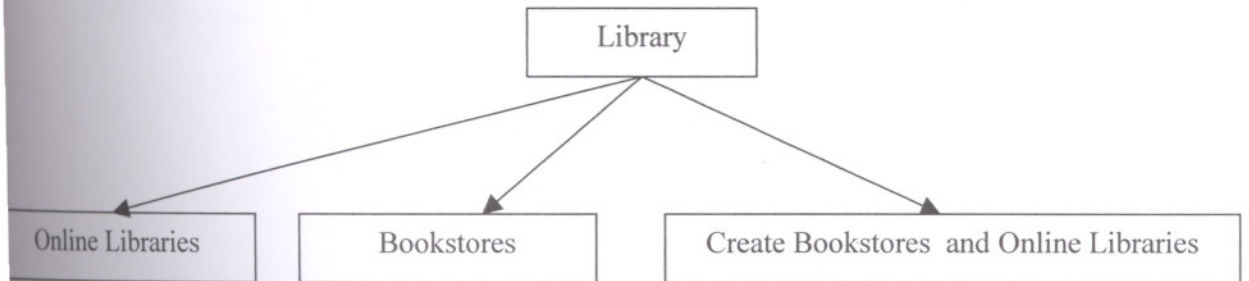


Figure 4.7 : Library Page Graphic Of The Virtual Campus

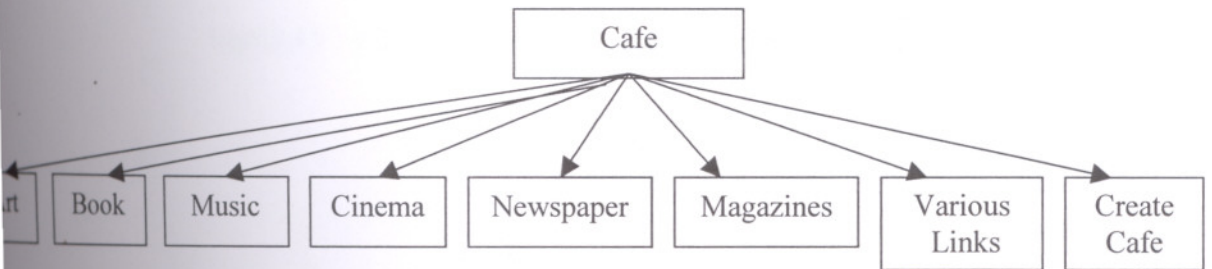


Figure 4.8 : Cafe Page Graphic Of The Virtual Campus

4.4 The Data Model Of The Virtual Campus

In the Virtual Campus, relational database model has been used. There are 11 tables. The *physical* storage of the information is complemented by a “theoretical” or *logical* description of the way the information is stored. This logical description is known as the data model.

A data model consists of the tables that store the information. It shows the relationships with each other.

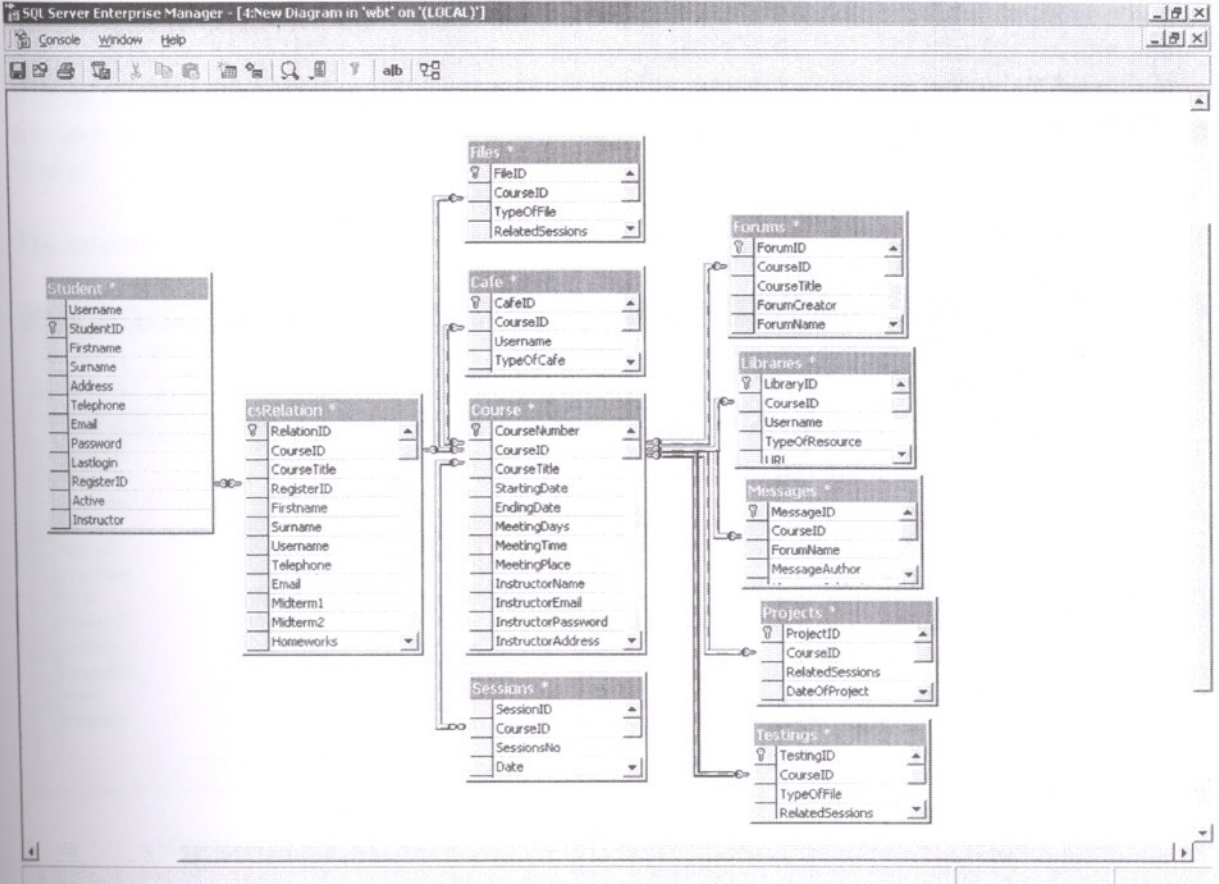


Figure 4.9 : A picture of the data model for the Virtual Campus

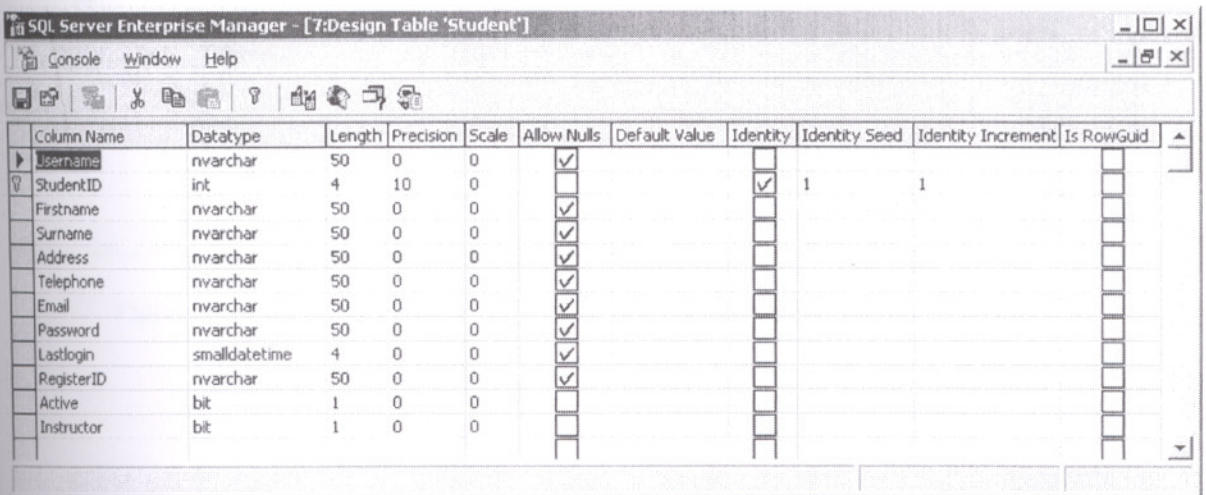
4.5 Database Design of The Virtual Campus

In the Virtual Campus, relational database model has been used. There are 11 the different data tables in the Virtual Campus. These are:

The Student Table

The Student table is used to store information about each user that is accessing the Virtual Campus. This information includes information about the student or instructor. In the Virtual Campus, each individual user has been identified uniquely in the database via a unique numeric identification number in the StudentID field. In order to log in into the Virtual Campus, the Active field must be “True” in which the default value is “False”. If the user is an instructor, the Instructor field must be “True” in which the default value is “False”.

The structure of the Student table is as below.



The screenshot shows the 'Design Table' view for the 'Student' table in SQL Server Enterprise Manager. The table has 11 columns with the following properties:

Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
Username	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
StudentID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	
Firstname	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
Surname	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
Address	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
Telephone	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
Email	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
Password	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
Lastlogin	smalldatetime	4	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
RegisterID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
Active	bit	1	0	0	<input type="checkbox"/>		<input type="checkbox"/>			
Instructor	bit	1	0	0	<input type="checkbox"/>		<input type="checkbox"/>			

Figure 4.10 : The structure of the Student table in the Virtual Campus

The csRelation Table

The csRelation table is used to store the relationship information between each user and each course. If user is an instructor, when instructor create course, the Instructor field will be "True" automatically. If user is a student, when student register course, the Instructor field will be "False" automatically.

The structure of the csRelation table is as below.

Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
RelationID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
CourseTitle	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RegisterID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Firstname	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Surname	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Username	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Telephone	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Email	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Midterm1	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Midterm2	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Homeworks	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Final	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Average	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Instructor	bit	1	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.11 : The structure of the csRelation table in the Virtual Campus

The Course Table

The Course table is used to store all information about each course.

The structure of the Course table is as below.

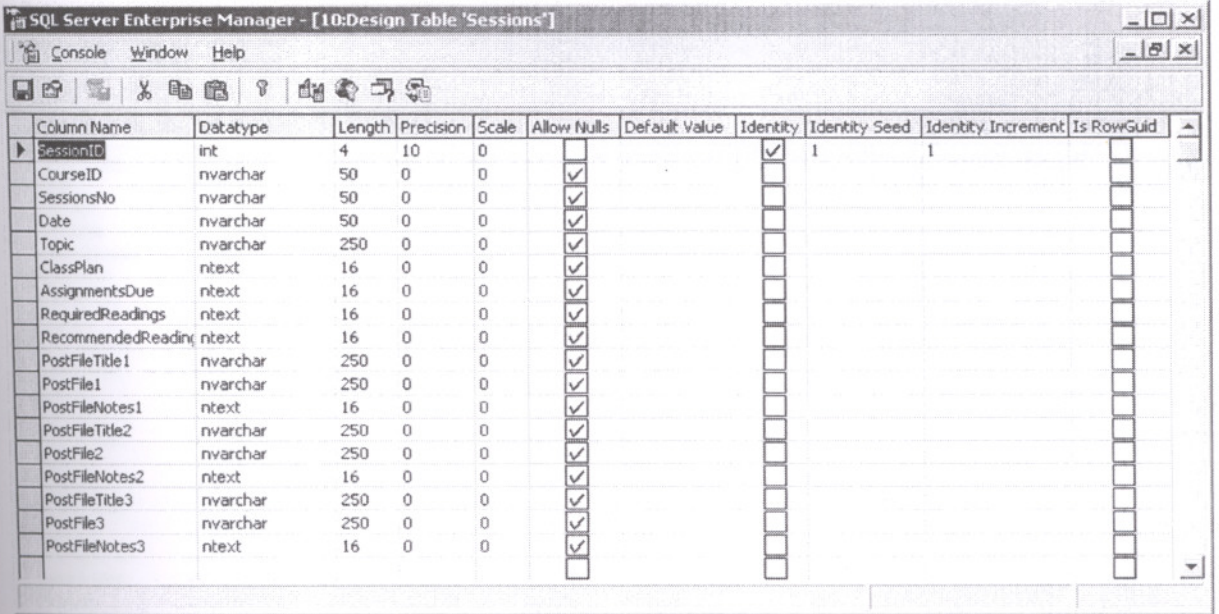
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
CourseNumber	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
CourseTitle	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
StartingDate	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
EndingDate	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MeetingDays	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MeetingTime	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MeetingPlace	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorName	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorEmail	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorPassword	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorAddress	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorTelephone	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorFaxNumber	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorOfficeHours	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
InstructorOptional	nvarchar	250	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMRRequired1	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMRRequired2	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMRRequired3	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMRRecommended1	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMRRecommended2	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMRRecommended3	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMWeblink1	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMResource1	nvarchar	50	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMNotes1	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMWeblink2	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMResource2	nvarchar	50	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMNotes2	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMWeblink3	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMResource3	nvarchar	50	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RMNotes3	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
CourseDescription	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Prerequisites	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
CourseObjectives	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MethodOfInstruction	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MethodOfEvaluation	ntext	16	0	0	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.12 : The structure of the Course table in the Virtual Campus

The Sessions Table

The Sessions table is used to store information about each session.

The structure of the Sessions table is as below.



The screenshot shows the 'Design Table' view for the 'Sessions' table in SQL Server Enterprise Manager. The table structure is as follows:

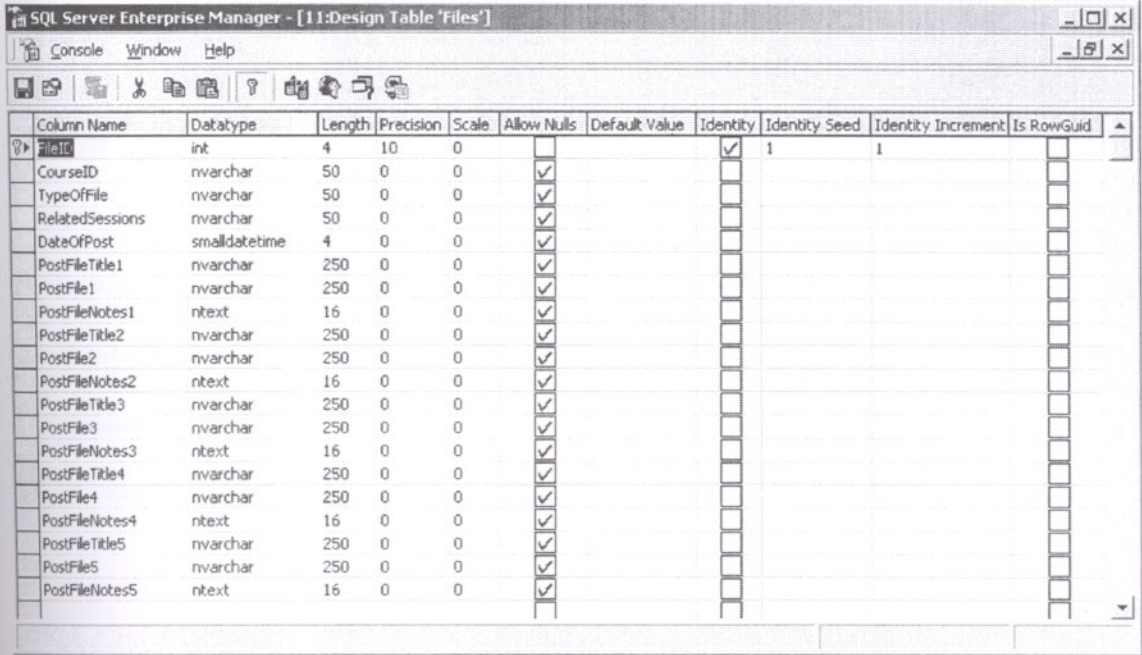
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
SessionID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
SessionsNo	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Date	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Topic	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ClassPlan	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
AssignmentsDue	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RequiredReadings	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RecommendedReading	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes1	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes2	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes3	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.13 : The structure of the Sessions table in the Virtual Campus

The Files Table

The Files table is used to store information about files that have uploaded. This information includes information as type of files and session to associate files.

The structure of the Files table is as below.



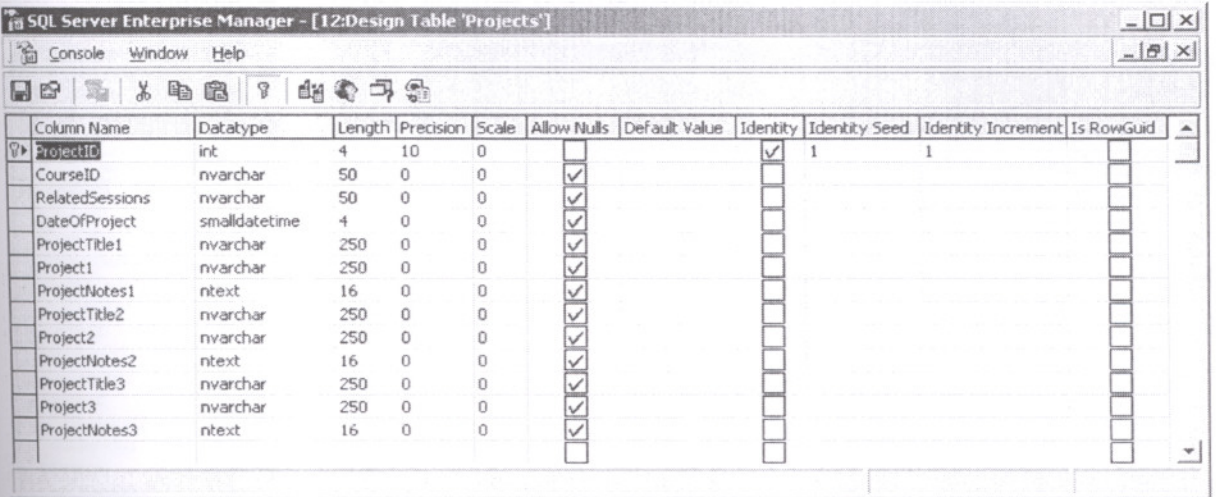
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
FileID	int	4	10	0	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TypeOfFile	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RelatedSessions	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
DateOfPost	smalldatetime	4	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes1	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes2	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes3	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle4	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile4	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes4	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileTitle5	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFile5	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
PostFileNotes5	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.14 : The structure of the Files table in the Virtual Campus

The Projects Table

The Projects table is used to store information about projects that have uploaded. This information includes information as session to associate project files and upload date.

The structure of the Projects table is as below.



The screenshot shows the SQL Server Enterprise Manager interface with the 'Design Table' view for the 'Projects' table. The table structure is as follows:

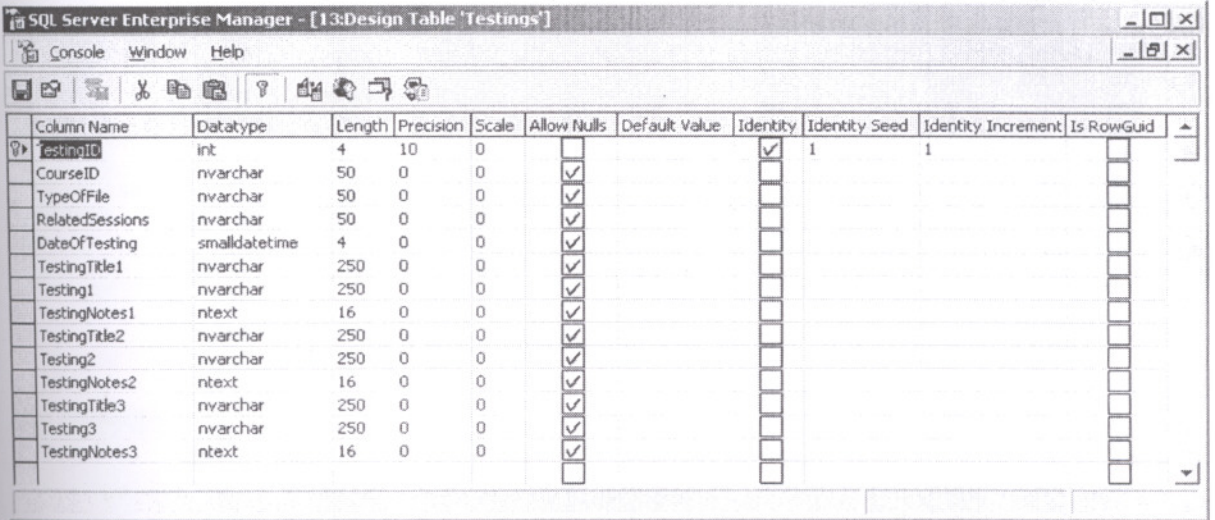
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
ProjectID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RelatedSessions	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
DateOfProject	smalldatetime	4	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ProjectTitle1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Project1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ProjectNotes1	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ProjectTitle2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Project2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ProjectNotes2	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ProjectTitle3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Project3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ProjectNotes3	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.15 : The structure of the Projects table in the Virtual Campus

The Testings Table

The Testings table is used to store information about testing files that have uploaded. This information includes information as session to associate testing files, type of testing file and upload date.

The structure of the Testings table is as below.



The screenshot shows the SQL Server Enterprise Manager interface for the 'Design Table' of the 'Testings' table. The table structure is as follows:

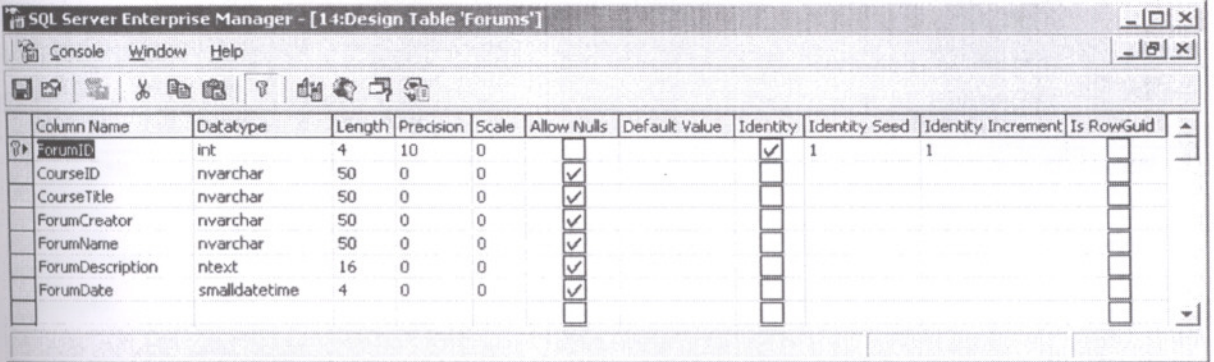
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
TestingID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TypeOfFile	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
RelatedSessions	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
DateOfTesting	smalldatetime	4	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TestingTitle1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Testing1	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TestingNotes1	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TestingTitle2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Testing2	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TestingNotes2	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TestingTitle3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Testing3	nvarchar	250	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TestingNotes3	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.16 : The structure of the Testings table in the Virtual Campus

The Forums Table

The Forums table is used to store information about forums that have created.

The structure of the Forums table is as below.



The screenshot shows the 'Design Table' view for the 'Forums' table in SQL Server Enterprise Manager. The table has the following structure:

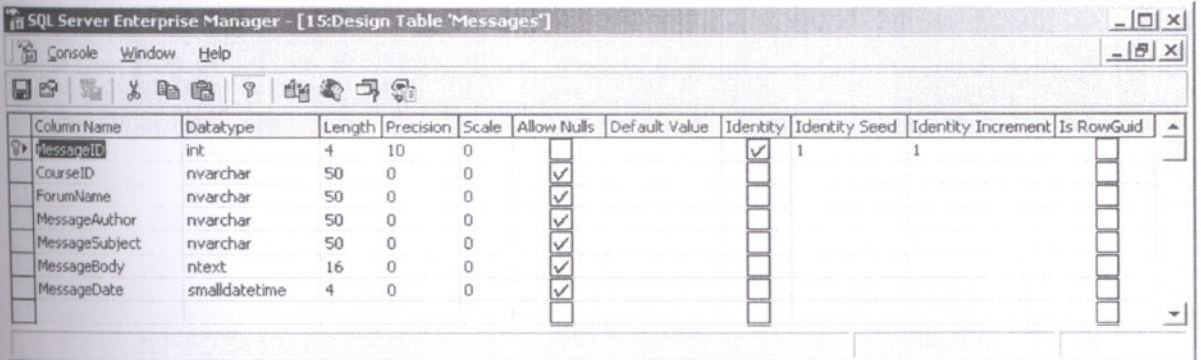
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
ForumID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
CourseTitle	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ForumCreator	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ForumName	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ForumDescription	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ForumDate	smalldatetime	4	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.17 : The structure of the Forums table in the Virtual Campus

The Messages Table

The Messages table is used to store information about related messages with a forum topic that have created.

The structure of the Messages table is as below.



The screenshot shows the 'Design Table' view for the 'Messages' table in SQL Server Enterprise Manager. The table has the following structure:

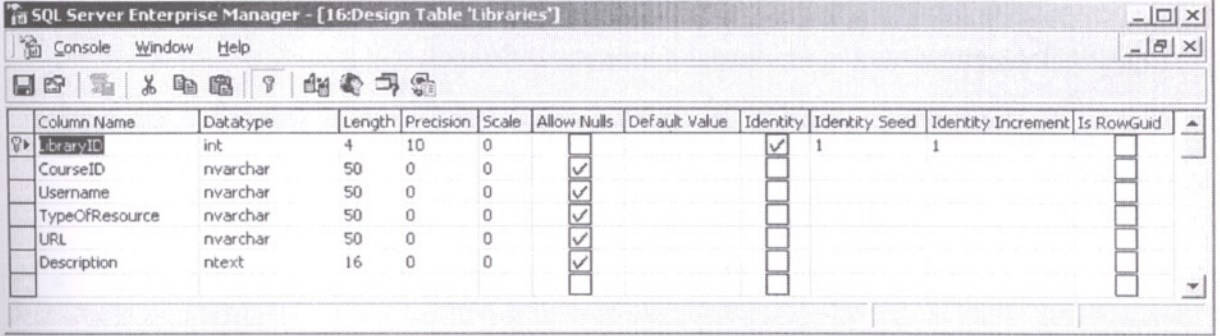
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
MessageID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
ForumName	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MessageAuthor	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MessageSubject	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MessageBody	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
MessageDate	smalldatetime	4	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.18 : The structure of the Messages table in the Virtual Campus

The Libraries Table

The Libraries table is used to store information about libraries links that have created.

The structure of the Libraries table is as below.



The screenshot shows the 'Design Table' view for the 'Libraries' table in SQL Server Enterprise Manager. The table has the following structure:

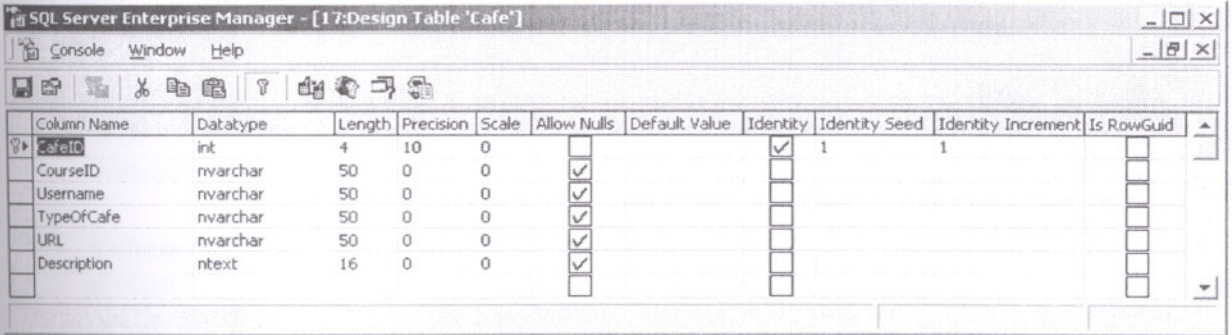
Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
LibraryID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Username	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TypeOfResource	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
URL	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Description	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.19 : The structure of the Libraries table in the Virtual Campus

The Cafe Table

The Cafe table is used to store information about cafe links that have created.

The structure of the Cafe table is as below.



The screenshot shows the 'Design Table' view for the 'Cafe' table in SQL Server Enterprise Manager. The table has the following structure:

Column Name	Datatype	Length	Precision	Scale	Allow Nulls	Default Value	Identity	Identity Seed	Identity Increment	Is RowGuid
CafeID	int	4	10	0	<input type="checkbox"/>		<input checked="" type="checkbox"/>	1	1	<input type="checkbox"/>
CourseID	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Username	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
TypeOfCafe	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
URL	nvarchar	50	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>
Description	ntext	16	0	0	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

Figure 4.20 : The structure of the Cafe table in the Virtual Campus

4.6 Implementation Tools Of The Virtual Campus

4.6.1 Windows 2000

In the Virtual Campus, Windows 2000 as operating system has been used. Especially, Web and Application Services of Windows 2000 has been used.

Briefly, Web and Application Services and features:

(<http://www.microsoft.com/windows2000/advancedserver/evaluation/features/default.asp>)

- **Internet Information Services 5.0 (IIS) :** Integrated Web services enable users to easily host and manage Web sites to share information, create Web-based business applications, and extend file, print, media and communication services to the Web.
- **Active Server Pages (ASP) Programming Environment :** Active Server Pages is consistently rated the easiest, highest performance web server-scripting environment available.
- **Component Object Model + (COM+) :** COM+ builds on COM's integrated services and features, making it easier for developers to create and use software components in any language, using any tool. COM+ includes Transaction Services and Message Queuing Services for reliable distributed applications.
- **Multimedia Platform :** With integrated Windows Media™ Services, configure and manage high-quality digital media content across the Internet and intranets — delivering live and on-demand content to the maximum number of users.
- **Web Folders :** Web Folders bring the richness of Windows to the Web, by using Web Document Authoring and Versioning (WebDAV) to enable drag and drop Web publishing.
- **Enhanced ASP Performance :** More scalable Active Server Page (ASP) processing, improved ASP flow control, and ASP Fast Path for scriptless ASP files enable faster Web page processing.
- **Multi site Hosting :** Internet Information Services (IIS) 5.0 allows to host more Web sites per server with high performance.
- **IIS CPU Throttling :** Limit the amount of CPU time a Web application or site can use to ensure that processor time — and therefore better performance — is available to other Web sites or to non-Web applications.
- **IIS Application Protection :** Application protection keeps Web applications running separately from the Web server itself, preventing an application from crashing the Web server.

4.6.2 Internet Information Services 5.0 (IIS)

Windows 2000 Server meets the needs of a broad spectrum of users, from corporate intranets to Internet Service Providers hosting Web sites receiving millions of hits per day. Because Internet Information Server 5.0 (IIS) is fully integrated at the operating system level, Windows 2000 Server lets organizations add Internet capabilities that weave directly into the rest of their computing infrastructure.

(URL: <http://www.microsoft.com/windows2000/server/evaluation/features/web.asp>)

Specifically, Windows 2000 Server lets organizations:

- **Share information more efficiently using the Web :** In the past, performing standard file operations on a network file share was much easier than performing similar operations on a remote Web site. Now, Windows 2000 Server technologies such as Web Distributed Authoring and Versioning (WebDAV) make it as easy to carry out standard file operations on a Web share.
- **Create Web-based business applications :** Creating Web-based applications that integrate well into traditional business applications can be difficult. Windows 2000 Server overcomes this burden by sharing internet-aware application development tools with IIS, an efficiency that extends applications to the Web and eliminates awkward bridges between internal and external processes.

Briefly, Sharing Information :

- **Support for Web Distributed Authoring and Versioning (WebDAV) :** WebDAV is an Internet standard that lets multiple people collaborate on a document using an Internet-based shared file system. It addresses issues such as file access permissions, offline editing, file integrity, and conflict resolution when competing changes are made to a document. WebDAV expands an organization's infrastructure by using the Internet as the central location for storing shared files.
- **Web Folders :** Support for Web Folders lets users navigate to a WebDAV-compliant server and view the content as if it were part of the same namespace as the local system. Users can drag and drop files, retrieve or modify file property information, and perform other file system-related tasks. Web Folders let users maintain a consistent look and feel between navigating the local file system, a networked drive, and an Internet Web site.
- **Support for Multiple Sites with One IP Address :** With support for host headers, an organization can host multiple Web sites on a single computer running Microsoft Windows 2000 Server with only one Internet Protocol (IP) address. This lets Internet service providers (ISPs) and corporate intranets host multiple Web sites on a single server while offering separate user domains for each site.

- **News and Mail :** Administrators can use Simple Mail Transfer Protocol (SMTP) and Network News Transport Protocol (NNTP) Services to set up intranet mail and news services that work in conjunction with IIS. SMTP is a commonly used protocol for sending e-mail messages between servers; NNTP is the protocol used to post, distribute, and retrieve USENET messages.
- **File Transfer Protocol (FTP) and FTP Restart :** The File Transfer Protocol (FTP) service, used to publish information to a Web server, is integrated into Windows 2000 Server. FTP Restart provides a faster, smoother way to download information from the Internet. Now, if an interruption occurs during data transfer from an FTP site, a download can be resumed without having to download the entire file over again.

Briefly, Create Web-based business applications :

- **Active Server Pages :** Microsoft Active Server Pages (ASP) lets developers create dynamic content by using server-side scripting and components to create browser-independent dynamic content. ASP provides an easy-to-use alternative to Common Gateway Interface (CGI) and Internet Server Application Program Interface (ISAPI) by letting content developers embed any scripting language or server component into their HTML pages. ASP pages provide standards-based database connectivity and the ability to customize content for different browsers. ASP also provides error-handling capabilities for Web-based applications.
- **Performance-enhanced Objects :** ASP provides performance-enhanced versions of its popular installable components. These objects scale reliably in a wide range of Web application environments.
- **Windows Script Components :** ASP supports the new scripting technology, Windows Script Components. This lets developers turn business logic script procedures into reusable COM components for Web applications and other COM-compliant programs.
- **Browser Capabilities Component :** ASP has a new feature for determining the exact capabilities of a browser. When a browser sends a cookie describing its capabilities (such a cookie can be installed by using a simple client-side script), developers can create an instance of the Browser Capabilities Component that retrieves the browser's properties as returned by the cookie. Developers can use this feature to discover a browser's capabilities and adjust an application accordingly.
- **Encoded ASP Scripts :** Traditionally, Web developers have been unable to prevent others from reading their scripting code. ASP now supports a new script encoding utility provided with Microsoft Visual Basic Scripting Edition (VBScript) and Microsoft JScript 5.0. Web developers can apply an encoding scheme to both client and server-side scripts that makes the programmatic logic unreadable. When unencoded, the logic appears in standard ASCII characters. Encoded scripts are

decoded at run time by the script engine, so there's no need for a separate utility. Although this feature is not intended as a secure, encrypted solution, it can prevent most casual users from browsing or copying scripts.

- **Application Protection** : IIS 5.0 offers improved protection and increased reliability for Web applications. By default, IIS runs all applications in a common or pooled process that is separate from core IIS processes. In addition, administrators can still isolate mission-critical applications that should be run outside of both core IIS and pooled processes.

4.6.3 ASP - Active Server Pages

Active Server Pages (ASP) is a great tool for creating dynamic web pages. ASP is a Microsoft technology, and it works by allowing programmers the functionality of a programming language; developers write programming code that will generate the HTML for the web page dynamically. So, whenever a user browses to web site and request one of ASP pages, the ASP code is processed at that time by a special piece of software – the web server. This processing generates the HTML, which is then passed to the browser and used to create the page itself, on the user's screen.

The power of ASP lies in two facts; first, the HTML is not created until the user wants to see the web page, and second, it doesn't care what web browser is being used. ASP isn't first technology to offer these features, but it undoubtedly one of the most powerful and widely used in industry; and crucially, it's one of the fastest. Active Server Pages is different from many Microsoft technologies in the following respect : while ASP must be executed on a computer that supports it and with any modern browser. This has enabled developers to enhance their web pages with interactive features, and even to solve common problems – to such an extent that pages with the *.asp* suffix are fast becoming as common as those with the *.htm* suffix.

ASP is potentially one of the most important innovations to emerge on the Web – for developers and users of the Internet and intranets alike.

The most important advantage that ASP brings is its ability to create pages that are sensitive to factors such as time and place, and the user's identity and previous choices and actions. In other words, developers can use ASP to customize their web pages to the specific needs of each individual user. It means that the text, images, tables, forms, and even the layout of the page can be selected automatically at the time the user requests the page – and to suit that user's requirement.

ASP is relatively simple to learn. All person need is a little experience with HTML and a scripting language (VBScript or JavaScript). In short, ASP is a great way to bring the best features of programming to web pages. (Kauffman, 2000)

ASP And Data Store Access

ODBC

Open Database Connectivity, or ODBC, is a standard protocol for accessing relational databases based around SQL . It was designed to allow th programmer to use a common set of routines to access the data stored in databases, regardless of the type of database in which the data was stored. This meant that once the programmer was connected to the database using ODBC, they could manipulate the data without worrying exactly where the data was stored, or which type of database was storing it.

OLE DB

OLE-DB is the next step in the evolution of the anonymous data store. As well as being more generic than ODBC, Microsoft has done a great deal of work to ensure that OLE-DB is faster and easier to use than ODBC. OLE DB is a more generalized and more efficient strategy for data access than ODBC, because it allows access to more types of data and is based around Microsoft COM (Component Object Model). OLE DB, the foundation of Microsoft's Universal Data Access model, is a set of COM interfaces that provides a standard way for programs to access data.

ADO

ActiveX Data Object (ADO) can be touted as being the friendly face of OLE-DB. ADO is set of objects that allow programmers to program their data access logic from languages like Visual Basic as well as scripting languages. ADO is higher-level model than OLE-DB, which means that it simplifies some of the complexities of programming with OLE-DB. Thus, ADO is much easier to use than OLE-DB.

4.6.4 SQL Server v7.0

Microsoft SQL Server is a powerful, high-performance relational database management system for distributed client/server computing. SQL Server provides a unified data-management architecture that is powerful, reliable, and open to a wide range of applications and data sources. (URL : <http://msdn.microsoft.com/sqlserver/>)

CHAPTER 5

PRESENTATION OF THE VIRTUAL CAMPUS

In this chapter, usage of the Virtual Campus has been described on the screen step by step.

5.1 Login Page

It is impossible to enter the Virtual Campus without having a user account. In order to login to the Virtual Campus must be entered the username and the password.

If the Virtual Campus has been used for the first time, it is clicked the Student and Instructor Services and then it is clicked the Create New Account on the Student and Instructor Services Page in order to create a user account. After user account, which includes username and password, has been created, the Virtual Campus may be entered.

Help page includes necessary information in order to login to the Virtual Campus.

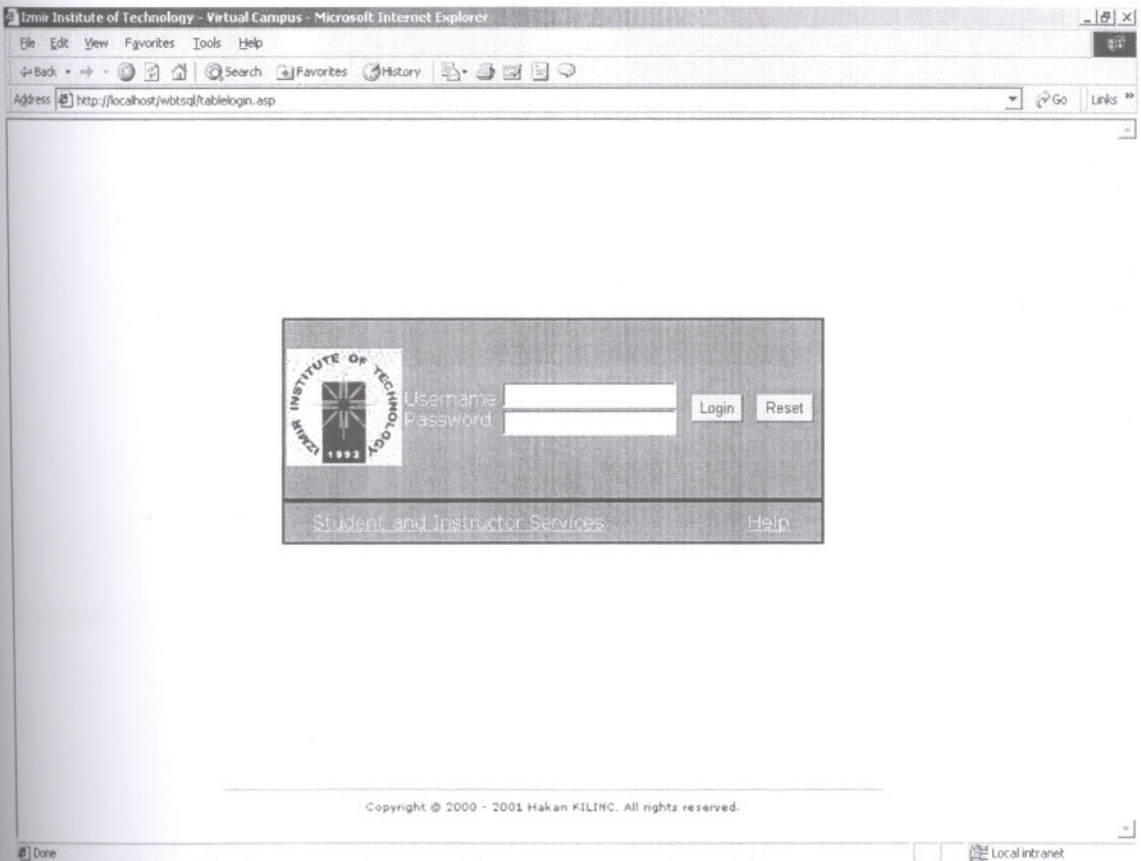


Figure 5.1 : Login Page of the Virtual Campus

5.2 Student And Instructor Services Page

From this page, can be:

- created user accounts
- demanded a forgotten password
- found answers to frequently asked questions
- found features of the Virtual Campus
- found more information about logging in
- found information about courses

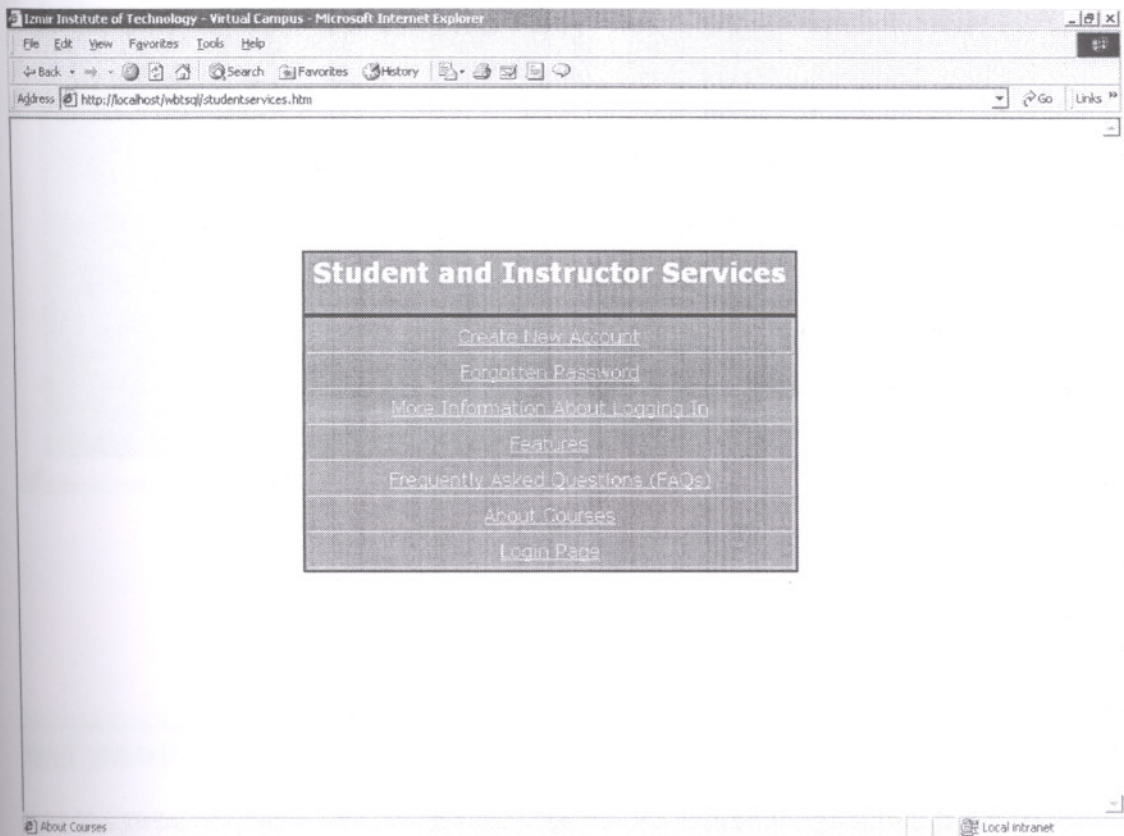


Figure 5.2 : Student and Instructor Services Page

5.2.1 Create New Account Page

This page is used to create a new account. All the fields for registration must be filled out. Anyway all the fields have been controlled by javascript programs. All user accounts that are inactive for 3 months will be deleted. Both username and password should be more than 3 characters long. For password, a combination of letters and numbers should be used.

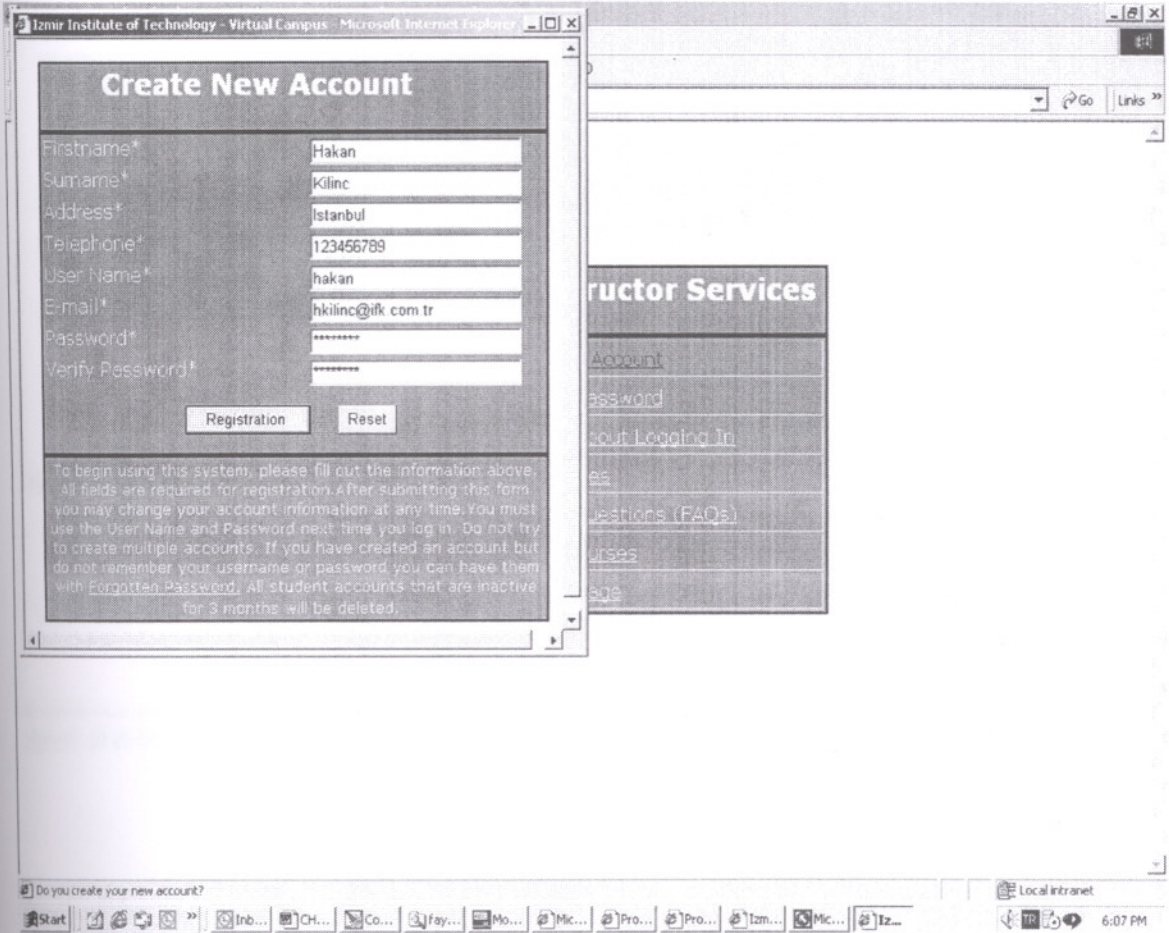


Figure 5.3 : Create New Account Page

If the account has successfully created, the screen will appear as below. RegisterID will be created and sent by entering email address automatically. But, in order to login to the Virtual Campus, account must be approved by system administrator or instructor. RegisterID will be used by only students. To register and join a course in the Virtual Campus is used to RegisterID.

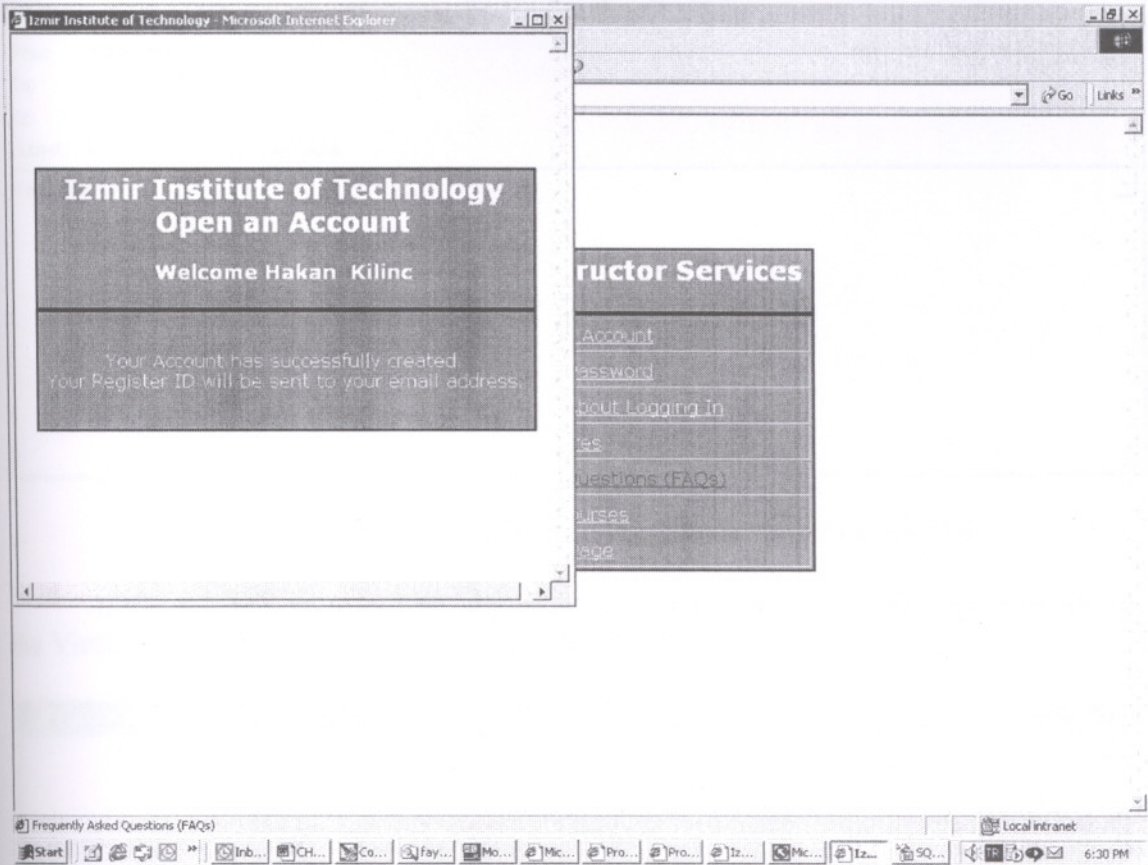


Figure 5.4 : Enable Screen For Create New Account Page

On this screen, RegisterID has been created and sent by entering email address automatically.

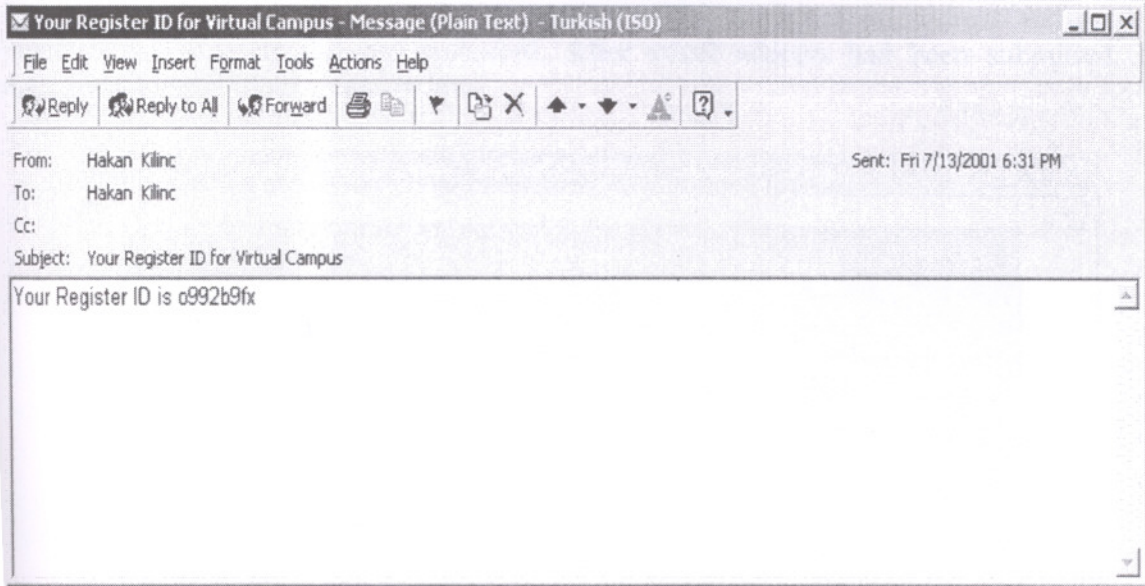


Figure 5.5 : User's Email Screen For Create New Account Page

If the account could not be successfully created, the screen will appear as below. In the Virtual Campus, there cannot two same username.

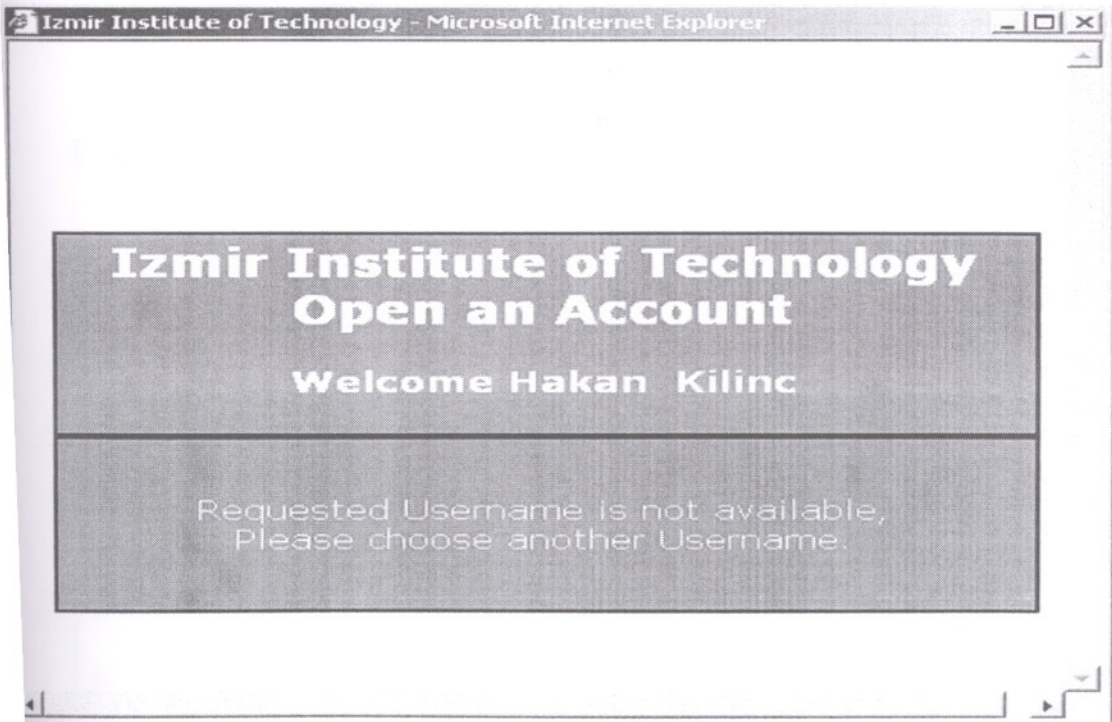
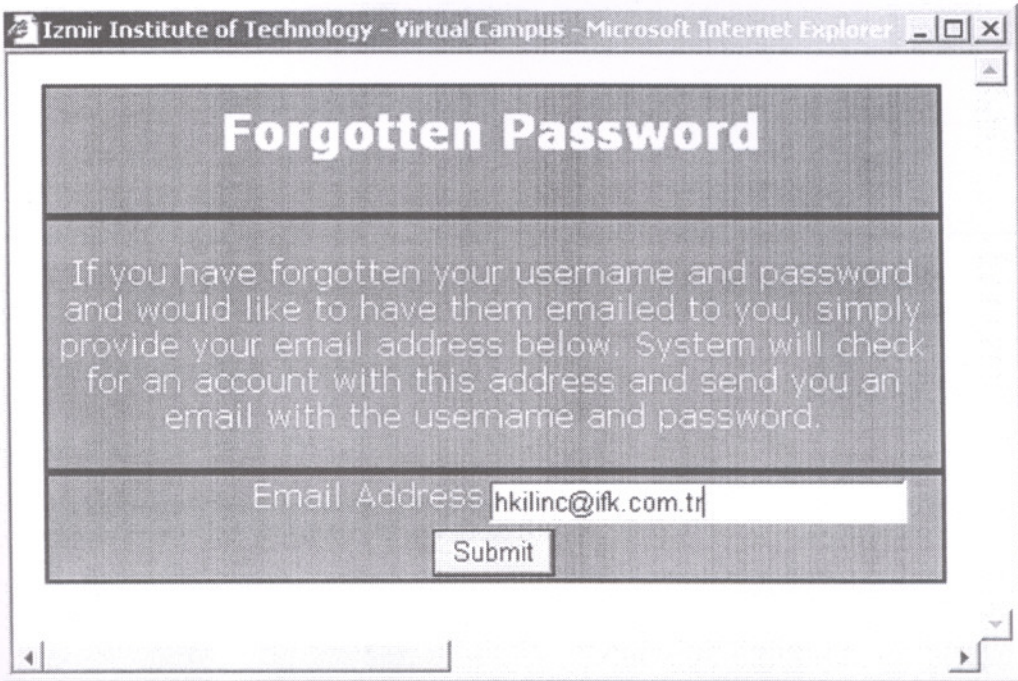


Figure 5.6 : Disable Screen For Create New Account Page

5.2.2 Forgotten Password Page

If username and password have been forgotten, then the below screen will be used. The Virtual Campus will check for an account with entering email address and send an email with the username and password. After email address had been submitted, the approval screen will appear as below.



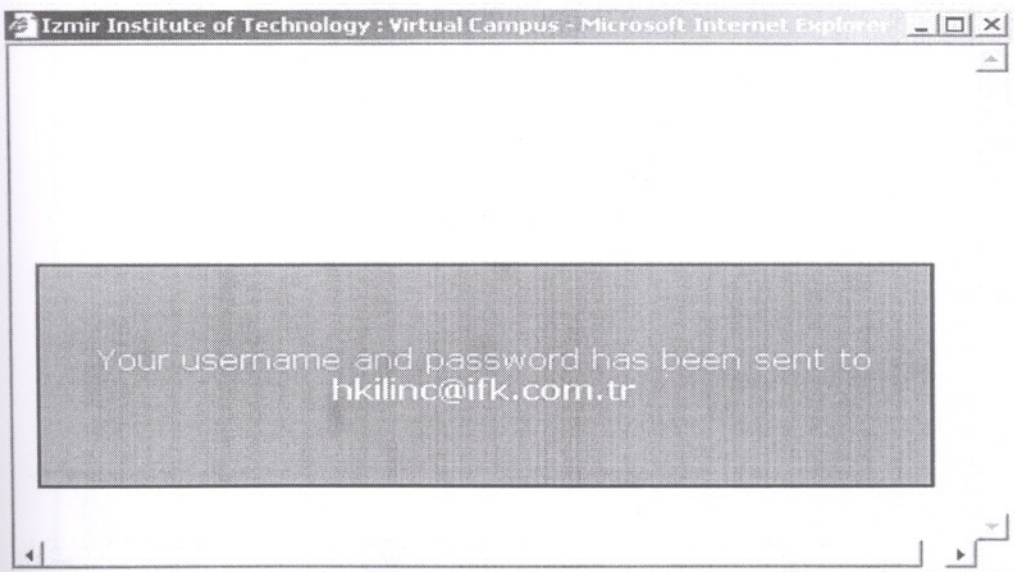
Izmir Institute of Technology - Virtual Campus - Microsoft Internet Explorer

Forgotten Password

If you have forgotten your username and password and would like to have them emailed to you, simply provide your email address below. System will check for an account with this address and send you an email with the username and password.

Email Address

Figure 5.7 : Forgotten Password Page



Izmir Institute of Technology : Virtual Campus - Microsoft Internet Explorer

Your username and password has been sent to
hkilinc@ifk.com.tr

Figure 5.8 : Approval Screen For Forgotten Password Page

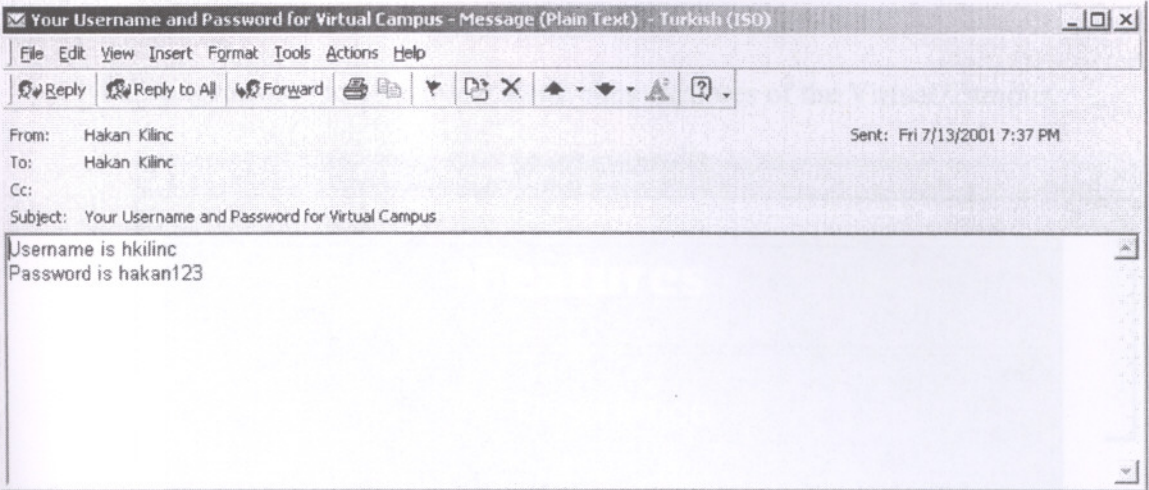


Figure 5.9 : User's Email Screen For Forgotten Password Page

5.2.3 More Information About Logging In Page

This page is used to give more information about logging in.

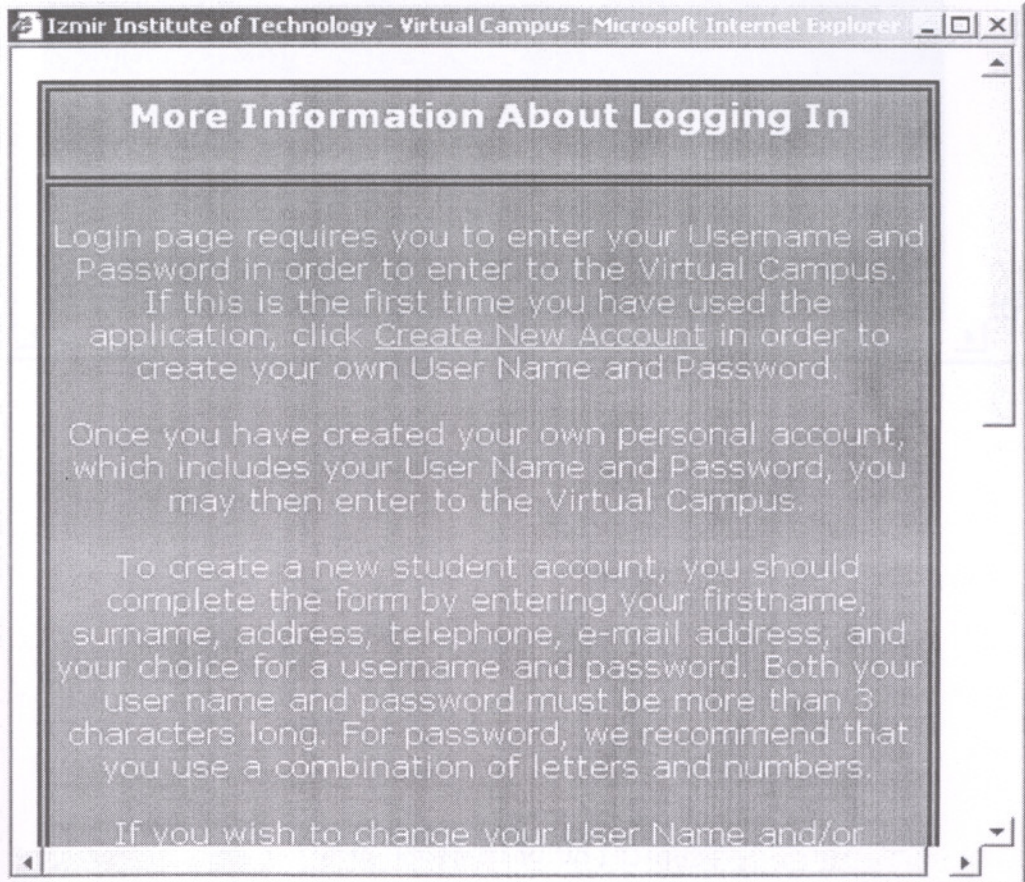


Figure 5.10 : More Information About Logging In Page

5.2.4 Features Page

This page is used to give information about features of the Virtual Campus.

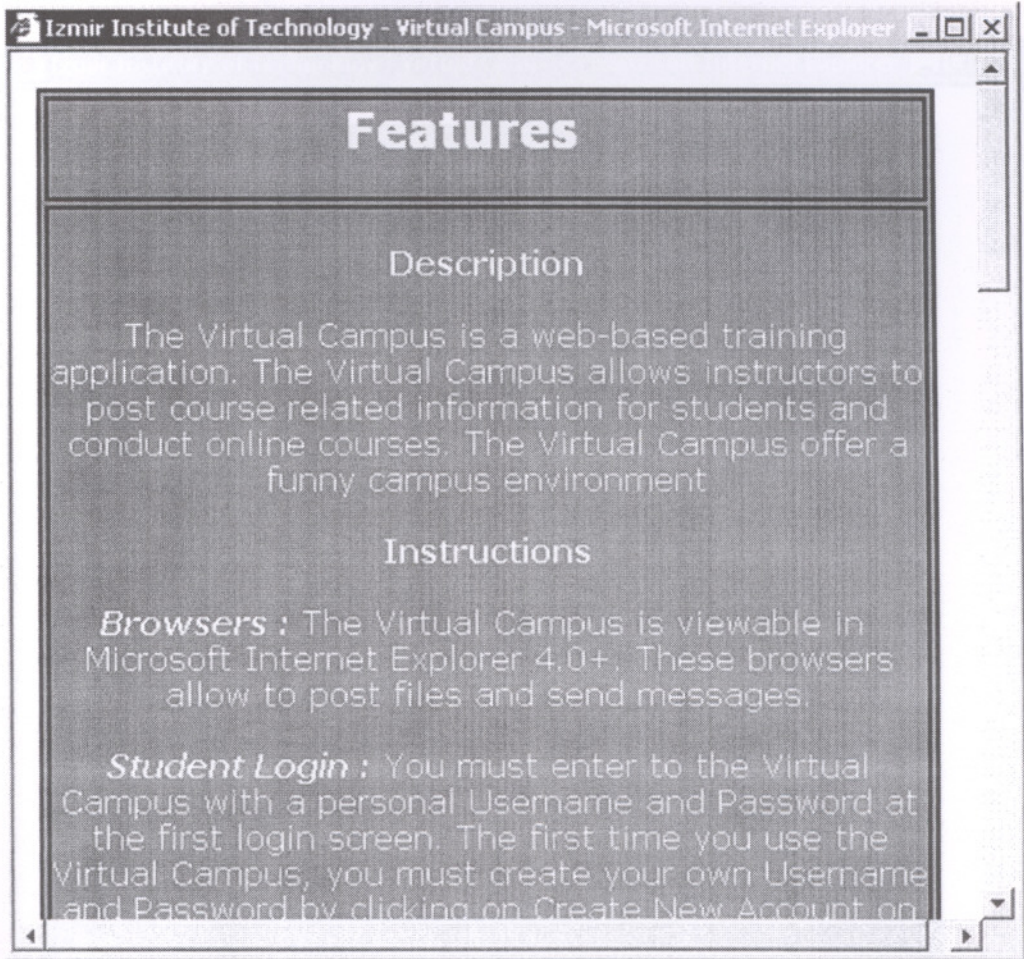


Figure 5.11 : Features Page

5.2.5 Frequently Asked Questions (FAQs) Page

On this page, there are answers for the frequently asked questions. Questions and answers can be increased along the course time.

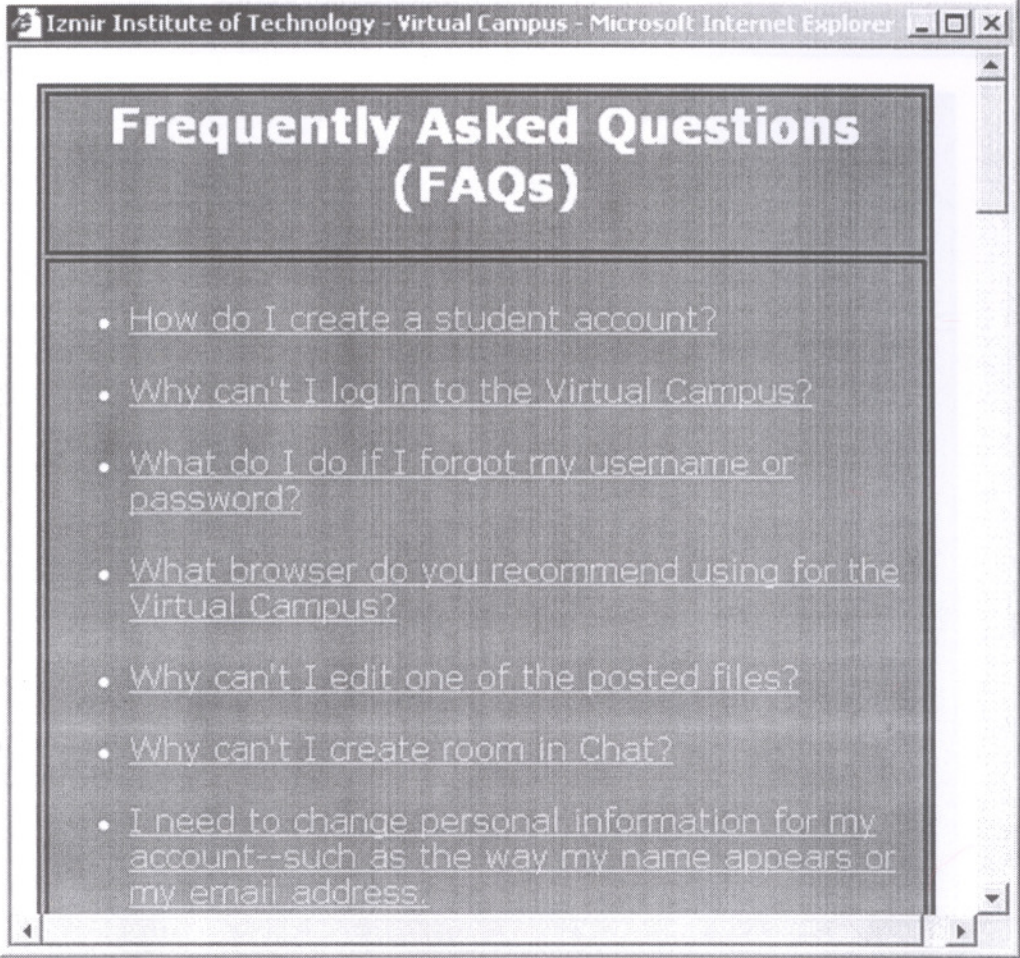
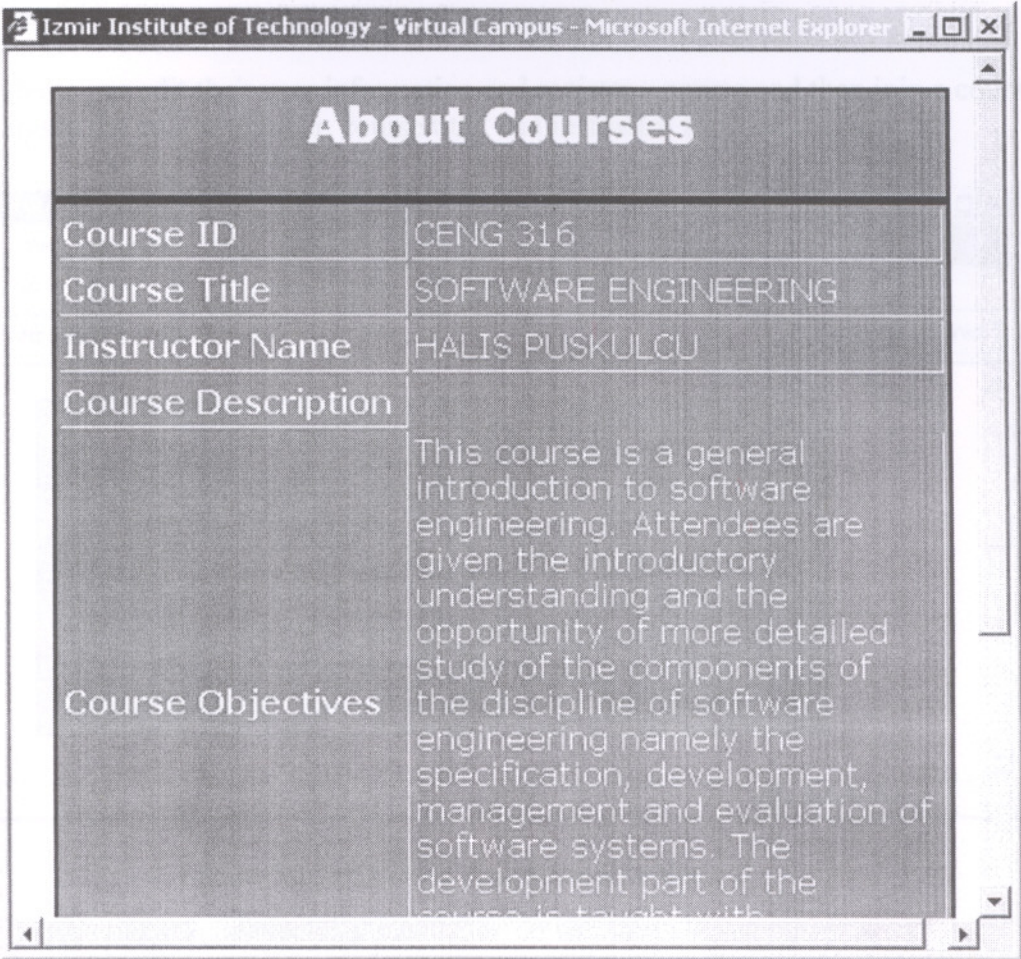


Figure 5.12 : Frequently Asked Questions (FAQs) Page

5.2.6 About Courses Page

This page is used to give information about available courses in the Virtual Campus. Course information has been come from database.



About Courses	
Course ID	CENG 316
Course Title	SOFTWARE ENGINEERING
Instructor Name	HALIS PUSKULCU
Course Description	This course is a general introduction to software engineering. Attendees are given the introductory understanding and the opportunity of more detailed study of the components of the discipline of software engineering namely the specification, development, management and evaluation of software systems. The development part of the course is taught with
Course Objectives	

Figure 5.13 : About Courses Page

5.3 Courses

The courses page is the gateway for the online courses and is customized for each type of the Virtual Campus user; student and instructor.

Student View

Students can edit their user information and register a course and then join a course. Students can see the course number, course title, and instructor for each course.

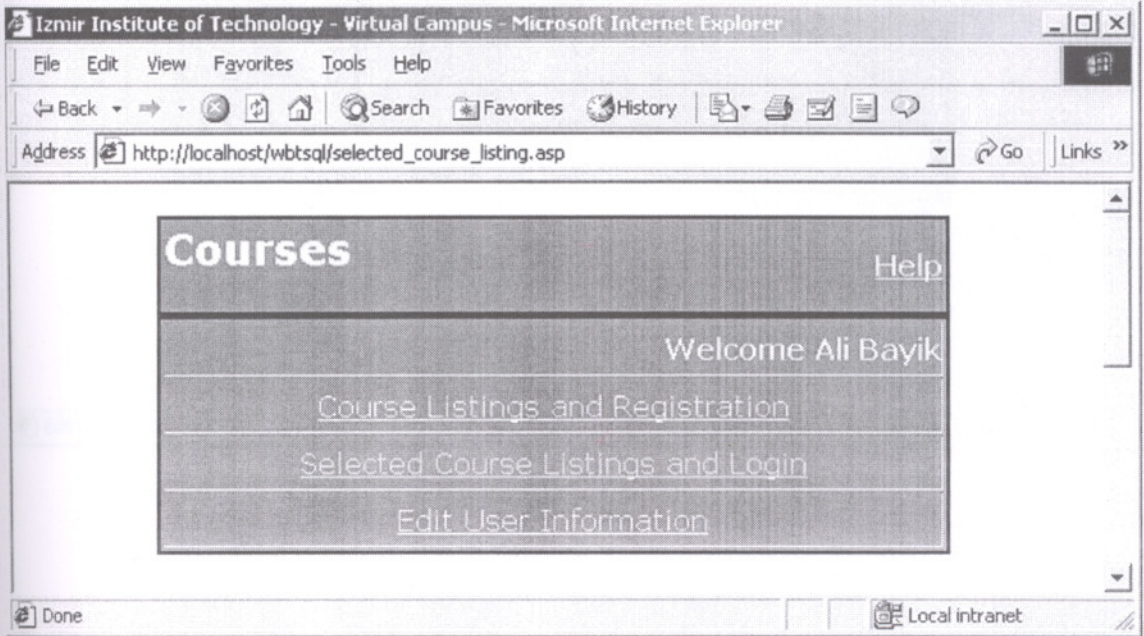


Figure 5.14 : Courses Page (Student View)

Instructor View

Instructors can edit their user information and create new courses and delete an existing course that they have created.

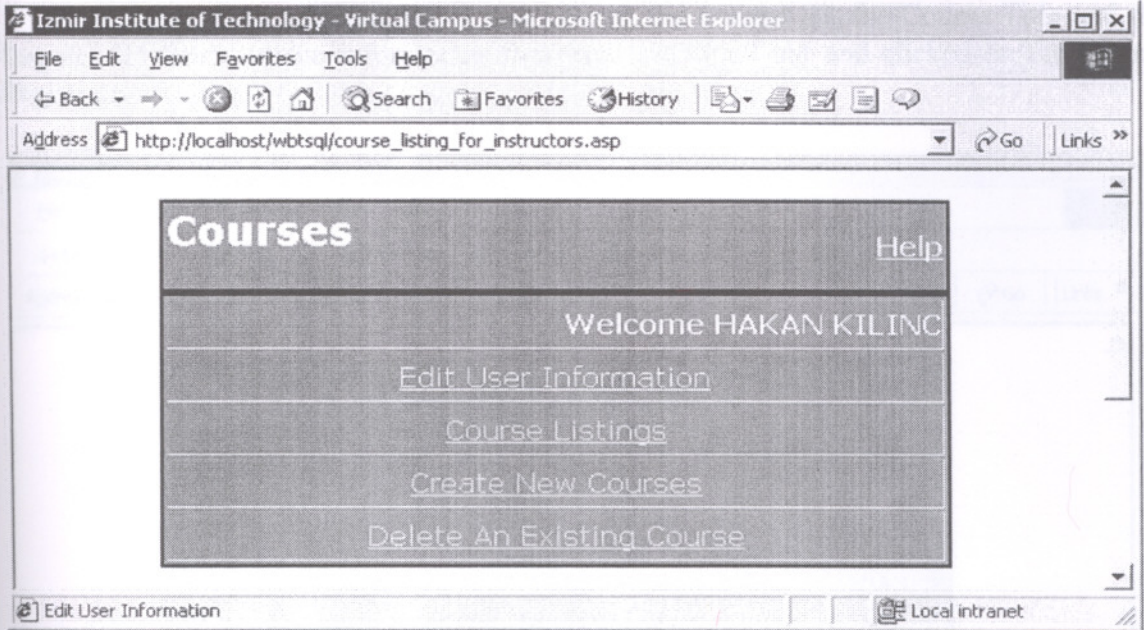


Figure 5.15 : Courses Page (Instructor View)

5.3.1 Course Listings and Registration Page (Student View)

Course Listings and Registration page is used to give current list of existing courses. The Course ID, the Course Title, Instructor Name of existing courses will be seen.

In order to be registered to a new course, the Course ID, the Course Title and the Register ID fields on the information form must be filled out and clicked on the Course Registration button.

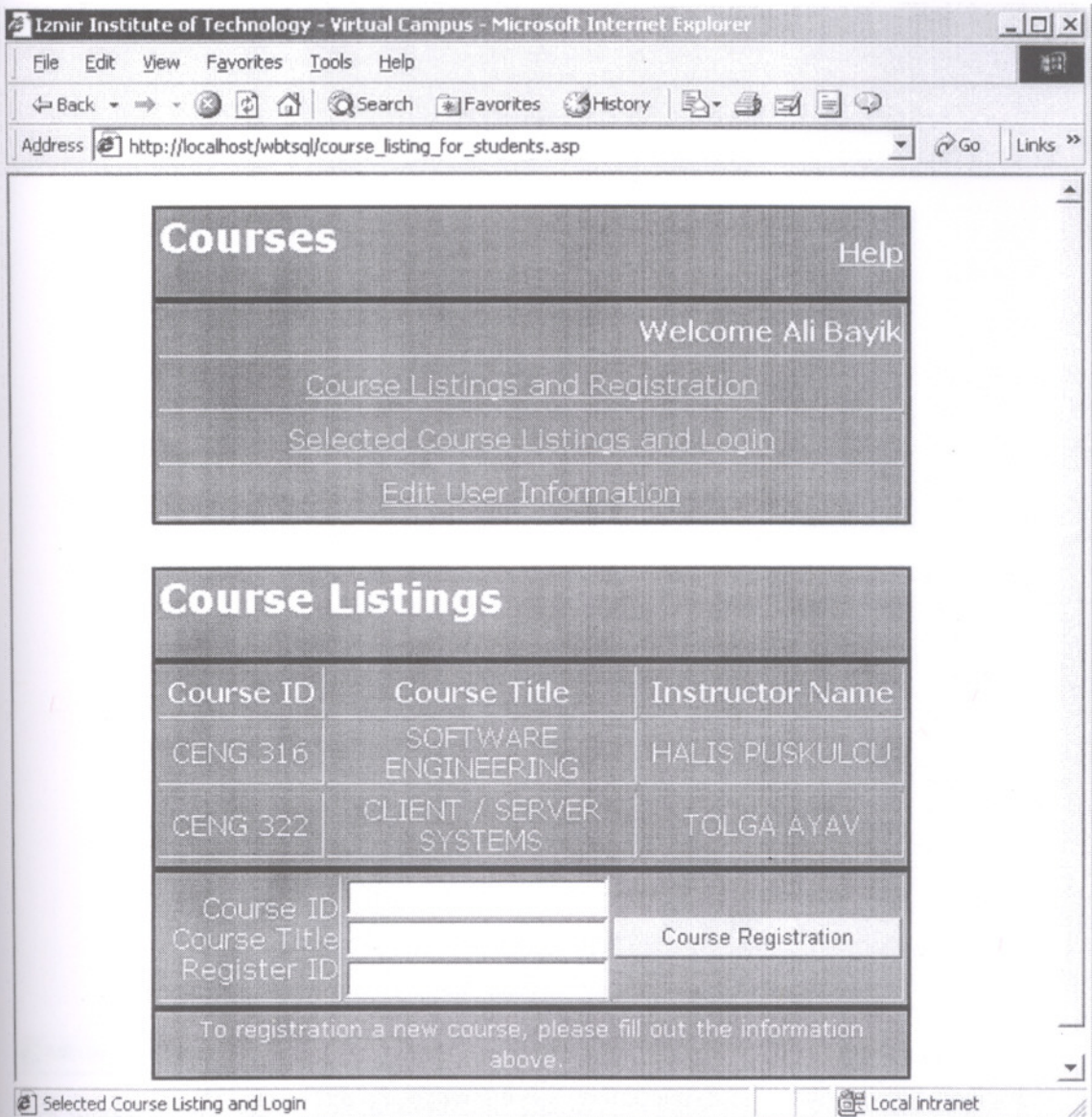


Figure 5.16 : Course Listings and Registration Page (Student View)

5.3.2 Selected Course Listings and Login Page (Student View)

Selected Course Listings and Login Page is used to give current list of registered courses. This page is the gateway to the online course. The Course ID, Course Title of registered courses will be seen.

In order to join a course, the Course ID and Register ID fields on the information form must filled out and clicked on the Course Login button.

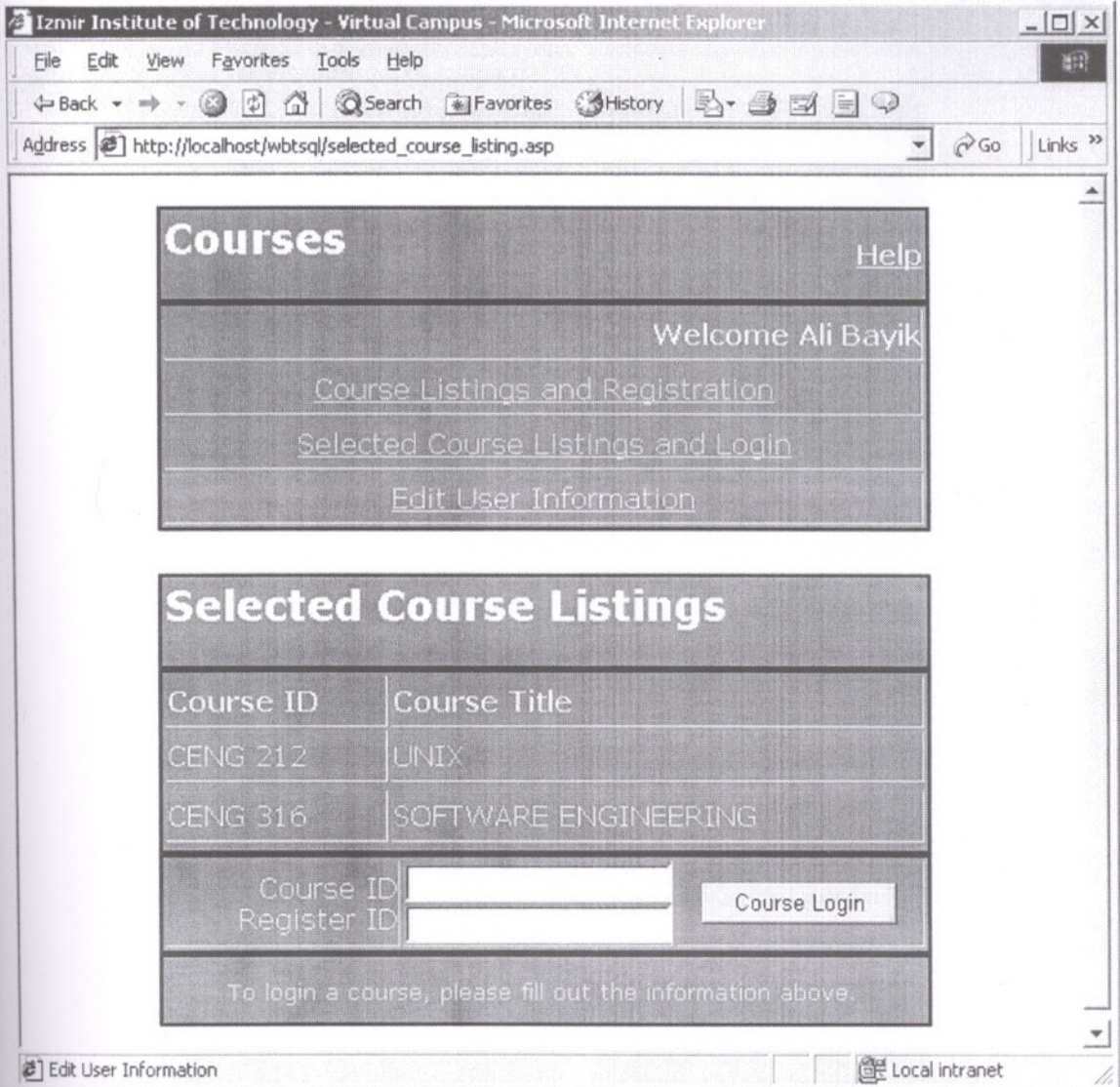


Figure 5.17 : Selected Course Listings and Login Page (Student View)

5.3.3 Edit User Information Page (Student View and Instructor View)

This page is used to edit and update personal information and password. On this page, the Firstname, Surname, Address, Telephone, Username, Email and Password can be changed.

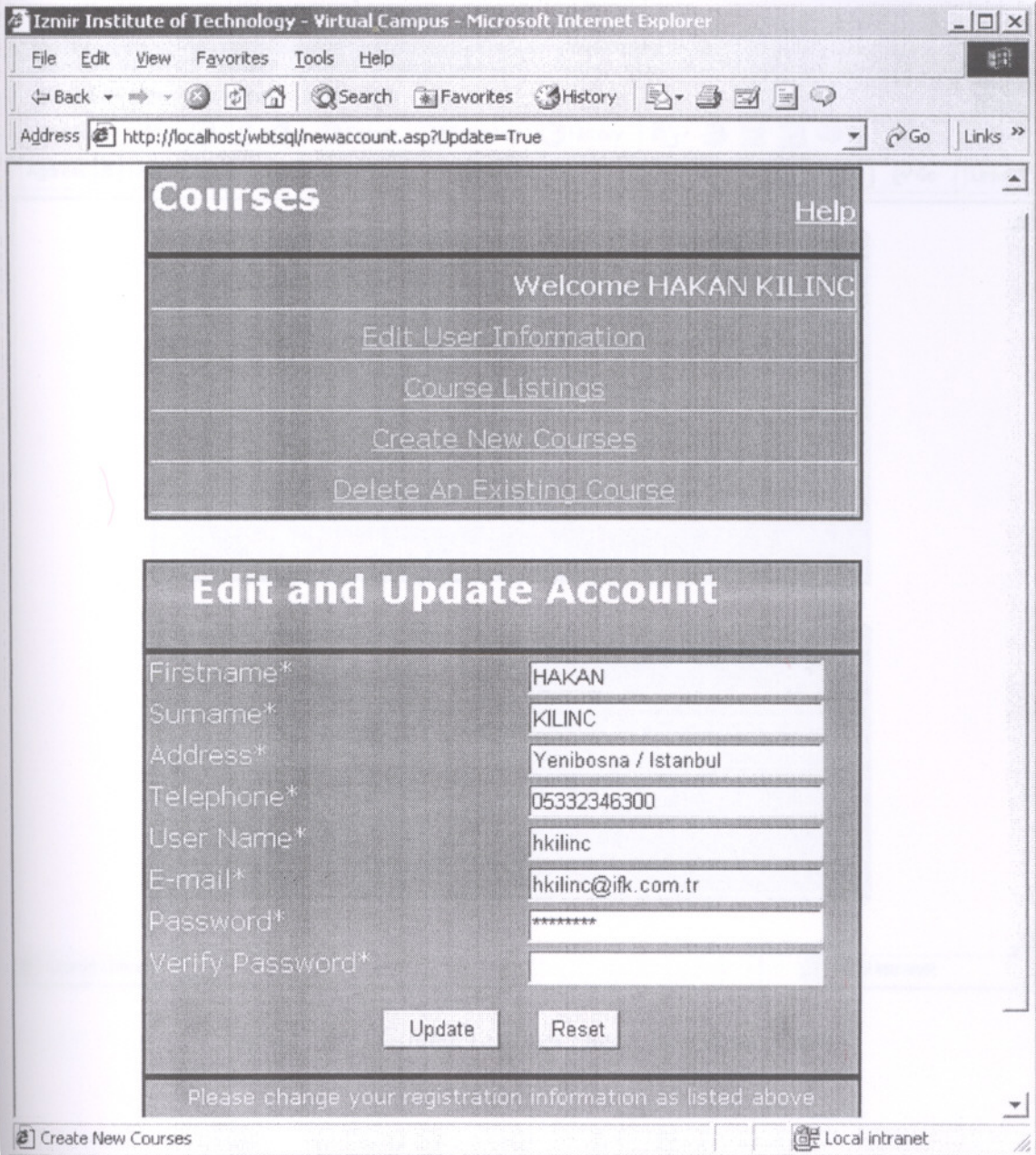


Figure 5.18 : Edit User Information Page (Student View and Instructor View)

5.3.4 Course Listings Page (Instructor View)

Course Listings page is used to give current list of existed courses. The Course ID, Course Title, Instructor Name of existed courses will be seen.

Course Listings page is the gateway to the online course. When it is being clicked on underlined Course ID, it is possible to enter course and it can be viewed or edited.

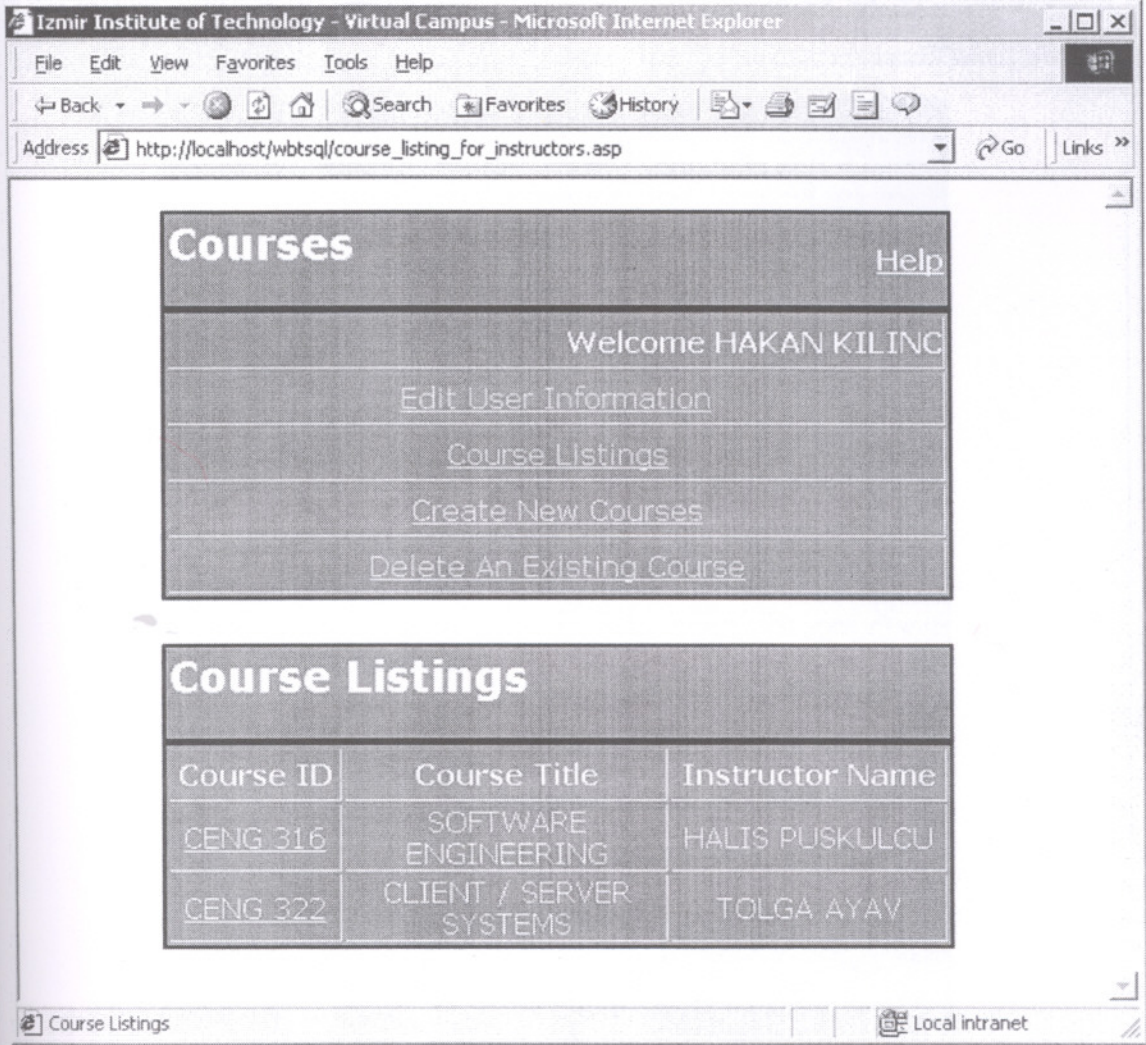


Figure 5.19 : Course Listings Page (Instructor View)

5.3.5 Create New Courses Page (Instructor Page)

This page is used to create a new course. It must be filled in the basic course information to create the new course. On this page, a skeleton for a course has been created.

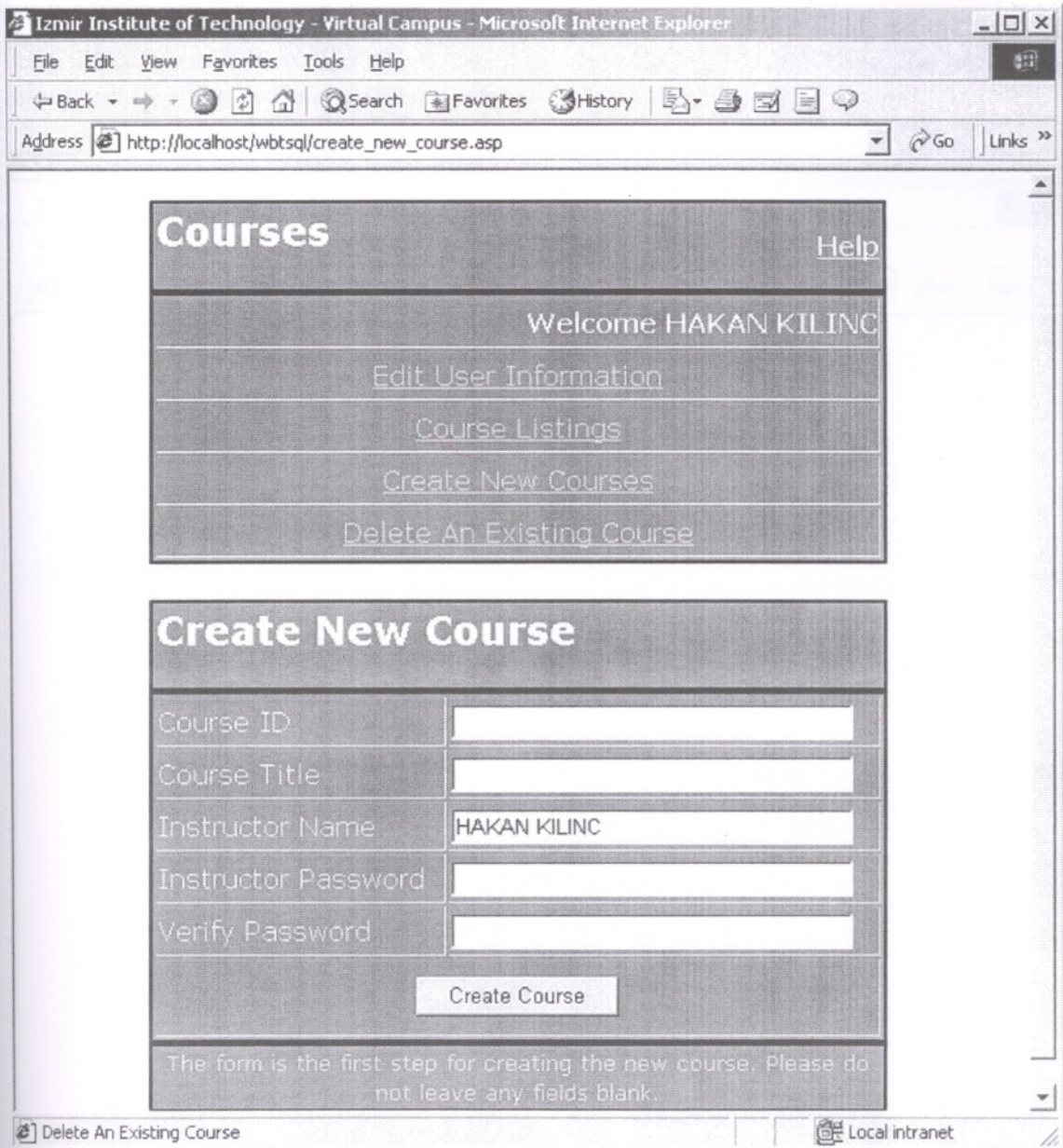


Figure 5.20 : Create New Courses Page (Instructor Page)

5.3.6 Delete An Existing Course Page (Instructor Page)

This page is used to erase a course from the Virtual Campus. A list of courses that have created will be seen on this page.

To delete a course, the Course ID and Instructor Password fields on the form have been filled out and it is clicked on the the Delete Course button. Thus, the basic course information will be completely destroyed.

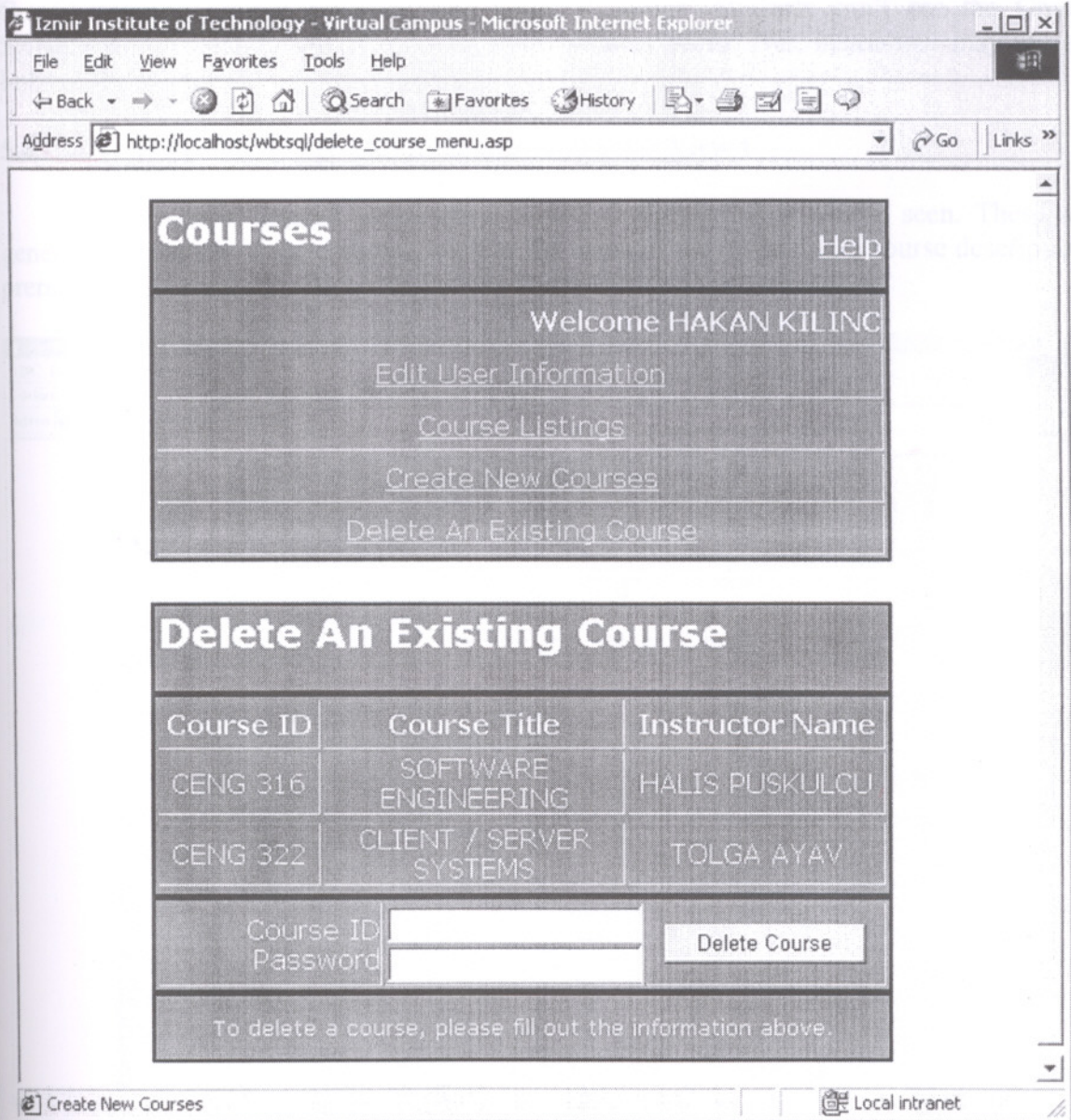


Figure 5.21 : Delete An Existing Course Page (Instructor Page)

5.4 Course Main Page

5.4.1 Syllabus Page

This page includes general information about a course, such as the name of the instructor, a course description, course reading materials, prerequisites, course objectives, and methods of instruction and evaluation.

There are four links on the syllabus page. These pages are the Create Syllabus, Create Readings, View Syllabus, and View Readings. Students can't see the Create Syllabus and Create Readings links on their syllabus pages. But, instructors may see all links of the syllabus.

5.4.1.1 View Syllabus Page (Student and Instructor View)

In this page, created information on the Create Syllabus can be seen. These are general information about a course, such as the name of the instructor, a course description, prerequisites, course objectives, and methods of instruction and evaluation.

The screenshot shows a Microsoft Internet Explorer browser window displaying the 'View Syllabus' page for CENG 316 Software Engineering. The page layout includes a header with the Izmir Institute of Technology logo and navigation links (Course, Discussions, Messages, Library, Cafe, Chat, LoginPage). Below this is a 'Course Main Page' section with links (Syllabus, Outline, Files, Projects, Testing, Grade, Students, Help). A 'View Syllabus' button is prominently displayed. The main content area features a 'View Syllabus' heading and a 'Course Information' table.

Course Information	
Course ID	CENG 316
Course Title	SOFTWARE ENGINEERING
Starting Date	19 February 2001
Ending Date	26 May 2001
Meeting Days	MONDAY
Meeting Time	9:30 - 12:15
Meeting Place	ROOM NO:207

Figure 5.22 : View Syllabus Page (Student and Instructor View)

5.4.1.2 View Readings (Student and Instructor View)

In this page, the required and recommended course reading materials and links to course-related web sites can be seen.

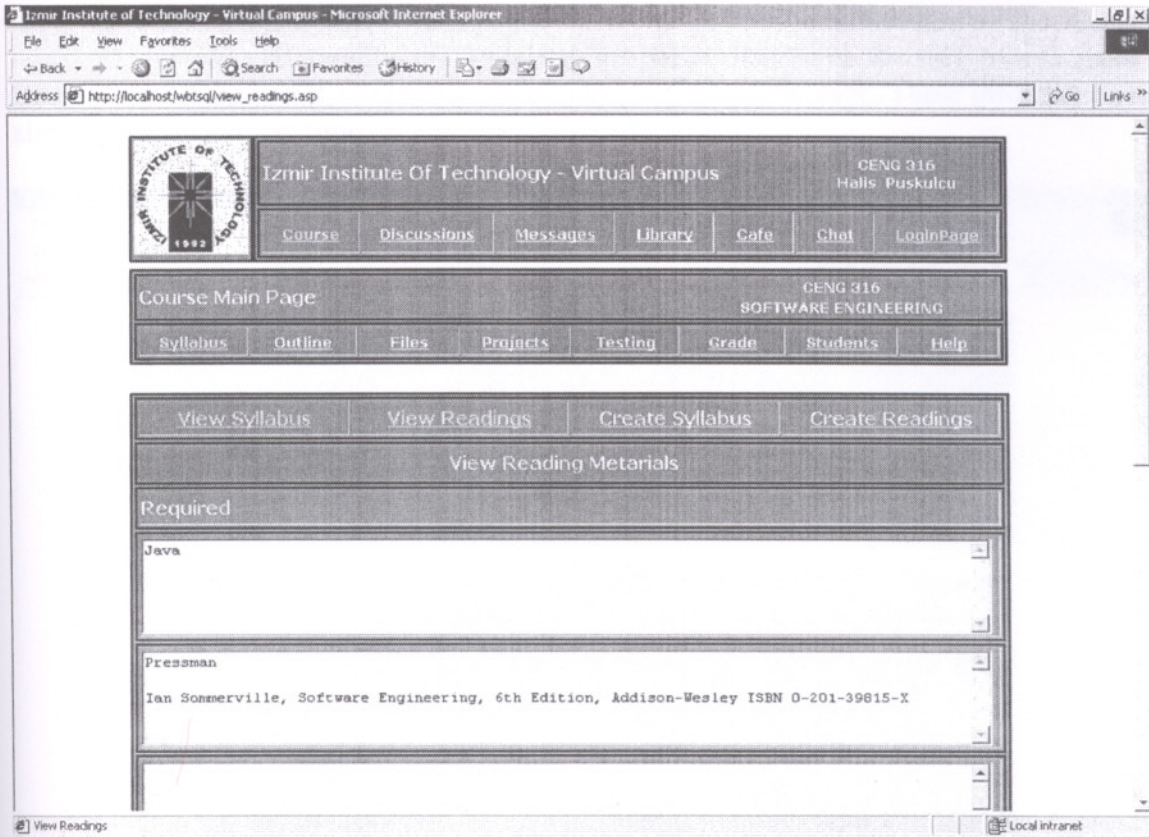


Figure 5.23 : View Readings Page (Student and Instructor View)

5.4.1.3 Create Syllabus Page (Instructor View)

In the Create Syllabus page, the information that is needed to create and modify the syllabus can be entered. The information that is contained in the syllabus can be edited using the Create Syllabus.

To create and modify the syllabus, Instructor Password for this course must be entered and clicked on the Submit button on the bottom of the page. These information may also be changed at any time.

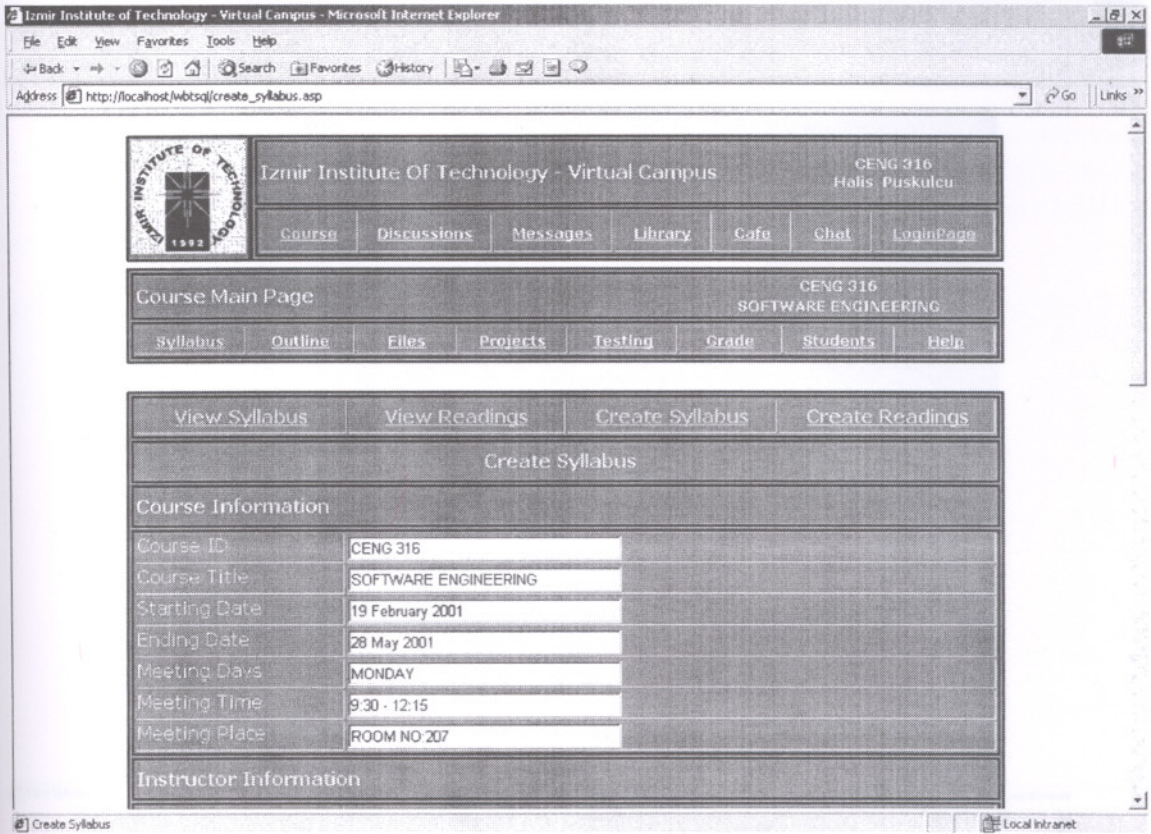


Figure 5.24 : Create Syllabus Page (Instructor View)

5.4.1.4 Create Readings Page (Instructor View)

In the Create Readings page, the required and recommended course reading materials and links to course-related web sites can be created, modified and listed.

To create and modify the readings, Instructor Password for this course must be entered and clicked on the Submit button on the bottom of the page. This information may also be changed at any time.

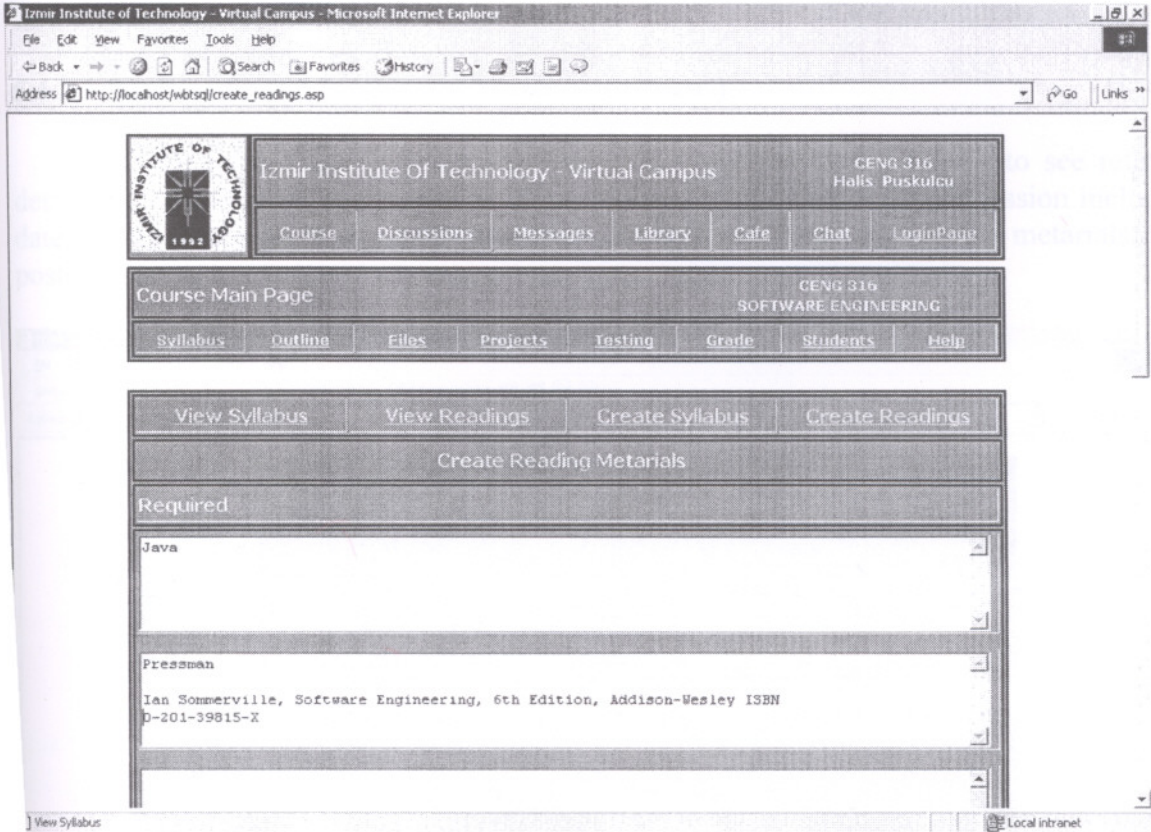


Figure 5.25 : Create Readings Page (Instructor View)

5.4.2 Outline Page

The outline page lists each individual class session in the course. The Course Outline lists course dates, the session number, and the topic that is covered for the individual session. To see session information, it is clicked on the session number. There are four links on the Outline page.

These pages are the Sessions, Assignments, Create Session, and Delete Session. Students cannot see the Create Session and Delete Session links on their Outline pages. But, instructors may see all links of the Outline.

5.4.2.1 Sessions Page (Student and Instructor View)

In this page, there is general information about sessions. In order to see related detail information with every session, click on the session number. Every session includes date, topic, class plan, assignments due, required and recommended reading materials and posted files.

Date	Sessions	Topic
19 FEBRUARY 2001	Session 1	Introduction to Software and Software Engineering
26 FEBRUARY 2001	Session 2	Computer Systems Engineering
12 MARCH 2001	Session 3	Software Management (Time Management)
19 MARCH 2001	Session 4	Software Management (Human Management)
2 APRIL 2001	Session 5	Software Management (Cost Management)
9 APRIL 2001	Session 6	Requirement Analysis
16 APRIL 2001	Session 7	Project Design
30 APRIL 2001	Session 8	Project Implementation
7 MAY 2001	Session 9	Project Implementation-2

Figure 5.26 : Sessions Page (Student and Instructor View)

5.4.2.2 View Session Page (Student and Instructor View)

On this page, there is detail information about each session. A view session page means the virtual classroom. All the information related to that day's class session would be found. This information includes date, topic, class plan, assignments due, required and recommended reading materials and posted files.

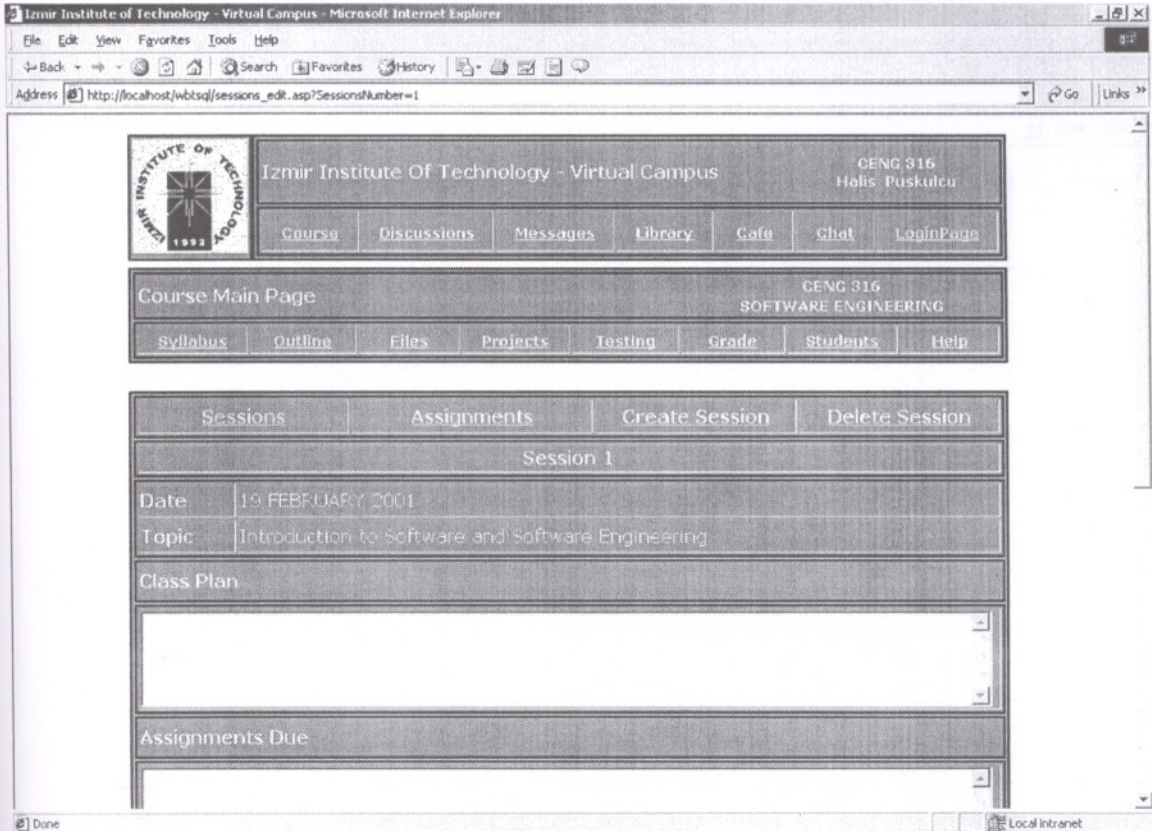


Figure 5.27 : View Session Page (Student and Instructor View)

5.4.2.3 Assignments Page (Student and Instructor View)

The Assignments page views date, topic, assignments due and files related with each session. The Assignments page means a reminder.

In order to see related detail information with each session, it is clicked on the session number on the Sessions page.

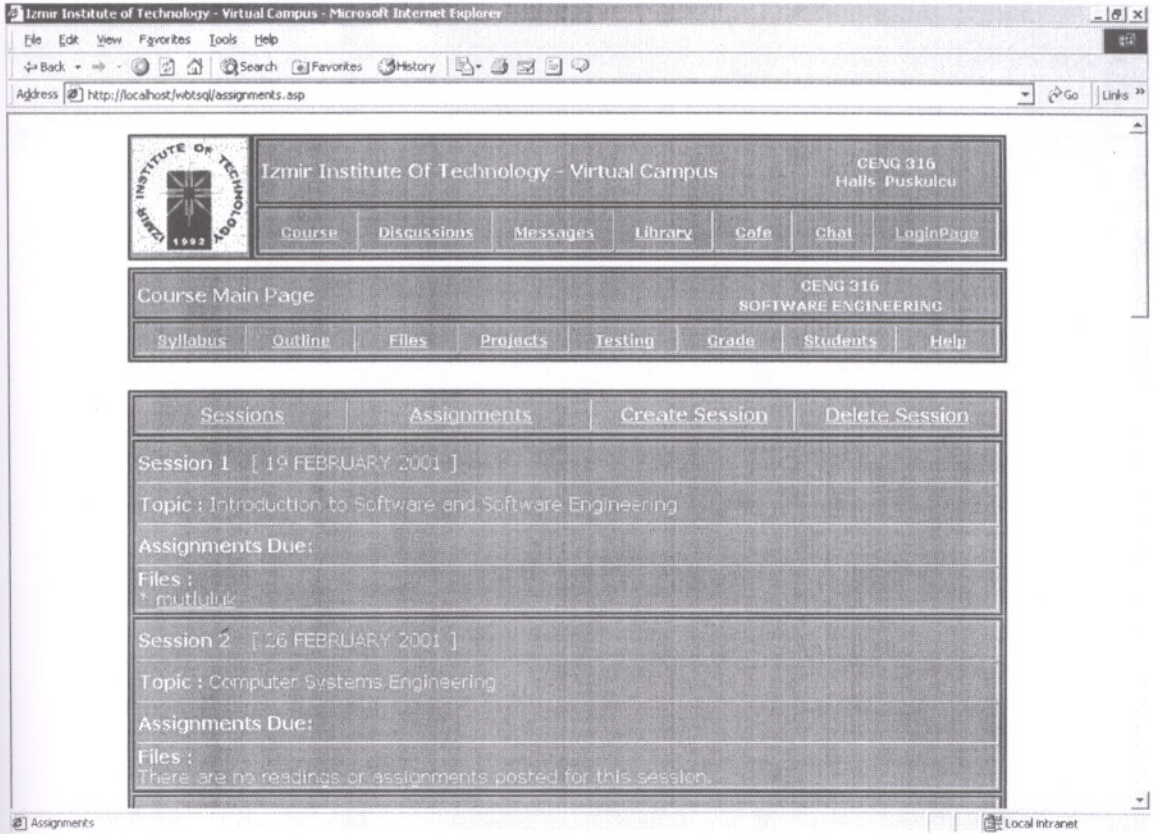


Figure 5.28 : Assignments Page (Student and Instructor View)

5.4.2.4 Create Session Page (Instructor View)

The Create Session option allows to add a new session to the course. Each session includes date, topic, class plan, assignments due, required and recommended reading meterials and posted files.

To create a new session, Instructor Password for this course must be entered and clicked on the Submit button on the bottom of the page.

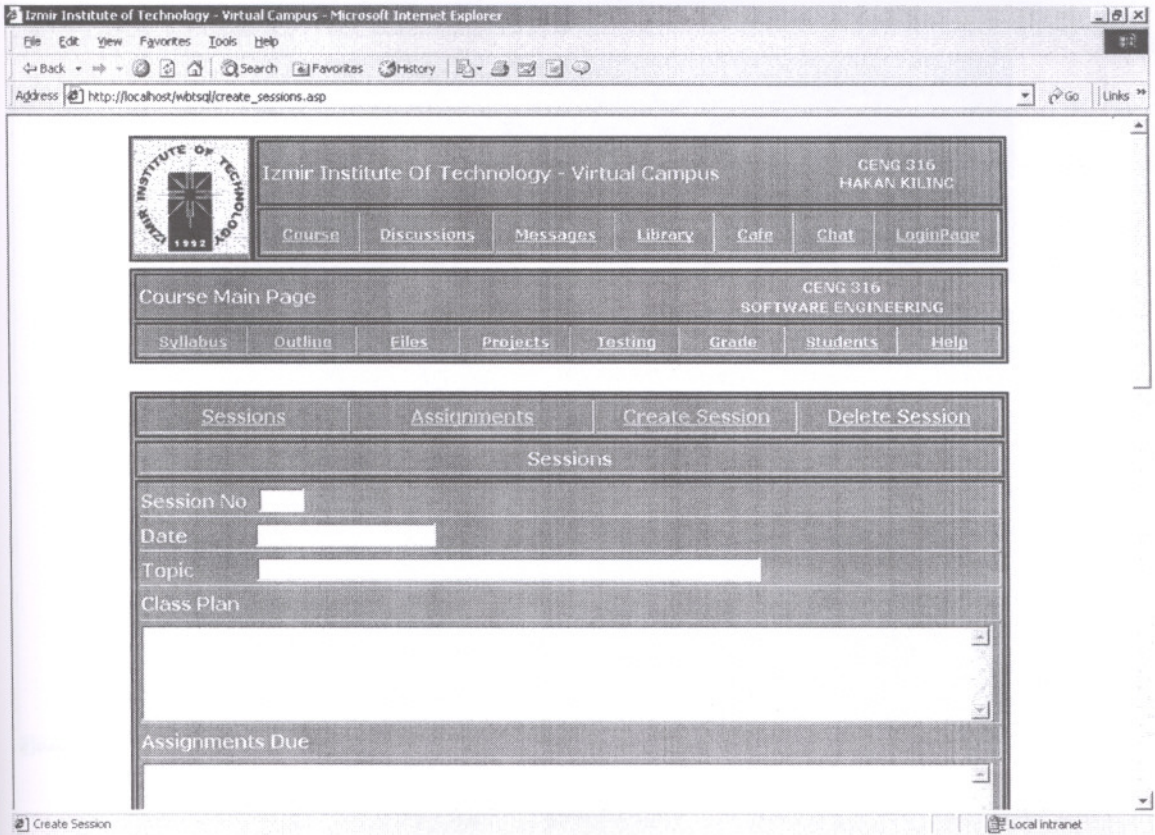


Figure 5.29 : Create Session Page (Instructor View)

5.4.2.5 Delete Session Page (Instructor View)

The Delete Session option allows to delete a session from the course. To delete a session, Session Number and Instructor Password fields on the form must be filled out and clicked on the "Delete Session" button. Whole content associated with a session will be lost when the session is deleted.

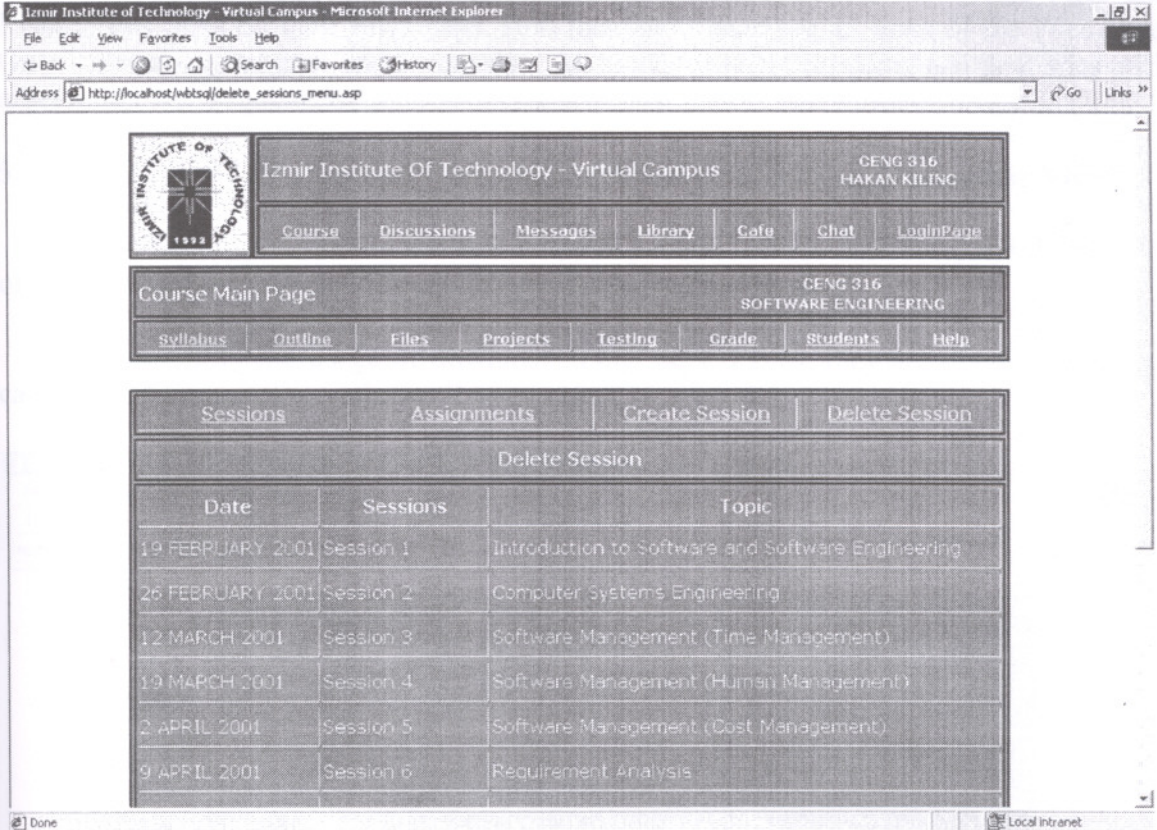


Figure 5.30 : Delete Session Page (Instructor View)

5.4.3 Files Page

The files page is a place where files are posted. This page includes lectures, tutorials and presentations about this course.

There are five links on the Files page. These pages are the Lectures, Tutorials, Presentations, Create Files and Delete Files. Students cannot see the Create Files and Delete Files links on their Files page. But, instructors may see all links of the Files page. Only instructors can post and delete files on the Files page. Students can post files each other on the Messages section.

5.4.3.1 Lectures, Tutorials and Presentations Pages (Student and Instructor View)

The Lectures, Tutorials and Presentations section include date, title, and detail notes of files that may or may not be associated with a particular session.

To simplify the usage of downloaded and posted files, they are divided into three categories; Lectures, Tutorials and Presentations.

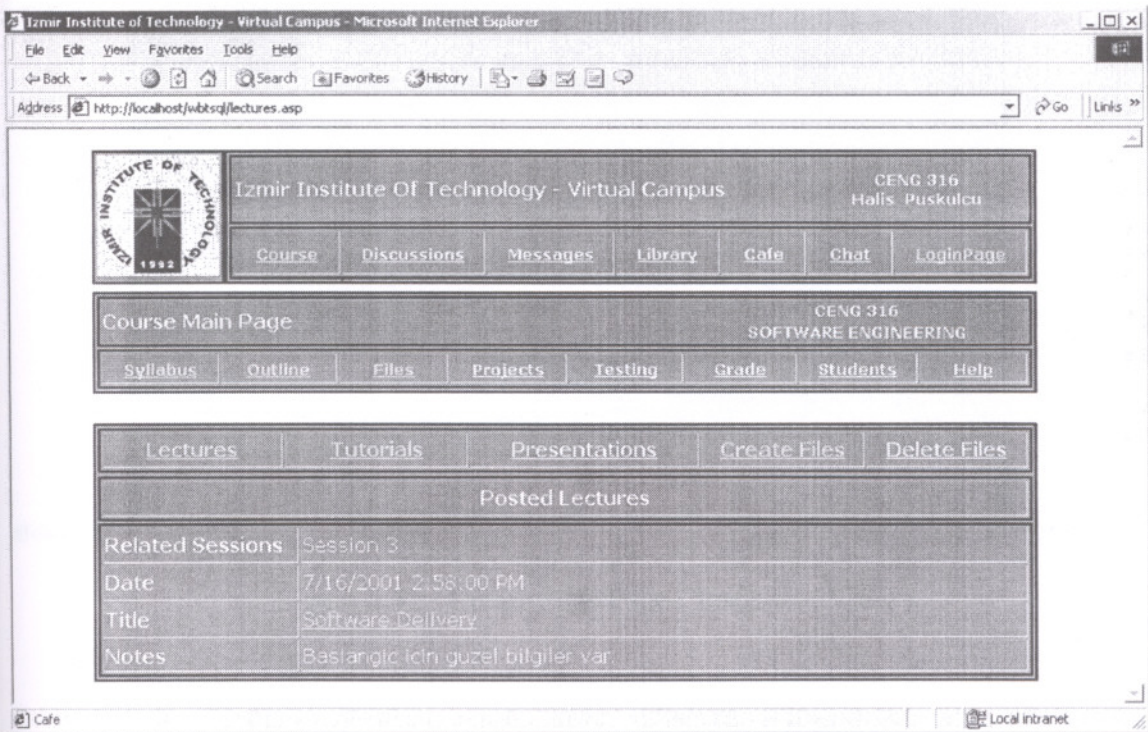


Figure 5.31 : Lectures, Tutorials and Presentations Pages (Student and Instructor View)

5.4.3.2 Create Files Page (Instructor View)

This page allows to post the files such as lecture, tutorial and presentation files for students that may or may not be associated with a particular session.

To post a file, Instructor Password field must be filled out and clicked on the Submit button.

Posted files have been copied in the "Course ID" folder on server. System has created the "Course ID" folder automatically. For example, "C:\Upload\CENG 312\".

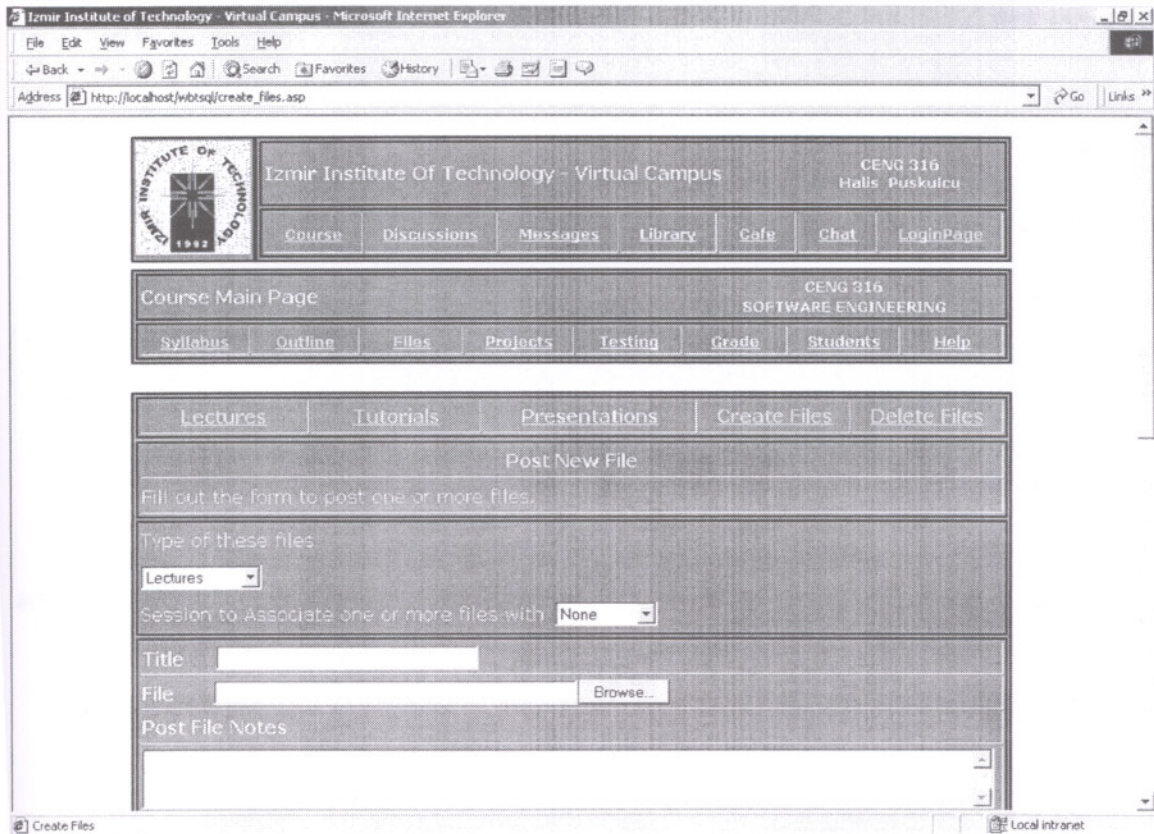


Figure 5.32 : Create Files Page (Instructor View)

5.4.3.3 Delete Files Page (Instructor View)

This page allows to delete posted files such as lecture, tutorial and presentation files for students that may or may not be associated with a particular session.

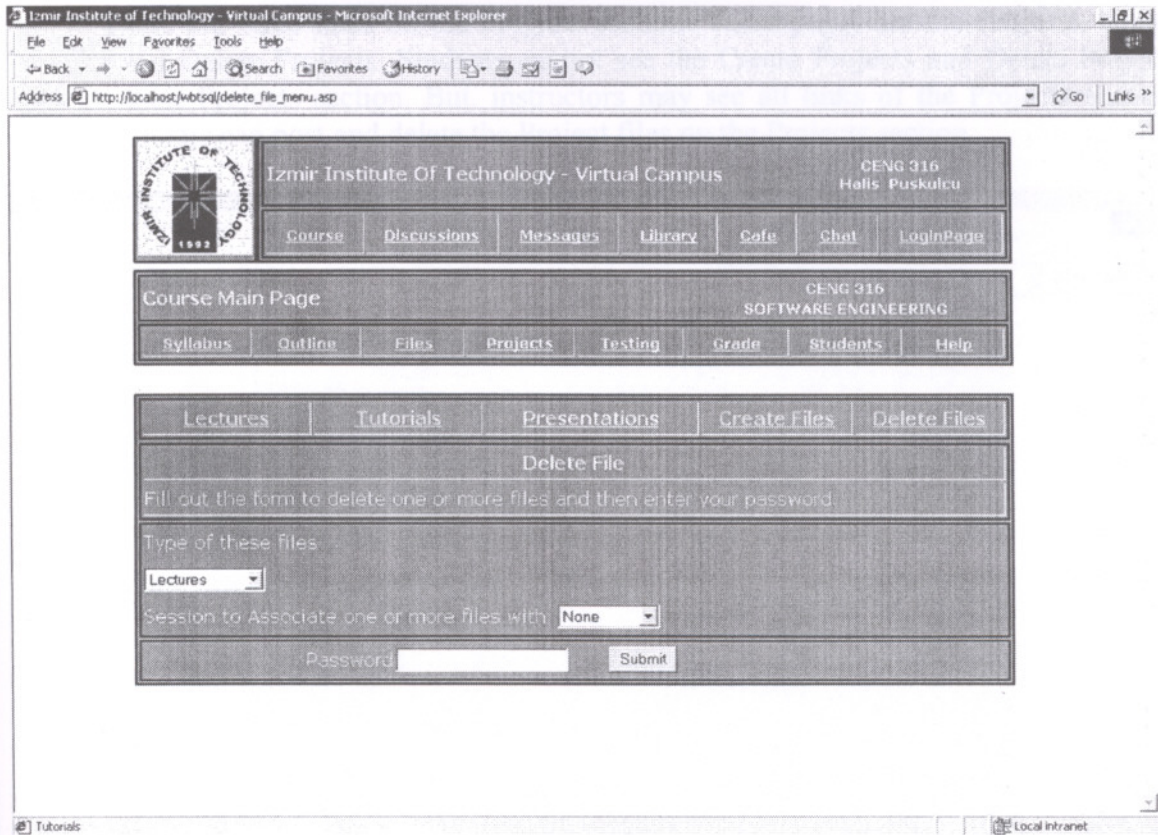


Figure 5.33 : Delete Files Page (Instructor View)

5.4.4 Projects Page (Student and Instructor View)

The Projects section includes date, title, and detail notes of project files that may or may not be associated with a particular session.

There are three links on the Projects section. These pages are the Projects, Create Projects and Delete Projects. Students cannot see the Create Projects and Delete Projects links on their Projects section. But, instructors may see all links of the Projects section. Only instructors can post and delete the Project files on the Projects section.

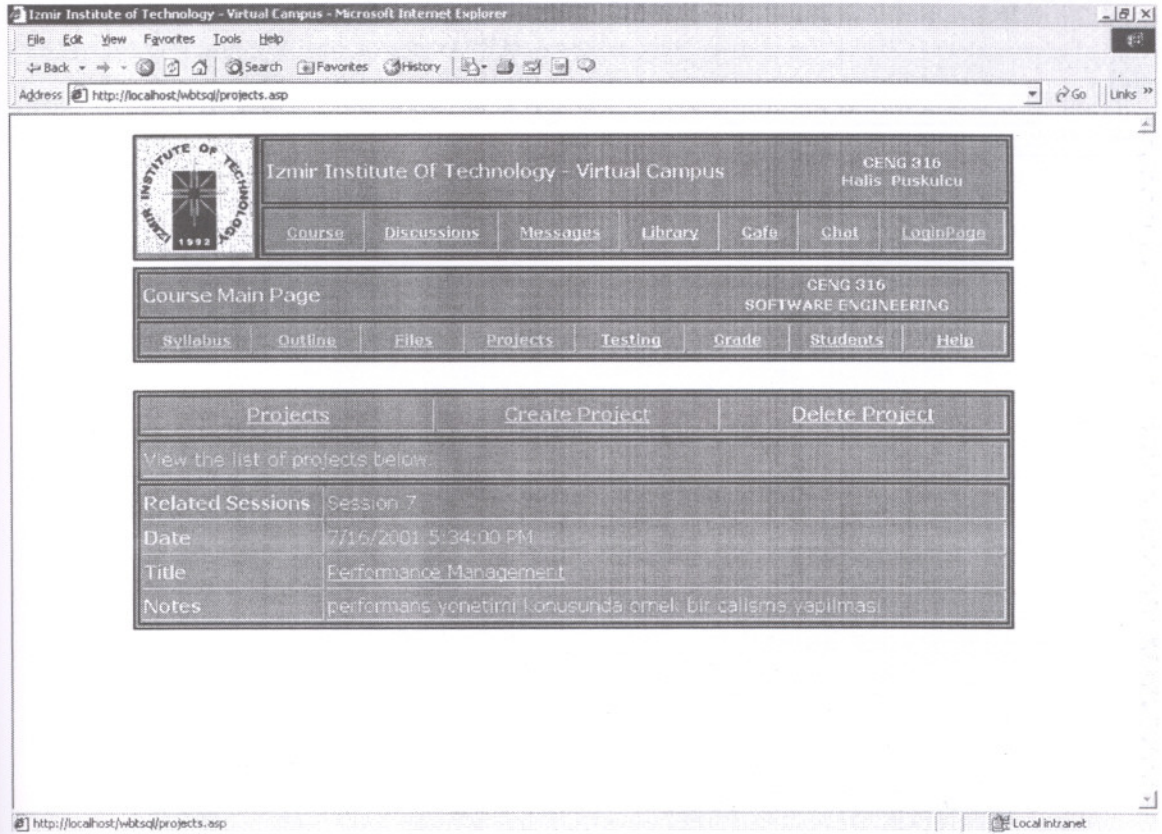


Figure 5.34 : Projects Page (Student and Instructor View)

5.4.4.1 Create Project Page (Instructor View)

This page allows to post the project files for students that may or may not be associated with a particular session.

To post a project file, Instructor Password field must be filled out and clicked on the Submit button.

Posted project files have been copied in the "Course ID" folder on server. System has created the "Course ID" folder automatically. For example, "C:\Upload\CENG 312\".

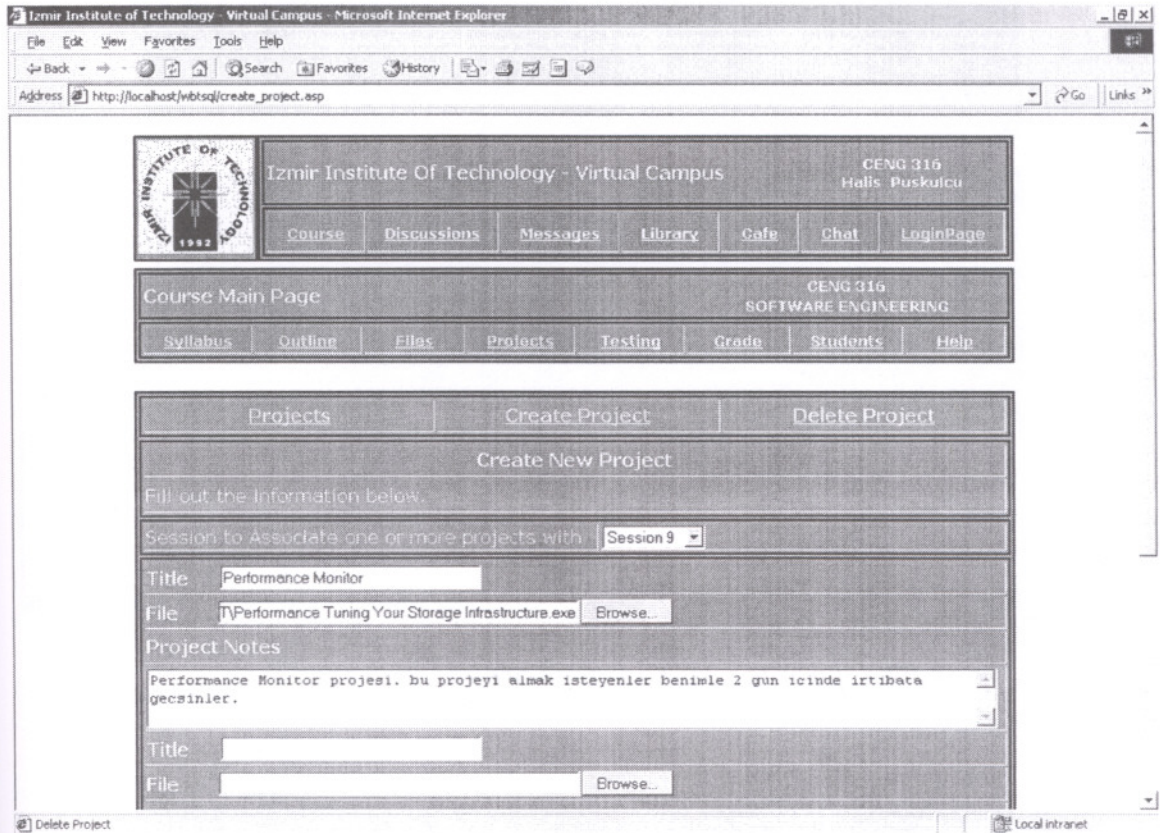


Figure 5.35 : Create Project Page (Instructor View)

5.4.4.2 Delete Projects Page (Instructor View)

This page allows to delete the posted project files that may or may not be associated with a particular session. On this page, the project lists will be seen.

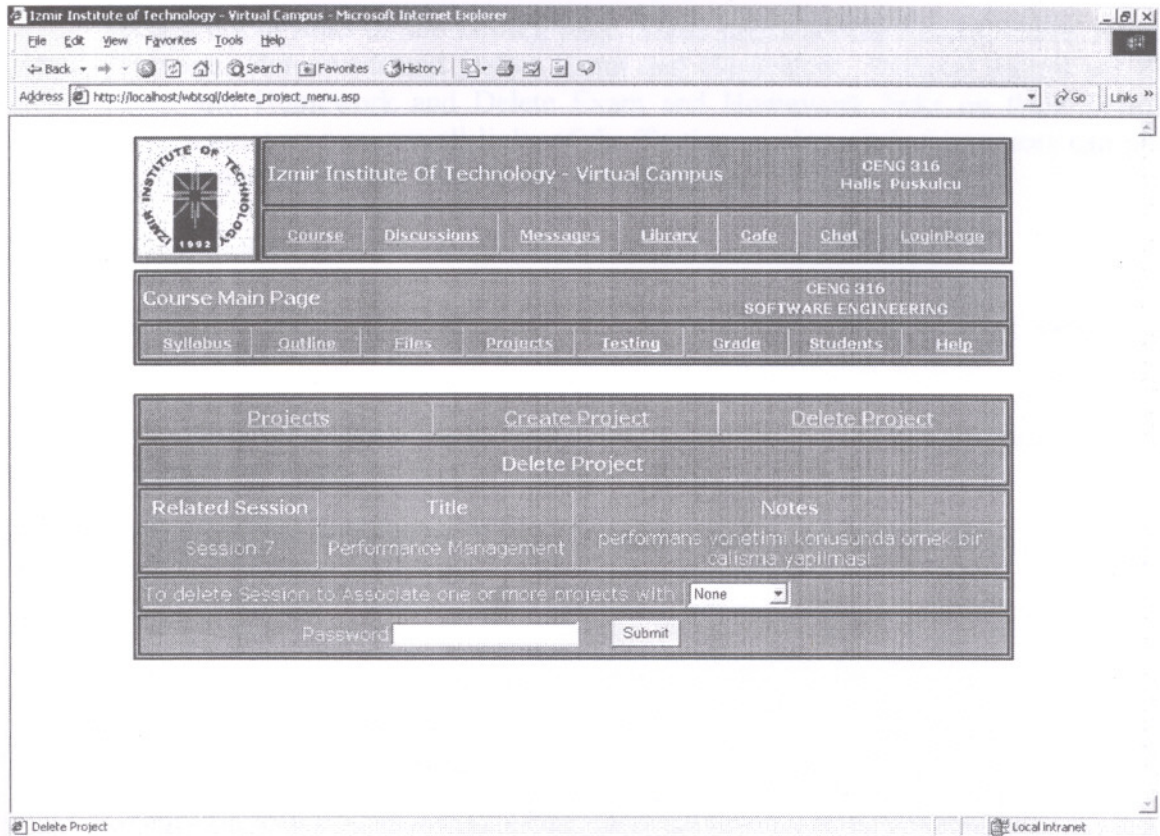


Figure 5.36 : Delete Project Page (Instructor View)

5.4.5 Testing Page

The Testing page include date, title, detail notes of testing files that may or may not be associated with a particular session.

There are four links on the Testing page. These pages are the Exams, Home works, Create Exam and Homework and Delete Exam and Homework. Students cannot see the Create Exam and Homework and Delete Exam and Homework links on their Testing section. But, instructors may see all links of the Testing section. Only instructors can post and delete exam and homework files on the Testing section.

5.4.5.1 Exams and Homeworks Page (Student and Instructor View)

The Exams and Homeworks page include date, title, detail notes of exams and homework's files that may or may not be associated with a particular session.

To simplify the usage of downloaded and posted exams and homeworks files, they are divided into two categories: Exams and Homeworks.

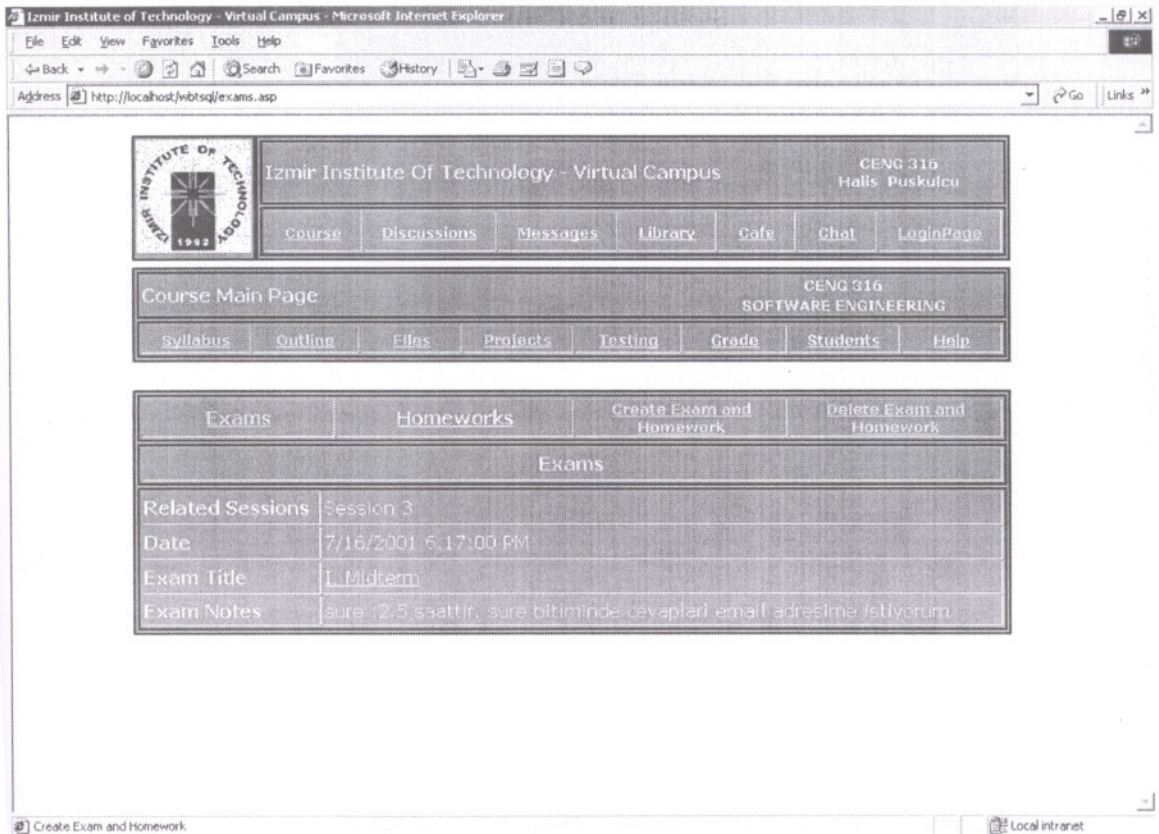


Figure 5.37 : Exams and Homeworks Page (Student and Instructor View)

5.4.5.2 Create Exam and Homework Page (Instructor View)

This section allows to post the exam and homework files for students that may or may not be associated with a particular session.

To post an exam and homework file, Instructor Password field must be filled out and clicked on the Submit button.

Posted exam and homework files have been copied in the "Course ID" folder on server. System has created the "Course ID" folder automatically. For example, "C:\Upload\CENG 312\".

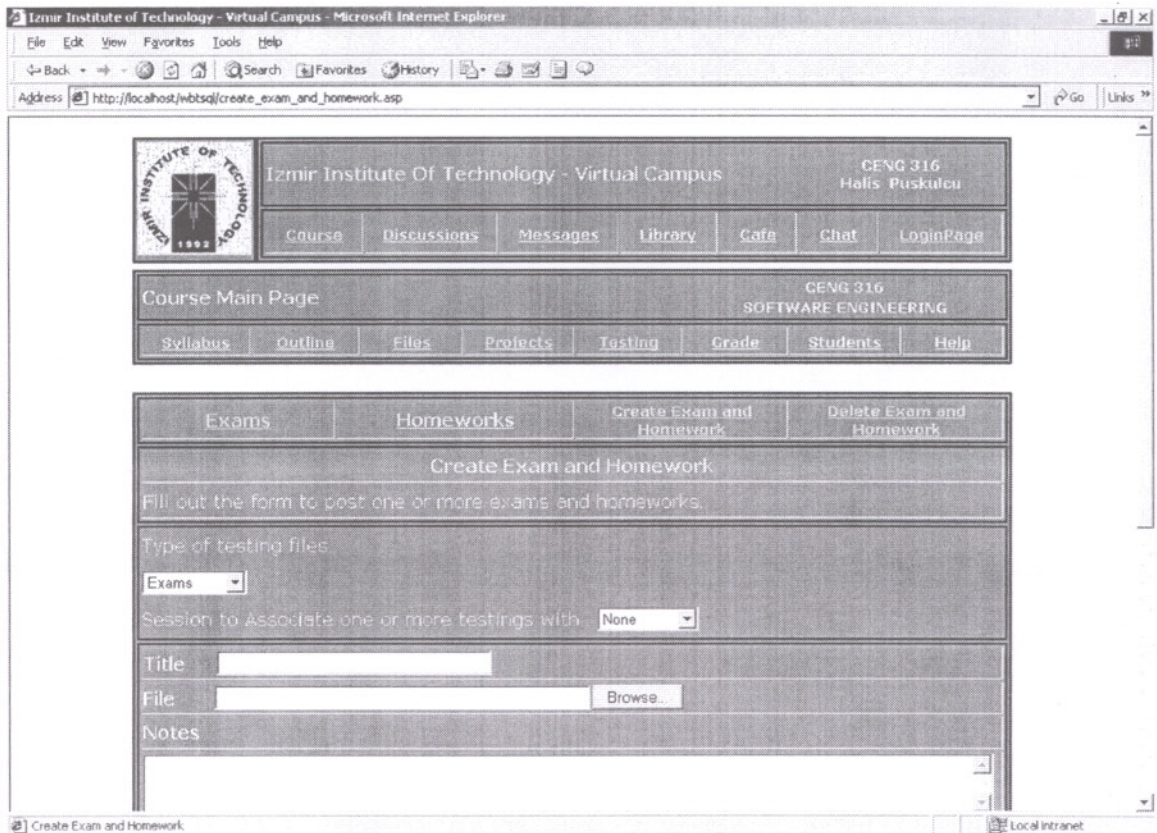


Figure 5.38 : Create Exam and Homework Page (Instructor View)

5.4.5.3 Delete Exam and Homework Page (Instructor View)

This page allows to delete the posted testing files that may or may not be associated with a particular session. On this page, list of the testing files will be seen.

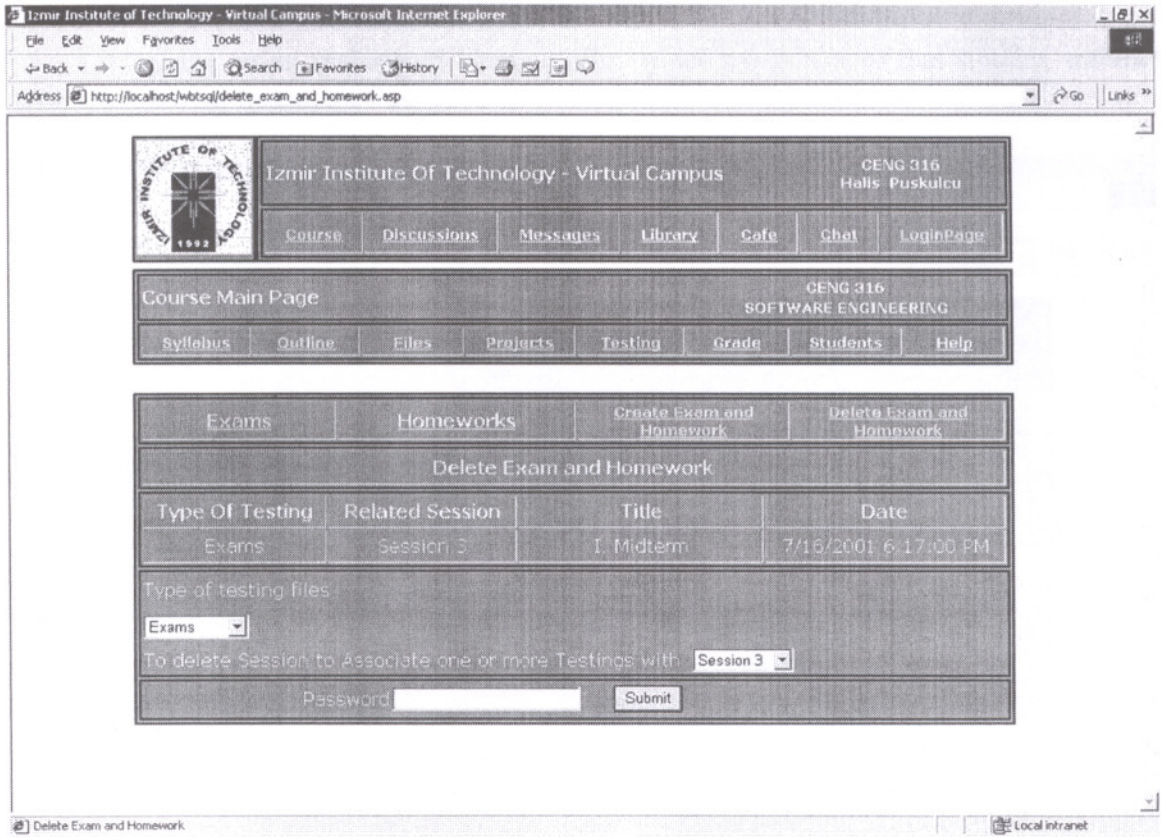


Figure 5.39 : Delete Exam and Homework Page (Instructor View)

5.4.6 Grade Book Page (Student and Instructor View)

This page allows to see the current list of registered students' grades to a course. The Name, I. Midterm, II.Midterm, Home works, Final and Average of registered students will be seen.

Clicking on an underlined Name allows to see the grades of that student. Instructor with his/her own Instructor Password can edit grades of that student.

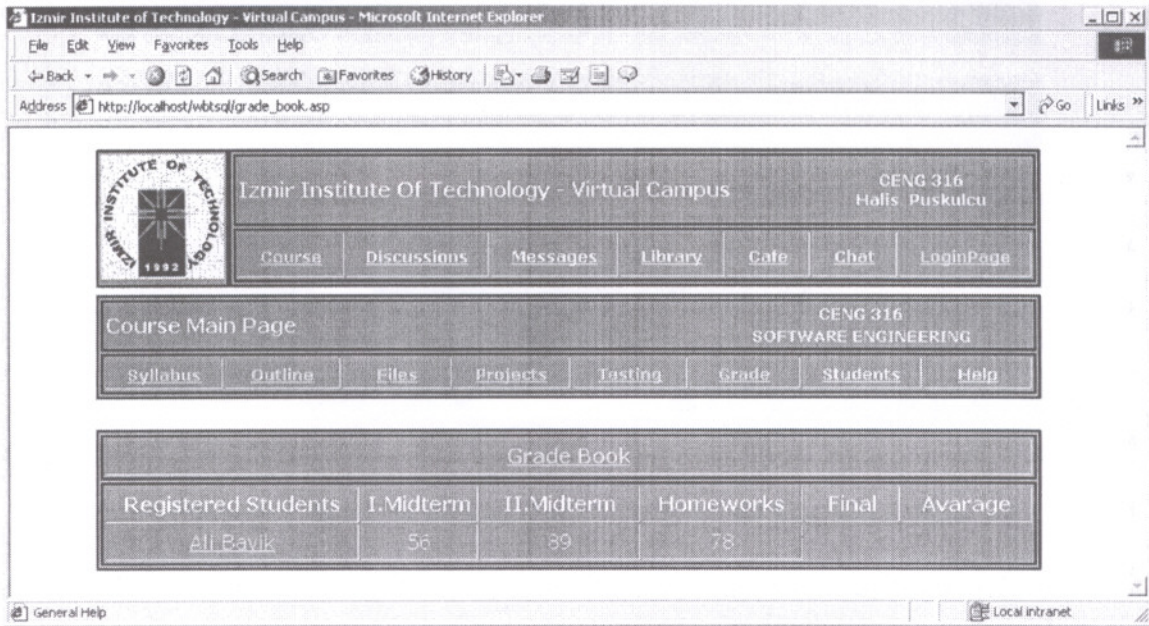


Figure 5.40 : Grade Book Page (Student and Instructor View)

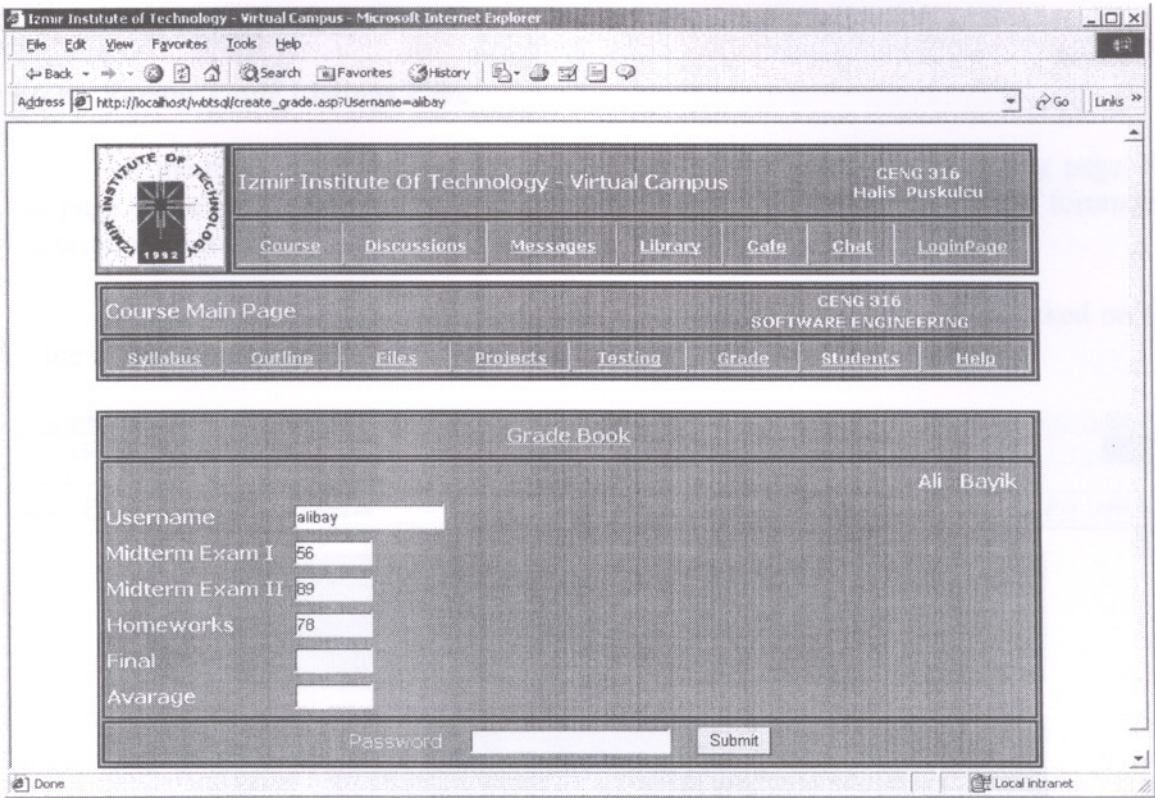


Figure 5.41 : Edit Grades Page (Student and Instructor View)

5.4.7 The Information Registered Students' Pages (Student and Instructor View)

This page is used to give information about registered students.

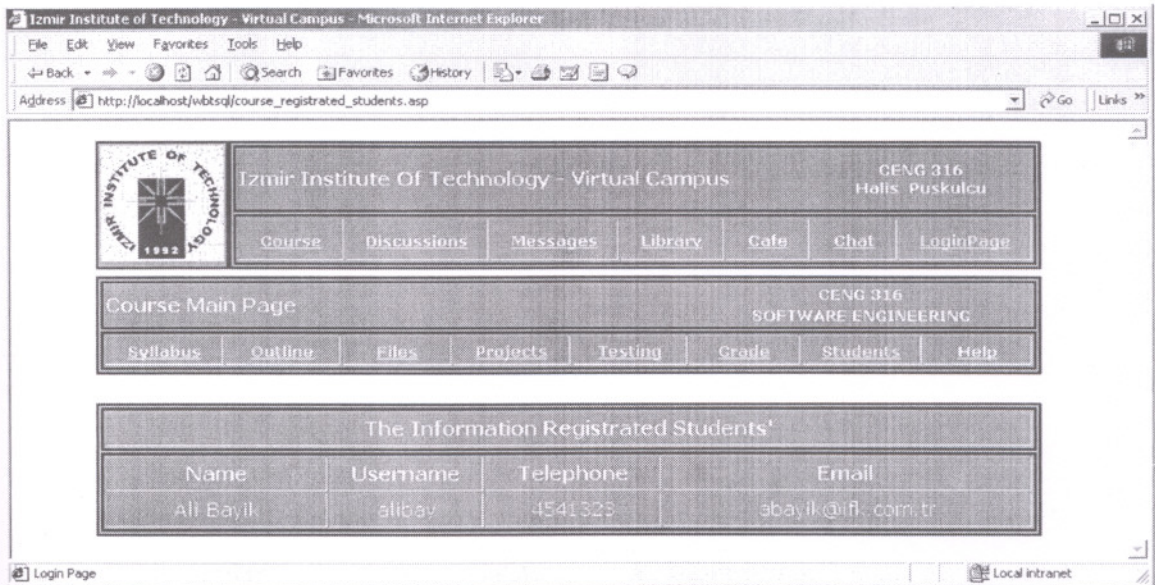


Figure 5.42 : The Information Registered Students' Pages

5.5 Discussions Page

5.5.1 Forum Topic Listings Page

All the topics that were created can be seen on the Forum Topic Listing page. On this page, there are the Forum Name, username of forum Creator, Create Date of forum and Description of forum.

In order to read related messages with a particular forum topic, it is clicked on the Name of that forum topic.

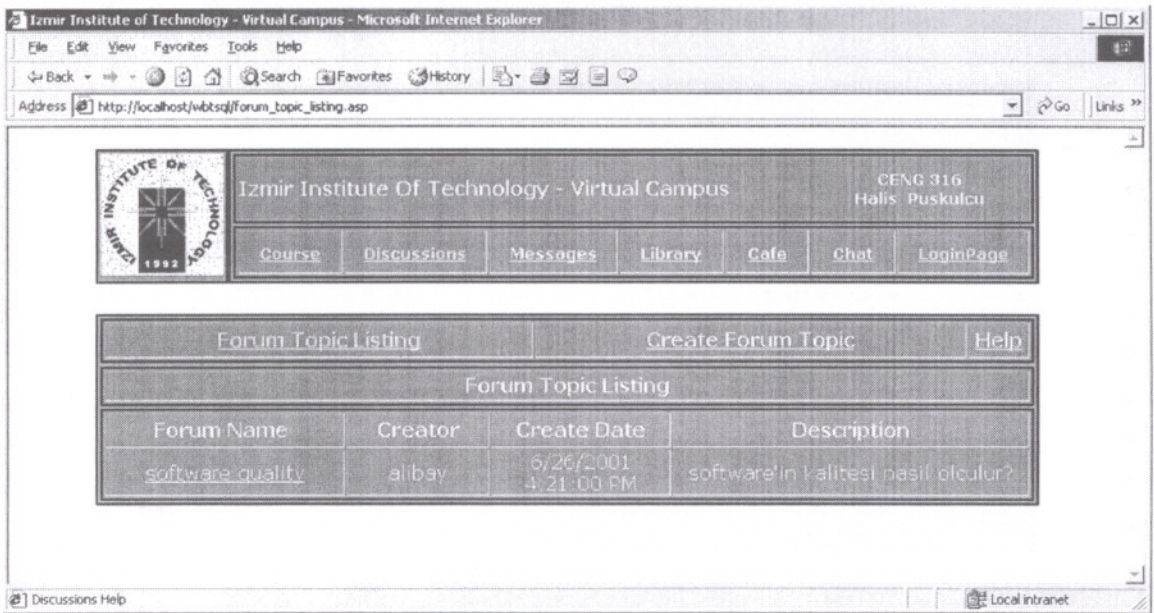


Figure 5.43 : Forum Topic Listings Page

5.5.2 Forum Topic Create Page

To create a new discussion forum topic, it is clicked on "Create Forum Topic". The instructor and all the students of that course can create the forum topic.

When forum topic created, related information with forum topic as the Forum Name, Creator, Create Date and Description will be represented on the Forum Topic Listing page. When it was being done, forum name musn't be blank

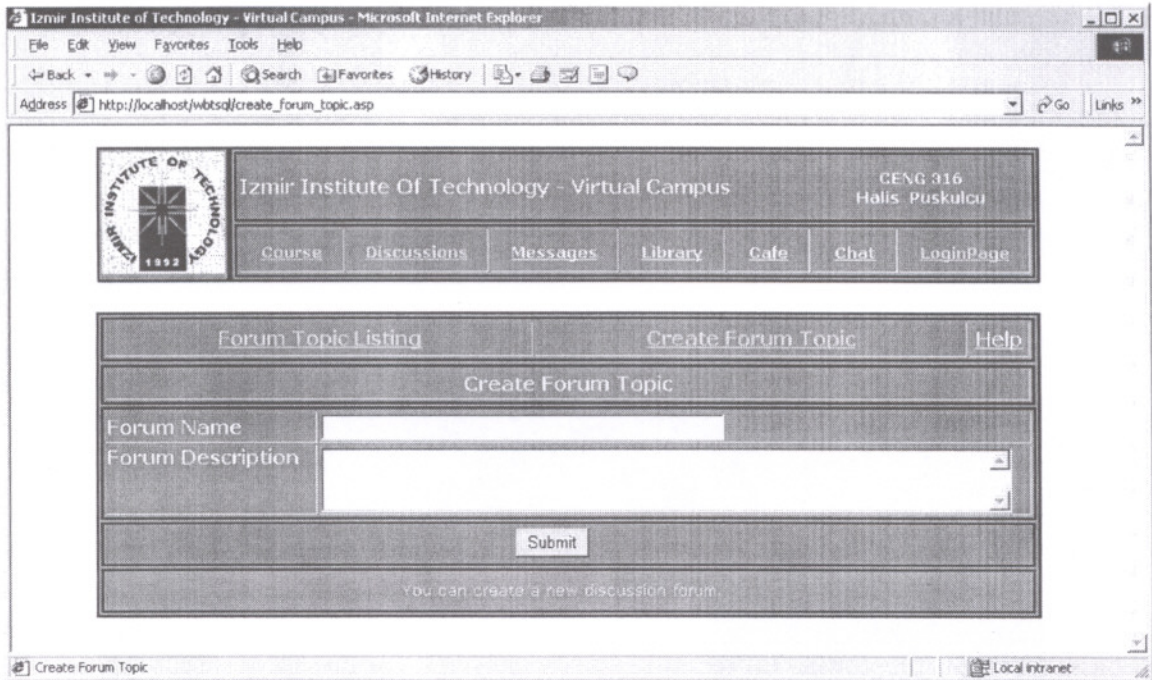


Figure 5.44 : Forum Topic Create Page

5.5.3 Related Messages With Forum Topic Page

On the Related Messages With Forum Topic page, all members of course can see created messages and create new related messages with topic.

To create new message, after message subject and message body has been written, it is clicked on the Submit Messages button and the message that has created can be seen on the screen immediately.

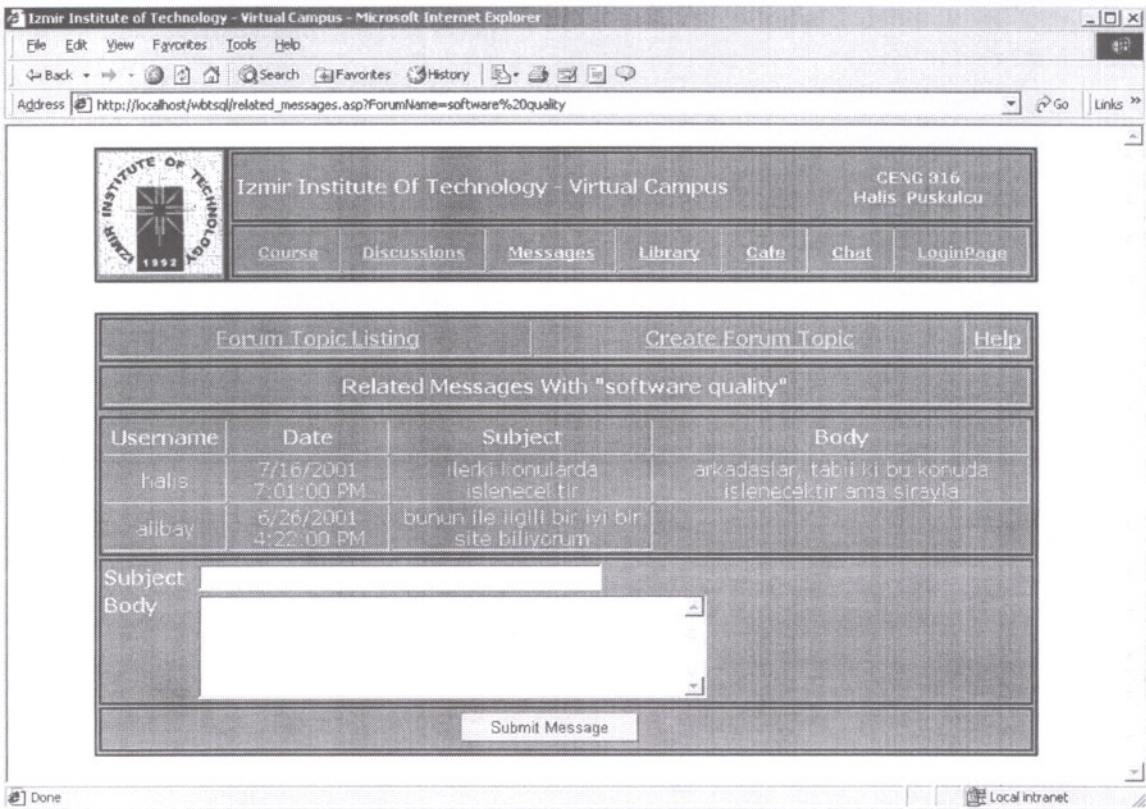


Figure 5.45 : Related Messages With Forum Topic Page

5.6 Messages Page

The Message page allows to send an individual email message to anyone in the class, to send a group email message to selected course members, to post an announcement to each course member.

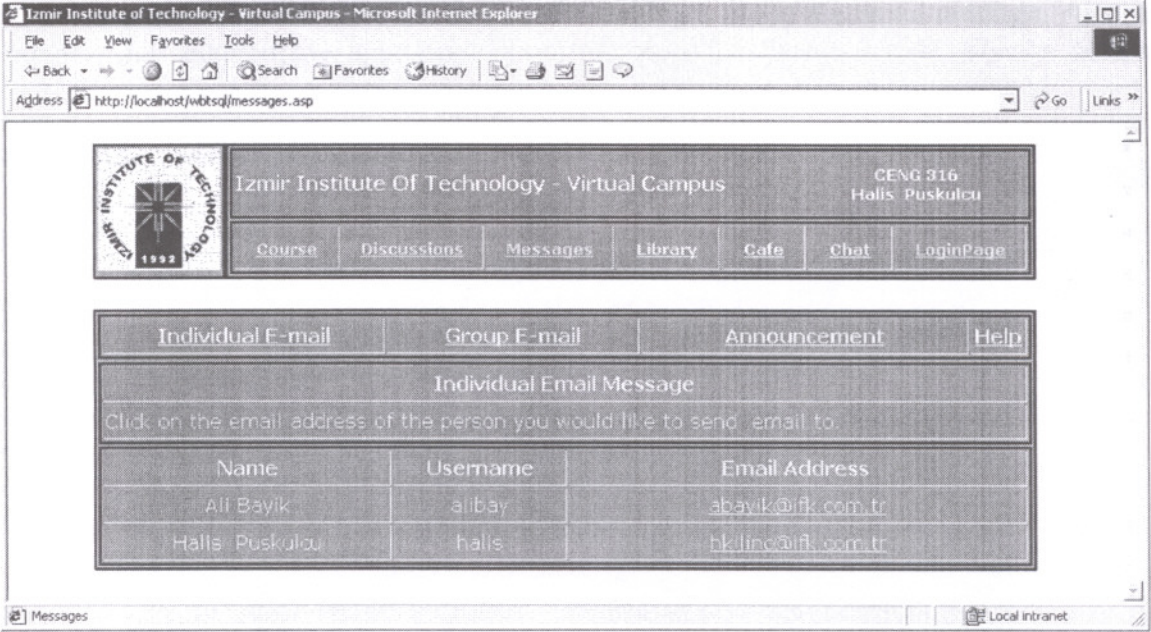


Figure 5.46 : Messages Page

5.6.1 Individual Email Page

To send an individual email to any person from the course members, it is clicked on the email address next to their name and username. This will take a form that allows to enter the Cc, Bcc, Subject, File for Attachment and Message.

Course members have the option of attaching a file to the email message. After any member has entered the appropriate information, it is clicked on the Submit Message button.

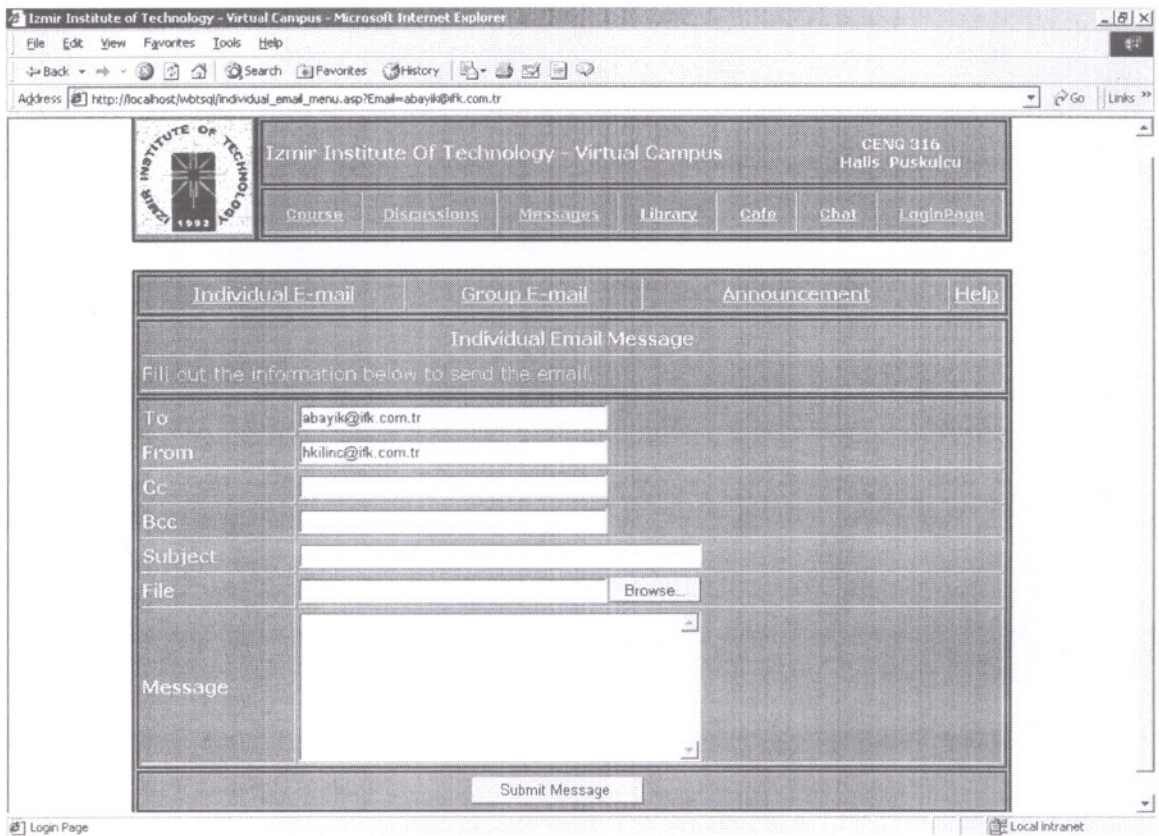


Figure 5.47 : Individual Email Page

5.6.2 Group Email Page

To send an email to a group from the course members, it is clicked on the Group Email. It is checked the boxes next to the names of the people under "Send To" and it is clicked the Submit button. This will take a form that allows to enter the Cc, Bcc, Subject, File for Attachment and Message.

Course members have the option of attaching a file to the email message. After any member has entered the appropriate information, it is clicked on the Submit Message button.

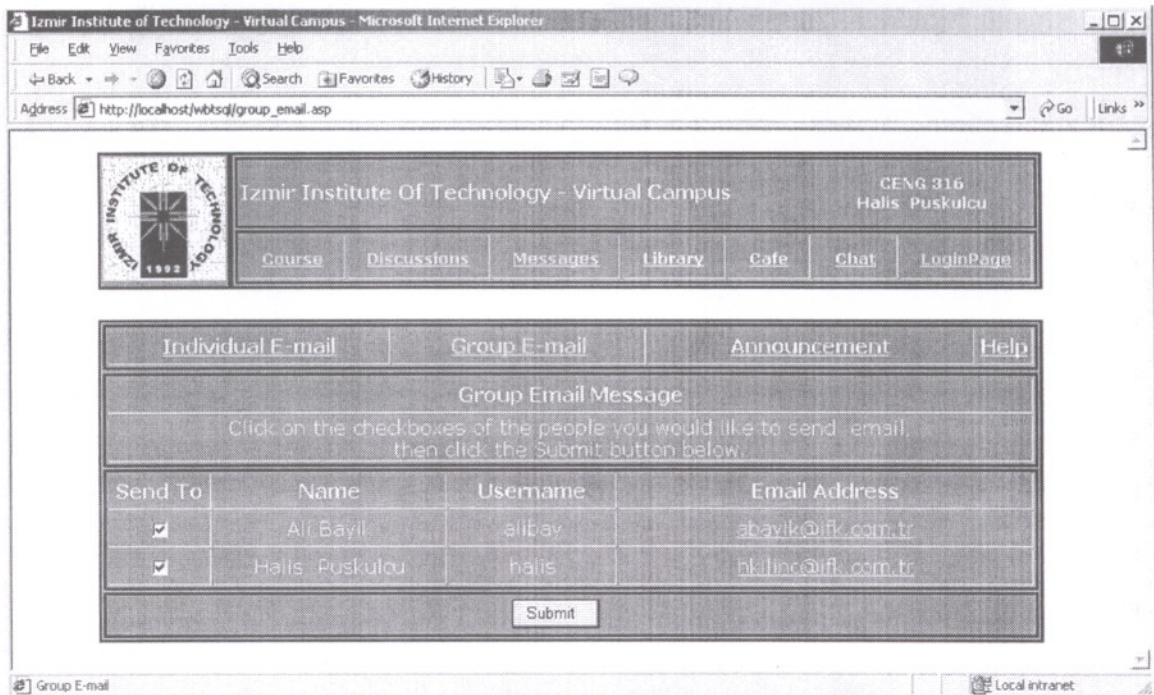


Figure 5.48 : Group Email Page - 1

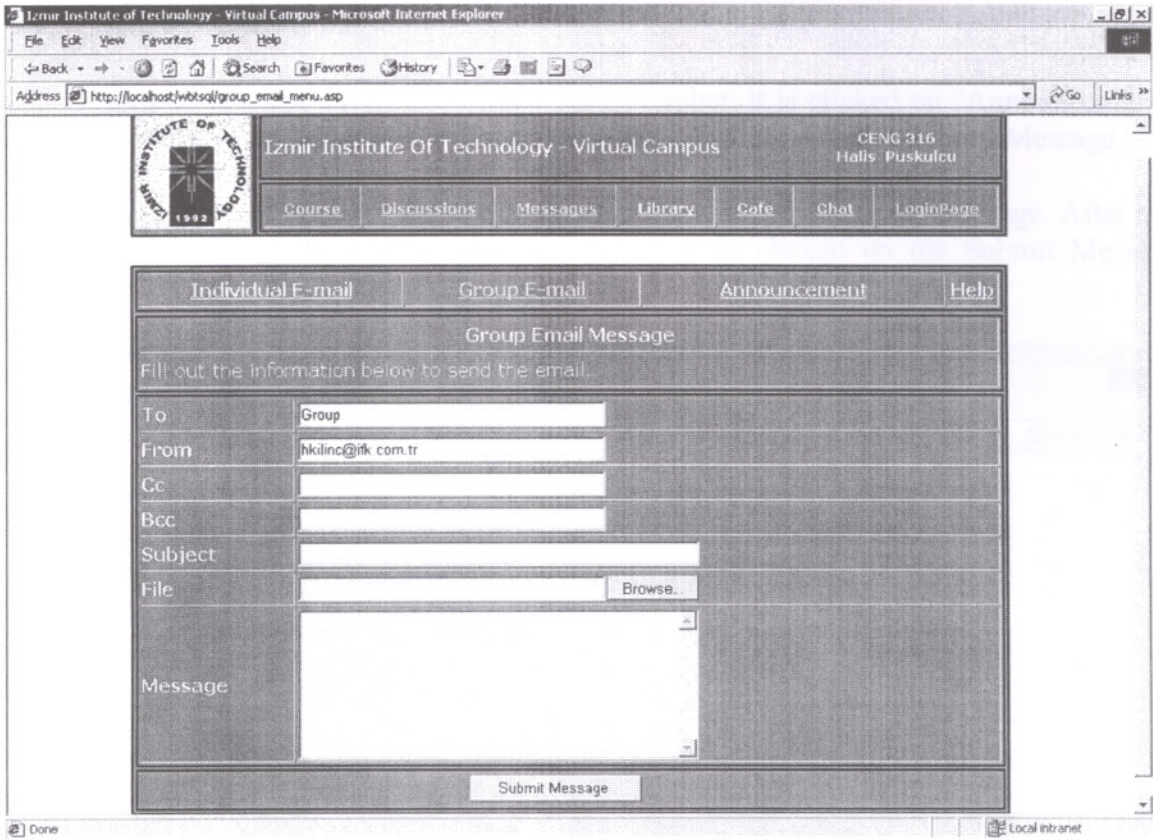


Figure 5.49 : Group Email Page – 2

5.6.3 Announcement Page

To post an announcement to each class member, it is clicked on "Announcement". This will take a form that allows to enter the Subject, File for Attachment and Message.

Course members have the option of attaching a file to the email message. After any member has entered the appropriate information, it is clicked on the Submit Message button.

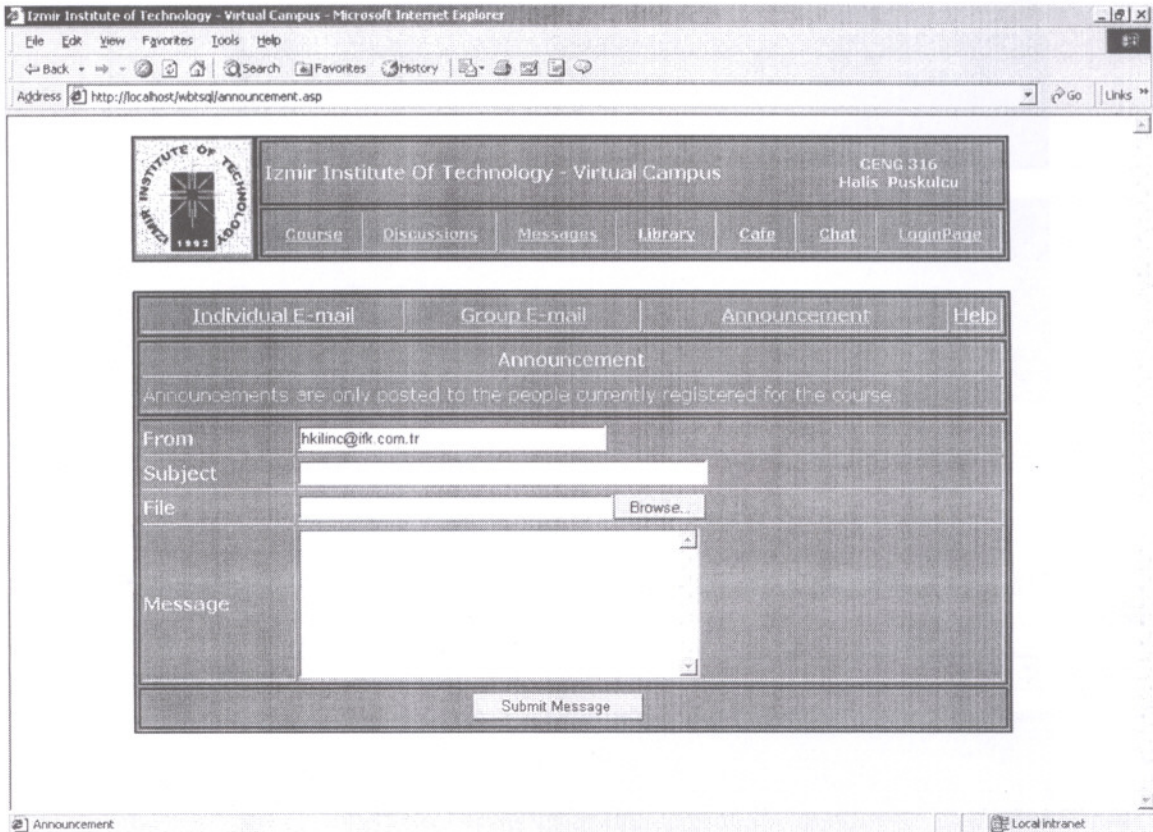


Figure 5.50 : Announcement Page

5.7 Library Page

The Library page includes links and information of bookstores and online libraries about course. Only course members can add a link. To simplify the usage of library, they are divided into two categories: Online Libraries and Bookstores.

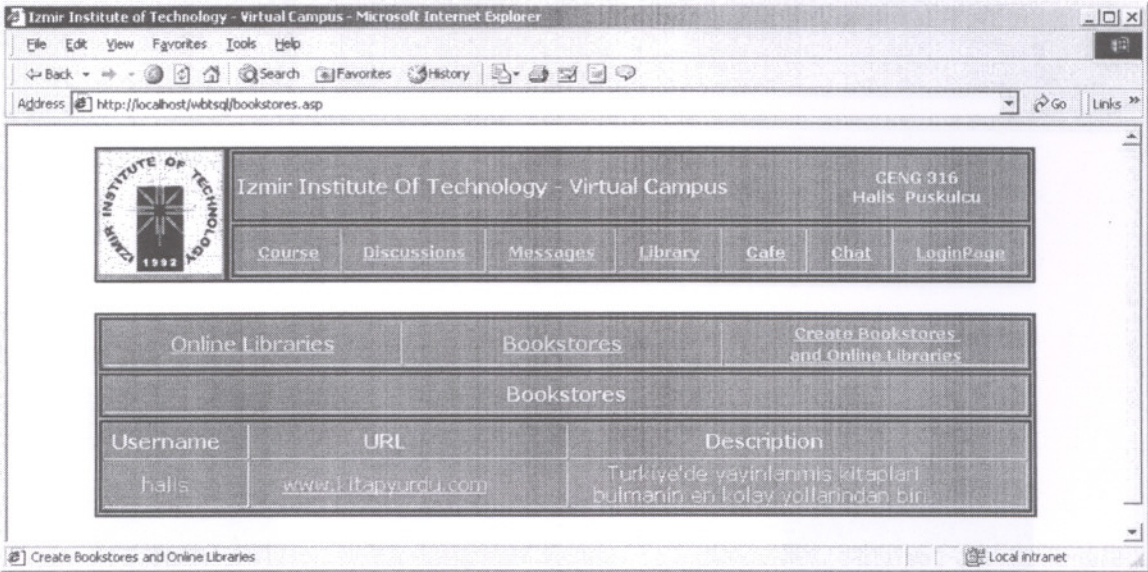


Figure 5.51: Library Page - 1

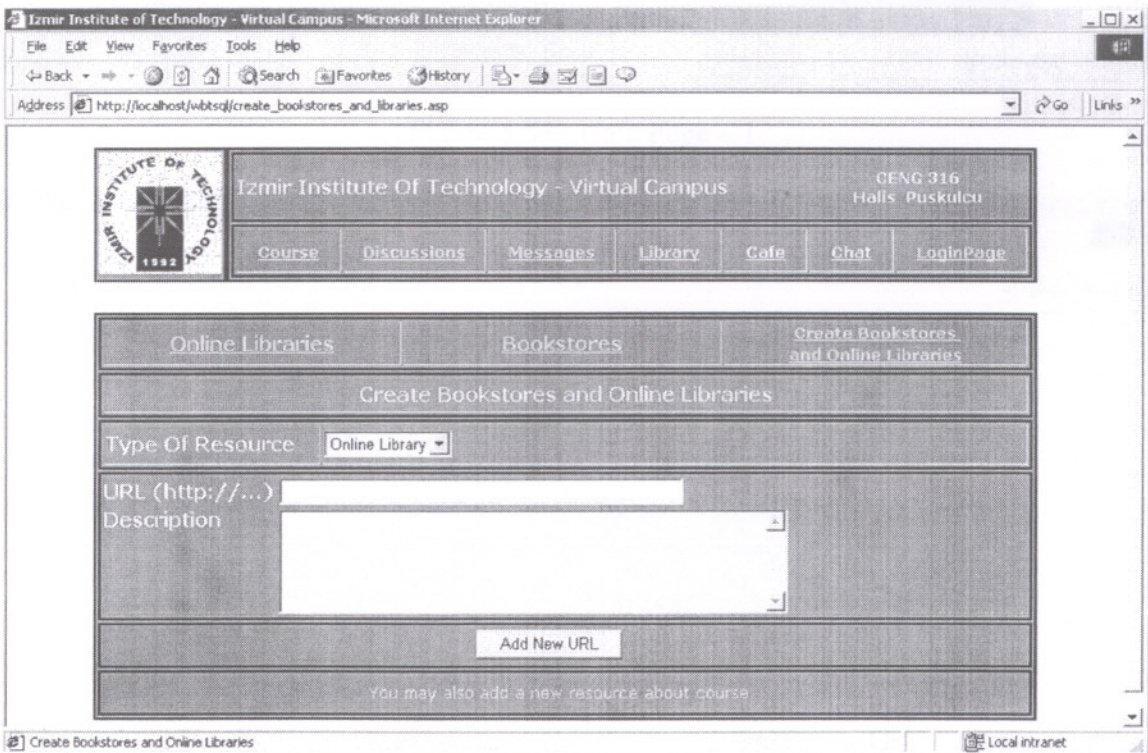


Figure 5.52 Library Page - 2

5.8 Café Page

In the café page, there are links that are categorized and information about them. Only course members can add a link. To simplify the usage of café, they are divided into seven categories; Art, Book, Music, Cinema, Newspapers, Magazines, and Various Links.

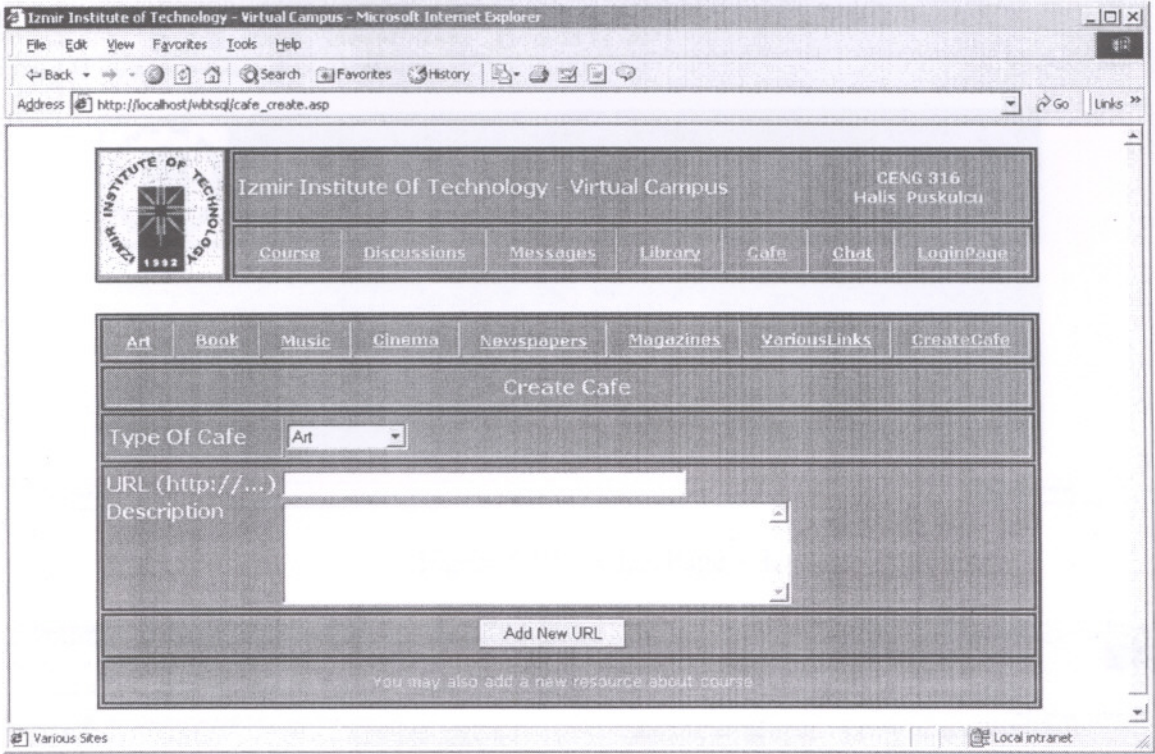


Figure 5.53: Cafe Page – 1

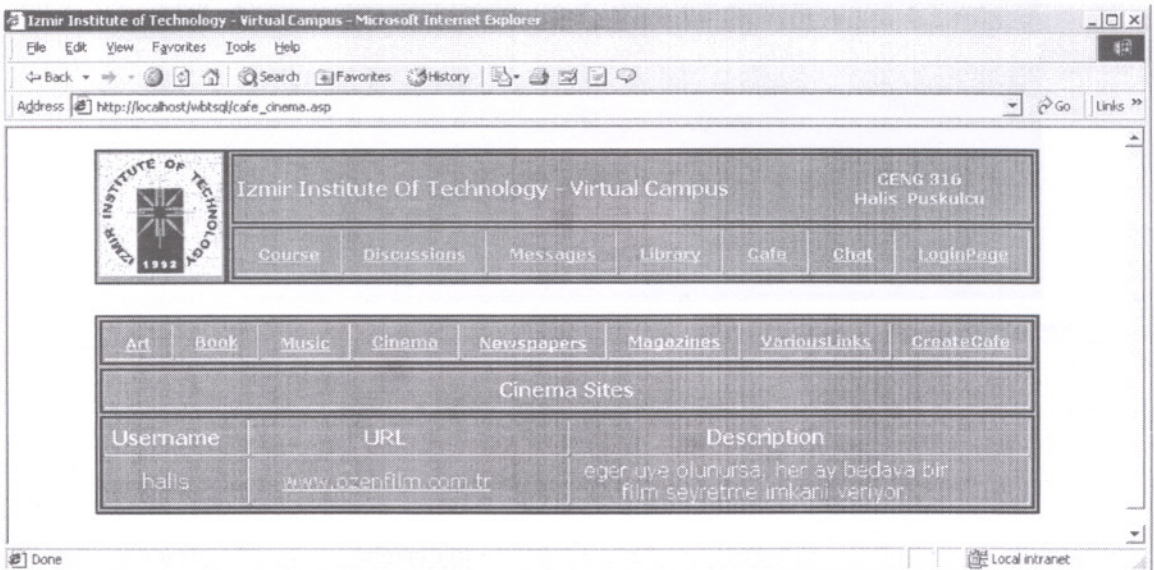


Figure 5.54: Cafe Page – 2

5.9 Chat Page

The chat page is social activity of the Virtual Campus. Different rooms can be created.

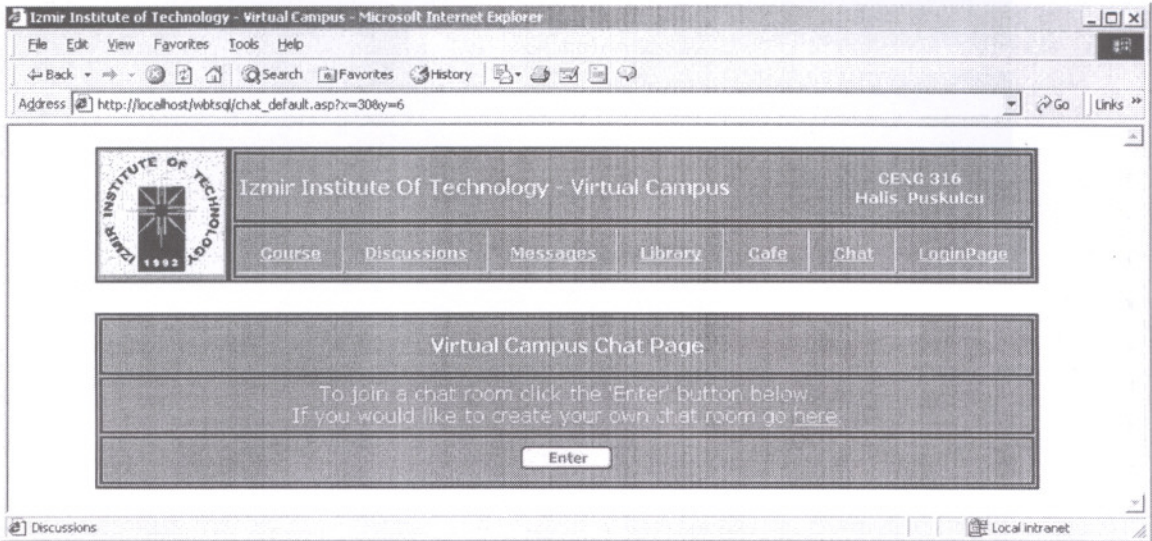


Figure 5.55 : Chat Page – 1

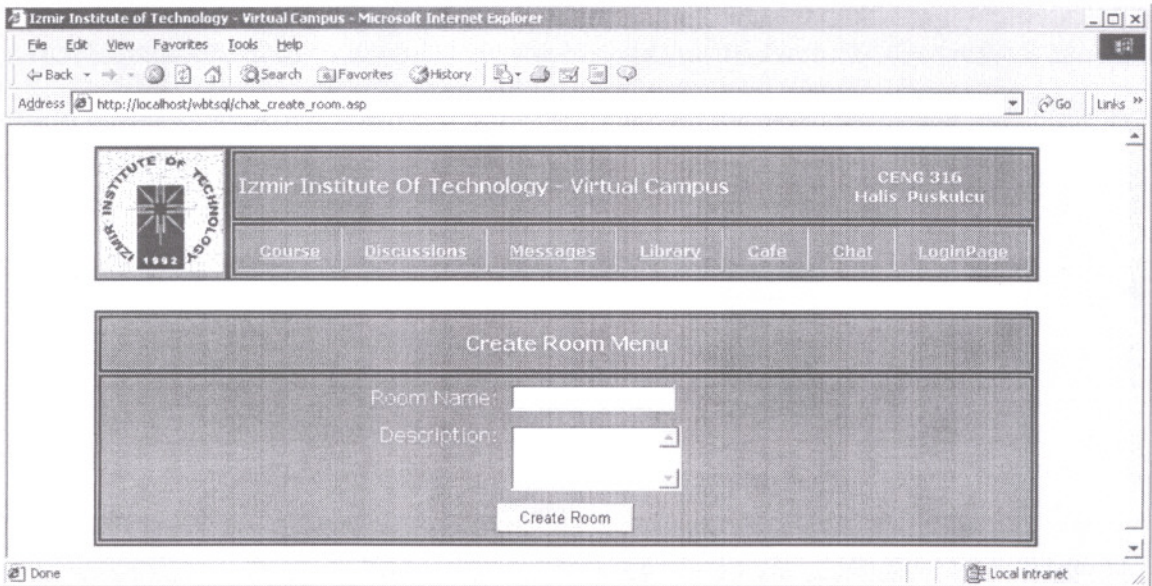


Figure 5.56 : Chat Page – 2

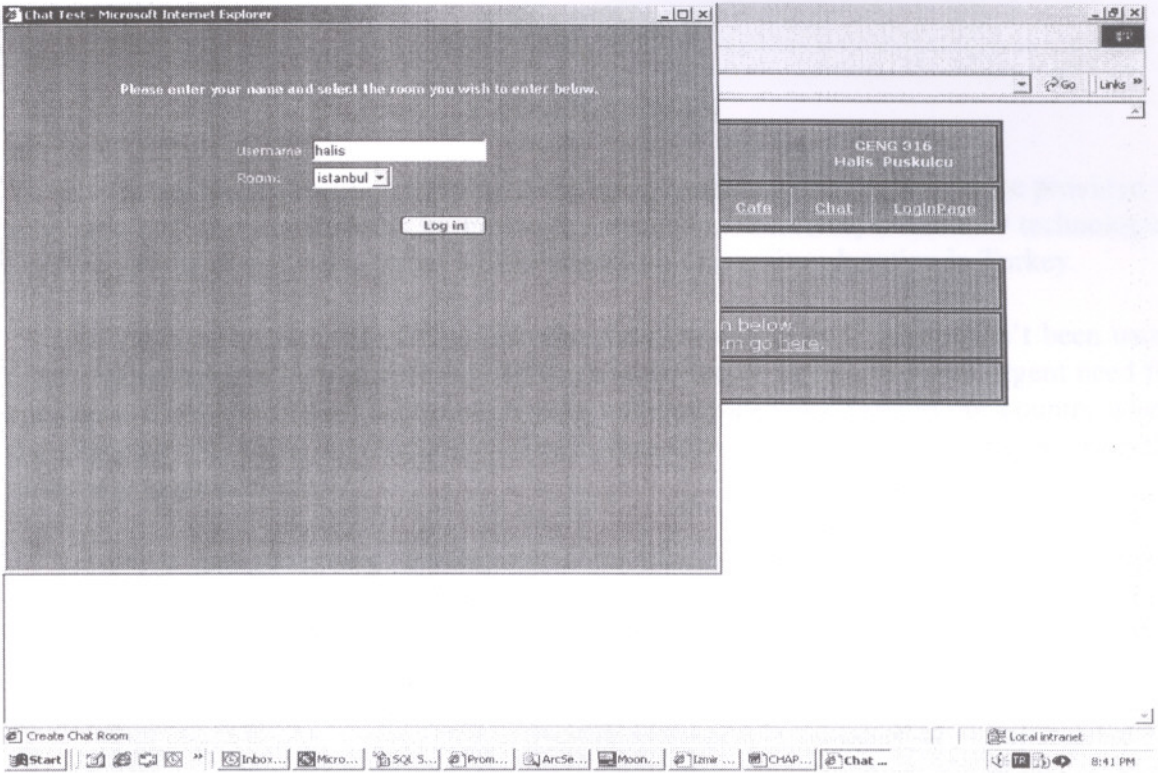


Figure 5.57 : Chat Page – 3

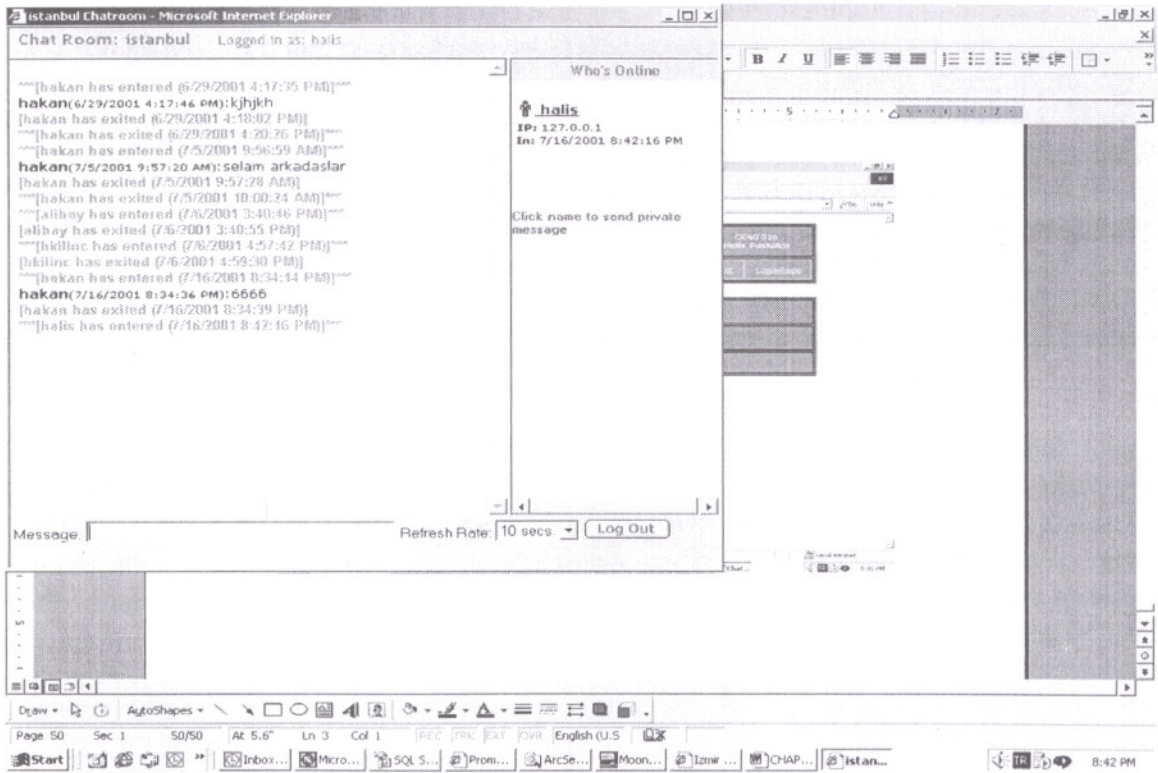


Figure 5.58 : Chat Page – 4

CHAPTER 6

CONCLUSION

The distance education in some developing countries like Turkey can be provided to accommodate of more students in university education. Therefore, to use new technologies like Web in the distance education will be useful for university education in Turkey.

When compared with USA and other western countries, Turkey hasn't been using these technologies effectively. However, in the near future there will be an urgent need for education in which communication networks and computers are used in our country where the available places in universities are much less than the number of people entering the university examination.

There are promising developments in Turkey. In the last four years, Turkey's leading universities also give great importance in online distance education. There are studies about using Internet in distance education in a serious way. Many lectures are offered on the Internet and it seems that it will spread to all universities in the near future.

This thesis has been contributed studies about distance education in our country and has offered an interactive education environment for presenting courses on the Web. It presents the implementation of web based training system which exploits the advantages of the internet for distance education.

The Virtual Campus presents web based courses. It is an easy-to-use tool. Because, instructors can create a course and import to the content from outside applications such as Microsoft Word, PowerPoint, and Excel, PDF (Portable Document Format). They can easily enhance their content by uploading movies, images, and audio from multimedia files like MPEG, JPEG and GIF. However images in HTML pages cannot be uploaded. Because the ASP Upload Component which is currently being used, is not compliant with HTML pages containing images. Therefore different the ASP Upload Components must be used, but they aren't free. In the ongoing works, application like Microsoft Word, PowerPoint, HTML pages without images and PDF can be used. Future work can be added a new the ASP Upload Component.

There are communication tools in the Virtual Campus. The Virtual Campus provides communication facilities during course presentation. The discussion page of the Virtual Campus allows course members to create a particular forum topic and related messages with forum topic. The Message page of the Virtual Campus allows to send an individual email message to anyone in the class, to send a group email message to selected course members, to post an announcement to each course member. The Virtual Campus supports text chat. Course members can create chat rooms. But the Virtual Campus cannot support voice chat. This property can be provided in future.

The Virtual Campus uses modules. There are syllabus, outline, files, projects, testing, grade, discussions, library and café modules in the Virtual Campus. Instructors can

insert and rearrange courses. Only discussions, library and café modules can be inserted by students. Modules make content independent of any particular course. Instructors can associate the session(s) with the other modules. Future work can be rearranged and improved interface of these modules.

The Virtual Campus is viewable in Microsoft Internet Explorer 4.0+. This browser allow to post files and send messages. Future work can be improved for using any web browser and all platforms including Mac, Unix and Linux.

In this work, Access and SQL Server databases have been used. Future work can be improved to use Oracle. The Virtual Campus database stores information about the students, courses and modules. In future works, the stored information can be queried by the instructor or system administrator in order to obtain specific information about the students or the courses.

The Virtual Campus is a safe system. It uses Session Technology. In the Virtual Campus, if the user stops interacting with the application, then the session will end after 20 minutes. The Virtual Campus uses two layers of security to allow access to course materials. Future work can be improved user authentication mechanisms. Login and password information that is stored within the Virtual Campus database can be stored safer.

There are two user roles in the Virtual Campus. These are instructor and student roles. Future work can be added supervisor roles and improved users' permission levels. Course level user roles and system-wide user roles can be rearranged and improved.

The documentation of the Virtual Campus is insufficient. In the future works, the documentation of the Virtual Campus can be rearranged and improved.

Finally, the user interface of the Virtual Campus can be improved in order to provide more attractive and enjoyable environment for the students. According to the time and team, many new things can be added and improved.

REFERENCES

Arkan, Mehmet Hakan (1999): Distance Education On Internet: A Java Based Image Processing Course in Metu, Master Thesis, ODTU, Ankara.

Çubukcu, Faruk (1999): SQL Server 7.0, Alfa Basın Yayım Dağıtım, İstanbul.

Kauffman, John (2000): Beginning ASP 3.0 and Beginning ASP Databases, Wrox Press, UK

Keegan D. (1986): The Foundations of Distance Education, Croom, Helm, London.

Murphy K. L. (1996). "Enhancing interaction in Turkish distance education.", Turkey First International Distance Education Symposium , Ankara.

Schuemer, R. (1993): " Some psychological aspects of distance education.", Hagen, Germany: Institute for Research into Distance Education.

Varol, Asaf (1996): "Televizyon, Telekonferans, ve Internet Sistemlerinin Uzaktan Eğitim Amaçlı Kullanımı (Fırat University)", Turkey First International Distance Education Symposium, Ankara.

Willis, Barry (1993): Distance Education: A Practical Guide and Distance Education: Strategies and Tools, Englewood Cliffs, NJ : Educational Technology Publications.

Yazıcı, Ali and Altaş, İrfan (1999): "Web-based distance Education in Developing Countries", 14. Uluslararası Bilgisayar ve Enformasyon Sistemleri Sempozyumu, Ankara.

Online References

BİLGİ e-mba, URL : <http://www.bilgiemba.net>

Dyro's WBT (Web Based Training) Site, URL: <http://www.dyroweb.com>

Internet Information Services Features,
URL: <http://www.microsoft.com/windows2000/server/evaluation/features/web.asp>

METU – Online, URL: <http://euclid.ii.metu.edu.tr/metuonline/>

Prometheus:: The Evolution of Learning, URL: <http://www.prometheus.com>

Saneg, URL: <http://www.saneg.itu.edu.tr/>

SAÜİDO, URL: <http://www.ido.sakarya.edu.tr/>

SQL Server, URL : <http://msdn.microsoft.com/sqlserver/>

Windows 2000 Features, URL:

<http://www.microsoft.com/windows2000/advancedserver/evaluation/features/default.asp>