

Placement Cell Mobile Training App

¹Mahesh N Nair, ²Vinay Hegde, ³SaumyaOmanakuttan

^{1,2,3}Information Technology SIES Graduate School Of Technology Navi Mumbai, India

Abstract: The captioned project is an android application program that intends to provide an interface for the Placement cell of any Institution serving the training exercises and to its subscribers as well who will get to access their online exercise, tests, reports, analysis rankings and notes through the system intended to be implemented by this project. The placement cell admin will get a customized access to incorporate the timely changes, give tests and to monitor the results and progress of the cell as a whole and also at an individual level.

Keywords: Mobile Training, android application program.

I. INTRODUCTION

Today, it is seen that many people that prepare for their exams are studying in buses, in parks or in a cafe with a test book in their hands. The tests prepared via electronic exam systems, now, have been an alternative for those who prepare for their exams by using their personal computers or mobile devices. Connecting such services requires a computer and an internet access. In other words it is necessary that students must be in an environment which provides above mentioned conditions in order to access such electronic exam systems.

Mobiles are an integral part of daily life. With time, customers are expecting best and very versatile applications in less time. It is big challenge to develop high performance mobile applications in this competitive market that would meet the expectation of customers. The advancement in mobile technology has improved everyone's life. One of the uses of mobile devices is "mobile learning", which can be defined as "all kinds of learning that do not take place in certain predetermined fixed places". The student appearing for placements and other engineering related entrance exams, have to prepare themselves in technical as well as non-technical areas. For this they have to accumulate study material from different sources. Also there are many mobile applications available that provide mock tests. But there is no application that provides all the sections under one roof. They also surf around internet for some tests for practice. Android technology, being available freely for download, along with enhanced data storage (using SQLite framework) occupying less space leading to increasing number of users using android technology. By considering this, Android platform was chosen to develop this application.

II. NEED OF PROJECT

EXISTING SYSTEM:

The present system exists as a private enterprise product where the application conducts tests with static questions and user can solve the tests and get a score card. Most of the present products are websites for aptitude training Example: www.Indiabix.com, www.aptitude-test.com

DISADVANTAGES OF CURRENT SYSTEM:

- The questions are not generated dynamically.
- The difficulty level is linear or not taken into account while generation of questions.
- Analysis is not available in depth.

- The present system does not serve as a customizable framework rather exists as a controlled environment under the developer of the app.
- Does not have virtual test classrooms which simulate classroom examination
- Placement training cells do not have an android platform framework to build their customized virtual interface and form a self-sufficient, controlled & restricted community.

ADVANTAGE OF MOBILE APPLICATION OVER WEBSITE APPROACH:

- Interactivity/Gaming – for interactive games (think Angry Birds) an app is almost always going to be your best choice, at least for the foreseeable future.
- Regular Usage/Personalization – If your target users are going to be using your app in a personalized fashion on a regular basis then an app provides a great way to do that.
- Complex Calculations or Reporting – If you need something that will take data and allow you to manipulate it with complex calculations, charts or reports (think banking or investment) an app will help you do that very effectively.
- Native Functionality or Processing Required - mobile web browsers are getting increasingly good at accessing certain mobile-specific functions such as click-to-call, SMS and GPS. However, if you need to access a user's camera or processing power an app will still do that much more effectively.

III. LITERATURE REVIEW

- A Comparison of Java RMI, CORBA, and Web Services Technologies for Distributed SIP Applications ^[10]: In this document the comparison of the titled topics were studied to choose the data exchange technology which is required to fetch the questions from an android application from a database server during the test.
- Comparison of Web Services, Java-RMI, and CORBA service implementations by N.A.B. Gray School of Information Technology & Computer Science, University of Wollongong ^[11] : Another document was studied to reaffirm the choice of Web Services implementation for the implementation of the action of data fetching.
- A SURVEY OF ACCESS CONTROL MODELS 2009^[12] : Through this document various different Access control Models ACL, RBAC, ABAC, PBAC, RADAC were studied, compared and RBAC was selected as it suited the requirements of the project where roles and necessary privileges for a user are fixed for life time and as the role assignment is not an ambiguous task.
- Study on Role-Based Access Control Model for Web Services and its Application ^[6]: Author: MIN WU, JIAXUN CHEN, YONGSHENG DING College of Information Sciences and Technology, Donghua University.

In this Document why RBAC is suitable for Web Services oriented projects was understood as well as the choice of implementing the Web Services for our purpose of Enterprise information sharing was reaffirmed .

- Web Services Security Architectures using Role-Based Access Control ^[8] : We studied role-based access control policies for Web Services using Layered Model-driven architectures and Agile modeling security principles for enhancing security requirements.
- Role-based Access Control System for Web Services ^[12]: In this document the secure SOAP message and proxy RBAC server system was studied which will be applicable for the need of our project that demands a proxy authentication server residing away from the database server at the product owner's campus.
- Load Balancing Algorithms Round-Robin (RR), Least-Connection and Least Loaded Efficiency^[14] Author: Mustafa ElGili Computer Science Department Community College Shaqra University Shaqra, Saudi Arabia et al: In this document the comparisons of load balancing algorithms was studied to choose the Least connection algorithm to be implemented as RR was inefficient according to the study in the paper and Least loaded would not be of any use as almost all process requests would be of same type for which time would roughly be same in which case the calculation of time needed for servicing would prove to be just an overhead.

IV. METHODOLOGY

A. Modules:

A.1. Logging In:

- Login for owner: Owner may login through a special interface through a desktop on his server machine.
- Login for admin: The T&P admin will access through data server url accessing at the local machine through a login form which is through desktop browser.
- Login for Students: The students may login through their android devices after downloading the application from google play-store.

The login ids and default passwords will be generated by the admin and communicated to each student who may then change only the password.

- Login for Faculty: The Faculty will login through web browsers on local machines where the data server resides .

A.2. Authentication:

- All the T&P logins would be authenticated at the server side of the owner
- All the student & faculty login will be authenticated on the data server on the local network of the T&P cell.

A.3. Creating data base:

- The data base will reside at the owners server machine(Data of all the T&Ps) as well as data server on a local machine of the T&P cell(Only data of its own T&P subscribers).
- The data base will also reside in SQLite on the android devices.(Only the data of the previous logins on that device and their test informations, score cards, report cards)

A.4. Connection with database:

- JDBC connectivity will connect the data servers and the android devices to parse the question and answers and all data in strings to each other as well as the images in any questions if at all.

A.5. Generating ids and passwords:

- The Owner will generate ids and passwords to grant it to subscribed institutions
- The T&P admin will generate ids and passwords to distribute it to students who may later change their passwords only.

A.6. Uploading questions/lessons:

- The faculty will have options to add questions and answer sets over their browser interface
- This interface connects to the database with jdbc connectivity and uploads the questions set with their answers

A.7. Generate tests:

- The T&P cell admin may generate a test which will execute a java code for random number generation within the range of number of questions available. The question at this number will be added to the test and thus the test will be generated out of the vast question bank. This will happen on the local data server of the T&P cell.

A.8 Schedule tests:

- The T&P admin will schedule the tests and the generated test will be served to students only on the scheduled date, time through the android application.
- The clock timing of the data server will be used to refer time.

A.9. Take tests:

- Students will login and take tests only at the scheduled date and time and only for the defined period of time and the data server time will be the reference clock.

A.10. Generate score card:

- The student when hits the submit button the client side logic is invoked and the application will execute the string match java code for generating the score card.
- This is done at the client side to avoid load on server.
- Once the score card is generated the application will send it to the local data server for further analytical report generation.

A.11. Generate Report card:

- This is done at the server side i.e at the local data server as it accumulates the score cards post the test score card submission from each android device that was taking the test.
- The Report card will be then generated from the MySQL database entries of the scores implementing the SQL queries. This report card is sent to each device through jdbc connectivity.

A.12. View Scorecard/Previous Test:

- The SQLite database on the devices will receive and display view results of the reports.

B. Working:

Every time a user logs in, the person has to get himself/herself authenticated by using the Unique ID and password. The ID and password would be validated by the Authentication Server using WCF's in-built authentication. Students appearing for tests will be provided with a set of questions for which students have to give answers. The answers submitted by the students will be send in the form a JSON string to the server side which would be implemented using WCF services. The fetching of the questions will be from MySQL residing at the server side. Every response from the MySQL will be returned back to the user in the form a XML response. The report generation procedure occurs at the client database so as to reduce pressure on server side database. The questions left unattended by the user will be cached at SQLite at client side which could be used whenever demanded by user. The system would be capable to handle as many users as required at a time by the use of loadbalancer. Loadbalancing distributes workloads across multiple computing resources, such as computers, a computer cluster, processing central disks. Load balancing aims to optimize resource use, maximize throughput, minimize response time, and avoid overload of any single resource. Using multiple components with load balancing instead of a single component may increase reliability and availability through redundancy.

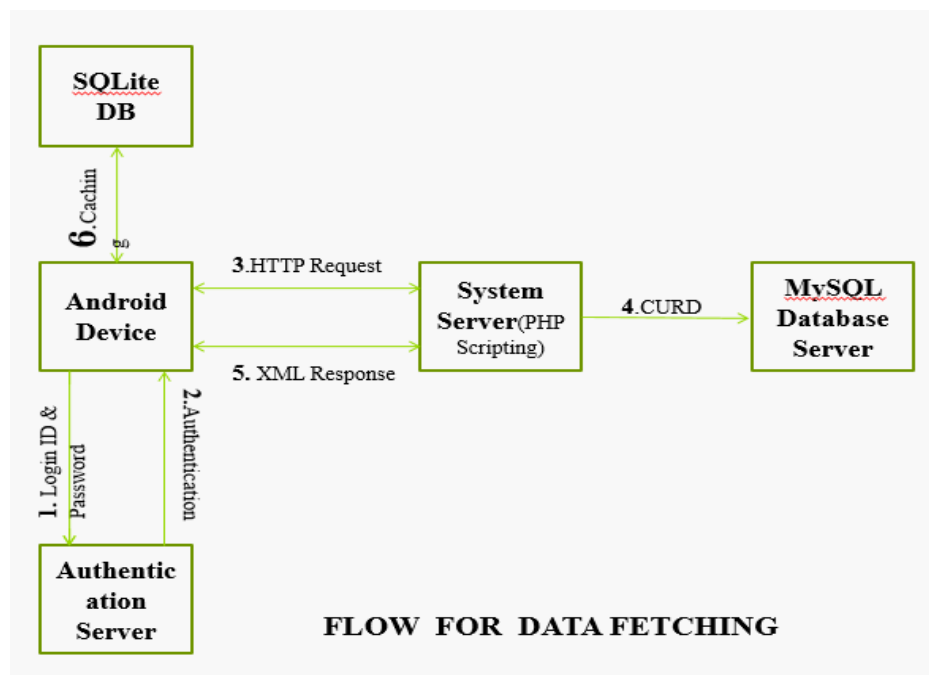


Figure 1. Process Flow Diagram

C. System Requirements:

C.1. Java JDK5 or later version

C.2. Java RuntimeEnvironment (JRE) 6

C.3. Android 6.0 (API 23)

- Android studio
- Android sdk

C.4. System requirements:-

- Microsoft Windows 8/7/Vista (32 or 64-bit)
- 2 GB RAM minimum, 4 GB RAM recommended
- 400 MB hard disk space
- At least 1 GB for Android SDK, emulator system images, and caches
- 1280 x 800 minimum screen resolution
- Java Development Kit (JDK) 7
- Optional for accelerated emulator: Intel processor with support for Intel VT-x, Intel EM64T (Intel 64), and Execute Disable (XD) Bit functionality.

D. Design and Features:

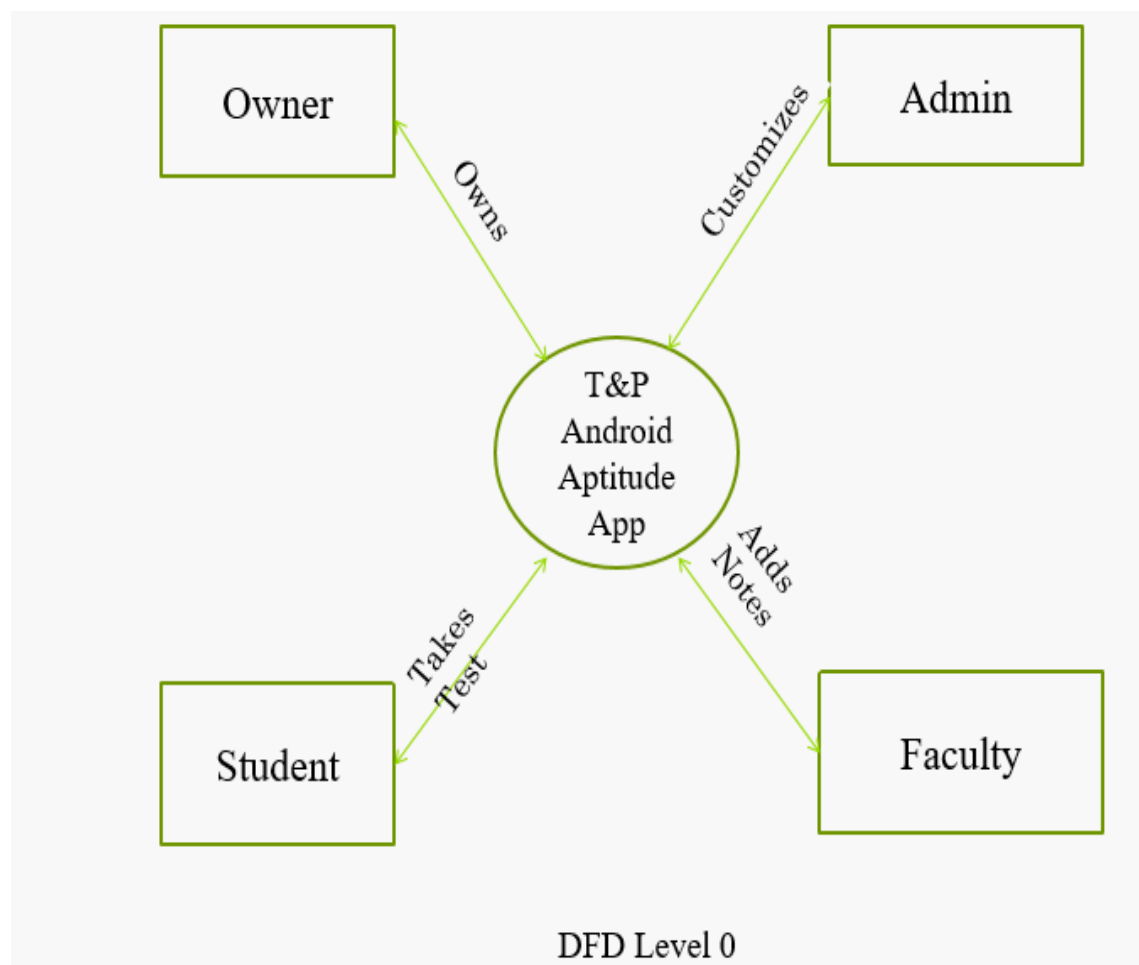


Figure 2. DFD 0

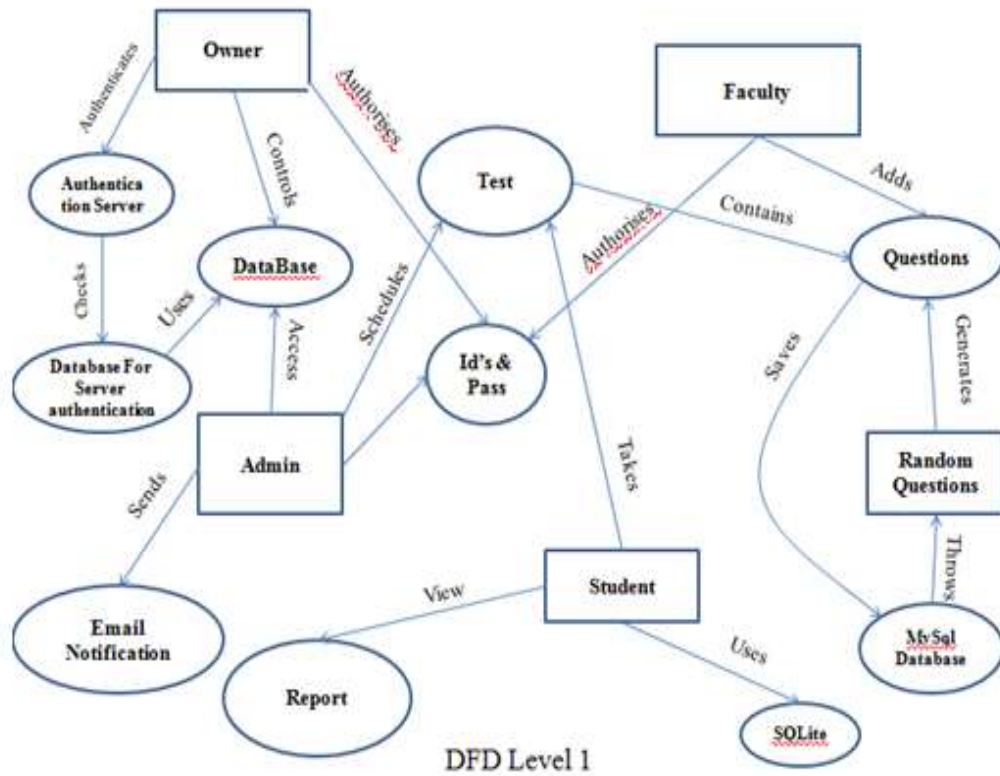


Figure 3. DFD 1

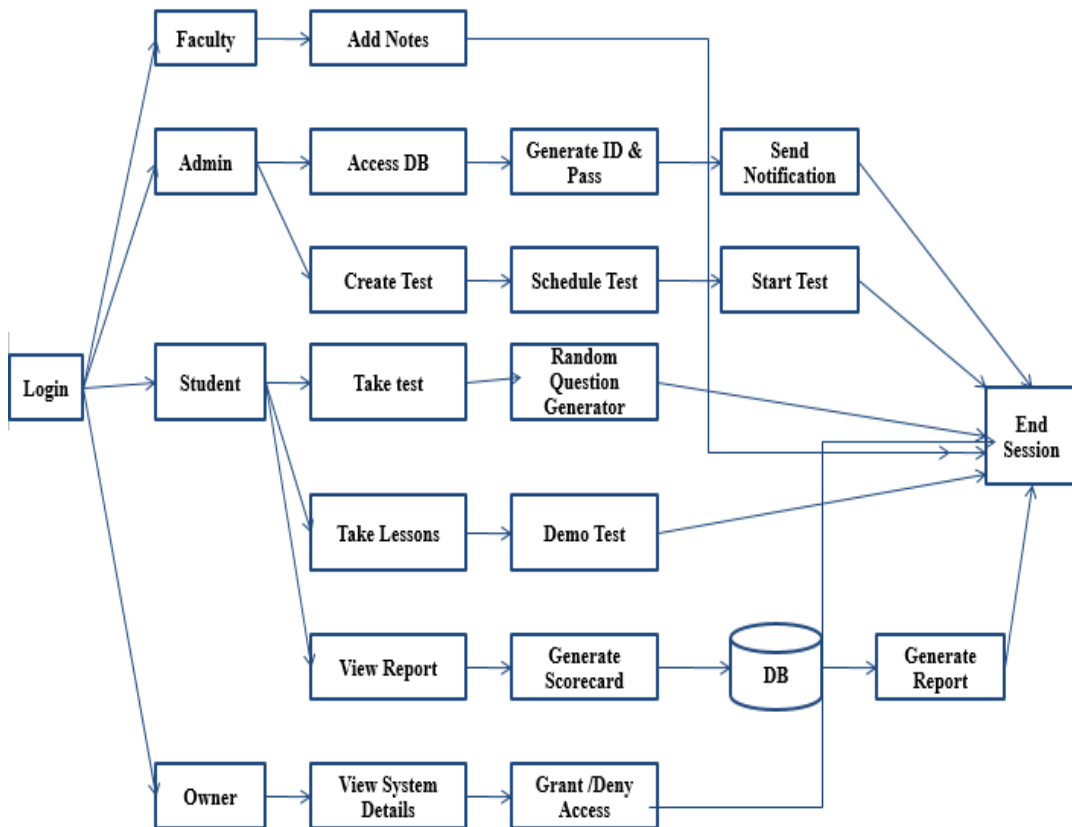


Figure 4. Flow Diagram

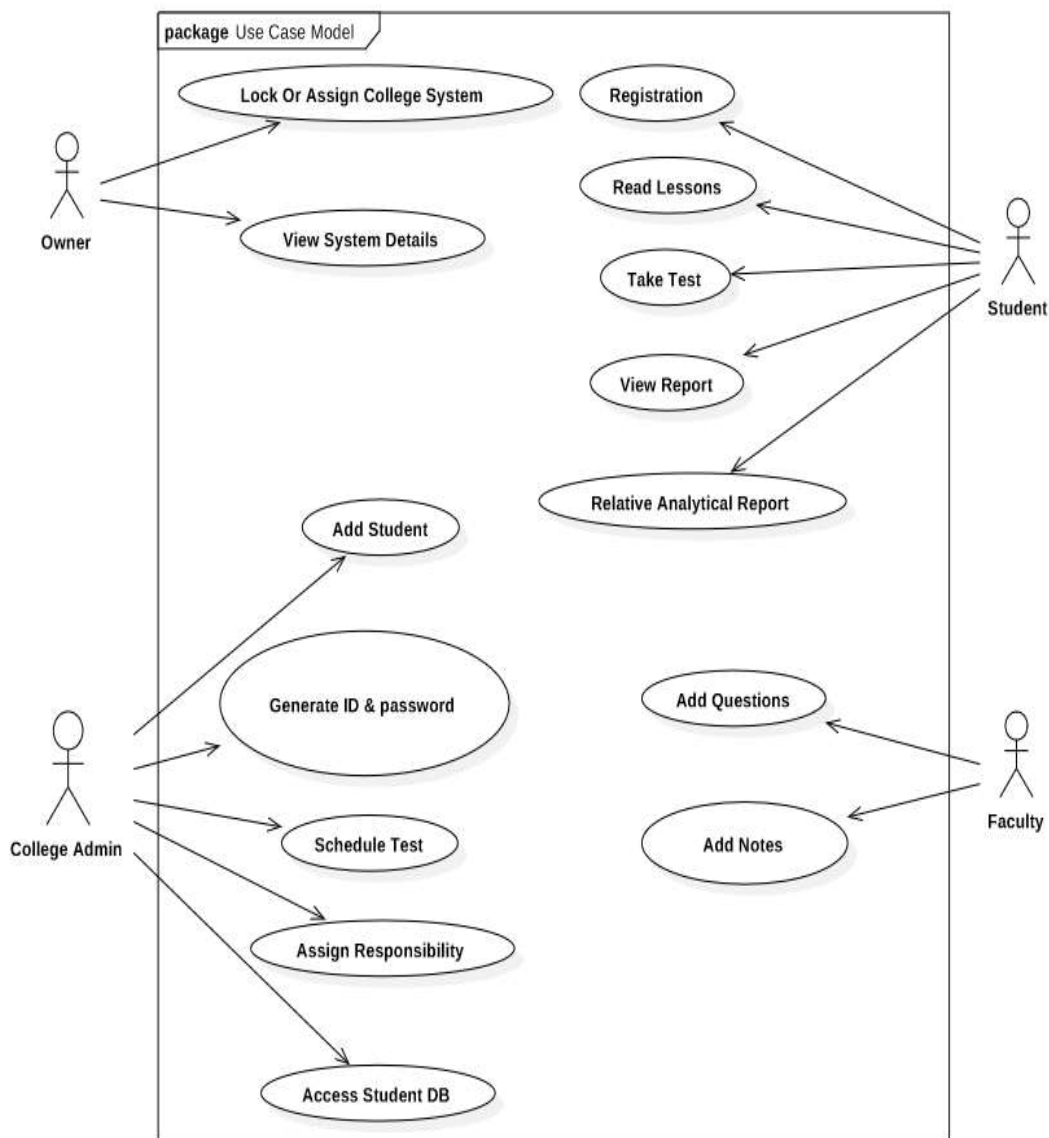


Figure 5. Use Case Diagram

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