

Fall 12-1-2013

M-Learning Android Application

Krishna Mohan Rao Dontineni Venkata
Dakota State University

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M-LEARNING ANDROID APPLICATION

A graduate project submitted to Dakota State University in partial fulfillment of the requirements for the degree of

Master of Science

in

Information Systems

December, 2013

By

Krishna Mohan Rao Dontineni Venkata

Project Committee:

Dr. Ronghua Shan

Dr. William Figg

Zixing Shen



PROJECT APPROVAL FORM

We certify that we have read this project and that, in our opinion, it is satisfactory in scope and quality as a project for the degree of Master of Science in Information Systems.

Student Name: Krishna Mohan Rao Dontineni Venkata

Master's Project Title: M-Learning Android Application

Faculty supervisor: Ronghua Shan Date: 12/9/13

Committee member: Will J. P. H. Date: 12/9/2013

Committee member: [Signature] Date: 12/9/2013

ACKNOWLEDGMENT

I would like to express my gratitude to all the people behind the screen who have helped me transform idea into a real time application.

I would like to express my heart-felt gratitude to my parents without whom I would not have been privileged to achieve and fulfill my dreams. A special thanks to founding members of **Dakota State University** for establishing such an esteemed university. I am also grateful to president of Dakota State University **Dr. David B. Borofsky** who most ably run the institution and has had the major hand in enabling me to do my project.

I profoundly thank **Prof. Dr. Ronghua Shan**, Associate professor at Dakota State University who is my project supervisor, who has been an excellent guide and also a great source of inspiration to my work.

I am very thankful to **Prof. Zixing Shen** who helped me in developing my IEEE paper writing skills and **Prof. Surendra Sarnikar** who helped me in developing my programming skills when I was working as graduate assistant at DSU. I would also like to thank **Prof. William Figg** for helping me in my plan of study, with which I finished my Master's in short span of time.

The satisfaction and euphoria that accompany the successful completion of the task would be great, but incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crown all the efforts with success. In this context, I would like to thank all the other staff members; both teaching and nonteaching who have extended their timely help and eased my task.

Krishna Dontineni (7121322)

ABSTRACT

1. INTRODUCTION

M-Learning is a mobile application which is developed for Android mobile Operating System. Android is nothing but a stack of software's for mobile devices which consists of applications, middleware and operating system. To start developing applications for android powered mobile devices we need tools and APIs, which are provided by the Android SDK. I used core java for developing the server part (back end) of the project. For storing all the user details and videos I used MySQL database. By using M-Learning application a registered user can access all the videos in the database at free of cost. User can also give rate and write reviews for the videos which are stored in database and they can be seen by all the users.

1.1 PURPOSE OF THE PROJECT

My main purpose of the project is to create an application through which users (mostly students) will have access to all the videos and sessions from an android powered device to learn and update their educational concepts. Today there are other applications which can be used for learning skills, they are owned by a particular organization and change subscription fees yearly or monthly.

I concentrated mainly on students who cannot afford that huge amount of subscription fee and developed this project which is a free application and can be downloaded from android mobile at free of cost. And also all the video sessions in the application can be accessed by the user for free, all the user needs to do is just register.

1.2 PROBLEMS IN EXISTING SYSTEM

Due to thrive of mobile network and portable device, distance learning is evolved from desktop computer to mobile device. Currently there is no application which provides academic educational access to the user for free.

There are many existing applications which are being used by many people. Many of which have serious flaws and inefficiencies for sharing of knowledge among huge number of users at a time. For example, when a few tens of clients are connected to the server then the Server freezes and subsequently many connections are dropped.

There is another security issue that is to be noted that current application has been developed using the latest technologies in the market like android and core java which reduces the complexity and improves the visibility and adaptability. The whole process of sharing of videos is kept confidential and stored in the database which can be viewed by only registered users.

Disadvantages of Current System

The current system is very time consuming. It is very difficult to analyze the updates manually. Usually the information known to a person cannot be shared with all his fellow mates. Since the system is highly complex it can't be understood easily.

The security levels are also poor and there is no privacy for the user's personal details and profiles. Also most of the features visible on the screen over the page are vague and once clicked leads to tiresome tasks which consumes hours of time easily.

1.3 PROPOSED SYSTEM

So as to overcome the disadvantages of the currently existing systems a new system was proposed which shuns most of the drawbacks. As android and java code is simple and small in size, there will not be any problem such as server break down even for a large number of user requests.

As my application can be accessed by the registered users only leakage of information is minimal and hence it can be kept confidential. So we can have the maximum protection of data at the database level itself. The main feature of this system is the highly enhanced visibility, user friendly interface, reduced complexity, greater levels of security, faster and proper access, no server breakdowns.

User will have access to video learning through this application. This application enhances users in self-directed learning which increases motivation and personal commitment to learning and encourages responsibility.

Characteristics of the proposed system

The application is created for sharing of knowledge has following features:

- In comparison to the present system the proposed system will be less time consuming and is more efficient.
- Video sharing will be very easy in proposed system.
- Updates will be very precise and accurately delivered to the defined user.
- The proposed system is very secure as no chances of leakage of information are dependent on the administrator only.
- The logs of users and their profiles are stored and can be backup for future use.

1.4 SCOPE OF THE PROJECT

To create an android application through which users can have or gain access to multiple technical concept videos by connecting to server from any android powered mobile device. To provide good and innovative form of knowledge sharing by which will handle a large number of users, who are interacting at a time. It also aims at providing a user friendly interface to the users as well as administrators.

The purpose of such endeavor was to design and develop a robust, fault tolerant, secure and scalable and an adaptive system through which knowledge sharing can be done at ease. This project assesses users by sharing the views with others. The knowledge sharing would be highly customizable. This project will enable users in gaining knowledge and learning new technologies. It will enable students to update the user with the latest technologies and it also allows students in completing projects or assignments.

2. SOFTWARE REQUIREMENT SPECIFICATIONS

2.1. REQUIREMENTS SPECIFICATION DOCUMENT:

According to Roger Pressman in Software Engineering: A Practitioner's Approach (McGraw-Hill Publications) [SEPA-1997], the requirement specification document is produced at the end of Analysis of the system. This document is a very comprehensive document & contains all the User requirements & Analysis diagrams.

There are types of requirements namely:

Functional requirements

Non-functional requirements

2.1.1. FUNCTIONAL REQUIREMENTS

Creating a User Interface using Android through which M-Learning Application is demonstrated. The process involves displaying the list of session, video sessions. Whenever user selects any of the session, the application fetches the data from Server.

2.1.2. NON-FUNCTIONAL REQUIREMENTS:

The non-functional requirements consist of:

Analysis and Design

2.1.2.1 ANALYSIS AND DESIGN:

The Analysis of the system is done in each and every phase.

Designs are developed by using Android which includes the user interface, which consists of buttons, textviews, edittexts, etc.,

2.2 SOFTWARE REQUIREMENTS

- ✓ Core Java
- ✓ Android SDK
- ✓ OS 2.0 .2.1,2.2,2.3.1,3.0,3.1
- ✓ Eclipse Galileo
- ✓ MySQL

2.3 HARDWARE REQUIREMENTS

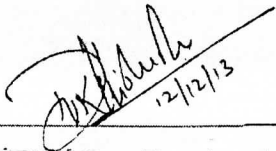
PROCESSOR : Pentium IV 1GHz Speed
HARD DISK : 80 GB
RAM : 1 GB

DECLARATION

I hereby certify that this project constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

I declare that the project describes original work that has not previously been presented for the award of any other degree of any institution.

Signed,



Krishna Mohan Rao Dontineni Venkata

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CHAPTER 1

INTRODUCTION

1. Purpose

The purpose of the project is to create an application M-learning which helps students to learn educational concepts through video session using Mobile Phone.

1.1 Product Scope

To create an android application which connects to the server from an android mobile and users can gain access to all the videos from mobile.

1.2 References

- The Unified Modelling Language Users guide
By Grady Booch
- Software Engineering, A practitioners approach
By Roger S Pressman
- Software Project Management
By Walker Royce
- The applicable IEEE standards as published in 'IEEE standards collection, for the preparation of SRS'.
- Backup policy, Naming Conventions as per Teleparadigm Conventions.

2. Overall Description

M-learning helps students to learn educational concepts using Mobile phone. Users can learn latest technologies from the files which are stored in the server. This application supports different file formats for audio & video files.

2.1 Product Perspective

Existing System:

Due to thrive of mobile network and portable device, distance learning is evolved from desktop computer to mobile device.

Presently there is no application which provides academic educational access to the user.

Proposed System:

In this application the user has access to video learning.

Through this application users can enhance self-directed learning.

Increases motivation and personal commitment to learning and encourages responsibility

2.2. Product Functions

Analysis

Outputs of all analysis should be in the form of

- a) Sessions are going to be displayed in the form of list.
- b) Fetches the audio, video data from Server.

2.3. User Classes and Characteristics

Following are the characteristics of the intended users:-

Different Categories: Sessions are going to be displayed in the form of list. Which may contains various technologies like Java, Android, and Flex.

3. External Interface Requirements

3.1. User Interfaces

Interface between the software product and its users:

User friendly interfaces as depicted below will be used.

1. Screen formats are required to be created with following features:-

- a) User friendly.

- b) Indicate the Mandatory fields by asterisk (*).
- c) Fill up default values where ever possible
- d) Give combo boxes in all input screens.

3.2 SOFTWARE REQUIREMENTS

- ✓ Core Java
- ✓ Android SDK
- ✓ OS 2.0 .2.1,2.2,2.3.1,3.0,3.1
- ✓ Eclipse Galileo
- ✓ MySQL

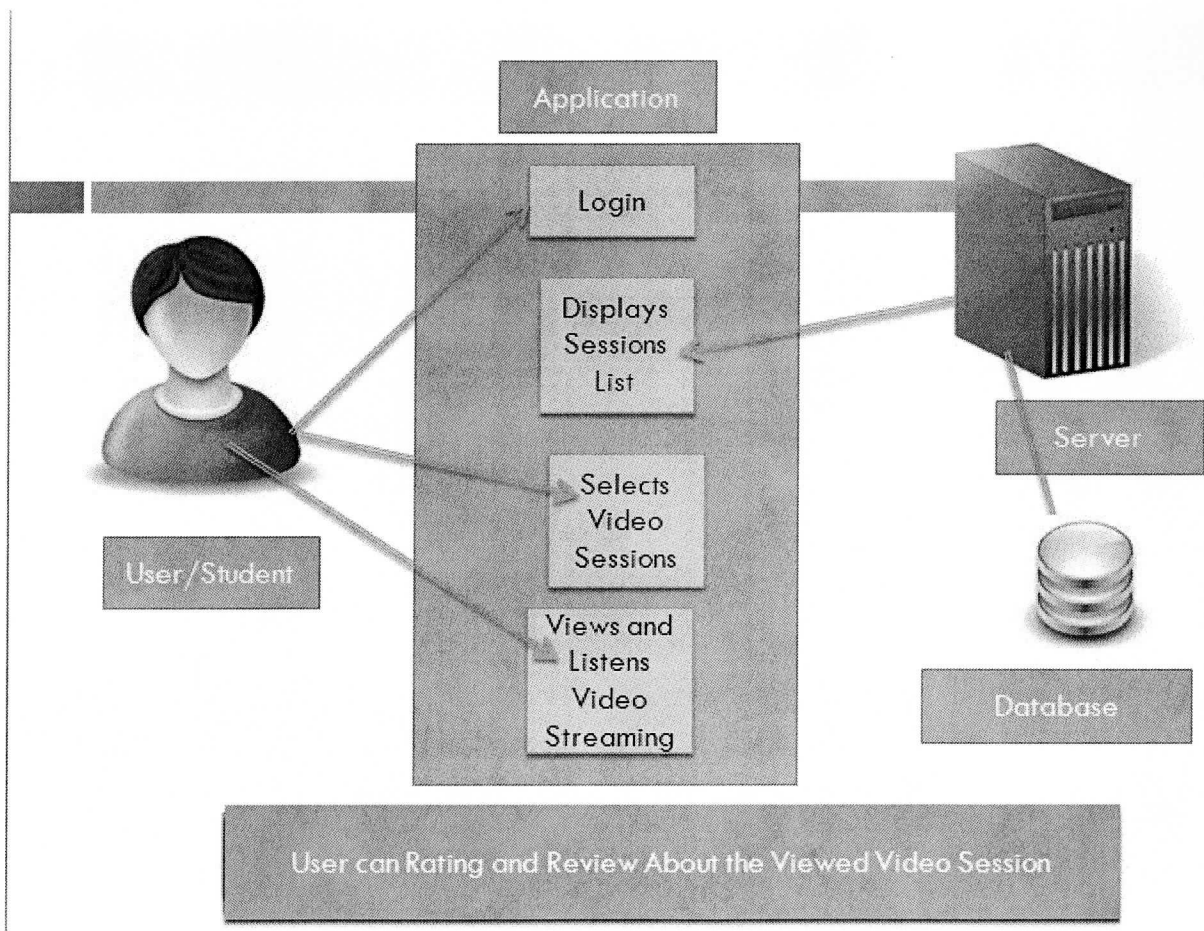
3.3 HARDWARE REQUIREMENTS

PROSESSOR : Pentium IV 1GHz Speed
HARD DISK : 80 GB
RAM : 1 GB

CHAPTER 2

LITERATURE REVIEW

The project “M-Learning Application” is based on Android application which is of three-tier architecture.



MODULES OF THE SYSTEM

1. Module-1 of System Feature 1

1.1 Description and priority

The User/Student needs to enter the username and password in order to login the application. The module-1 has first and high priority

1.2 MODULE-1

In this module user has to create his own account with a unique user name and password and has to log in with the same, here authentication process is going to be implemented.

1.3 Stimulus/Response Sequences

In this stimulus sequences it check whether the user is authentic or not and if the user is authentic it allows the user to enter into the application else if the user is unauthorized then displays an alert stating the user credentials are invalid.

2. Module-2 of System Feature 2

2.1. Description and priority

User/Student select Video session, the application plays the respected session. The module-2 has 2nd and next priority after the module-1.

1. MODULE-2

In this module a video session list is displayed where the user can select particular session and play it.

2.2. Stimulus/Response Sequences

In this stimulus sequence it checks whether the selection is audio or video depending on it, the application select the player and plays the session

3. Module-3 of System Feature 3

3.1. Description and priority

User/Student can give the review and rating about the session which has been viewed. The module-2 has 2nd and next priority after the module-2.

MODULE-3

In this module the user has to give review and rating about the viewed Session and those details should be placed in Database.

3.2. Stimulus/Response Sequence

In this stimulus sequence it saves the review and rating given by user in database.

Nonfunctional Requirements

Unit testing, System testing will be done for integrity check and reliability check.

Maintainability:

All the user interfaces are different so all the modules must be developed separately in through effective and thoughtful software engineering in the future. To ensure maintainability of the product throughout its life time all steps of the software development process will be well documented.

Performance:

To ensure the system with comparatively high performance care is taken for response time, utilization and through put behavior of the system.

Usability:

The ease of use and training the end users of the system is usability. System should have qualities like- learning ability, efficiency, affect, control. The main aim of the project is to increase the scope of page designer to design a page and to reduce the rework of the programmer.

Modifiability:

The ease with which a software system can accommodate changes to its software is modifiability. To withstand the needs of the users changes are useful for the application and my project is easily adaptable for the changes.

Portability:

The system is able to run under different computing environments. The environment types can be either hardware or software, but is usually a combination of two.

Reusability:

The existing application can be reused in new application to extent. Our application can be reused a number of times without any technical difficulties.

Security:

The software is protected from accidental or malicious access, destruction, use, disclosure and modification. Security can be ensured as the project involves authenticating the users.

CHAPTER 3

ANALYSIS AND DESIGN

INTRODUCTION:

System Analysis is first stage according to System Development Life Cycle model. This System Analysis is a process that starts with the analyst. Systems analysts perform system analysis and design and it is used to analyze, design and implement improvements in the functioning of businesses. System analysis and design lends structure to the analysis and design of information systems, it takes the System Specification and designs the architecture of the system. This is done by defining a series of components with what they do and how they interact with other components. These components can be other systems, interfaces, modules of code, screens, databases etc. What is not defined is the detail of how each component will work.

System Analysis Design course at DSU helped me a lot in designing of my project. I designed all the four use cases which made easy for me in developing the project. With the help of use case diagram I came to know the actors and their functions, with class diagram I came to know to the responsibilities and attributes needed for project. While developing the sequence diagram it helped me to know the work flow of the application and collaboration diagram helped me to find the interaction between all the software objects and relationships between them.

Design principles:

- Establish a change-management environment.
- Capture design artifacts in rigorous, model-based notation.
- Use a demonstration-based approach to assess intermediate artifacts.

- Base the process on an architecture-first approach.
- Plan intermediate releases in groups of usage scenarios with evolving levels of detail.
- Establish an iterative life-cycle process that confronts risk early.
- Instrument the process for objective quality control and progress assessment.
- Transition design methods to emphasize component-based development.
- Establish an economically-scalable, configurable process.
- Enhance change freedom through tools that support round-trip engineering.

UML DIAGRAMS

1. **Class Diagram:** It is a collection of objects that shares the common properties and relations. Every representation of a class includes name, attributes and responsibilities

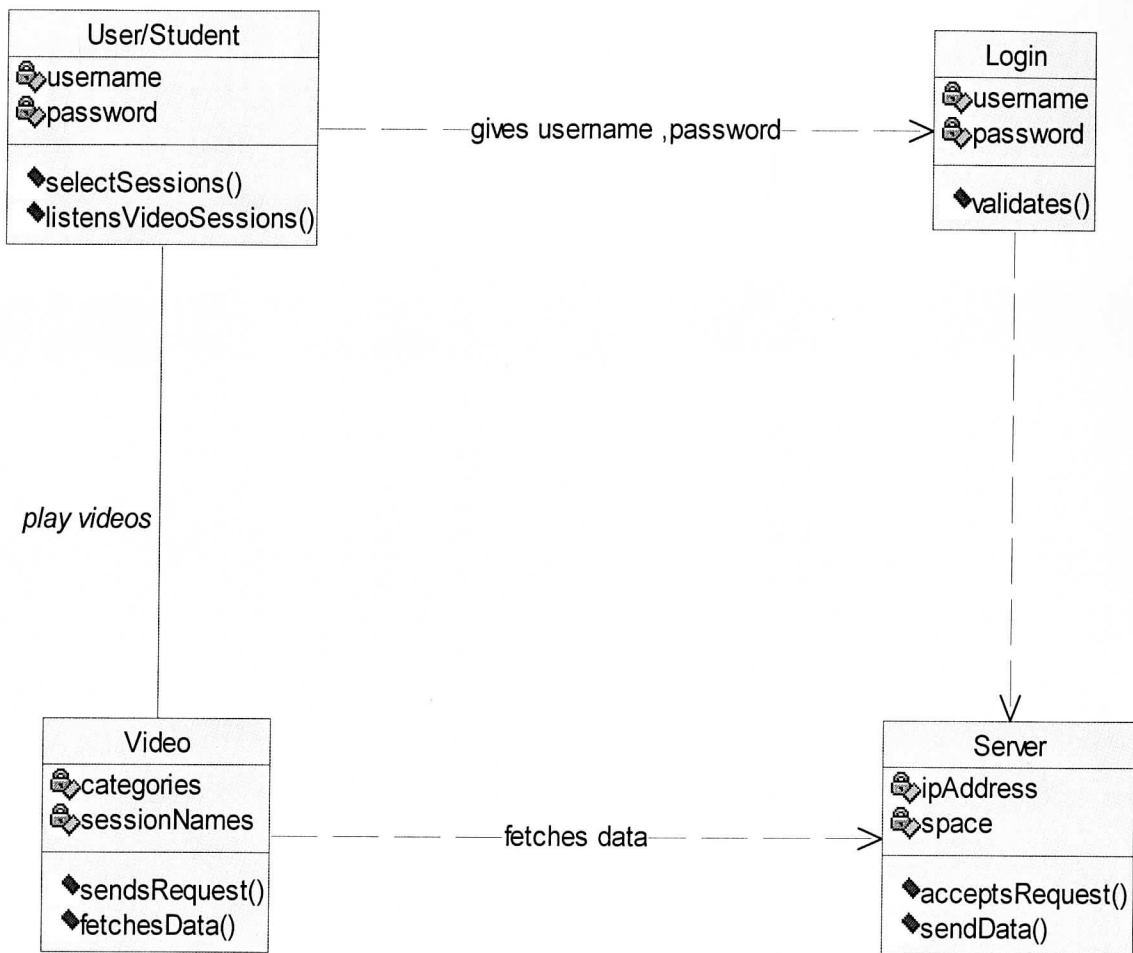


Figure 1. Class Diagram

2. UseCase Diagram

A systems unit of functionality is illustrated by a use case. The use-case diagrams are used to visualize the functional requirements of a system by the development teams. Which includes the "actors" relationship (interaction with the system by human beings) with essential processes, as well as the relationships among different use cases. Groups of use cases are generally shown by use case diagrams, either complete system will have use cases, or it will have related functionality with particular group of use cases (e.g all use cases related security administration). To communicate with the high-level functions of the system's scope and the system a use-case diagram is typically used.

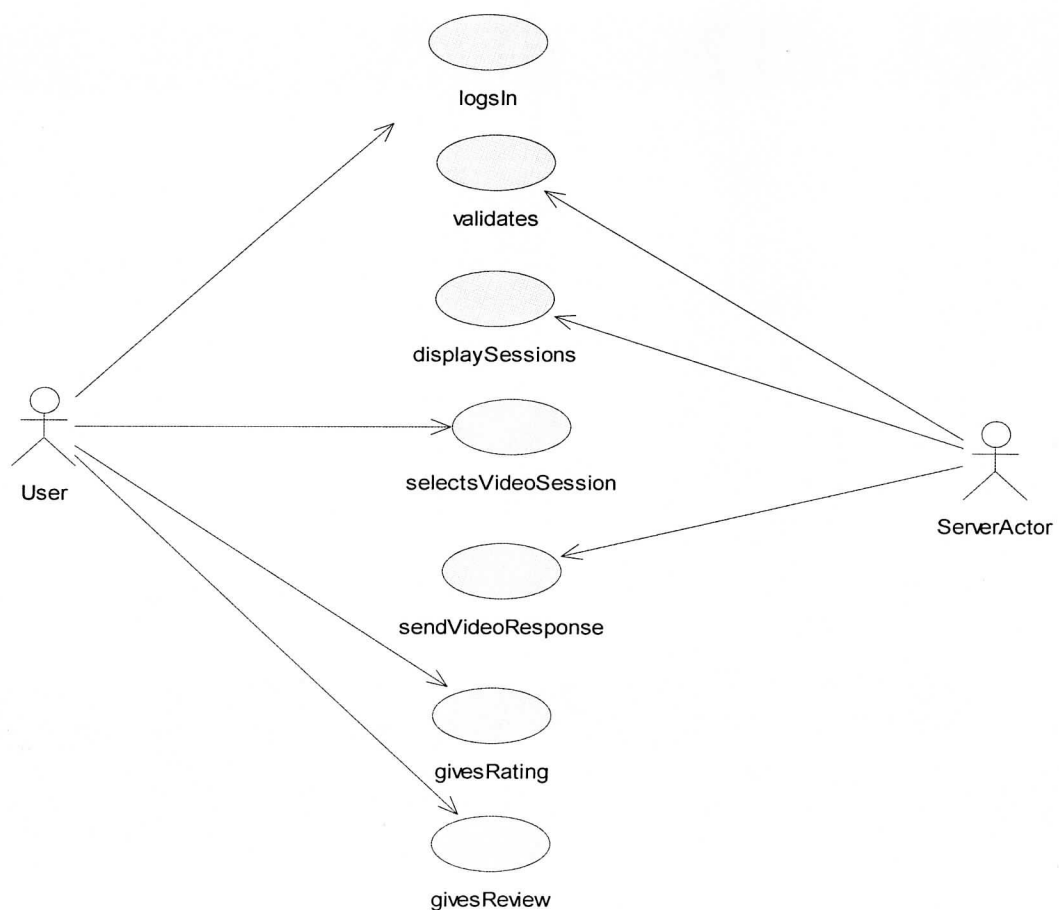


Figure 2. Use Case Diagram

3. Sequence Diagram

Sequence diagrams are almost self explanatory and they are used to show detailed work flow of just part of a specific use case or even a specific use case. Calls between the different calls to different objects and different objects in their sequence and can show at a detailed level are shown by sequence diagrams.

There are two dimensions in a sequence diagram: The messages which are sent to object instances are shown by the horizontal dimension and Messages or calls sequence in the timely order that they occur are shown by vertical dimension.

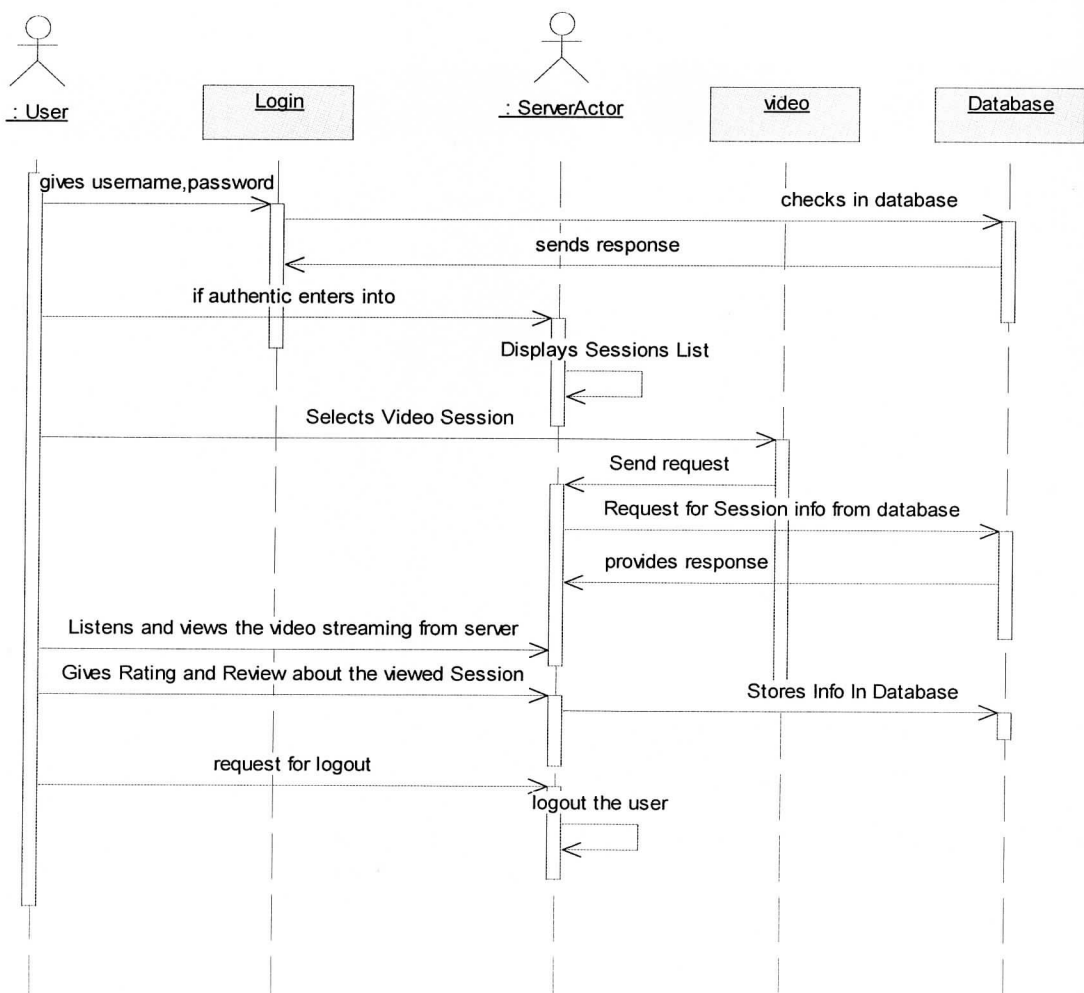


Figure 3. Sequence Diagram

4. Collaboration Diagram

Interaction between all the software objects and the relationships between them are illustrated by collaboration diagram. The messages sent between objects and classes are also illustrated by this diagram. They require domain model, system operation contracts, and use cases to already exist. For each system operation which related to the current development cycle (iteration) a diagram is created.

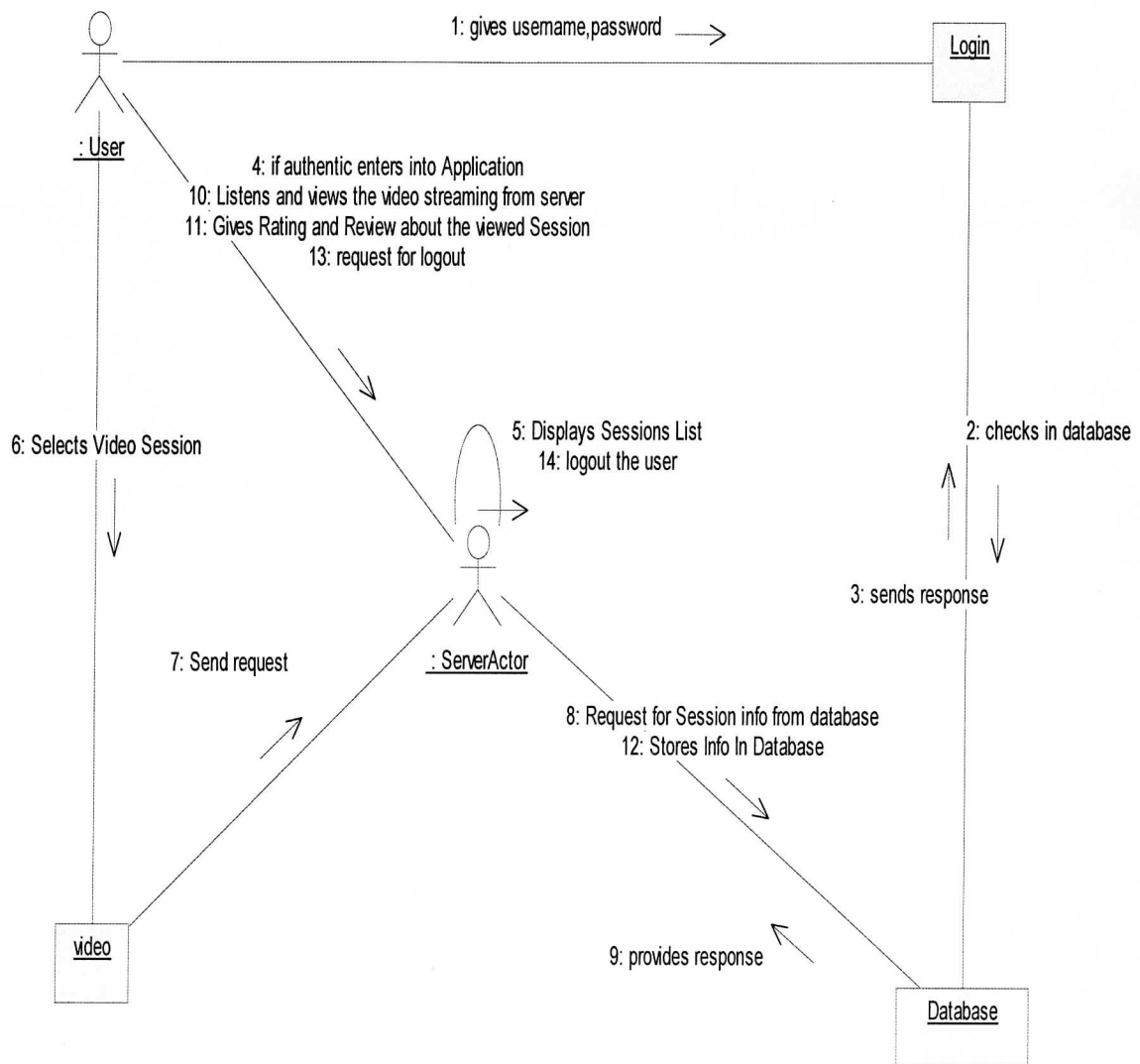


Figure 4. Collaboration Diagram

DATABASE TABLES

According to me database is like heart of this application. So database is needed to be designed so beautifully and with a lot of care. So that it can handle a lot of requests from the users and probability for crashing is very less. To achieve this I created two tables for one for registration and another for review table. The registration table has four attributes in four columns namely sno (serial number), username, password and email Id. Where serial number is integer and the remaining three are variable characters. All the user details used by the user at the time of registration come into this table and at the time of user logon these details are used for authentication. Review table is used for storing all the user reviews which has five attributes namely sno, username, rating, review and sessions name. Here sno and username are same from the registration table and the remaining three attributes are variable characters. All the reviews are stored in this table and displayed when a user requests it.

Table 1: Table Structure

Table Name ▲	Engine	Rows	Data len...	Index le...	Update time
registration	InnoDB	3	16 kB	0 B	
reviewtable	InnoDB	3	16 kB	0 B	

Table 2: Registration Table:

Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comment
sno	INTEGER			<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
username	VARCHAR(45)	<input checked="" type="checkbox"/>		<input type="checkbox"/> BINARY	NULL	
password	VARCHAR(45)	<input checked="" type="checkbox"/>		<input type="checkbox"/> BINARY	NULL	
emailId	VARCHAR(45)	<input checked="" type="checkbox"/>		<input type="checkbox"/> BINARY	NULL	

Table 3: Review Table:

Column Name	Datatype	NOT NULL	AUTO INC	Flags	Default Value	Comment
sno	INTEGER	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> UNSIGNED <input type="checkbox"/> ZEROFILL	NULL	
username	VARCHAR(45)	<input checked="" type="checkbox"/>		<input type="checkbox"/> BINARY	NULL	
rating	VARCHAR(45)	<input checked="" type="checkbox"/>		<input type="checkbox"/> BINARY	NULL	
review	VARCHAR(200)	<input checked="" type="checkbox"/>		<input type="checkbox"/> BINARY	NULL	
sessionname	VARCHAR(45)	<input checked="" type="checkbox"/>		<input type="checkbox"/> BINARY	NULL	

Table 4: Registration Table Data

sno	username	password	emailId
NULL	barath	barath	barath@gmail.com
NULL	sharan	sharan	sharan@gmail.com
NULL	user1	user	user@gmail.com

Table 5: Review Table Data:

sno	username	rating	review	sessionname
3	sharan	3.0	the session covered very imp topic	Android Session
4	sharan	4.0	usefulsession good info	Android Session
5	barath	2.5	nice okay	Android Session

TECNOLOGIES AND PLATFORMS USED

Google developed operating system called Android for the mobile devices. Modified version of Linux kernel, some key applications and middleware are included in android. Android Inc. initially developed the android operating system and later Google purchased the firm. Java is used by the developers for programming code and java libraries are used for controlling the device. Today there are mainly four mobile operating systems they are iOS from Apple, Windows 8 OS from Microsoft, Android from Google and Symbian from Nokia in which Apple iOS and Google Android are leading the market.

Android application framework is object oriented and it is based on java which is used to run all the java applications present in the software stack of android OS. For developing libraries for some of the part of android like the SQLite relational database management system, webkit layout engine, OpenGL ES 2.0 3D graphics API, OpenCore media framework, Bionic libs, SGL graphics engine, the surface manager and SSL C language is used. 12 million lines of code was written to develop the Android OS in which 2.1 million lines of Java, 2.8 million lines of C and 3 million lines of XML. JIT compilation is featured in a dalvik virtual machine to run all the core libraries of java.

Open Handset Alliance

To develop open standards for mobile devices several companies Google, NVidia, T-Mobile, LG, Texas instruments, Samsung, Intel, Broadcom corporation, Sprint Nextel, HTC and Marvell Technology group came together and formed an Open handset Alliance. New 14 companies joined in the android project, companies including Toshiba corp, Softbank, Asustek Computer Inc, ARM Holdings, Vodafone Group Plc., Sony Ericsson, Packet Video and Atheros Communications in 2008 December.

Using the 2.6 version of Linux kernel an android mobile operating was developed by Open Handset Alliance and it was the first product unveiled by Open Handset Alliance after its formation.

Software development kit

A comprehensive set of development tools like tutorials, debugger, documentation, libraries, sample code and QEMU based handset emulator are included in android SDK. Java Development Kit, Python 2.2 or later and Apache Ant are also included in the requirements. Computers running Windows XP or Vista, Linux with any modern desktop Linux distribution, Mac OS X 10.4.8 or later are the development platforms which are supported as of today, this also includes x86-architechture. To build, create and debug Android applications control attached Android devices are used as well as command line tools are also used (e.g., installing software package(s) remotely, triggering a reboot). Eclipse 3.2 or later is the integrated development environment (IDE) which is officially supported using Android Development Tools (ADT) Plugin even though, to edit XML and Java files text editor is used by most of the developers.

On November 12 2007 they released a preview version of the Android software development kit. Accidentally an email was sent to all the people in developer challenge on Android by the team which was conducting the Android Developer Challenge on July 15, 2008 that the newly developed version of the android SDK will be available only for private

download and this was intended to the people who will win the android developer challenge. This resulted in a lot of frustration in the community of the android developers because the newly developed version of SDK was given only for few developers privately by Google.

Android 0.9 SDK beta was released August 18, 2008. Home screen design got updated, API got extended and updated and development tools were improved with this version. Those who were already familiar working with an earlier release a detailed version of instructions were provided for upgrading. And finally the release 1 of android version 1.0 was released on September 23, 2008. Even though some small features were added the main purpose of the update was to fix bugs and several changes were made in the API, this was stated in the release notes.

For all the android dev phones Google released the new 1.1 version on March 09, 2009. The important update was the paid applications which can be accessed by all the dev phones and those are available for all the developers on the android phone. It also had critical updates like alarm clock fixes, mail notification fixes, business reviews shown by maps, Voice search, refreshing intervals, freeze fix Gmail sending and priced applications along with this there are few aesthetic updates.

Cupcake was the name given to version 1.5 by Google and it was released in 2009 middle of the May month. This was one of the major update from Google which had many advanced features like stereo Bluetooth profile, onscreen keyboard system which is customizable, voice recognition and Video recording. With the cupcake update Google also opened a new framework for App Widget through which developers mainly the third party ones can develop new app widgets from anywhere in the world.

One of the backdrops in cupcake update was the battery and to overcome this problem another update was released in 2009 September which was called as Donut and the version was 1.6. With this update Google has provided some features like longer battery with indicator (which shows how much percentage of the battery is left), better search and control

applet for VPN. It also included with new technologies they are gestures & Accessibility framework and text to speech engine, this feature was not available for all the phones.

Generally .apk format is used to store all the android applications and all these packages are stored in a folder named /data/app on the Android OS. Adb root command can be used by the user to access this folder because permissions to access this folder is only given to root.

Native code

Android Native Development Kit is used to install all the libraries written in C language after it is converted into ARM native code. System.loadLibrary call is used by Dalvik VM which runs the java code to call all the Native classes.

Traditional development tools are used for installing and compiling the applications. For uploading and execution of the ARM code is allowed by the android emulator under which ADB debugger has a root shell. Using a standard PC, GCC can be used for compiling the GCCARM code. SGL (Skia Graphics Library) is an open sourced graphic library released by Google to control the device access and also arbitrate. Google chrome is underlain with Skia graphics engine and for allowing the development of cross-platform applications Skia has been backbends for both UNIX and win32. Bionic which is a non-standard C language library is used by android so it is complicated to compile the native code. In android graphics device is available at */dev/graphics/fb0* in the form of a framebuffer.

Linux compatibility

Linux kernel is used in android but the kernel version is not a conventional distributed version, to meet the needs of android Google has tweaked albeit and it was separated from Linux kernel tree. Like its system libraries (GNU C Library) it do not support the set of

standard GNU libraries nor it do not have a native X Window System. Because of this reusing the existing libraries and applications on android is difficult.

Android has been contributed to the Linux kernel so the code is no longer maintained by Google, for separating their code from Linux; effectively the kernel code has branched in the own tree. In January 2010 the code was deleted from the Linux codebase which was no longer maintained. But after that Google has employed few staff for maintain and to continue work with the Linux community.

Community-based firmware

There are many features and customizations which are added to android like storing the downloaded applications on micro SD card and FlacLossLess audio support; these are developed and build by the enthusiastic open source community of android and they share this firmware for free of cost. Rooting the device is the name given to this of firmware installation. By rooting users install the latest firmware on the old phones through users can have access to all the new firmware.

Frequent updates are released for these firmware packages, As the functionality of android is officially not limited any firmware to be carrier sanctioned because of this there are only few limitations in android. One of the famous firmware of such type is Cyanogen Mod.

Google came to know about re-distribution issues of some of the source closed applications of Google by Modder Cyanogen with in the custom firmware and issued a desist and cease letter to the Modder Cyanogen on September 24, 2009 regarding these issues. Everyone knows that android is open source but some of the Google applications like GPS navigation, application store (Google Play) configuration and source cannot be changed which means all the all the android phones must have source-closed Google applications. Later Google has made a decision that licensed distributors can approve some distributed channels and through them these applications can be provided. After receiving a letter from Google, Cyanogen has made few talks with Google and continued to provide Mod to users

without proprietary software. During the mod install process users used lost the licensed Google applications so to overcome this Cyanogen has provided users with a method to back up all those licensed applications at the time of installation and it can be restored after the installation.

Dalvik Virtual Machine (DVM):

All android devices have virtual machine which is called as Dalvik.

Dalvik virtual machine is used to run applications which are which are converted into **.dex** format. The **.dex** is Dalvik Executable files which contain processor speed and memory and this format is very suitable for systems.

Dan Bornstein has written Dalvik and he was named it as Dalvik after a village in Iceland named Eyjafjörður, as his ancestors have lived over there.

Architecture

Architecture of Dalvik is register-based whereas most of the virtual machines are truly based on Java and they are mostly stack machines.

There are continuous arguments and debate on the merit subjects of register based Vm's and stack machine Vm's which is similar to debate between RISC and CICS. Instructions are used for loading data on the stack based machines and to manipulate that data, therefore number of instructions is more are more to implement a high level code when compared with the register based machines. It tends to be larger because destination and source must be encoded in the instructions of a register machine. Opcode dispatch tends to be expensive due to the importance of the virtual machine interpreters and some JIT compilation relevant factors make the primary difference.

For converting into .dex files from java .class files a tool named dx is used, but this is be used to convert only some of the files but not all. In a single .dex file we can include multiple classes. There may be constants and duplicate strings in multiple classes so to conserve space all those are included only once in the .dex output. To make it easy for the Dalvik virtual machine alternate instruction set is given to it by converting the Java byte code. When we compare the file sizes of both .dex and .jar files, .dex file (which is uncompressed) is smaller than the .jar file.

After installing the Dalvik on the android mobile device the executables of the Dalvik may get modified. We can have further more optimizations like we can short circuit the class objects which are empty, by swapping the byte order of certain data, and we can inline link the function libraries and simple data structures for example.

As of Android 2.2, Dalvik has a just-in-time compiler.

We can differentiate Dalvik from all standard virtual machines because there are some extra characteristics to Dalvik. It is also used for optimizing the low memory requirements it also:

- All the useless space is deleted and virtual machine is slimmed.
- To interpreter is to be simplified so all the indexes in the constant pool are modified to 32-bit.
- Dalvik does not use Java byte code it uses its own byte code.

Dalvik was designed in such a way that the virtual machine device can run more than one instances (multiple) efficiently.

Class Library

Java ME and SE class library profiles are not aligned to Dalvik, because Dalvik does not support Swing, java classes ME and AWT. So Dalvik has its own library and uses it for java implementation of apache harmony.

Java Servlet API:

There are many packages in java; two of them are javax.servlet.http and javax.servlet. Generally a java package will have interfaces and classes so as these both packages. The above mentioned packages are used to create and execute servlets. Java servlet API is nothing but combination of the above mentioned two packages which is supplied by sun's JSDK.

Classes which are commonly used are:

- ServletRequest class.
- HttpServletRequest interface.
- ServletResponse interface.
- Http Servlet class.
- HttpServletResponse interface.
- Generic Servlet class

HttpServlet class:

This class is extended by Most of the HTTP servlets. Methods are defined by HttpServlet which can be called by the server whenever it receives a servlet request. GenericServlet has many subclasses and HttpServlet is one of it.

GenericServlet class:

Most non-HTTP servlets extend this class. GenericServlet overrides the service() method that is called by the server whenever a servlet request is received.

Steps to run Servlet:

1. Compile the program using javac command and obtain a .class file. Copy this file to the classes folder in Apache Tomcat.
2. Start the tomcat and this be returned in the background always as long as the servlet is running.
3. Now run the servlet in the browser.

In servlets once you change the values in the file then one must again save and compile and keep the .class file in the classes folder of Apache Tomcat web server.

doGet() and doPost()

doGet() and doPost() methods are identical. The only difference is the request they service. doPost are used for request and doGet() for response instead of the general method service(). The parameters of these specific methods are the same as service() method. The doGet() method handles GET requests (of HTML) and doPost() method handles POST requests(of HTML).

Redirect

Browser gets instructions from header of a HTTP response to request a new url, the instructions which are present in the HTTP response is nothing but a HTTP redirect. Redirect is used in many circumstances and it is a very common phenomenon used in the web.

JDBC

The Java Database connectivity is a set of java classes that provide connectivity to relational databases. We can use JDBC from java programs to access almost every SQL database like Oracle, Sybase, DB2, SQL server, Access and FoxBASE, etc. JDBC drivers are available from javasoft, Borelan/Visigenic, Intersolve, Symantec, and IBM etc., with little effort we can connect to database.

Origin of JDBC

JDBC is a java object oriented interface which is uses to communicate with SQL, most of them think that JDBC is a query language but its not. Power of SQL cannot be diminished or enhanced by using JDBC. To forward all the SQL statements to DBMX JDBC is used by the applications. One can consider JDBC as a Java SQL wrapper. To perform database updates and queries we can write java program with SQL statements. For submitting all the SQL statements, JDBC is just a mechanism which helps to do it. Rolling back transactions, retrieving query results, committing transactions, connecting to a database etc. these type of manipulations can be easily handled by JDC.

Call level interface X/Open SQL is used as a base for JDBC, ODBC interface of Microsoft is also developed on the same base. Call level interface is just a procedural interface to SQL.

JDBC Drivers

JDBC drivers are present on top of the native interface of DBMS, these drivers are ODBC bridged or they are bridged directly. For example, Oracle 7.X drivers using ODBC are provided to Symantec. For DB2 native JDBC drivers are provided by IBM so that there are no direct means, which is in between database and the JDBC program there will be no transactions. This will be faster and used in real-time environment.

On the ODBC drivers which are already existing bridge drivers are also built to contrast the direct drivers. After creating the ODBC then JDBC is created, therefore in between these two protocols there will be a translation. Due to this there will be a slow communication for this type of drivers. There will may translations between various ODBC and JDBC drivers so make them easier bridge drivers are provided by Intersolve and JavaSoft from JDBC to ODBC. Because of this portable across multi-vendor DBMS is guaranteed by the JDBC applications. This states that all the JDBC programs written are database independent and platform independent.

Java has many inbuilt packages and one of them is java.sql package. For writing a JDBC program we need some Interfaces and classes and these are present in the java.sql package, jdk software will supply us the java.sql package. For implementation of Interfaces and class present in the java.sql package are provided by JDBC drivers and these drivers must provide required protection for synchronization, accordingly it take responsibility for transaction reliability maintaining too.

Java Database Connectivity (JDBC)

JDBC is a set of interfaces and classes used for the purpose of connecting applications to a database, if the applications are developed in Java language. To get a connection with the database, a Driver, which is the implementation of JDBC API loaded. This driver is used to create a Statement, which is an object used to execute SQL queries. Result of a statement is stored as ResultSet.

My SQL

It has 11 million installations and counting, generally it is a RDBMS. It means relational database management system. To provide all the users to access the databases My SQL runs as a server.

MySQLAB a Swedish company owned the copyrights of codebase of My SQL but now Sun Microsystems is providing subsidiary for this company. General public license has some terms and under these specified terms source code of the project is available and also for different proprietary agreements. Generally people call it as My Sequel rather than My SQL. Earlier sequel was a predecessor of SWL language and a database language of IBM.

For most of the web applications popularly used database MySQL because it acts as a component for platforms like MAMP, LAMP, WAMP SAMP and BAMP platforms which includes windows, Mac, Linux, Solaris, BSD, Python, Perl, Apache and also for tools like bugzilla (used for bug tracking). Generally PHP is famous for developing web applications and MySQL is combined with PHP for all the web applications with high traffic. Google, Facebook, YouTube and Wikipedia are the examples of high traffic websites which use MySQL for user logging and storing data.

The My SQL Administrator in Linux

C++ and C languages were used for developing My SQL. To open a VMS a port is also available in MySQL. It works efficiently with many platforms like Symbian, Microsoft windows, SCO open server, eCom station, Solaris, SCO Unix Ware, HP-UX, Linux, Novell NetWare, Open BSD, SunOS, Mac OS, BSDi, OS/2 wrap, Free BSD, Tru64, AIX and Sanos.

For all the programming languages My SQL database libraries are available and that too with specific language API's. ANSI C++ and ANSI C are used to developing official libraries and also My SQL server. To support the additional programming languages like ColdFusion or ASP.net a interface called My ODBC, this interface allows to communicate with My SQL database.

The included command line tool can be used for administration of My SQL. Generally the command line tool is already included if it is not available we can download the GUI from

My SQL website. GUI's that are needed to be downloaded are MY SQL query browser and My SQL Administrator. These both GUI tools are present in a same package named tools/5.0.html My SQL GUI tools.

Integrated development environment:

An integrated design environment is a software application which usually called as integrated development environment (IDE) provides computer programmers with comprehensive facilities for developing the application or any software. Normally an IDE has:

- Build Automation Tools
- Source code editor
- Debugger
- Interpreter or/and Compiler

CHAPTER 4

INTEGRATION AND TESTING

INTRODUCTION:

In any mobile or computer based application development the next phase is testing. Usually development of the applications takes lesser time than the time taken for testing that application. Because testing is a time consuming process as it involves a lot of steps. The individual or the company only knows whether the developed application has met all the user requirements or not because of the testing phase.

Testing methods I applied for the project are as following:

INTEGRATION

Integration is all about combining the individual parts of the system and making the system into a single unit. Here in this “M-Learning Application” we are combining the modules i.e., User interface with the database

SOURCE CODE TESTING:

Logic of the system can be examined using this testing process, if the user is getting the output which he needs then the logic used for developing this application is correct.

SPECIFICATION TESTING:

Name itself describes that this testing method is used to determine what all that are need to be performed and programmed by the application. This testing helps us in studying the system requirements and performance evolution.

MODULE LEVEL TESTING:

In this the error will be found at each individual module, it encourages the programmer to find and rectify the errors without affecting the other modules.

UNIT TESTING:

In this testing the software is divided into small unit modules and verified. All the unit modules have boundaries and testing is done on the boundaries to make sure they operate properly. To make sure that integrity is maintained for the temporarily stored data examination is done on the local data structure during the algorithms execution.

INTEGRATION TESTING:

An interface is used for testing the data. There will be an adverse and inadvertent effect of one module on another. With integration testing we can conduct tests to recognize the errors associated with interring and parallel we can develop a systematic technique for constructing a program structure.

COMPILATION TEST:

When high transaction volumes are exposed to these components then there is a probability for occurrence of stability problems and deadlocks which are unexpected, so it will be good if we do this testing very early and then we have time to fix them.

EXECUTION TEST:

This program was successfully loaded and executed. Because of good programming there were no execution errors. The complete performance of the project "M-Learning Application" was good.

OUTPUT TEST:

The successful output screens are placed in the output screens section above with brief explanation about each screen.

PERFORMANCE TESTING:

For testing the performance runtime of an application in an integrated system this testing method can be used. Commonly stress test is also done with performance testing because software instrumentation is required for both test methods.

BLACKBOX TESTING:

Software functional requirement is mainly focused in black- box testing. Sets of input conditions are derived which is enabled by blackbox testing and the program functional requirements are fully exercised by that input conditions.

Black box testing is used to find errors of below category:

- Errors in data structures or external database access and performance errors.
- Incorrect or missing function
- Interface errors

USER ACCEPTANCE TESTING:

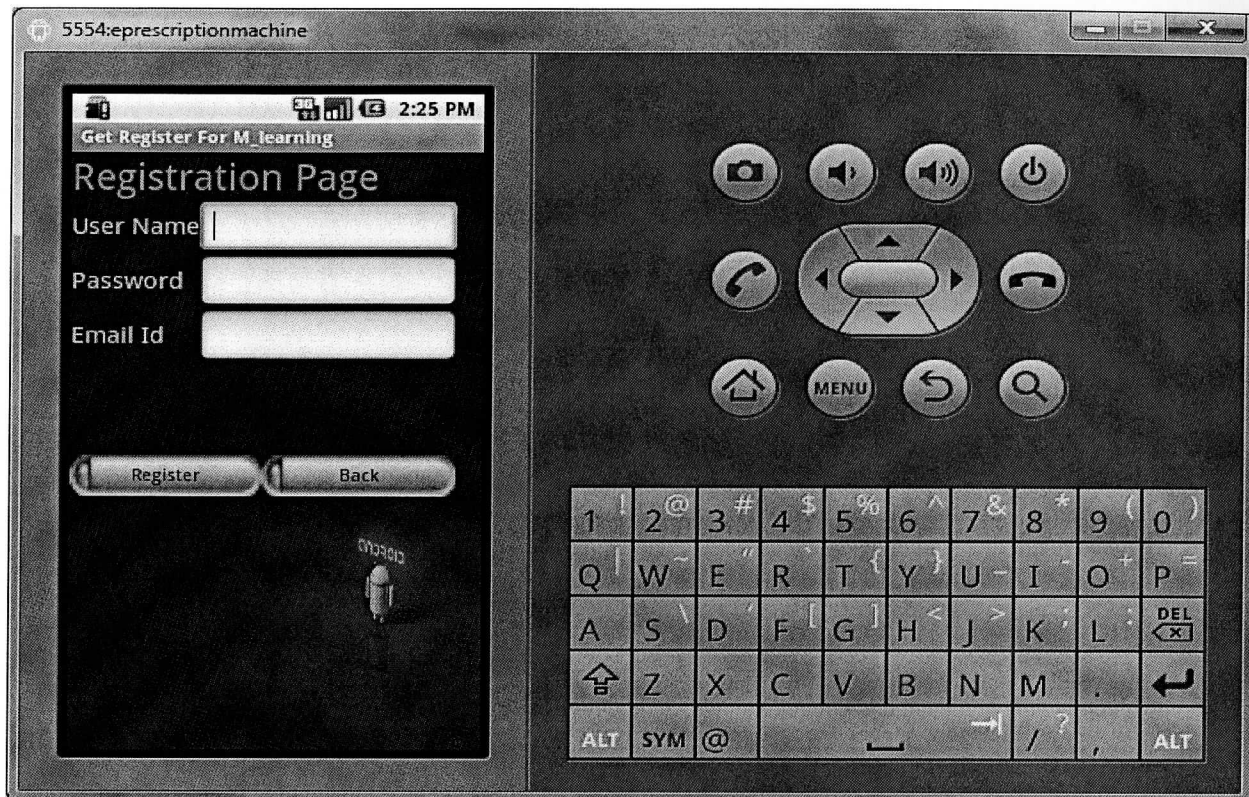
Key factor for success of any system user acceptance is testing. The system is tested for user acceptance under consideration, so at the time of development prospective systems are kept in touch constantly if any required changes are to be made.

OUTPUT SCREENS

1. Login Screen



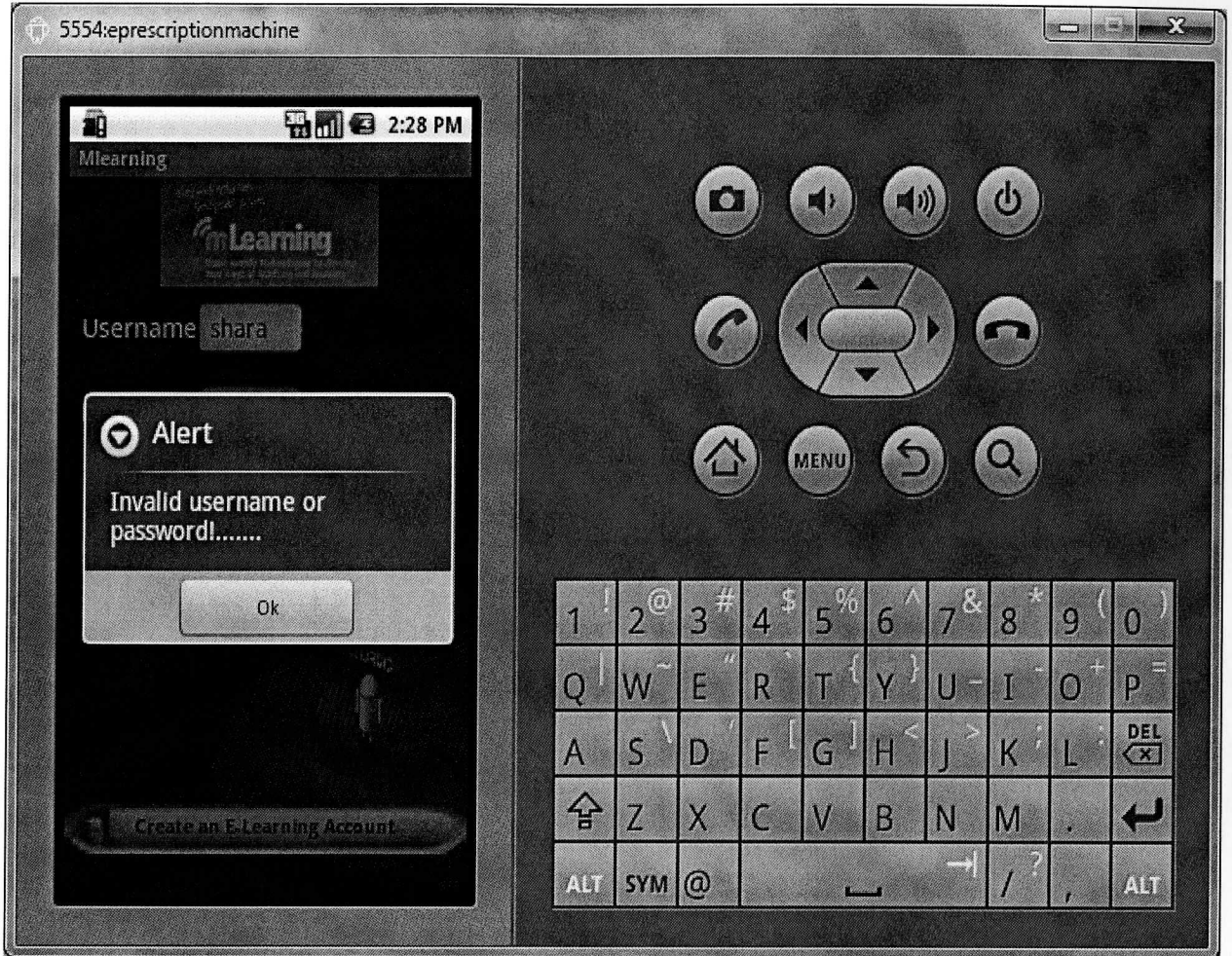
2. Registration Screen



3. Checking whether Username and Password fields are empty or not

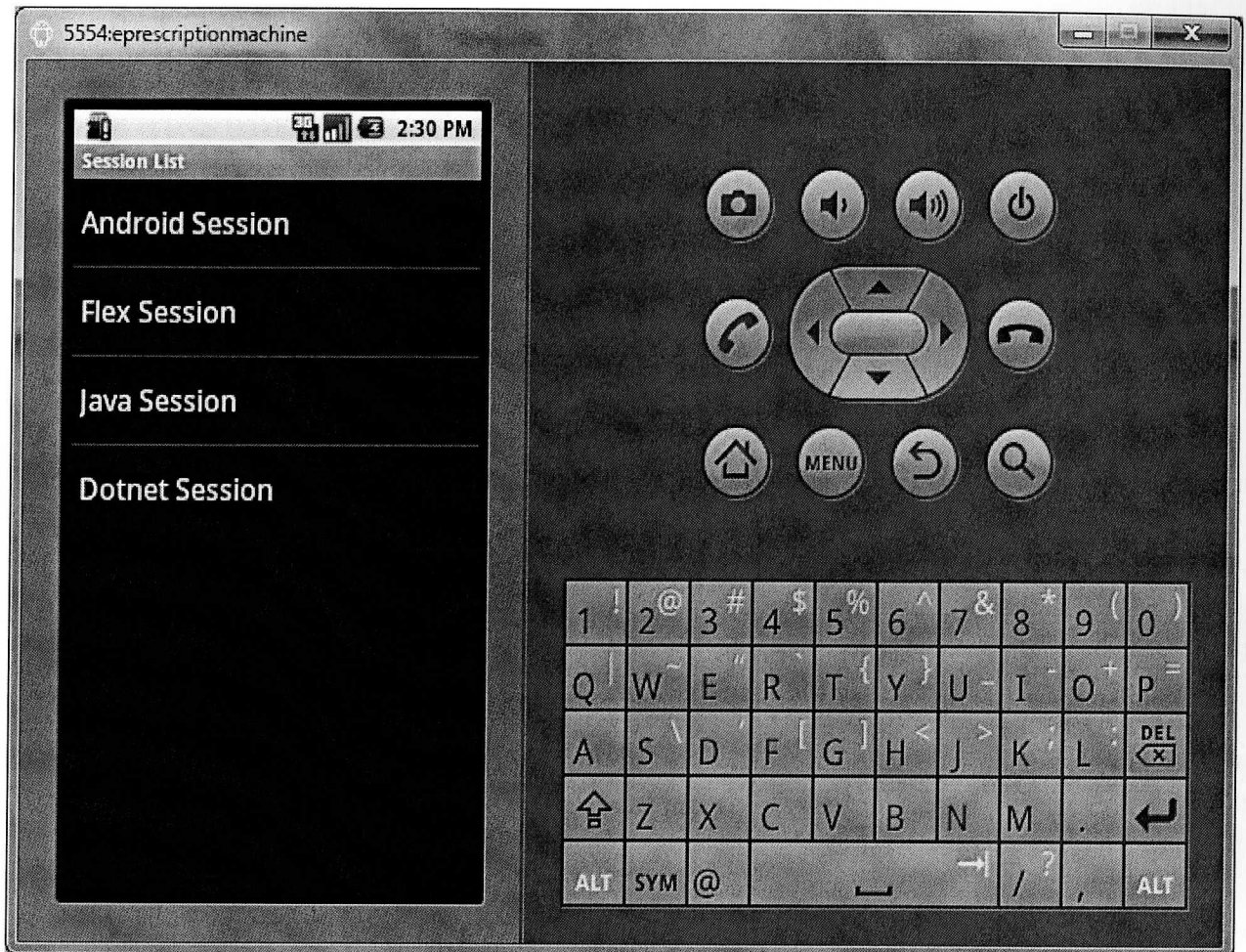


4. If user is invalid



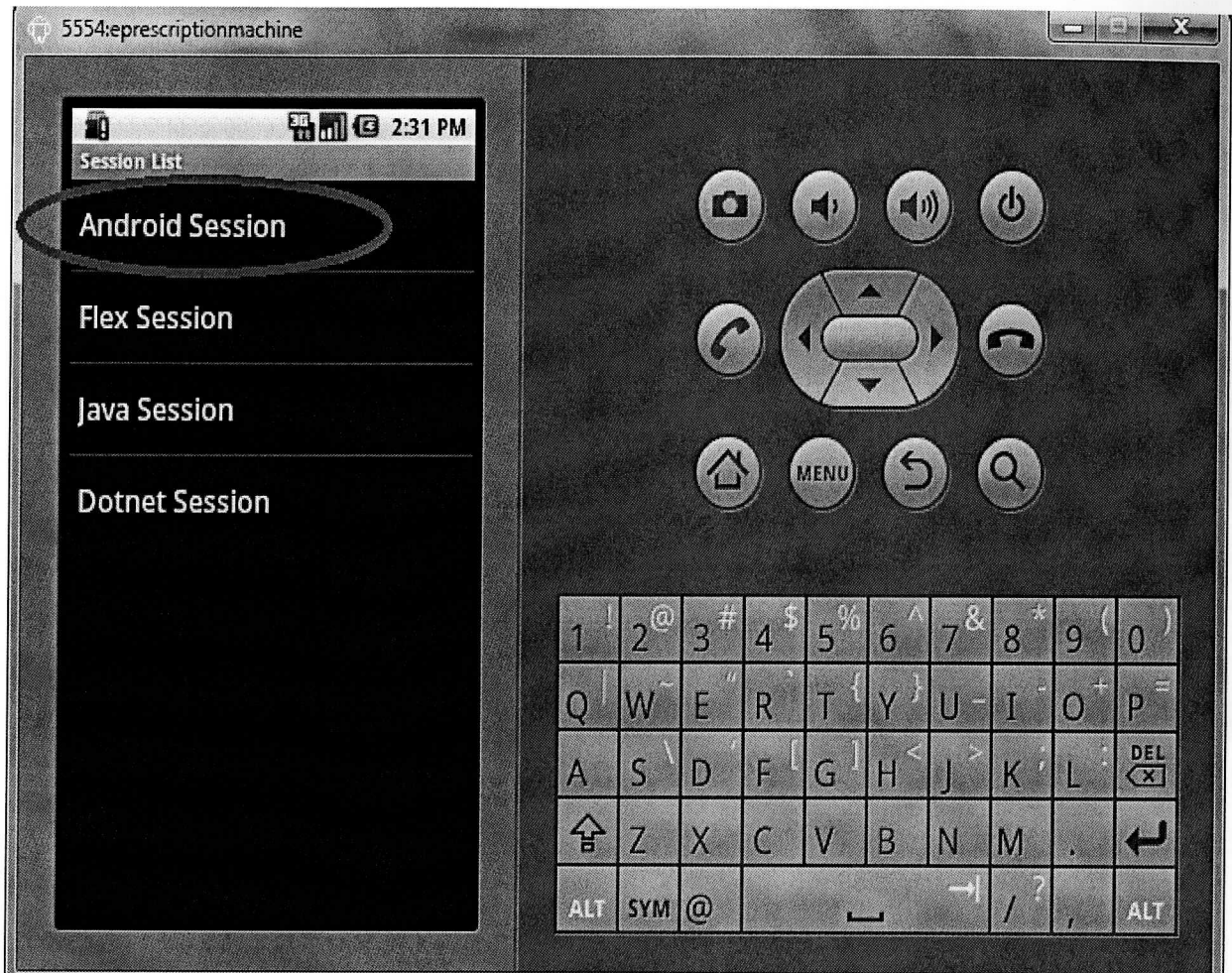
5. Home Screen

Displaying the Session Details:

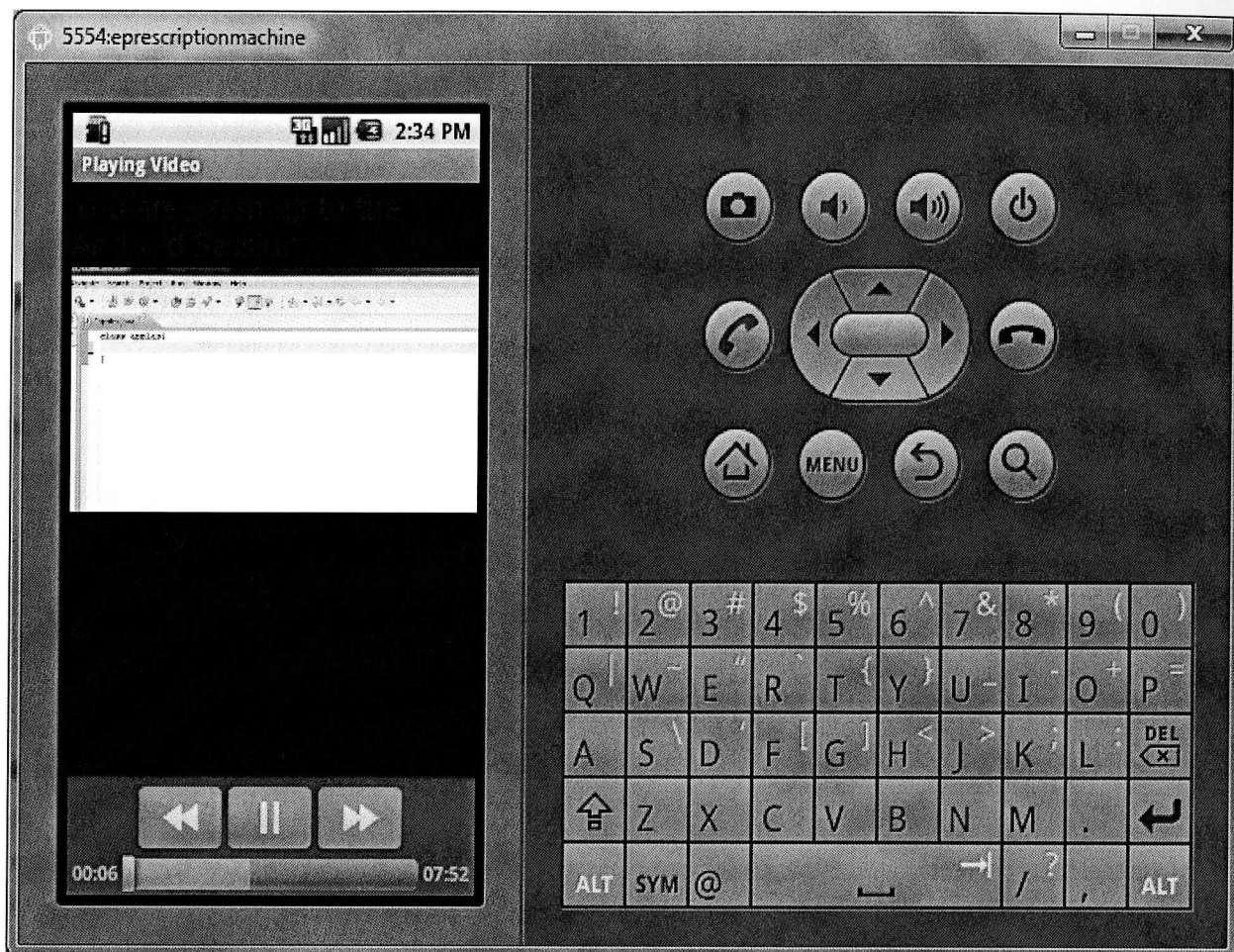


6. Playing Video:

Should select any one of the session from the list: Here Selecting Android

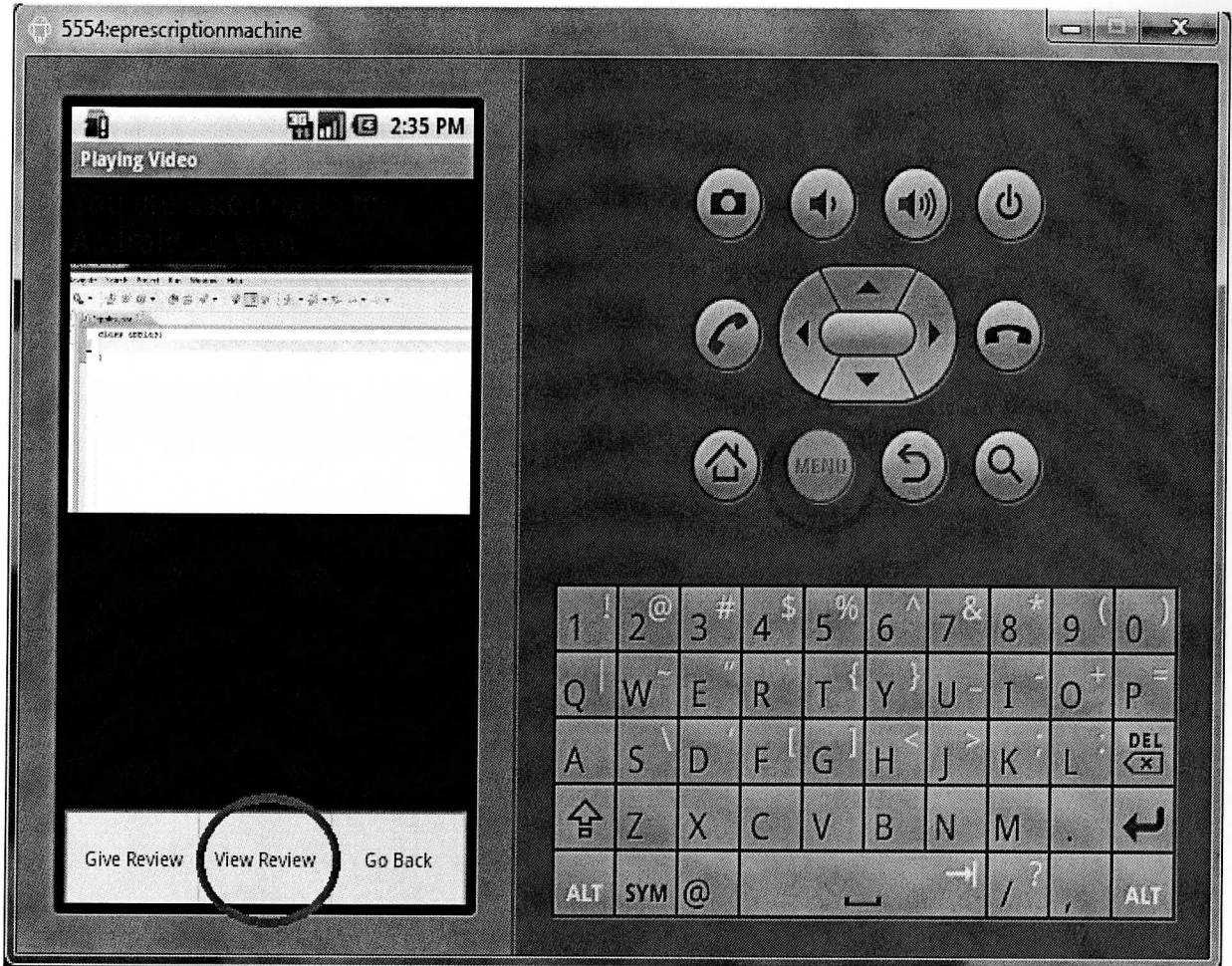


7. Video Screen



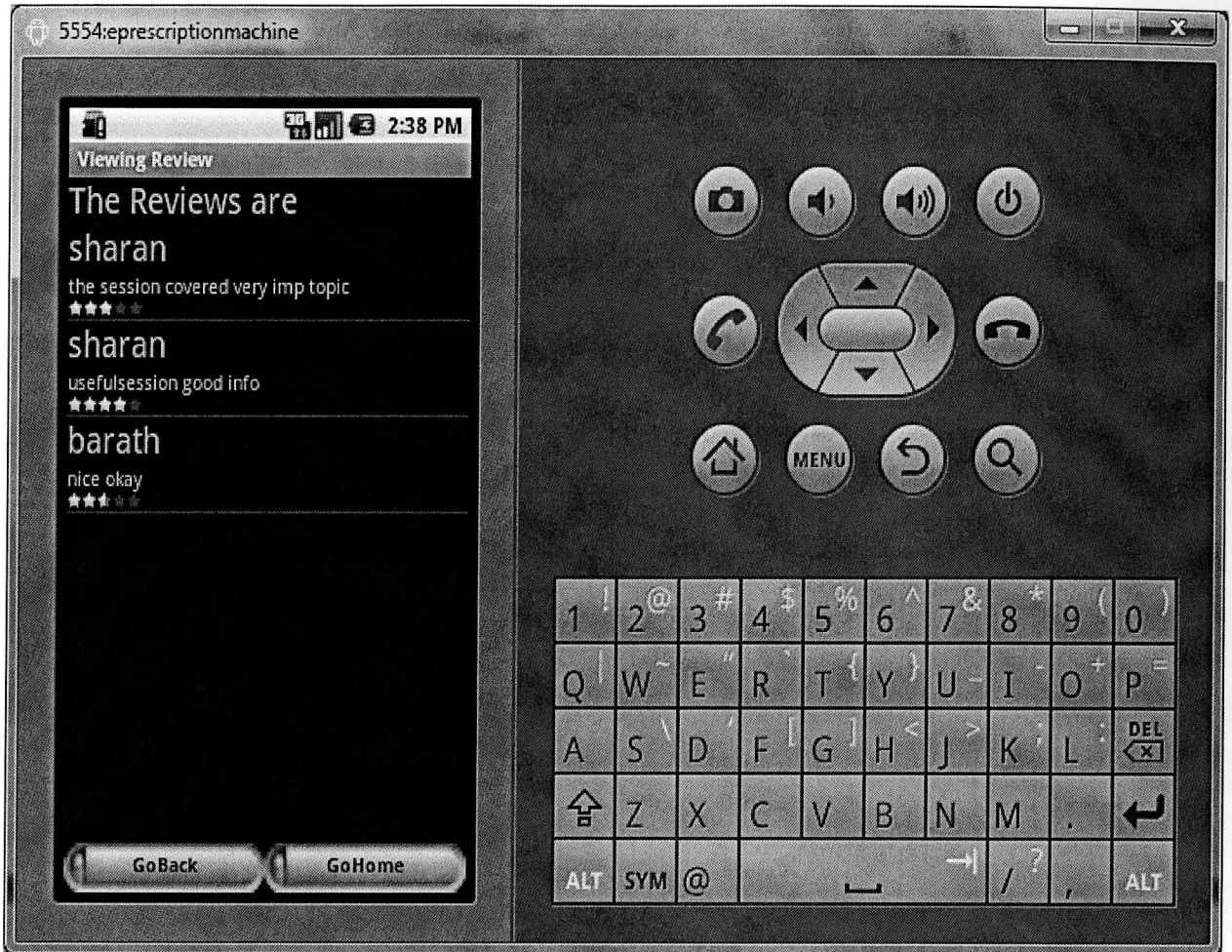
8. Viewing Review

Click on Menu Key in Video Screen you will get Menu Options Select “View Review”

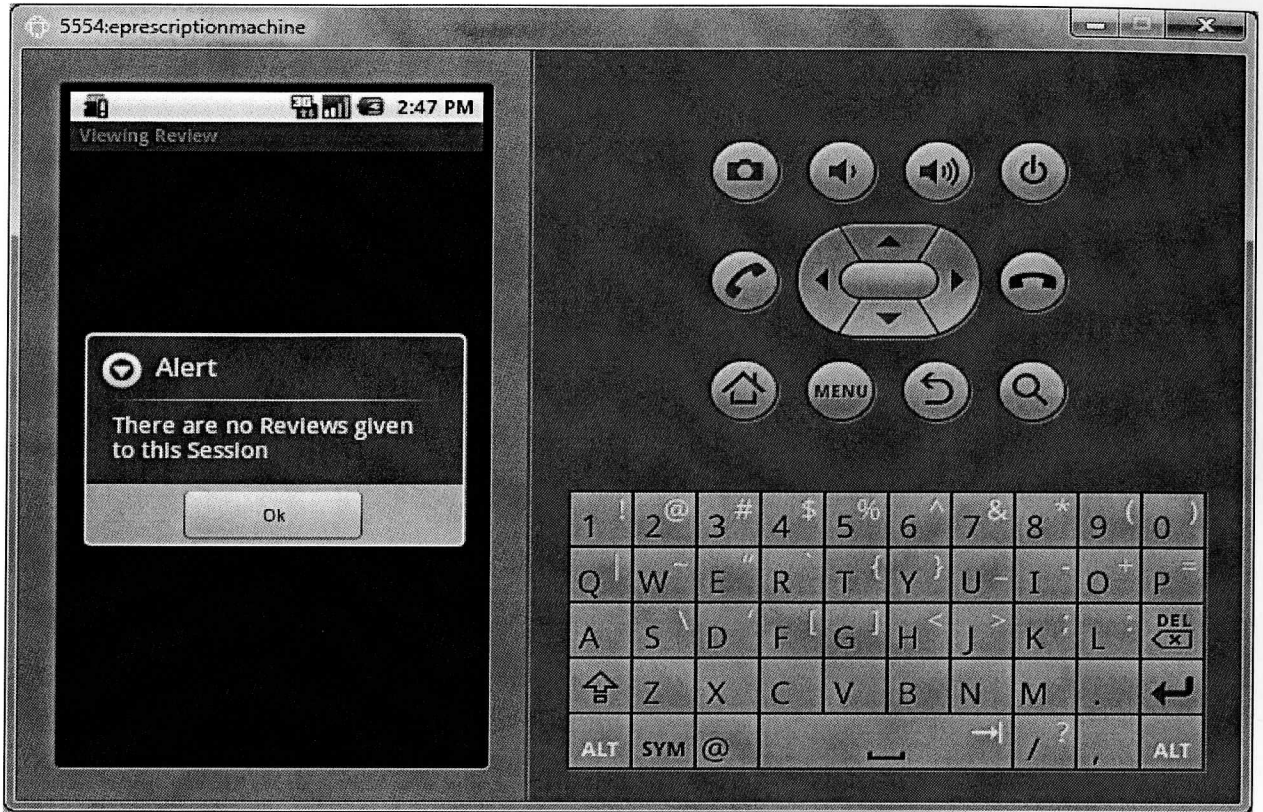


9. View Review Screen

Which Display Username, Review, Rating about particular Session

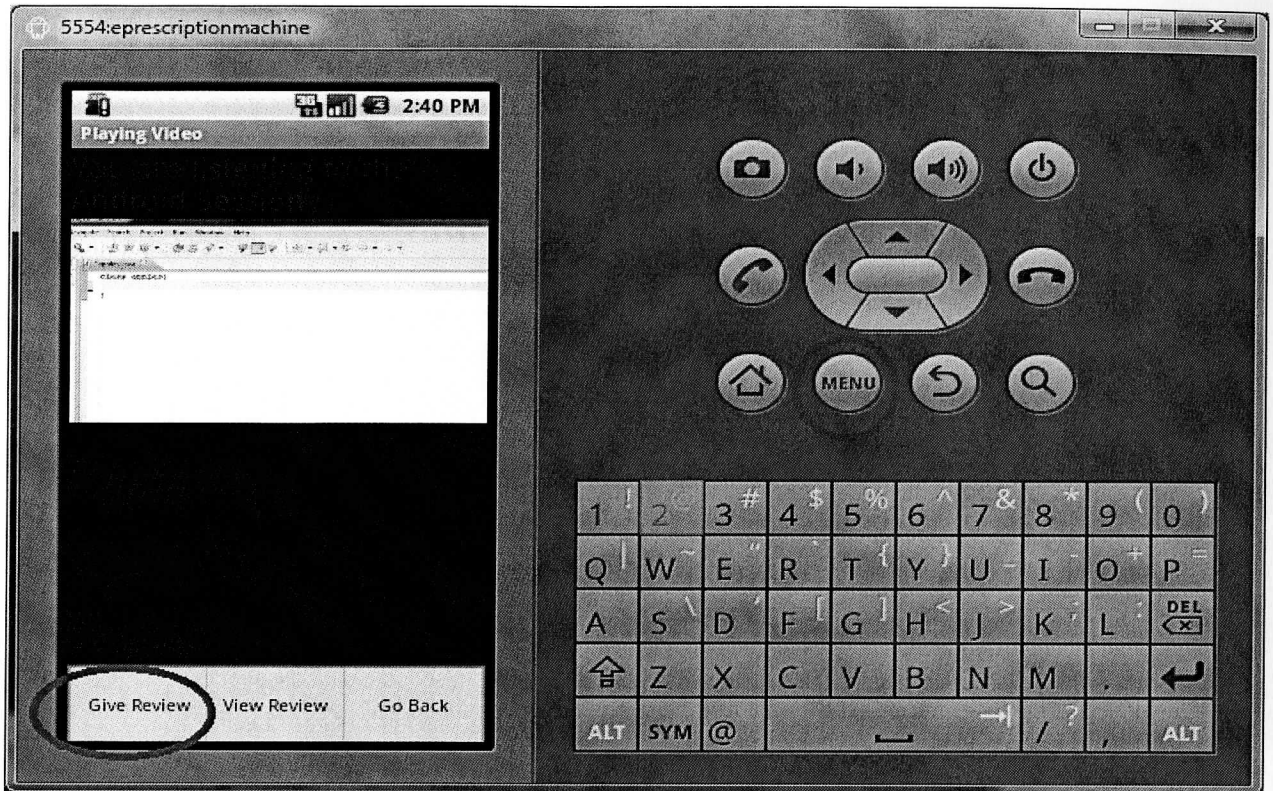


9.1 If there are no Review for the selected session then will display the following Screen



10. Write Review

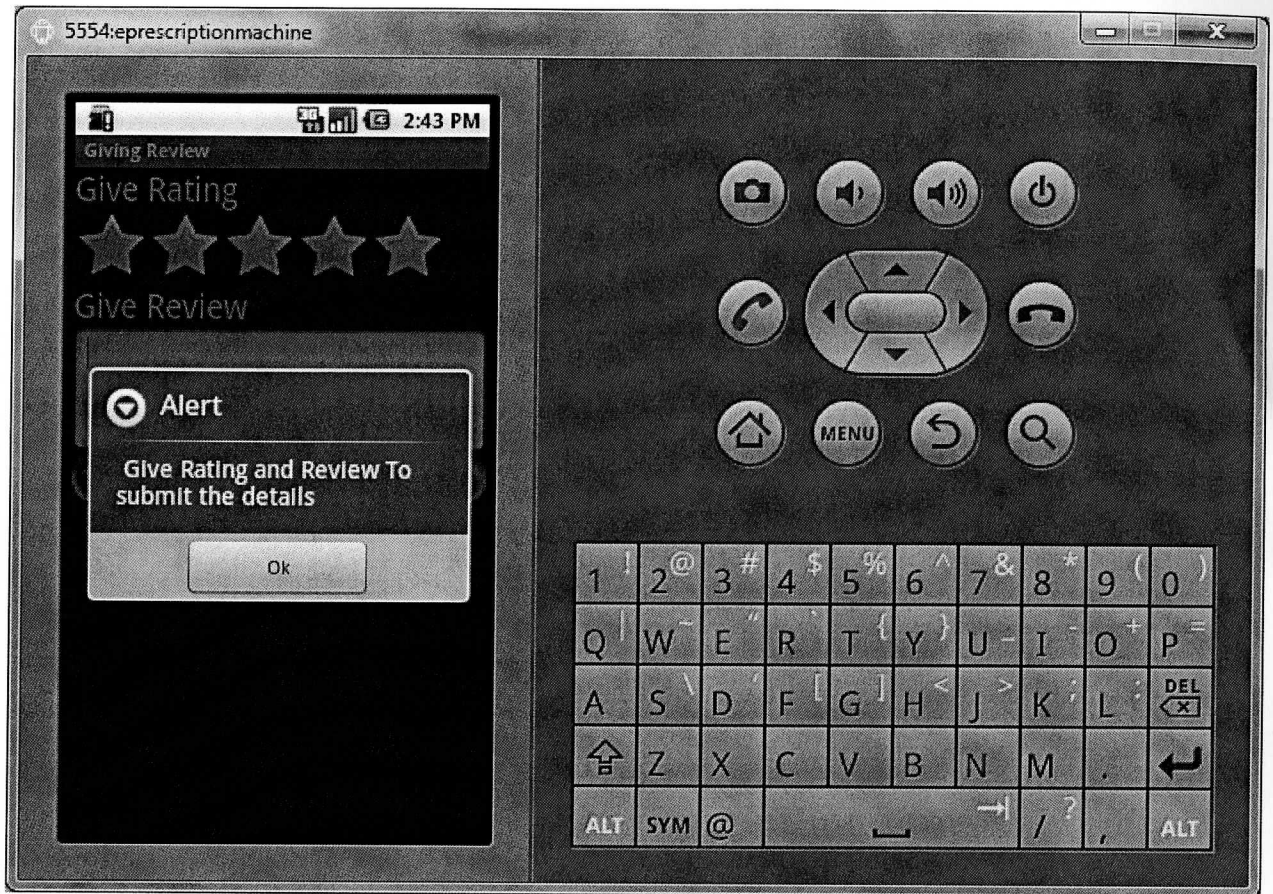
Click on Menu Key in Video Screen you will get Menu Options Select "Give Review"



11. Give Review Screen



With giving the details if you click Submit Details button then it will give alert



For Logout:

Click on Menu key in the device logout option will appear click to logout from application.

CHAPTER 5

CONCLUSION

Present era is the Information era. There is a rapid growth in the number of Internet and mobile users but there is a lack of innovative solutions for sharing of knowledge and the need for getting updated with latest technologies and inventions. The mutual sharing of ideas and latest technologies that has proven most successful and possible to develop further are the ones designed to be an integrated part of the learning process.

The Application “**M-Learning**” is mostly used by the students to learn the latest technologies, research and concepts by accessing video lectures from the server system on to the mobile. In this application the users can give their review and rating about the particular video session and those details are going to be stored in the database of server system. And even the users can view the rating and review about the particular session.

BENEFITS

- As this project is Mobile based Application it serves users with all the requirements which can be easily accessed in mobile.
- High graphical user Interface.
- All the video sessions available are for free
- Videos can be accessed from any place in the world from an android mobile with internet connection.
- Most of the videos have reviews so it will be easy for users to find the most popular videos.

Future Scope:

In future we can some enhancements like any user can upload the videos and share it with other users. Even users can group a set of videos into one session and create channels. Subscription for channels can also be implemented.

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Books

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Hello, Android: Introducing Google's Mobile Development Platform by Ed Burnette.

Websites:

<http://developer.android.com/index.html>

<http://www.androidsnippets.com/>

APPENDICES

APPENDIX A: ANDROID SAMPLE CODE

Login android Code:

```
/*
 * This Activity is used to display the login Page
 * and check the authenticity of the user by connecting to the
 server
 */

package mobile.learning;

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.util.ArrayList;
import java.util.List;
import org.apache.http.HttpResponse;
import org.apache.http.NameValuePair;
import org.apache.http.client.HttpClient;
import org.apache.http.client.entity.UrlEncodedFormEntity;
import org.apache.http.client.methods.HttpPost;
import org.apache.http.impl.client.DefaultHttpClient;
import org.apache.http.message.BasicNameValuePair;

import android.app.Activity;
import android.app.AlertDialog;
import android.content.DialogInterface;
import android.content.Intent;
import android.content.SharedPreferences;
import android.content.SharedPreferences.Editor;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;

public class LoginActivity extends Activity
{
    public SharedPreferences sp_obj;
    public Editor editor_obj;
```

```

/** Called when the activity is first created. */
@Override
public void onCreate(Bundle savedInstanceState) {
super.onCreate(savedInstanceState);
setContentView(R.layout.loginfile);

/*
 *   getting references of Button "Login"
 */

Button b=(Button) findViewById(R.id.Button01);
b.setOnClickListener(new View.OnClickListener() {

@Override
public void onClick(View v)
{

/* getting references of edittext and placing the information
present in edittext into string */

EditText useredit=(EditText)findViewById(R.id.uname);
EditText passedit=(EditText)findViewById(R.id.upass);
String username=useredit.getEditableText().toString();
String password=passedit.getEditableText().toString();

// if username and password fields are empty displaying alert

if((username.length()<1) ||(password.length()<1))
{
String str1="Please enter username and password";
displayalert(str1);
}
Else
{

/*
 * Connecting to the server and will check the authenticity of
the user */

HttpClient client = new DefaultHttpClient();

/*
 * If the server is in your system then replace the IPAddress
with your system IPAddress */

```

```

HttpPost post = new
HttpPost("http://96.2.6.56:8080/MlearningServerApp/LoginServlet");

/*
* If You want to use genesisServer then use the below
IPAddress */

// HttpPost post = new
HttpPost("http://196.12.36.118:8080/MlearningServerApp/LoginServlet");
List<NameValuePair> pairs = new ArrayList<NameValuePair>();
pairs.add(new BasicNameValuePair("username", username));
pairs.add(new BasicNameValuePair("password", password));
try {
post.setEntity(new UrlEncodedFormEntity(pairs));

HttpResponse response = client.execute(post);
BufferedReader rd = new BufferedReader(new
InputStreamReader(response.getEntity().getContent()));
String line;
StringBuilder sb = new StringBuilder();
while ((line = rd.readLine()) != null)
{
sb.append(line);
}
rd.close();
String s = sb.toString();

/*
* If the response from the server is Login Success then
*/

if(s.equals("Login Success"))
{
sp_obj=getSharedPreferences("mlearninddata",MODE_WORLD_WRITEABLE);
editor_obj=sp_obj.edit();

editor_obj.putString("username",username);
editor_obj.commit();

Toast.makeText(LoginActivity.this, "valid user: " ,
Toast.LENGTH_SHORT).show();
System.out.append(s);

Intent intent1=new Intent(v.getContext(), Course.class);

```

```

startActivity(intent1);

}

/** If the response from the server is Login Fail then */

else if(s.equals("Login Fail"))
{
String str2="Invalid username or password!.....";
displayalert(str2);

//Toast.makeText(LoginActivity.this, "Invalid user: " ,
Toast.LENGTH_SHORT).show();
}

}
catch (Exception e)
{
e.printStackTrace();
}

} // else close
} // method close
});

        /*
        *   getting references of Button "Registration"
        */

Button bregister=(Button) findViewById(R.id.bregister);
bregister.setOnClickListener(new View.OnClickListener()
{

@Override
public void onClick(View v)
{
Intent i=new
Intent(LoginActivity.this,RegisterActivity.class);
startActivity(i);
}
});

} // Closing On create Method

// Alert if Login details are empty
public void displayalert(String displaymessage)

```

```
{
AlertDialog.Builder builder = new AlertDialog.Builder(this);
builder.setTitle("Alert");
builder.setMessage(displaymessage);

builder.setPositiveButton("Ok", new
DialogInterface.OnClickListener() {
public void onClick(DialogInterface dialog, int id) {

}
});
builder.show();
}
} // Main Method
```

Login Server code:

```

package mlearning;
import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;
/**
 * Servlet implementation class LoginServlet
 */
public class LoginServlet extends HttpServlet {
private static final long serialVersionUID = 1L;
Connection con=null;
Statement st=null;
ResultSet rs=null;

@Override
public void init()
{
    try
    {
        System.out.println("init() called");
        Class.forName("com.mysql.jdbc.Driver");

con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/mlear
ning","root","root");
        st=con.createStatement();
        System.out.println("Connected to database");
    }
    catch(Exception e)
    {
        e.printStackTrace();
        System.out.println("Not connected to
Database");
    }

}
}

```



```

/**
 * @see HttpServlet#doGet(HttpServletRequest request,
 * HttpServletResponse response)
 */

protected void doPost(HttpServletRequest request,
HttpServletResponse response)
throws ServletException, IOException
{
    response.setContentType("text/html");
    PrintWriter out = response.getWriter();
    try
    {
        System.out.println("Login servlet");
        String
username=request.getParameter("username");
        String
password=request.getParameter("password");
        System.out.println("the value"+username);
        System.out.println("the value"+password);

rs = st.executeQuery("select username,password from
registration where username='"+username+"' and
password='"+password+"'");
if(rs.next())
{
rs.previous();
System.out.println("The user is:   '"+username+"   Login
Sucess");
out.println("Login Success");
        }
        else
        {
            out.println("Login Fail");
        }
    }

catch(Exception e)
    {
        e.printStackTrace();
        System.out.println("There is an
Exception:");
    }

}
}

```

Registration Android code:

```
/*
 * This Activity is used to send the registration Details to
 server
 * and stores the registration details in database
 */

package mobile.learning;

import java.io.BufferedReader;
import java.io.InputStreamReader;
import java.util.ArrayList;
import org.apache.http.HttpResponse;
import org.apache.http.client.HttpClient;
import org.apache.http.client.methods.HttpPost;
import org.apache.http.impl.client.DefaultHttpClient;
import org.apache.http.NameValuePair;
import org.apache.http.client.entity.UrlEncodedFormEntity;
import org.apache.http.message.BasicNameValuePair;

import android.app.Activity;
import android.app.AlertDialog;
import android.content.DialogInterface;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import java.util.List;

public class RegisterActivity extends Activity {
    BufferedReader regdata;

    @Override
    protected void onCreate(Bundle savedInstanceState)
    {
        super.onCreate(savedInstanceState);
        setContentView(R.layout.registerfile);

        /*
         * getting references of Button "Register"
         */
    }
}
```

```

Button bregister=(Button) findViewById(R.id.bregister);
bregister.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v)
    {

/* getting references of edittext and placing the information
present in edittext into string*/

EditText uname=(EditText) findViewById(R.id.etusername1);
EditText pwd=(EditText) findViewById(R.id.etpwd);
EditText email=(EditText) findViewById(R.id.etemail);
String uname1=uname.getText().toString();
String pwd1=pwd.getText().toString();
String email1=email.getText().toString();

if((uname1.length()<1)|| (pwd1.length()<1)|| (email1.length()<1)
)
{
String str1="Please enter username and password";
RegisterAlert(str1);
}
else
{

/** Connecting to the server and will send the user
registration details to server */

        HttpClient client = new DefaultHttpClient();

/** If the server is in your system then replace the
IPAddress with your system IPAddress */

// HttpPost post = new
HttpPost("http://10.11.32.59:8080/MlearningServerApp/Registrat
ionServlet");

/** If You want to use genesisServer then use the below
IPAddress */

HttpPost post = new
HttpPost("http://96.2.6.56:8080/MlearningServerApp/Registratio
nServlet");

```

```

List<NameValuePair> pairs = new ArrayList<NameValuePair>();
pairs.add(new BasicNameValuePair("username", unamel));
pairs.add(new BasicNameValuePair("password", pwd1));
pairs.add(new BasicNameValuePair("email", email1));
try {
post.setEntity(new UrlEncodedFormEntity(pairs));
HttpResponse response = client.execute(post);

/** Receiving the response from Servlet */

BufferedReader rd = new BufferedReader(new
InputStreamReader(response.getEntity().getContent()), 4096);
String line;
StringBuilder sb = new StringBuilder();
while ((line = rd.readLine()) != null)
{
sb.append(line);
}
rd.close();
String s = sb.toString();

/** If the response from the servlet is "Registered" then */

if(s.equals("Registered"))
{
Toast.makeText(RegisterActivity.this, "Registration success: "
, Toast.LENGTH_SHORT).show();
System.out.append(s);
}

/** If the response from the servlet is "UserId Exists" then
*/

else if(s.equals("UserId Exists"))
{
Toast.makeText(RegisterActivity.this, "Username Already Exists
",
Toast.LENGTH_SHORT).show();
String str2="Username Already Exists!.... try using another
name";
RegisterAlert(str2);
}
}
catch(Exception e)
{

```

```
e.printStackTrace();
}
}
});

// Reference For Cancel Button
Button bcancel=(Button) findViewById(R.id.bcancel);
bcancel.setOnClickListener(new View.OnClickListener() {

    @Override
    public void onClick(View v)
    {
Intent i=new
Intent(RegisterActivity.this,LoginActivity.class);
startActivity(i);
    }
});
} // Closing on Create Method

// Alert if registration details are empty
public void Registeralert(String message)
{
AlertDialog.Builder builder = new AlertDialog.Builder(this);
builder.setTitle("Alert");
builder.setMessage(message);
builder.setPositiveButton("Ok",new
DialogInterface.OnClickListener() {
public void onClick(DialogInterface dialog, int id)
{
}
});
builder.show();
}
}
```

Registration Server Code:

```

package mlearning;

import java.io.IOException;
import java.io.PrintWriter;
import java.sql.Connection;
import java.sql.DriverManager;
import java.sql.ResultSet;
import java.sql.Statement;

import javax.servlet.ServletException;
import javax.servlet.http.HttpServlet;
import javax.servlet.http.HttpServletRequest;
import javax.servlet.http.HttpServletResponse;

/**
 * Servlet implementation class RegistrationServlet
 */

public class RegistrationServlet extends HttpServlet
{
    Connection con=null;
    Statement st=null,st2=null;
    ResultSet rs=null;
    private static final long serialVersionUID = 1L;

    /**
     * @see HttpServlet#HttpServlet()
     */

    public RegistrationServlet() {
        super();
        // TODO Auto-generated constructor stub
    }

    public void init()
    {
        try
        {
            System.out.println("init() called");
            Class.forName("com.mysql.jdbc.Driver");
            con =
            DriverManager.getConnection("jdbc:mysql://localhost:3306/mlear
            ning","root","root");
            st=con.createStatement();
            st2=con.createStatement();
            System.out.println("Connected to database");
        }
    }
}

```

```

}catch(Exception e)
{
e.printStackTrace();
System.out.println("Not connected to Database in init()");
}
}

/** @see HttpServlet#doGet(HttpServletRequest request,
HttpServletResponse response) */

protected void service(HttpServletRequest request,
HttpServletResponse response) throws ServletException,
IOException
{
    response.setContentType("text/html;charset=UTF-8");
    PrintWriter out=response.getWriter();
    try
        {
            System.out.println("Registration servlet");

            String username=request.getParameter("username");
            String password=request.getParameter("password");
            String emailId=request.getParameter("email");

            System.out.println("the value"+username);

// System.out.println("the value"+pass);

/*

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con =
DriverManager.getConnection("jdbc:mysql://localhost:3306/inter
nalexam","root","root");
st=con.createStatement();

*/

rs = st.executeQuery("select username from registration where
username='"+username+"'");
        if(rs.next())
        {
            out.println("UserId Exists");
        }
}

```

```
        else
        {
            rs=null;
String sql="insert into
registration(username,password,emailId)
values('"+username+"','"+password+"','"+emailId+"')";
System.out.println("check");
int i=st2.executeUpdate(sql);

if(i>=0)
{
out.println("Registered");
}

}

        catch(Exception e)
        {
            e.printStackTrace();
System.out.println("Not connected to Database and in Register
servlet "+e);
        }

}

/** @see HttpServlet#doPost(HttpServletRequest request,
HttpServletResponse response)
*/

protected void doPost(HttpServletRequest request,
HttpServletResponse response) throws ServletException,
IOException {
// TODO Auto-generated method stub
}

}
```