


**Web Based Timetable Scheduling System For Applied Sciences At The
College Of Arts And Sciences (CAS)**

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**Web Based Timetable Scheduling System For Applied Sciences At The
College Of Arts And Sciences (CAS)**

A thesis submitted to the Graduate School in partial fulfillment of the
requirements for the degree Master of Science (Information and
Communication Technology)
Universiti Utara Malaysia

By

Sari Mahmoud Ali Al-zou'bi (89296)

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AT THE COLLEGE OF ARTS AND SCIENCES (CAS)**

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ABSTRACT

Timetabling is a problem that concerns every teaching institution. Every year a new timetable must be produced to take account of staff, student and course changes causing a necessarily large amount of work. CAS faces a considerable amount of difficulties especially before the start of academic semesters due to the increased number of students and courses. The main objective of this study is to develop a web-based application for timetable scheduling for the CAS. Implementing this prototype in CAS will return in many benefits for both the CAS staff and the students. However some work and studies still need to be done to this system as described in the recommendations section.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

As demand for education increases and diversifies, so does the difficulty of designing workable timetables for schools and academic institutions. Besides the intractability of the basic problem, there is an increasing variety of constraints that come into play (Rahoual and Saad, 2003).

Typical web-based systems consist of a database, a database query language and various components such as scripts and web servers that work together in a multi-tiered fashion. These systems can have massive amounts of confidential and trusted information, with quite complex security policies. Developing Web-based systems is significantly different from traditional software development and poses many additional challenges. There are subtle differences in the nature and life cycle of web-based and software systems and the way in which they are developed and maintained. Web development is a mixture between print publishing and software development, between marketing and computing, between internal communications and external relations, and between art and technology (Powell, 1998).

The contents of
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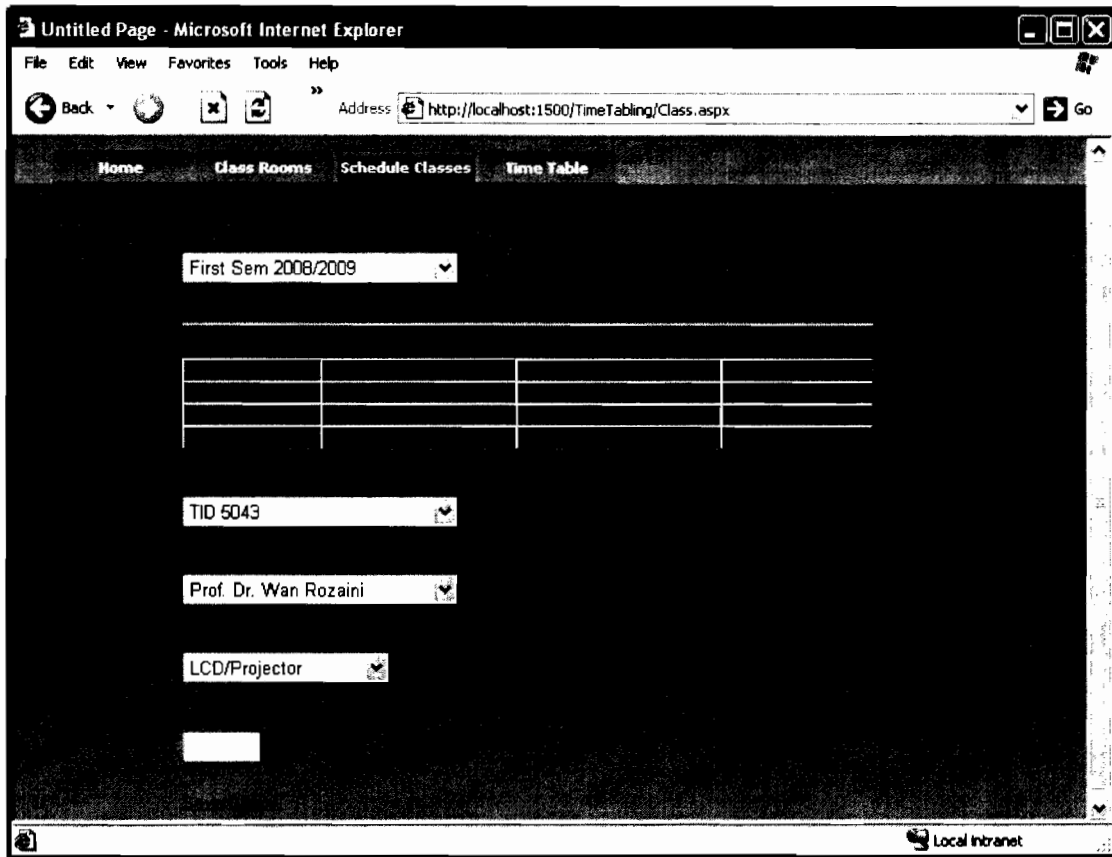


Figure 4.12: Schedule Class Page

This page allow the user to add new class to the list of classes in the semester, the user has to enter all related information in the page and then click save to add the new class to the database as in Figure 4.12.

4.5.3 Class Rooms Page

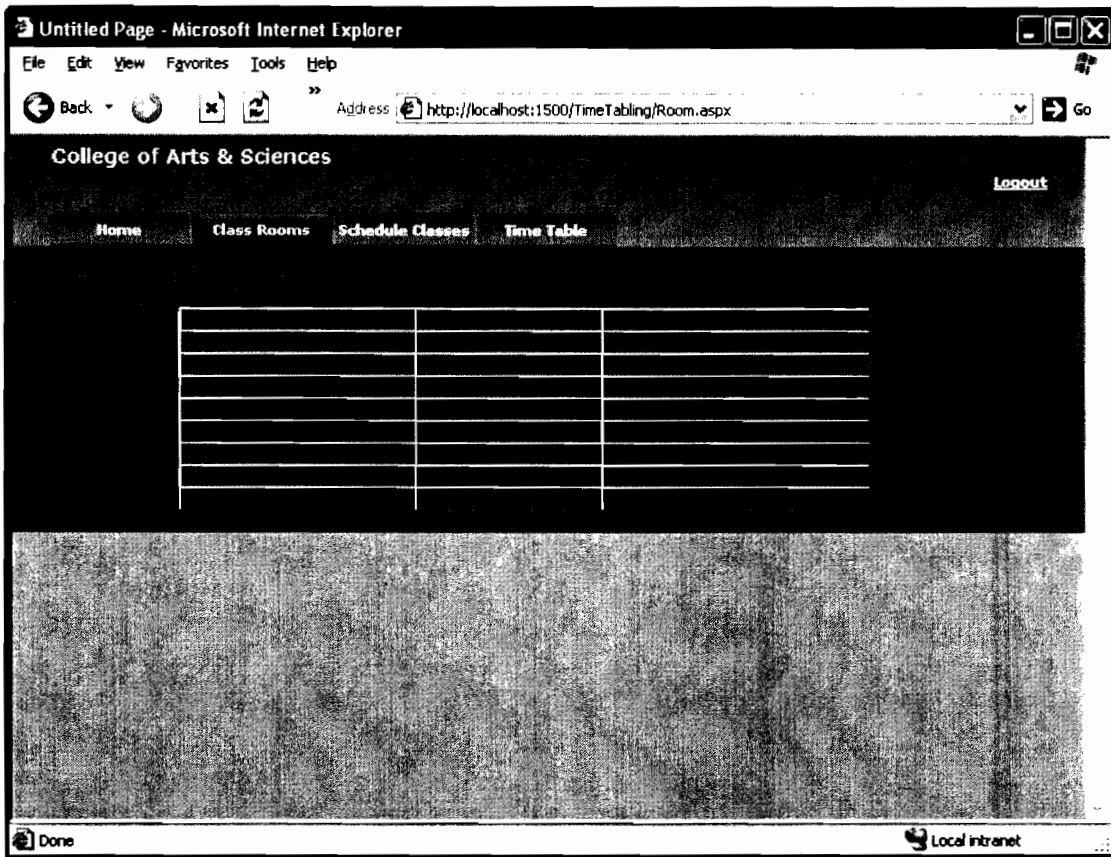


Figure 4.13: Class Rooms Page

This page is used by the college administration to view all Rooms Entered in the system showing the room specification and type, the user can add more rooms to the system and can enter all details about the capacity of the room or the type of the room, the user can save his entries to the system as in Figure 4.13.

4.5.4 Time Table Page

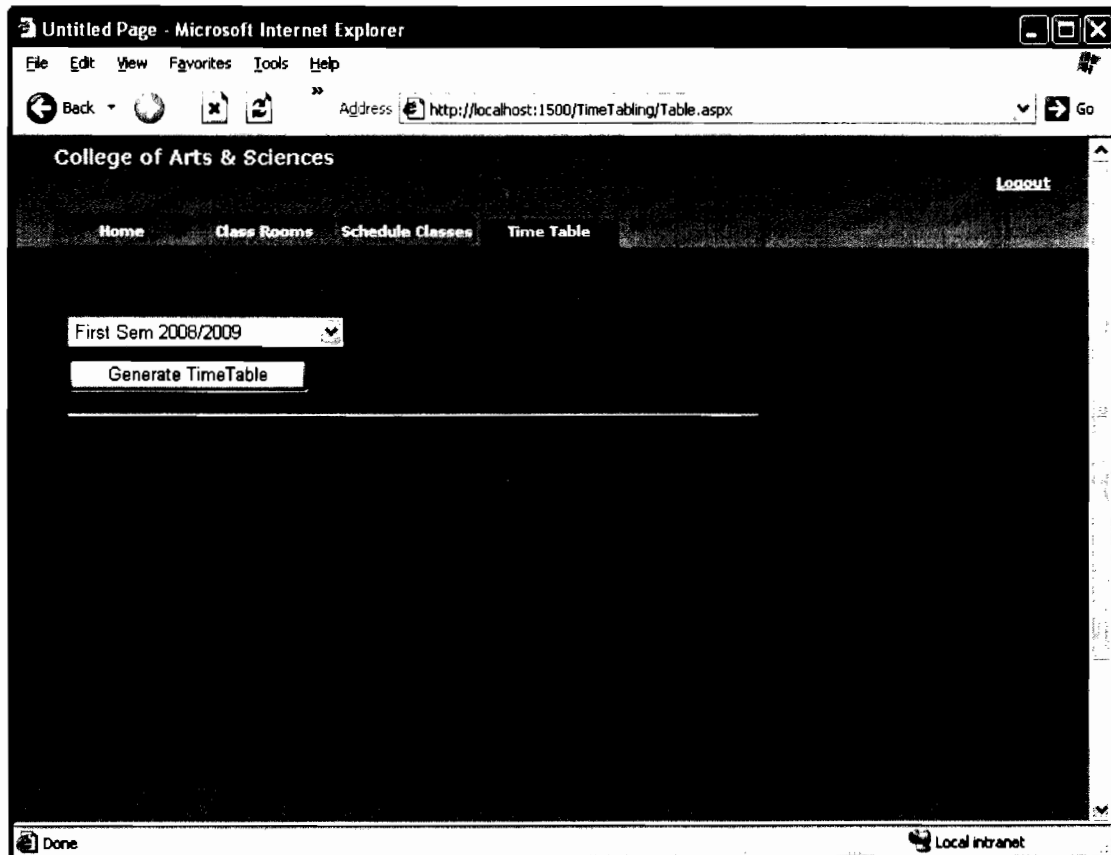


Figure 4.14: Time Table Page

This page is used by the college administration to generate the time table by choosing the semester and clicking the generate time table button the system will automatically generate the time table and display it to the user , the user can finally save the time table to the database as in Figure 4.14.

4.6 Timetabling System Database Design

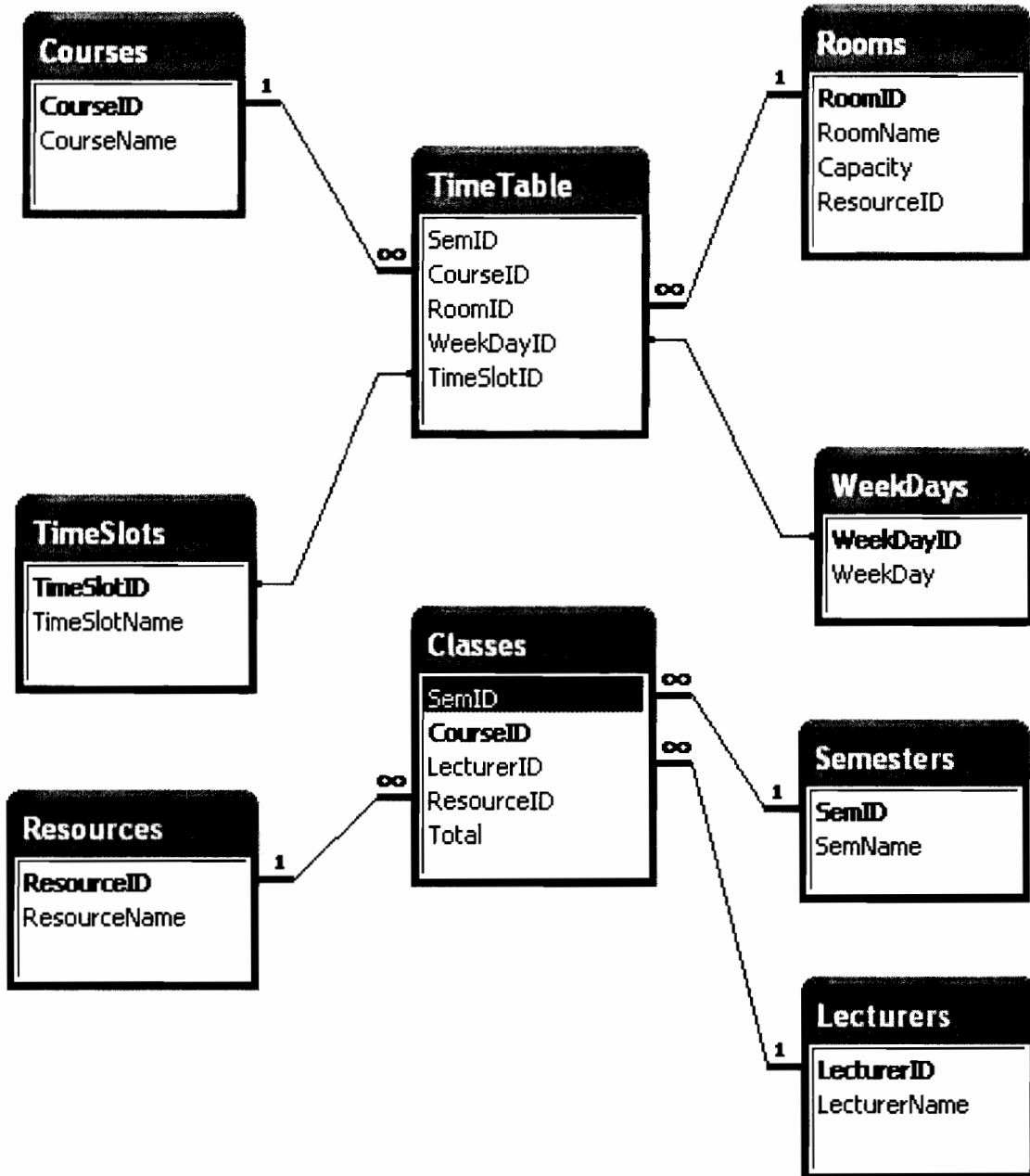


Figure 4.15: Timetabling Database Schema

The database schema shown in Figure is the Timetabling database for storing the class information, room specifications, and the distribution of rooms across the classes as in Figure 4.15.

The database schema shown in Figure reflects the actual hierarchy of the entities in the systems database. The main entities in the schema are the Timetable, Classes, and Rooms, the other tables are used mainly for lookup and login purposes

4.7 Summary

Using the computer-based and web Timetabling system will allow for better interaction between different departments in the college of arts and sciences , graphical representation of data enables both the academic staff and other staff to access the same information about the allocation of class rooms in the college in a seamless way and elevating a lot of efforts from the communication process between the involved parties, and allow the college administration to focus on giving the right distribution of rooms rather than looking after other details.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1. Introduction

The conclusion chapter presents a review of the study's whole design and development activities included. This includes problems and limitations encountered during the development of this project. Finally, this chapter will be ended with possible directions for future work related to the project.

5.2. Conclusion

A web-based timetabling prototype was developed for College of Arts and Sciences of UUM in order to save time and effort for CAS staff in producing classes time tables every new semester and to make that difficult task easier and push up its performance since this task incorporates many variables to deal with and it usually faces many conflicts in time or locations of the classes.

Implementing this prototype in CAS will return in many benefits for both the CAS staff management and academicians in one part and the students in the other part since they will have no problems during courses registration regarding time conflict or classes' capacity and other usual registration problems they face each semester. In addition the managerial staff will not face the usual problems of preparing the timetables for each semester and will stop receiving students complains about courses registration.

However some work and studies still need to be done to this system as described in the recommendations section in order to make the system reliable, up to date and converting the timetabling and classes scheduling process to a fully automated process by the system and to ensure the consistency of the data across all UUM related departments' databases.

5.3. Problems and Limitations

This study has achieved its proposed objectives of building a web-based system for CAS timetabling. However, some problems and limitations revealed during and earlier to the development of the model as follow:

- This study handled the timetabling problem of CAS by generating the classes' timetable based on two variants only which are the class rooms' requirements of each class and based on the time line so it makes sure that no time or room conflict between the classes.

- The solution of this study is not dealing with the lecturers' allocation for courses since it takes it as requirement for generating the time tables. So in order to generate the time table the lecturers of the courses must be provided manually.
- The prototype's database is built using Microsoft Office Access 2003 so it may encounter some limitations during the deployment and real testing such as the security issues and the performance which not appear during the development.
- The prototype's database is a stand alone one and is not integrated with the UUM databases like the postgraduate school database and registration department that are already exist and this requires ensuring about the data consistency when storing or retrieving any data or performing any registration transaction.

5.4. Recommendations

Throughout the design and development of this prototype, several issues about its design and development were exposed. Future design and development in the same field of this study should take in their considerations the following recommendations and guidelines:

- This prototype should be developed farther to include in its variables list the lecturers' timetables so building the classes schedule or timetable should be based on four variables which are the rooms availability at all the classes timeslots, the resources required by each class must be available in the room booked for it, the classes timetable should has no time conflict between the

classes and last building the timetable must take in consideration the timetable of each lecturer and his availability time to give the lecture or not.

- Another important development can be done to this prototype is to integrate it with an expert system for allocating the lecturers to the courses based on their qualifications, area of specialization and their experience in teaching the course. After this integration the system will be full automated and the CAS managerial staff needs to do nothing but get the timetable ready for publishing.
- Another important consideration for future development and projects is to integrate this prototype database with the related university databases such as the Registration department and the postgraduate school to ensure the consistency of the data stored and retrieved from the system database and to make sure it's always up to date and to make the system more reliable.

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