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SMART FEES PAYMENT AND EVENT NOTIFICATION SYSTEM

A Thesis Submitted By

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2K10/CSE/60

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Declaration of Authorship

I, RAJESH KUMAR, declare that this thesis titled, 'SMART FESS PAYMENT AND EVENT NOTIFICATION' and the work presented in it are my own. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University.
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated.
- Where I have consulted the published work of others, this is always clearly attributed.
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work.
- I have acknowledged all main sources of help.
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself.

Signed:

Date:

“Thanks to my solid academic training, today I can write hundreds of words on virtually any topic without possessing a shred of information, which is how I got a good job in journalism.”

Dave Barry

ABSTRACT

This system allows the user (student) to pay their admission / examination / pass certificate/ marksheet/ degree fees through scratch cards that will be available in university authorized shops. Students can pay their fees through scratch card by using' Short Message Service'. The prepared system will provide services such as university news, update about their result of admission, update about results of semester, information about degree, and information about timetable, information about course outlines etc. through 'Short Message Service' ...

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Abbreviations

SQL Structured Query Language

JVM Java Virtual Machine

API Application Programming Interface

SMS ShortMessage Service

Chapter 1

Introduction

1.1 Overview

This system allows the user (student) to pay their admission / examination / pass certificate/ marksheet/ degree fees through scratch cards that will be available in university authorized shops. Students can pay their fees through scratch card by using 'Short Message Service'. The prepared system will provide services such as university news, update about their result of admission, update about results of semester, information about degree, and information about timetable, information about course outlines etc. through 'Short Message Service'

1.2 Background

In almost all universities and colleges of our country, there is a lack of the advanced system for fee payment, event notification, and information / update regarding the academic or certificate information. Because of this, both, the students and the administration of the university suffer from increasing work load and wastage of time. For example, to pay the fee of a semester, the students have to travel to the university to get the challan form and to fill it up. After wards, they have go to the bank, where they stand in long big queue to pay the challan fee. After this, they again go to the university to submit the copy of challan fees. Further, every now and then there are various events in the university, for example, strikes, boycotts, changes in examination

schedule, class suspension, etc. which the administration must communicate to the students. Due to lack of immediate communication, the students arrive at university with no academic activity going on, thus wasting their whole day. Additionally, the students and the administration of the university suffer from the enquiries regarding the issuance of various certificates, and for the result and role number of the semesters etc, for which the students have to visit the concerned department or session and stand in the queue. Most of the times, the work is delayed from the administration side due to some reasons and the students waste their whole day without getting any update regarding academic activities or their required information or certificates. We have come up with a solution to this problem and introducing an advanced system for fee payment, event notification and update regarding the academic or certificate information.

1.3 Features

1.3.1 Fee payment system

We have introduced a system through which the students can pay the fee of examination, admission or any required academic degree or certificate easily without going through long process of challan fee form etc. This system is based on the use of a card. There are various types of cards with specific prices, designed according to the fee structure. For example, cards for admission and examination fee will be of different price. The card for any certificate issuance will be of different price. The card contains specific series of numbers, hidden by a coated material. These card numbers are already registered with and issued by the university accounts branch. The card are sold to the various shops in the city, where the students can buy the required card. After scratching the card, the student can type the hidden series of numbers in his mobile number and send it along with his own information, i.e., name and seat number etc. to the university. The university system will receive this information and automatically acknowledge the receipt of the payment of the requested procedure.

1.3.2 Event Notification

We have introduced a software, in which we put the names and their contact numbers of the students. Any new event if happens in the university, such as, admission or examination date announcement, or class suspension due to any reason, the concerned person will send a message of that event through this system to the all students. In this way, the students will be able to get any updated information of the event. As the system contains various groups of students according to the semester. Any information which needs to be delivered to the students of a specific semester, can be sent to only those students by selecting that group in our system. Thus, all or any group of the university students can be kept updated from the latest events in the university.

1.3.3 Information or update regarding the academic results or certificate issuance

We have introduced a system, through which the students will be able to get the information of their semester result, admission date or any certificate issuance etc. The student will simply type his role number and semester part and send it from his mobile to the given university number or check result. The system will reply with all the required information. In this way, the students will be able to get the information and update without any suffering and wastage of time.

1.4 Conclusion

In the presented thesis work, we have introduced a software system, through which both, the students and the administration of the university will get the benefits. Through this system, the long procedures of fee payment, events notification and information regarding any academic inquiry will easily be provided to the students through sms service within seconds. This system will save the time and money of the university staff and the students.

Chapter 2

Background

2.1 UseCase

A use case specifies the behavior of a system or a part of a system, and is a description of a set of sequences of actions, including variants, that a system performs to yield an observable result of value to an actor.” “An actor is an idealization of an external person, process, or thing interacting with a system, subsystem, or class. An actor characterizes the interactions that outside users may have with the system.” A use case is rendered as an ellipse in a use case diagram. A use case is always labeled with its name

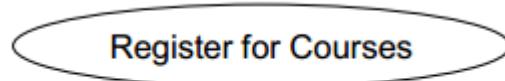


FIGURE 2.1: Eclipse

An actor is rendered as a stick figure 2.2 in a use case diagram. Each actor participates in one student or more use cases. Jacobson et al. [1]

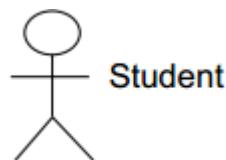


FIGURE 2.2: Actor

2.1.1 Example Use Case: Obtaining Verified Challan

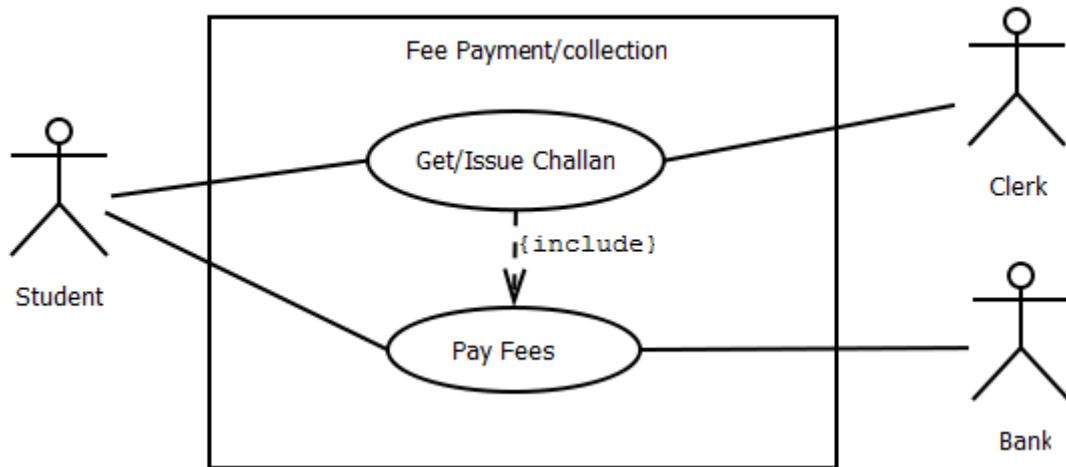


FIGURE 2.3: Obtaining Verified challan

Name: Obtaining Verified challan.

Description: the student gets the challan from clerk and pay fees to the bank

Actor: Student, clerk, bank

Main scenario:

1. The student provides information and verifies challan.
2. The Bank receives the challan and fees.

2.1.2 Activity Diagram

An activity diagram is essentially a flowchart, showing the flow of control from activity to activity. Use activity diagrams to specify, construct, and document the dynamics of a society of objects, or to model the flow of control of an operation. Whereas interaction diagrams emphasize the flow of control from object to object, activity diagrams emphasize the flow of control from activity to activity. An activity is an ongoing non-atomic execution within a state machine. Entity Relationship Modeling (ERM) . A technique used to analyze and model the data in organizations using an Entity Relationship (E-R) diagram .

2.2 Entity Type

A class of entities with the same attributes

2.3 ERD Development Process

- Identify the entities.
- Determine the attributes for each entity.
- Select the primary key for each entity.
- Establish the relationships between the entities.
- Draw an entity model.
- Test the relationships and the keys.

2.4 Relationship

An association between two or more entities that is of particular interest

2.5 Key Attributes

- Certain attributes identify particular facts within an entity, these are known as KEY attributes.
- The different types of KEY attribute are:
- **Primary Key:** One attribute whose value can uniquely identify a complete record (one row of data) within an entity.
- **Composite Primary Key:** A primary key that consists of two or more attributes within an entity
- **Foreign Key:** A copy of a primary key that exists in another entity for the purpose of forming a relationship between the entities involved

2.6 Class diagram

A diagram that shows a collection of declarative (static) model elements, such as classes, types, and their contents and relationships.

2.6.1 Association

Association is a relationship where all object have their own lifecycle and there is no owner. Let's take an example of Teacher and Student. Multiple students can associate with single teacher and single student can associate with multiple teachers but there is no ownership between the objects and both have their own lifecycle. Both can create and delete independently.

2.6.2 Aggregation

Aggregation is a specialize form of Association where all object have their own lifecycle but there is ownership and child object cannot belongs to another parent object. Let's take an example of Department and teacher. A single teacher cannot belongs to multiple departments, but if we delete the department teacher object will not destroy. We can think about “has-a” relationship.

2.6.3 Composition

Composition is again specialize form of Aggregation and we can call this as a “death” relationship. It is a strong type of Aggregation. Child object does not have their lifecycle and if parent object deletes all child object will also be deleted. Let's take again an example of relationship between House and rooms. House can contain multiple rooms there is no independent life of room and any room cannot belongs to two different house if we delete the house room will automatically delete.

2.6.4 Attribute

A named slot within a classifier that describes a range of values that instances of the classifier may hold.

2.6.5 Activity

An Activity is, fundamentally, an object that has a lifecycle. An Activity is a chunk of code that does some work; if necessary, that work can include displaying a UI to the user. It doesn't have to, though—some Activities never display UIs. Typically, we will designate one of our application's Activities as the entry point to our application.

2.7 Broadcast Receiver

Broadcast Receiver is yet another type of component that can receive and respond to any broadcast announcements.

2.7.1 Service

A Service is a body of code that runs in the background. It can run in its own process, or in the context of another application's process, depending on its needs. Other components "bind" to a Service and invoke methods on it via remote procedure calls. An example of a Service is a media player; even when the user quits the media-selection UI, she probably still intends for her music to keep playing. A Service keeps the music going even when the UI has completed.

2.7.2 Content Provider

Content Provider is a data storehouse that provides access to data on the device; the classic example is the Content Provider that's used to access the user's list of contacts. Our application can access data that other applications have exposed via a Content Provider, and we can also define our own Content Providers to expose data of our own.

2.8 Tools And Technologies

2.8.1 System Interface

Front End Client: Mobile DataBase Server: MySQL, Operating System (any) Back End: Java, Hibernate, MySQL, Operating System (any)

2.8.2 User Interfaces

Client (student) on Mobile will be using GSM protocol

2.8.3 Hardware Requirements

- P-IV or faster Processor.
- Minimum 1GB hard disk space.
- 500 MB of RAM or more.
- Display capable of showing 16 bit colors or more.
- Bluetooth enabled machine Or GSM Device.

2.8.4 Software Requirements

DBMS:

Name: MYSQL

Version Number: 5.6 Source: <https://www.mysql.com>

IDE:

Name: NeatBean

Version: 7.3.1

Source: <https://netbeans.org/downloads>

Java:

Name: JDK 1.7.0

Version: 1.7.0

Source: <http://java.com/en/download/index.jsp>

Hibernate: 3.0

2.8.5 Communications Interfaces

Client (student) on Mobile will be using GSM protocol

2.8.6 Installition Requirements

1. Install Jdk 1.7
2. Install MySQL Server 5.6
3. Java Communications API

There is a trick to install the Java Communications API correctly on a Windows system Machine. The following files are the core of JAVA Communication API, and they are very important to have them installed on your system for a proper operation:

- comm.jar
- win32com.dll
- javax.comm.properties

For the jdk (Java Development Kit) to recognize the serial ports on your machine, it is important to properly place these files in the right folders on your local machine : comm.jar should be placed in:

jdk/lib

jdk/jre/lib/ext

win32com.dll should be placed in: jdk/bin

jdk/jre/bin

c://System32

javax.comm.properties should be placed in: jdk/lib

jdk//jre/lib

2.8.7 Product Functions

This software will perform send and receive sms.

2.9 Constraint

- GUI is only in English.
- Roll number and card number is used for the pay fees of student.
- Only registered students are authorized to use the services.
- This system is working for single server.

Chapter 3

Problem Description

3.1 Fees Payment Use Case Report

3.1.1 Obtaining Verified Challan

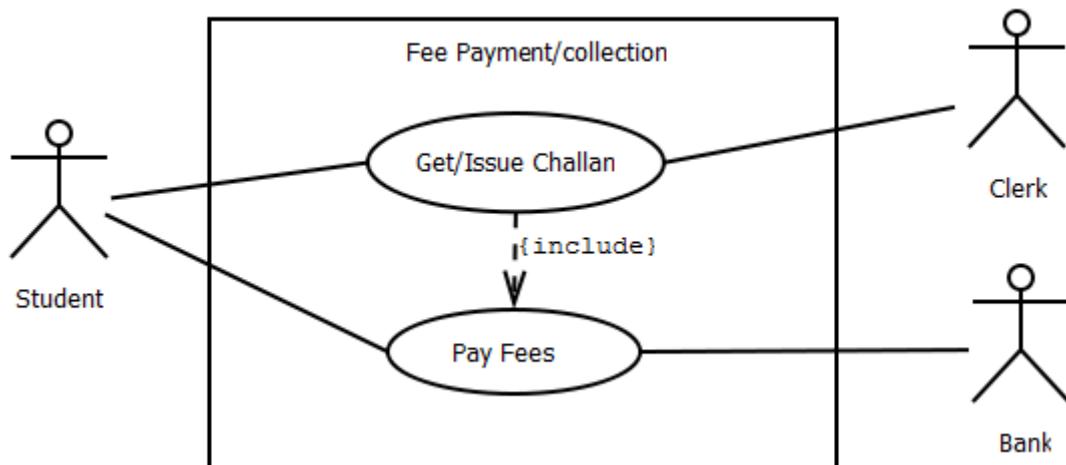


FIGURE 3.1: Obtaining Verified challan

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Main scenario:

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2. The Bank receives the challan and fees.

3.1.2 Electronic Fees Payment System

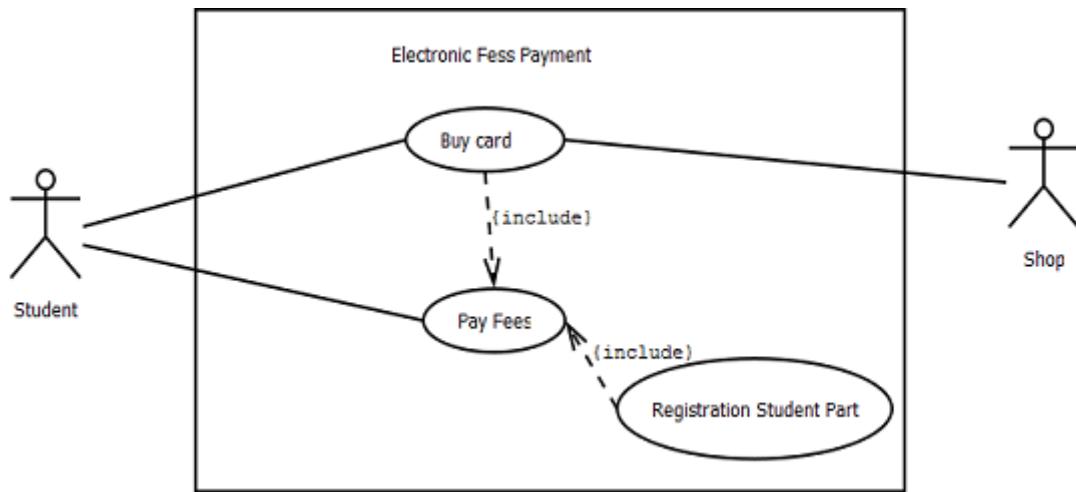


FIGURE 3.2: Electronic Fees Payment System

Name: Electronic fees payment

Description: The student gets the card from a shop and pays fees

Actor: student

Main scenario:

1. The student provides data such as year and roll number
2. The system provides available information about the student .

Alternative scenario:

1. If the input data is not correct, then the system shows the following options:
The system notifies the “roll number”, “card number”, or ”purpose” to be put.
If these information’s are not found by the system, then it displays that “you are not registered” or “invalid”.
2. If the student has no card than pay the fees through bank challan.
3. If the registration of semester is not done then student goes to the admission office.

3.1.3 Issue scratch card

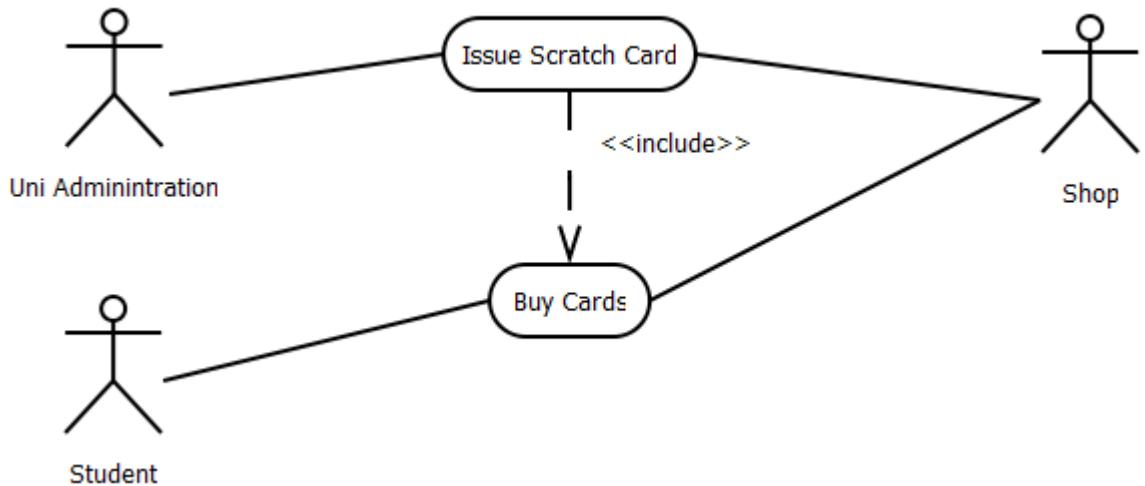


FIGURE 3.3: Issue scratch card

Name: Issue scratch card

Description: University issue the card for the student to pay fees

Actor: Administration, Shop, Student.

Main scenario:

1. University administration issue the scratch card.
2. Issued card available on shop
3. Student will purchase scratch card from shop to pay fees.

3.2 Event Notification Use Case Report

3.2.1 Event Notification

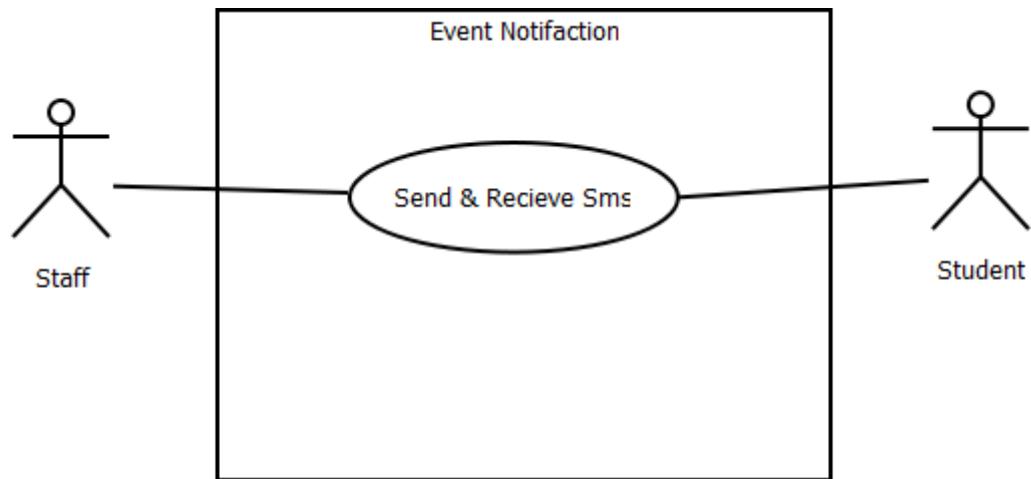


FIGURE 3.4: Event Notification

Name: Event Notification

Description: The staff sends notification via sms to the students

Actor: student, staff (clerk)

Main scenario:

1. The staff member sends the information about time table or emergency messages, etc to the students or the whole batch

3.2.2 Detail Event Notification

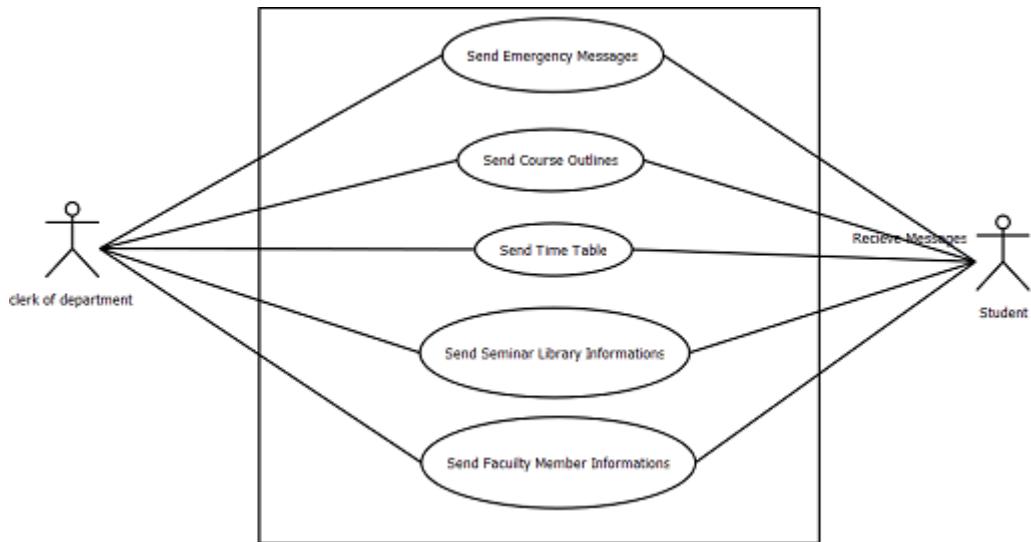


FIGURE 3.5: Detail Event Notification

Name: Detail Event Notification

Description: The clerk send notifications via sms to the students

Actor: student, staff (clerk)

Main scenario:

1. The clerk sends the information about time table or emergency messages, course outlines, seminar library information and faculty member's information to the students or the whole batch.

3.2.3 Detail Event Notification

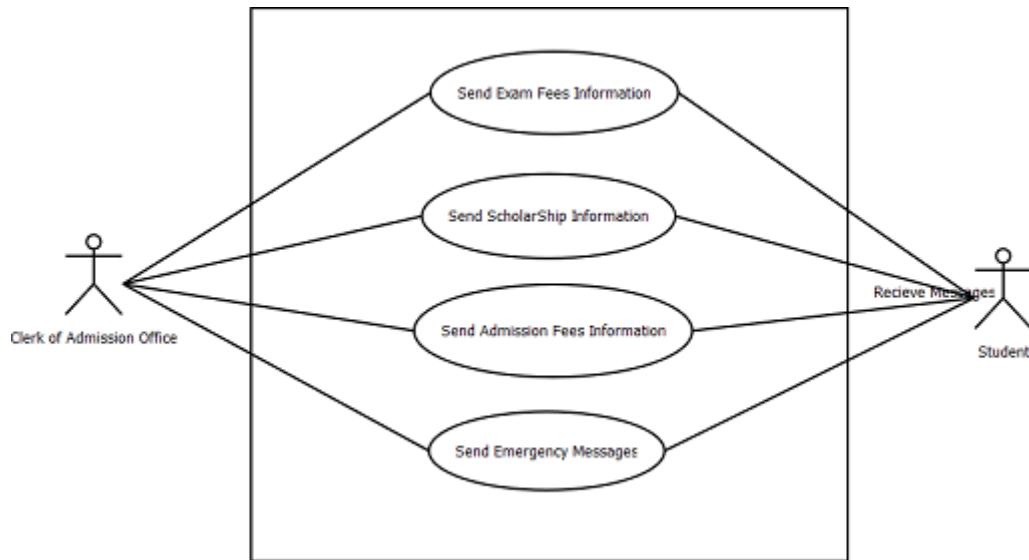


FIGURE 3.6: Detail Event Notification

Name: Detail Event Notification

Description: The clerk send notifications via sms to the students

Actor: student, staff (clerk)

Main scenario:

1. The clerk sends the information about time table or emergency messages, course outlines, seminar library information and faculty member's information to the students or the whole batch.

3.3 Information Of Results Use Case Report

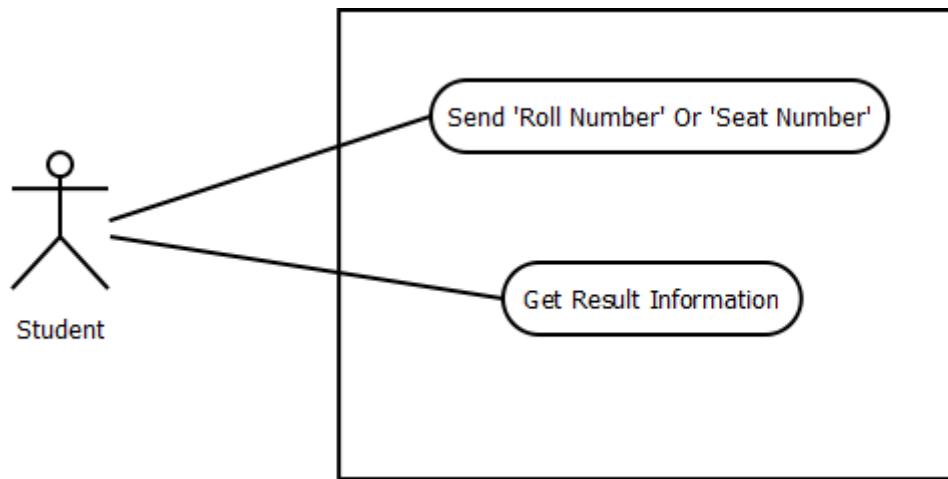


FIGURE 3.7: Information about exam or test result

Name: Information about exam or test result

Description: The student send roll number or seat number via short message to the university number and system provides available information about the student

Actor: student

Main scenario:

1. The student provides information about the year and roll number or seat number
2. The system send available information to the student

3.4 Activity Diagram for Sending SMS

Name: Activity Diagram for Sending SMS

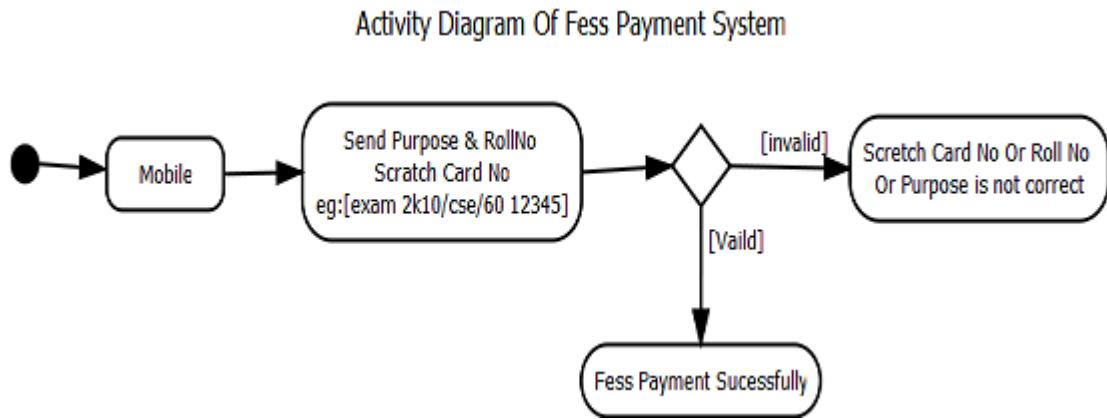


FIGURE 3.8: Activity Diagram for Sending SMS

User is made to send purpose, roll number and card number , they are verified and if the roll number and card number are verified displayed indicating he is fees payment successfully else they are asked “card no or roll number invalid”

Chapter 4

DESIGN AND IMPLEMENTATION

4.1 Architecture Diagram

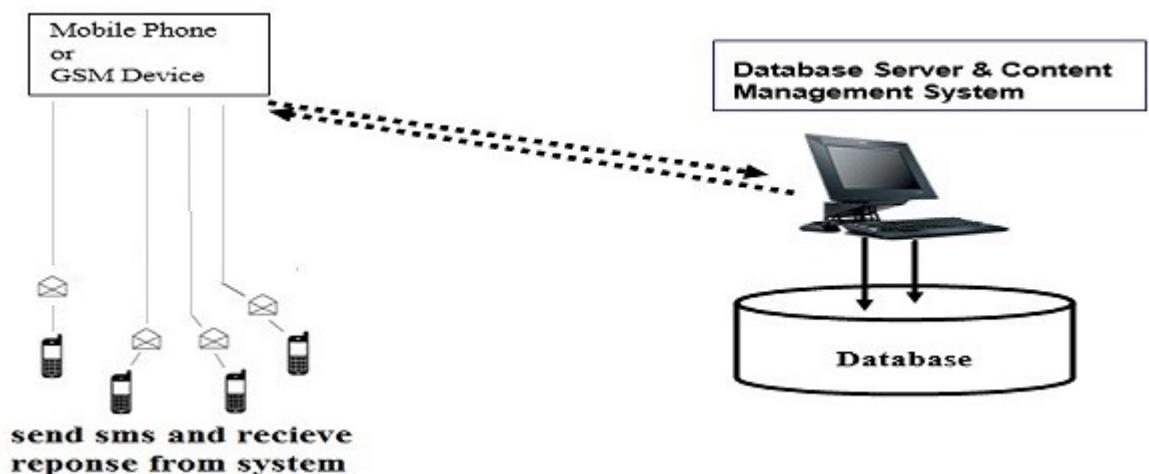


FIGURE 4.1: Architecture Diagram

Description: This system architectural diagram consists of three parts, Computer, Database (Server), GSM Device (Cell Phone) as shown in figure 4.1. GSM device is connected with computer which provides facility of sending and receiving SMS from computer. Computer is connected with database. Computer will receive information through 'GSM device' via short message service and it will response to client after fetching information from database.

4.2 Class Diagram For Fees Payment

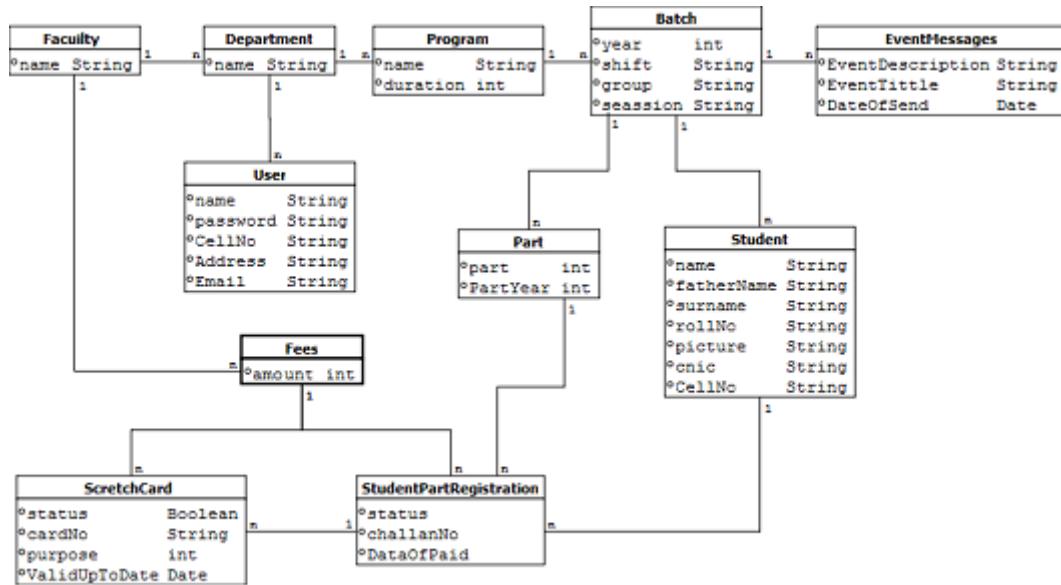


FIGURE 4.2: Class Diagram For Fees Payment

Description: The faculty class represents the major type of category of education in university for example arts, science etc. The department represents the fields regarding to specific faculty for example department computer science represents the natural science faculty. Program class represents the different type of degree program regarding to specific department for example bachelor, masters etc. Batch class represents the yearly group of admitted students in a specific program. Class Event Message represents the notification issued or sent to specific batch of students. Every program contains specific number of years to complete that program, the Part class represent the year of every batch. Student class represents student itself studying in university. Fees class represents yearly paid fee of student. Scratch Card class represents the cards issued from university for students to pay their fee.

4.3 Class Diagram For Exam Result and Event Notification

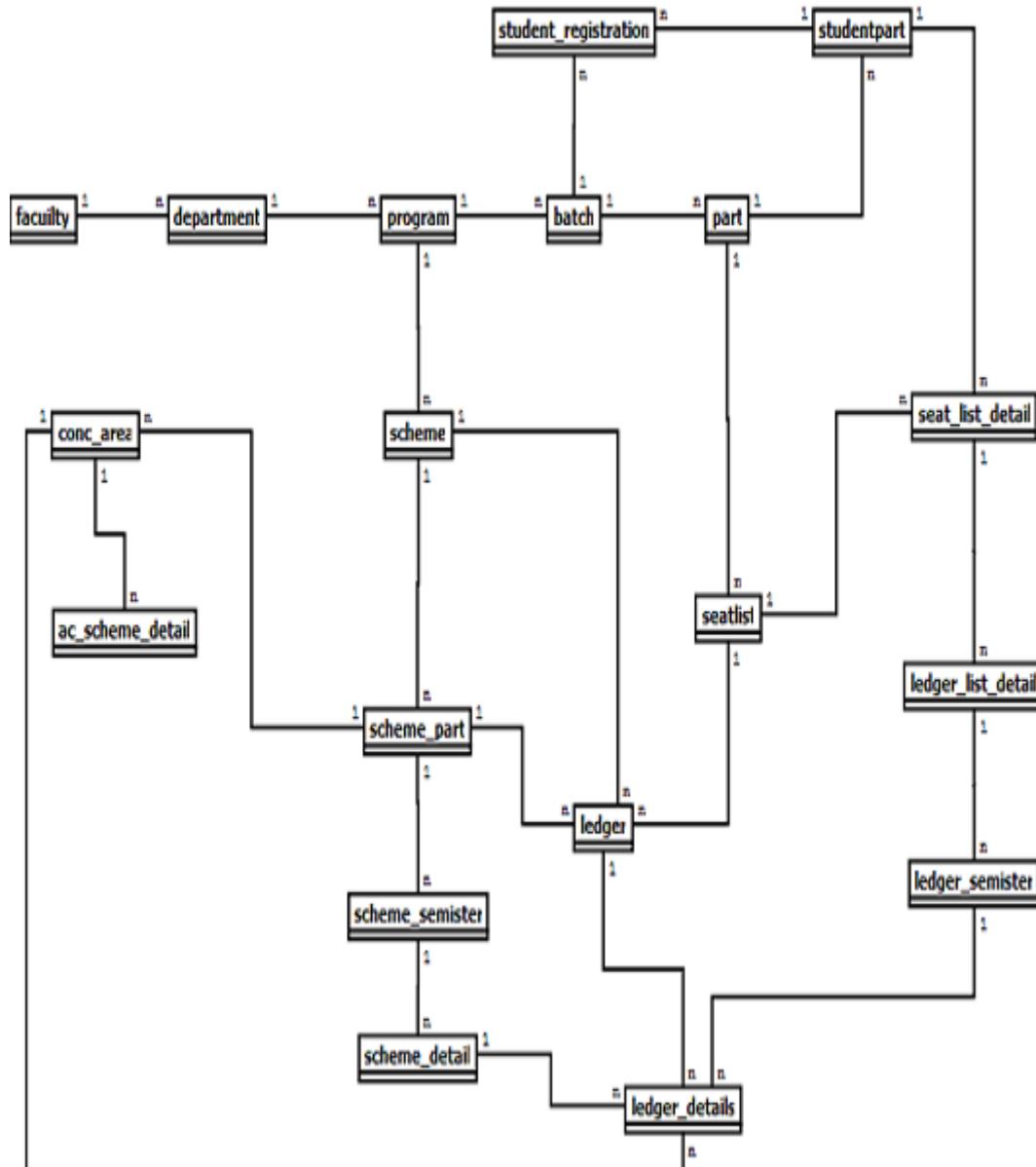


FIGURE 4.3: Class Diagram For Exam Result and Event Notification

4.4 ER Diagram For Exam Result and Event Notification

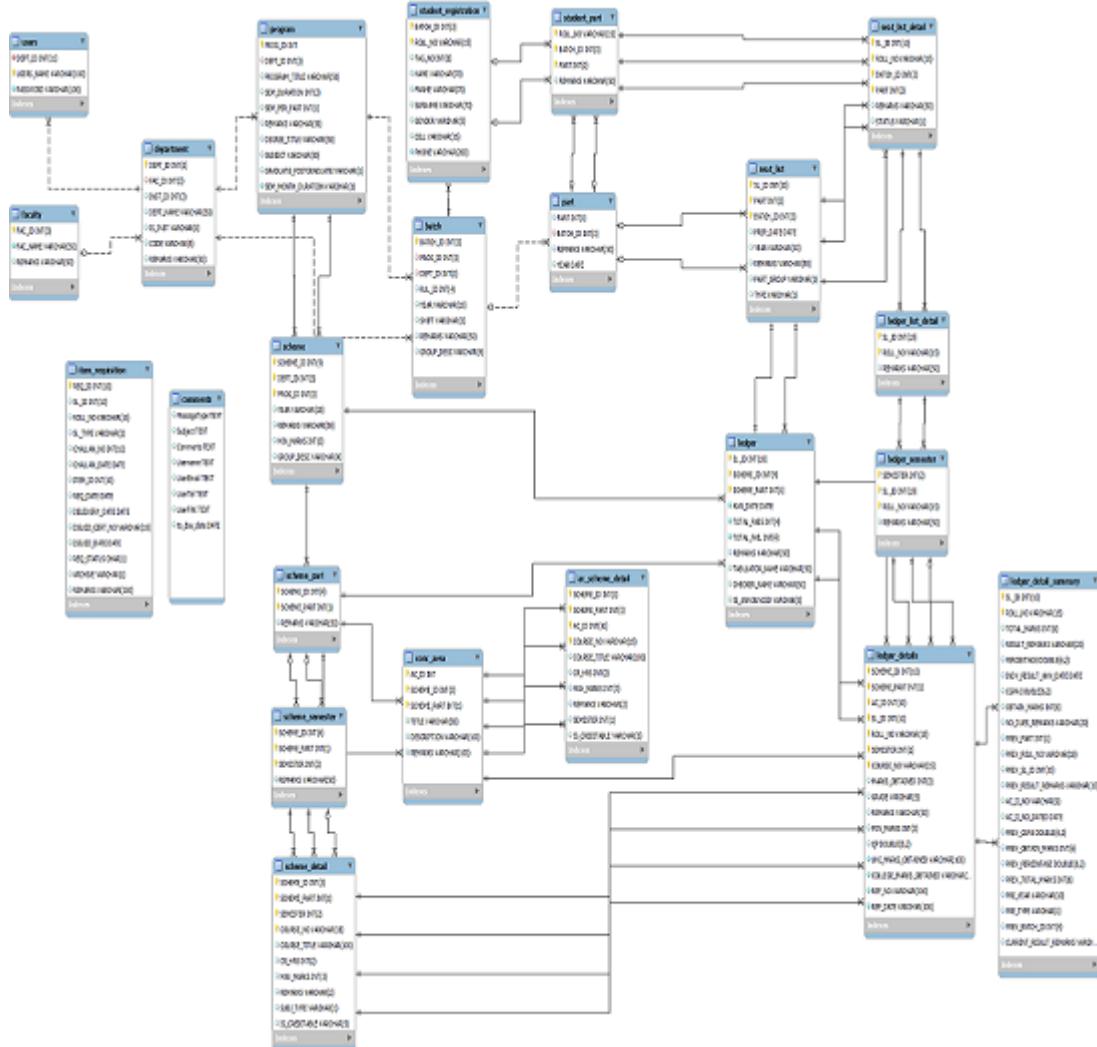


FIGURE 4.4: ER Diagram For Exam Result and Event Notification

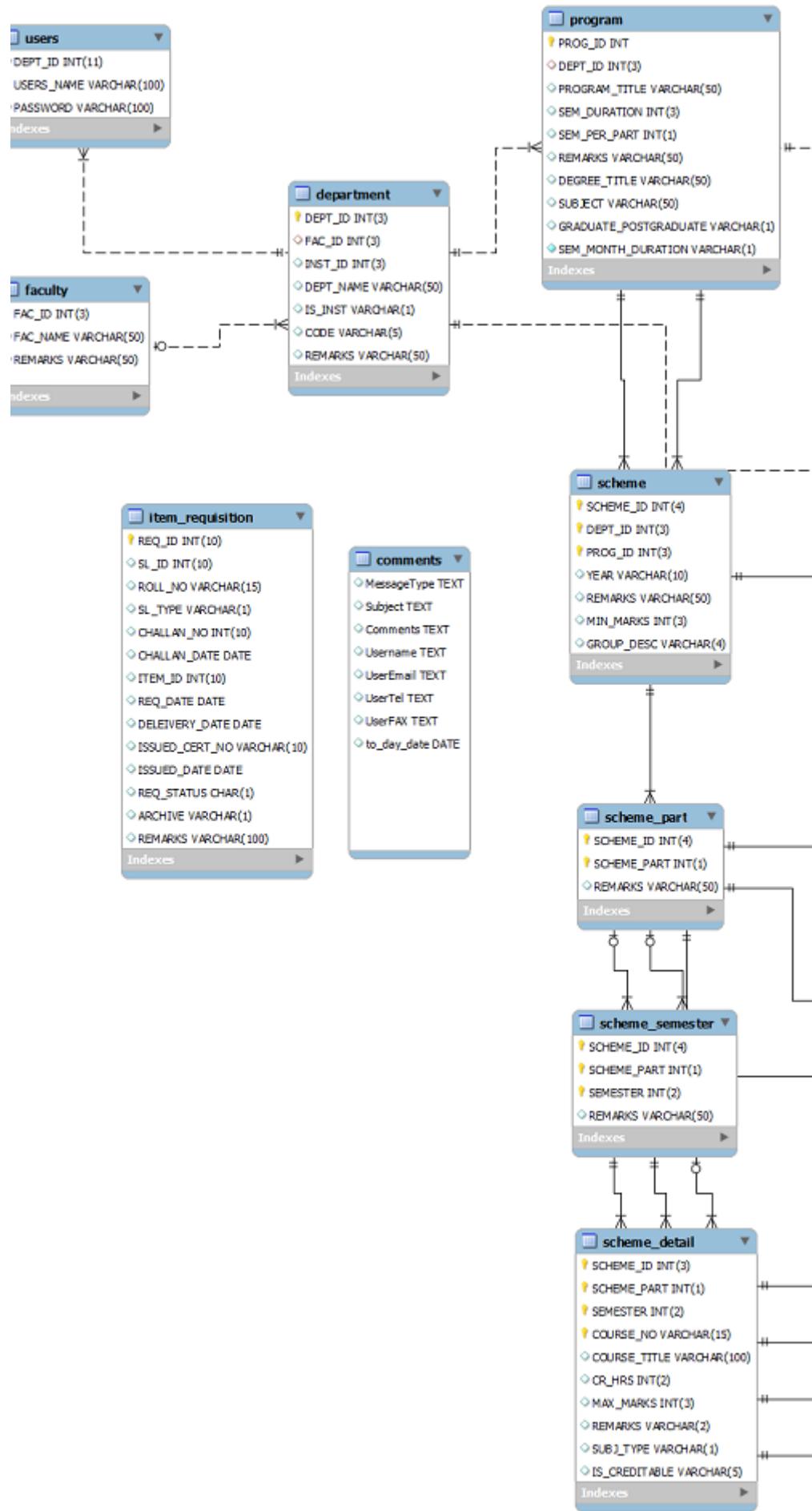


FIGURE 4.5: ER Diagram For Exam Result and Event Notification

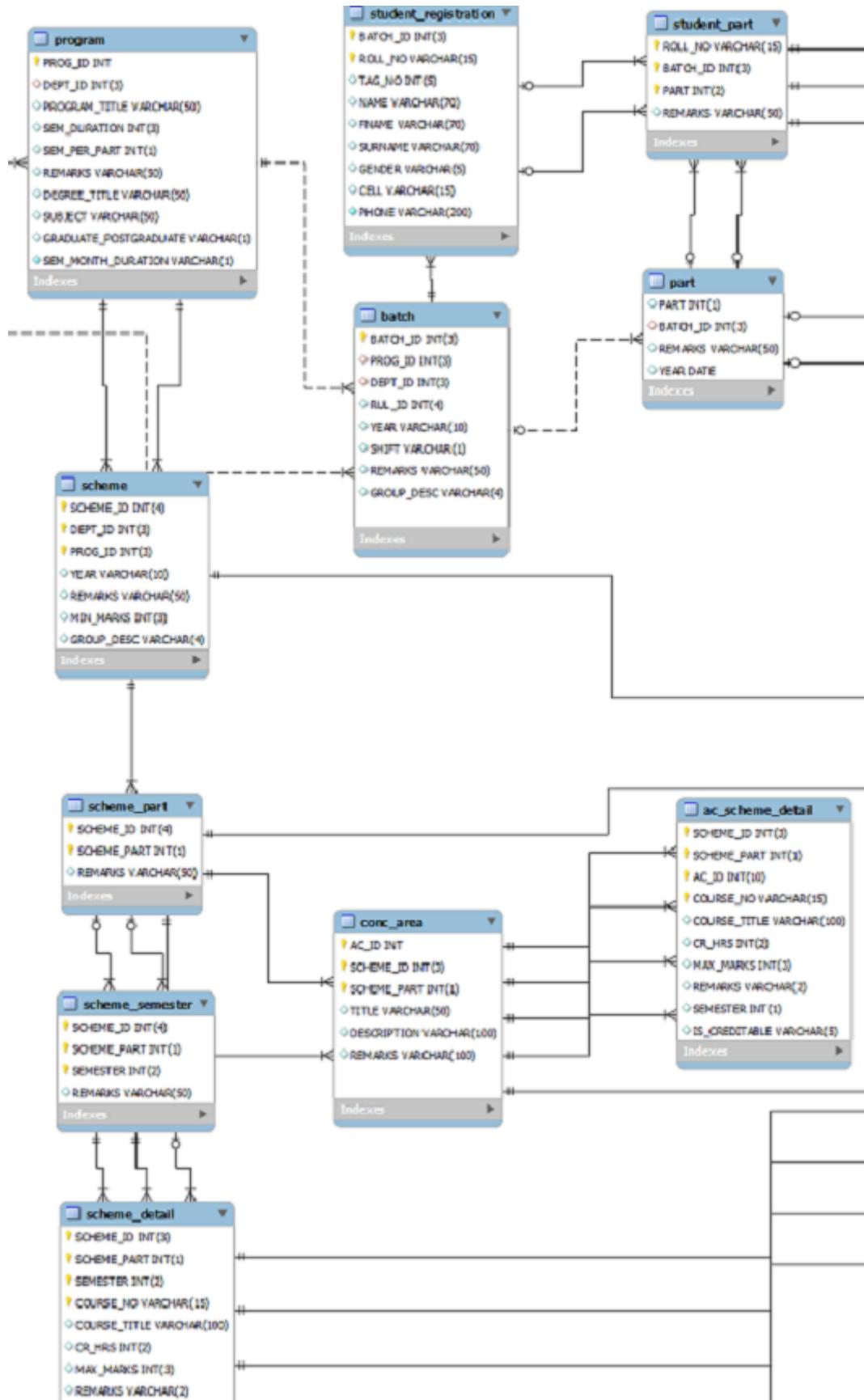


FIGURE 4.6: ER Diagram For Exam Result and Event Notification

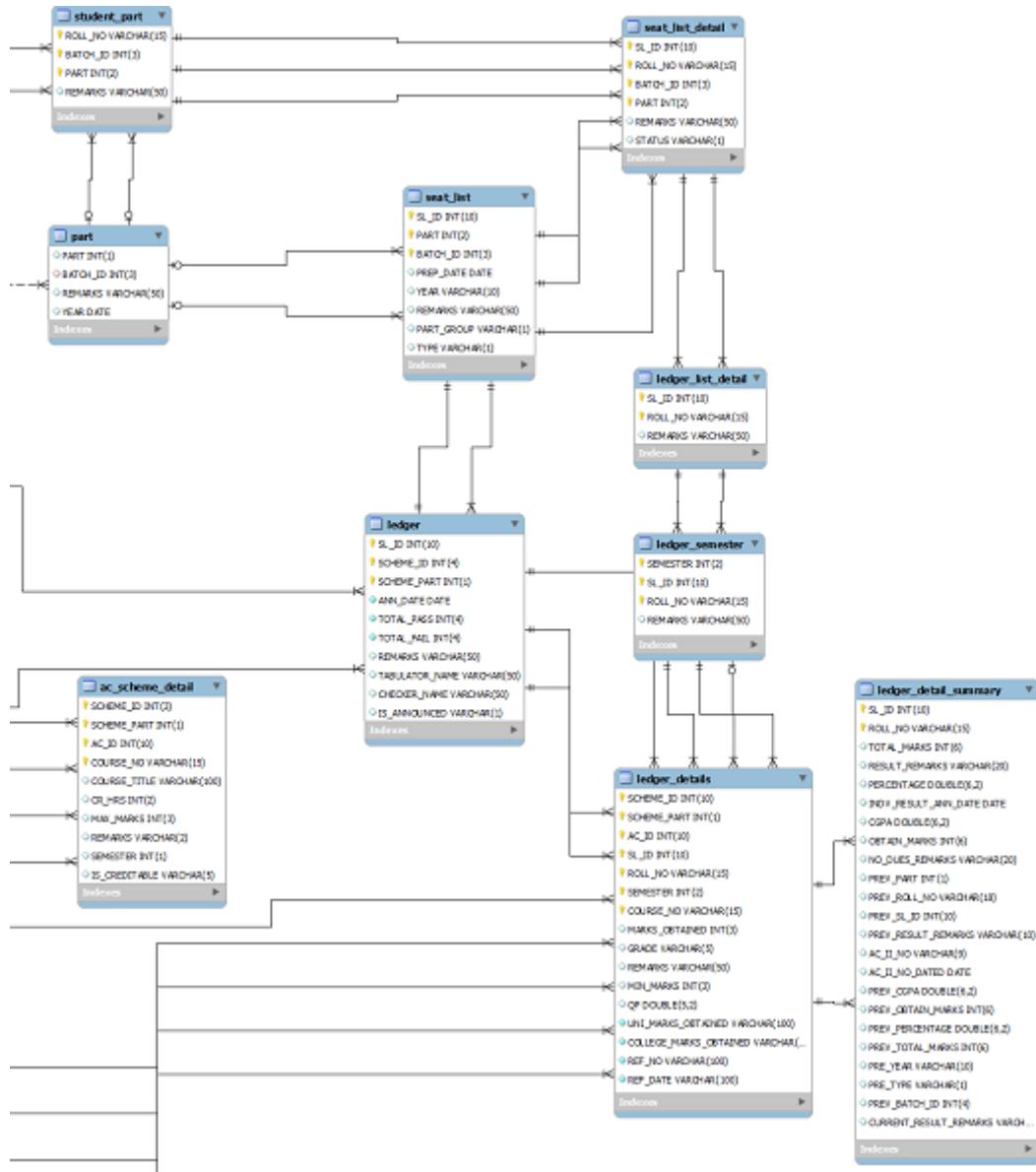


FIGURE 4.7: ER Diagram For Exam Result and Event Notification

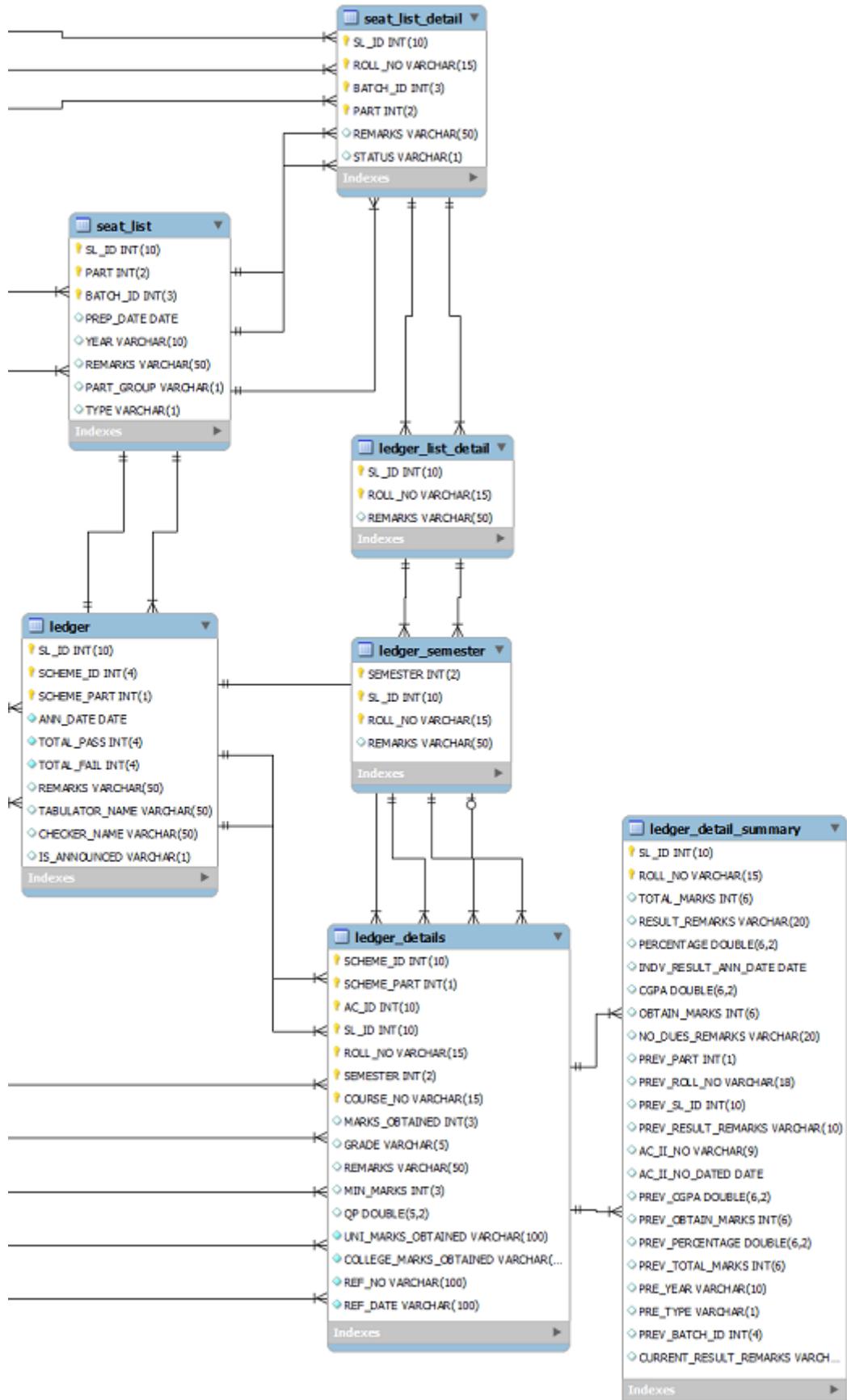


FIGURE 4.8: ER Diagram For Exam Result and Event Notification

4.5 User Interfaces For Paying Admission Fees and Exam Fees

4.5.1 Paying Admission Fees and Exam Fees



FIGURE 4.9: Paying Admission Fees and Exam Fees

Description: Figure 4.4.1 shows that student will pay admission, exam, degree or certificate fees. Student send information ‘Purpose’ ‘Roll Number’ and ‘Card Number’ On given University Number for Example university given number is: ‘03332836705’ or 2345 Ex: write ‘admin 2K10/CSE/60 1234456789765’ sms send on ‘03332836705’ or ‘2345’.

4.5.2 Response For Paying Admission Fees and Exam Fees



FIGURE 4.10: Reply For Paying Admission Fees and Exam Fees

Description: Figure 4.4.2 shows that Student will see conformation message of fees payment

4.5.3 Response For Paying Certificate or Degree Fees



FIGURE 4.11: Reply For Paying Certificate Fees or Degree Fees

Description: Figure 4.4.2 shows that student will see conformation message of fees payment

4.5.4 Response For Paying Certificate Fees or Degree Fees

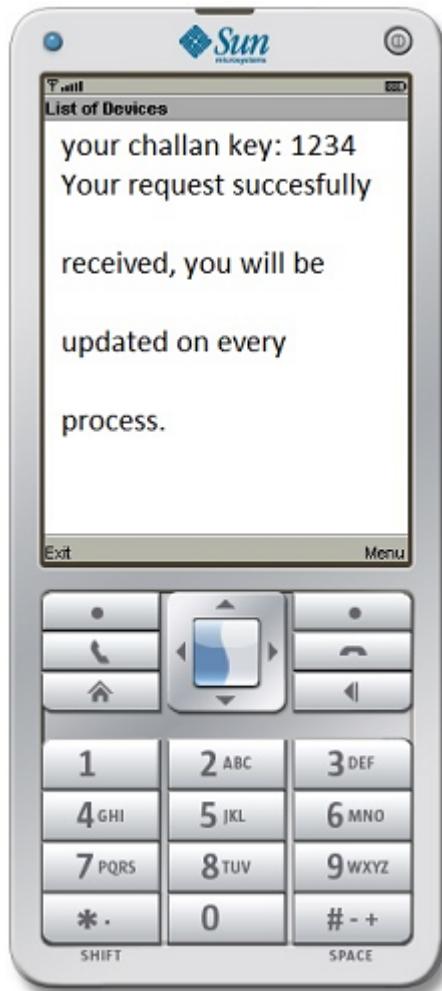


FIGURE 4.12: Reply For Paying Certificate Fees or Degree Fees

Description: : Figure 4.4.4 shows that Student will see conformation message of fees payment.

4.6 User Interface For Event Notification Android Application

4.6.1 Event Notification Login Form

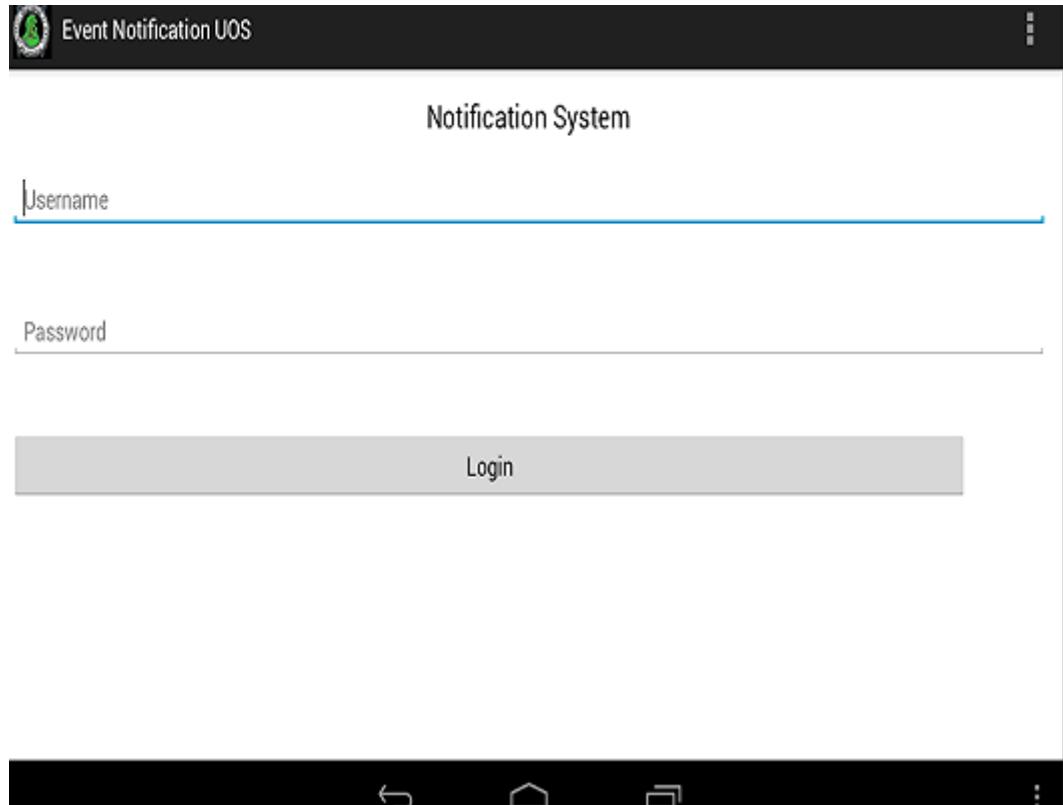


FIGURE 4.13: Event Notification Login Form

Description: It shows that each department contain own user name and password.

4.6.2 Event Notification Select Program

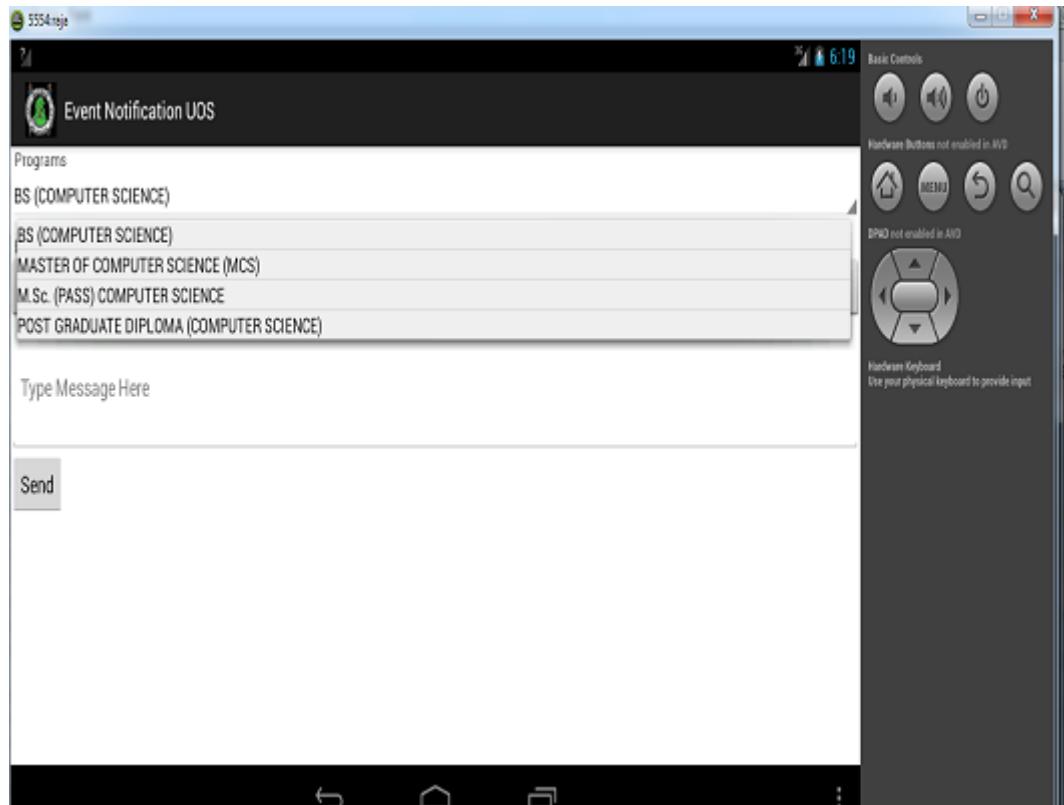


FIGURE 4.14: Event Notification Select Program

Description: Every department's admin will see only particular degree program related to that department.

4.6.3 Event Notification Select Batch



FIGURE 4.15: Event Notification Select Batch

Description: After selecting particular program, current batches will be shown in list in which single can be selected to sent message.

4.6.4 Send Event Notification

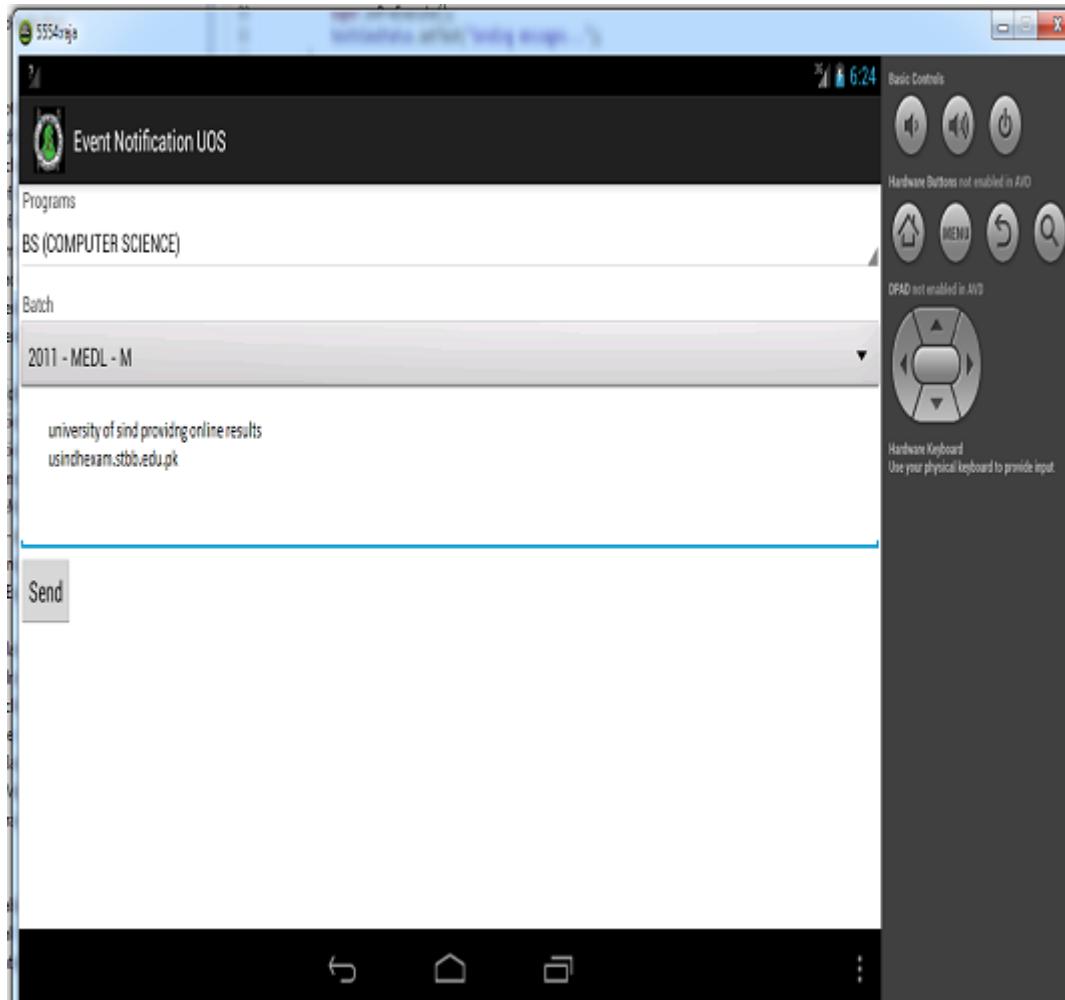


FIGURE 4.16: Send Event Notification

Description: shows that Any new event if happens in the university, such as, admission or examination date announcement, or class suspension due to any reason, the concerned person write ‘Event Message’ and select batch and group system will send a message to the all students. The students will receive message on mobile phone.

4.6.5 Response Of Event Notification



FIGURE 4.17: Response Of Event Notification

Description: Message sent by event notification will be received to all students of that particular batch of program, which were selected

4.7 User Interface For Exam Result Information

4.7.1 Exam Result Information



FIGURE 4.18: Exam Result Information

Description: Figure 4.5.1 shows that student will see exam result. Student write 'Roll Number' space 'Part Number' and send university given number for Example University Number is: '03332836705' or 2345 Example: Write '2k10/CSE/60 1' sms send on '03332836705' or 2345.

4.7.2 Response Of Exam Result

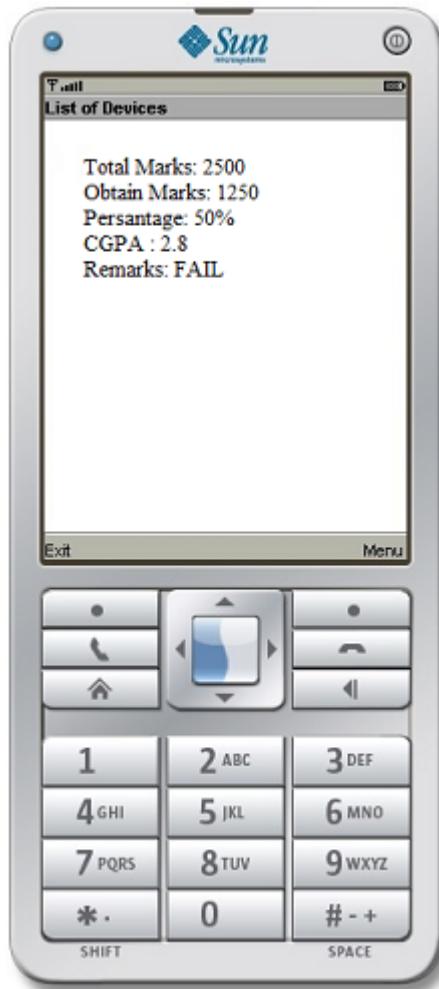


FIGURE 4.19: Response Of Exam Result

Description: : Figure 4.5.2 shows that Student will see on mobile information of semester result.

4.8 User Interface For Admission Result Information

4.8.1 Admission Result Information



FIGURE 4.20: Admission Result Information

Description: FFigure 4.6.1 shows that Student will see Admission result. Student send information ‘Seat Number’ On University Number for Example University Number is: ‘03332836705’ or 2345 Example: Write ‘1234’ sms send on ‘03332836705’ or 2345

4.8.2 Response Of Admission Result

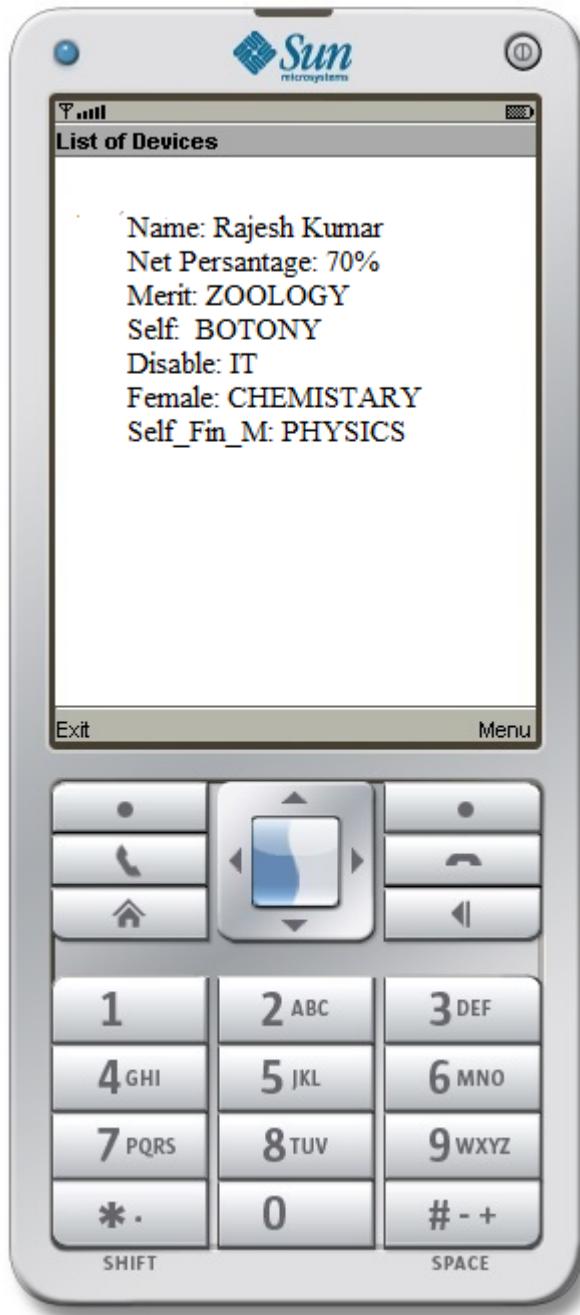


FIGURE 4.21: Response Of Admission Result

Description: : Figure 4.6.2 shows that Student will see on mobile information of admission result. The system automatically response and send student information on mobile.

4.9 User Interface For Examination Result Webiste

4.9.1 Main Tittle page



FIGURE 4.22: Main Tittle Page

Description: Home page of website of examination. This web contains all the examination positions and results including course scheme according to previous and current batches.

4.9.2 Semester results SMS service

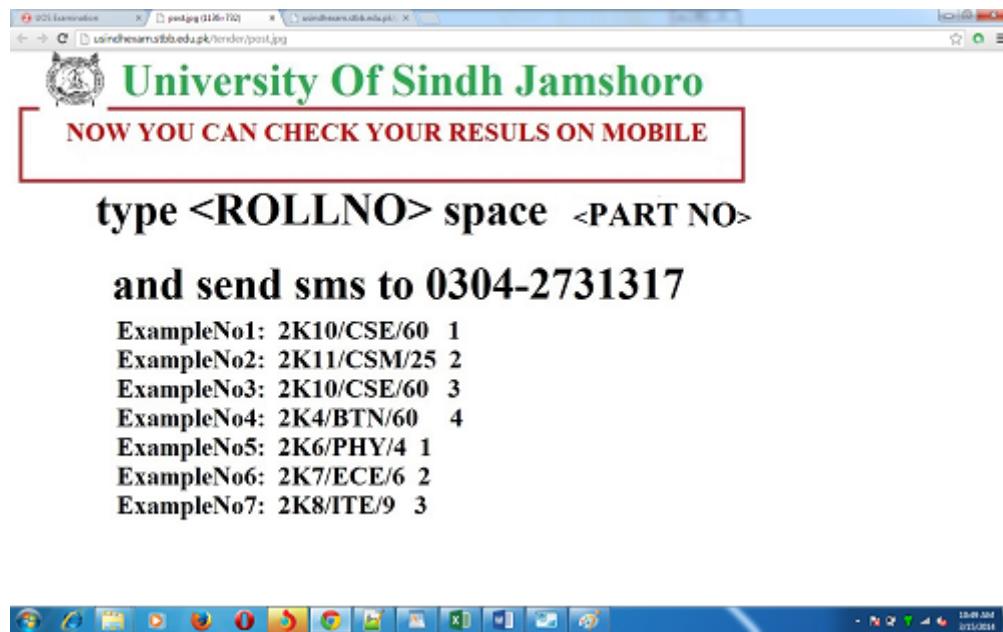


FIGURE 4.23: Semester results SMS service

Description: This service provide students to check their results via sending a message with this pattern.

4.9.3 Annually Result Announcement

The screenshot shows the official website of the University of Sindh, Directorate of Examinations. At the top, there is a logo of the university and the text "University of Sindh" followed by "Directorate of Examinations". A navigation bar below includes links for Home, Results (which is highlighted in blue), Course Scheme, Faculty, Comments, and Contact Us. Social media icons for YouTube, Facebook, and Twitter are also present. The main content area is titled "Announcements" and specifically mentions "Semester Examinations". Below this, the text "University of Sindh, Jamshoro" is displayed. There are two dropdown menus: one for "Department" set to "ANTHROPOLOGY & ARCHAEOLOGY" and another for "Exam. Year" set to "2004". A blue button labeled "View Announcements" is located at the bottom of this section. At the very bottom of the page, a copyright notice reads: "Copyright 2015 University of Sindh, Jamshoro, 76080, Sindh, Pakistan. exam.usindh.edu.pk. All Rights Reserved."

FIGURE 4.24: Annually Result Announcement

Description: student can see results announcement year wise and select the academic year and department.

4.9.4 Response of Result Announcement

COMPUTER SCIENCE	
RESULT ANNOUNCED EXAMINATION 2013	
BATCH (2010) MEDICAL	
BS (COMPUTER SCIENCE) FIRST YEAR	IMP/FAIL
BS (COMPUTER SCIENCE) FIRST YEAR	SPECIAL
BS (COMPUTER SCIENCE) SECOND YEAR	IMP/FAIL
BS (COMPUTER SCIENCE) SECOND YEAR	SPECIAL
BS (COMPUTER SCIENCE) THIRD YEAR	IMP/FAIL
BS (COMPUTER SCIENCE) THIRD YEAR	SPECIAL
BS (COMPUTER SCIENCE) FOURTH YEAR	REGULAR
BS (COMPUTER SCIENCE) FOURTH YEAR	SPECIAL
BATCH (2010) ENGINEERING	
BS (COMPUTER SCIENCE) FIRST YEAR	IMP/FAIL
BS (COMPUTER SCIENCE) FIRST YEAR	SPECIAL
BS (COMPUTER SCIENCE) SECOND YEAR	IMP/FAIL
BS (COMPUTER SCIENCE) SECOND YEAR	SPECIAL
BS (COMPUTER SCIENCE) THIRD YEAR	IMP/FAIL

FIGURE 4.25: Response of Result Announcement

Description: : Announcement of results of every department annually.

4.9.5 Response of Result Announcement

Result Announcement Sheet					
Semester Examinations					
BS (COMPUTER SCIENCE) FIRST YEAR BATCH (2010) MEDICAL IMP/FAIL					
S.NO	ROLL NO.	C.G.P.A	PER.	OBT/ TOTAL	PASS/ FAIL
1	2K10/CSM/101	2.89	63.07	883/ 1400	PASS
2	2K10/CSM/102	3.17	67.50	945/ 1400	PASS
3	2K10/CSM/103	2.70	59.50	833/ 1400	PASS
4	2K10/CSM/113	3.06	67.50	945/ 1400	PASS
5	2K10/CSM/116	2.61	59.50	833/ 1400	PASS
6	2K10/CSM/119	2.62	58.86	824/ 1400	PASS
7	2K10/CSM/123	2.62	58.93	825/ 1400	PASS
8	2K10/CSM/124	1.58	42.29	592/ 1400	FAIL
9	2K10/CSM/125	2.73	61.93	867/ 1400	PASS
10	2K10/CSM/126	2.86	65.79	921/ 1400	PASS

FIGURE 4.26: Response of Result Announcement

Description: : in above figure 4.8.4 you select the batch and figure 4.8.5 shows the result of batch.

4.9.6 Academic Transcript /Marksheet

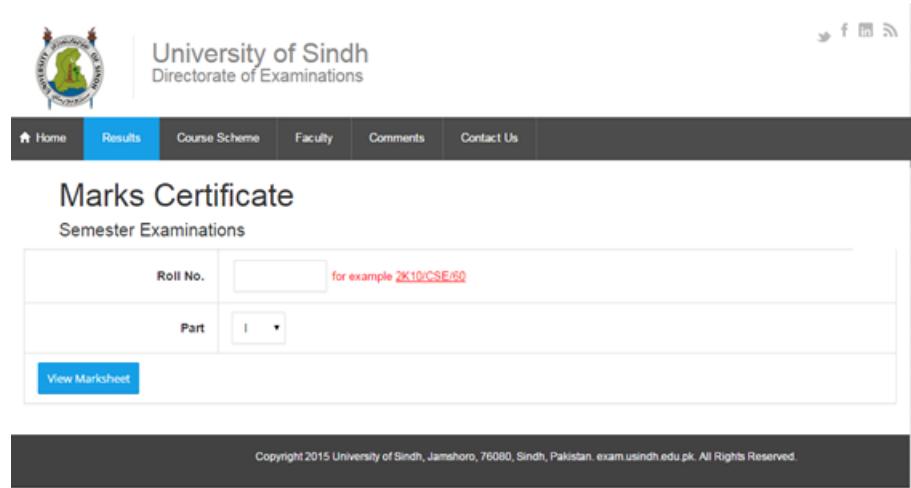


FIGURE 4.27: Academic Transcript

Description: student can see their semester results by typing the roll number of student and select the academic year and part.

4.9.7 Academic Transcript /Marksheet

**BS (COMPUTER SCIENCE) FOURTH YEAR REGULAR
2013**
Academic Transcript

NAME:	RAJESH KUMAR					
FATHER'S NAME:	GHANSHAM DAS					
SURNAME:	THARWANI					
ROLL NO:	2K10/CSE/60					
SEVENTH SEMESTER						
COURSE.NO	SUBJECTS	MAX.MK.	MIN.MK.	OBT.MK.	GRADE	Q.P
COMP600	OPERATING SYSTEM	100	40	63	B	9.00
COMP601	COMPUTER GRAPHICS - II	100	40	51	C	6.00
COMP602	VISUAL PROGRAMMING	100	40	82	A	12.00
COMP603	VISUAL PROGRAMMING (LAB)	100	40	82	A	4.00
COMP604	COMPILER CONSTRUCTION	100	40	60	B	9.00
COMP605	COMPUTER NETWORKS	100	40	80	A	12.00
COMP606	COMPUTER NETWORKS (LAB)	100	40	81	A	4.00
COMP607	ARTIFICIAL INTELLIGENCE	100	40	71	B	9.00
COURSE.NO	SUBJECTS	MAX.MK.	MIN.MK.	OBT.MK.	GRADE	Q.P
COMP611	WEB PROGRAMMING / ELECTIVE - I	100	40	64	B	9.00
COMP612	SCIENTIFIC MODELING & SIMULATION / ELECTIVE - II	100	40	67	B	9.00
COMP613	SOFTWARE PROJECT	200	80	170	A	24.00
COMP614	VIVA VOCE	100	40	65	B	12.00
MARKS OBTAINED:	3644/ 5300					
CGPA:	3.22					
RESULT:	PASS					
PERCENTAGE:	68.75					
RESULT DECLARED:	20 February 2014					

FIGURE 4.28: Response Academic Transcript

Description:: Reply of typing the roll number of student and select the academic year.

4.9.8 Academic Positions

The screenshot shows a web page titled "University of Sindh Directorate of Examinations". At the top, there is a navigation bar with links for Home, Results, Course Scheme, Faculty, Comments, and Contact Us. Below the navigation bar, the title "Positions" is displayed, followed by "Semester Examinations". There are two dropdown menus: one for "Department" set to "COMPUTER SCIENCE" and another for "Exam. Year" set to "2013". A blue "Display" button is located at the bottom of the form.

FIGURE 4.29: Academic Positions

Description:: Reply of typing the roll number of student and select the academic year.

4.9.9 List Of Academic Positions

BS (COMPUTER SCIENCE) BATCH (2010) MEDICAL					
<u>STOOD FIRST</u>					
NAME:	HUMZA				
FATHER'S NAME:	ABDUL BARI				
SURNAME:	FAROOQUI				
OBTAIN MARKS:	3967/ 5300	C.G.P.A:	3.67	PERCENTAGE:	74.85%
<u>STOOD SECOND</u>					
NAME:	NEELAM				
FATHER'S NAME:	NIAZ MUHAMMAD				
SURNAME:	MEMON				
OBTAIN MARKS:	4157/ 5300	C.G.P.A:	3.66	PERCENTAGE:	78.43%
<u>STOOD THIRD</u>					
NAME:	BABY SANAM				
FATHER'S NAME:	IRSHAD AHMED				
SURNAME:	SHAIKH				
OBTAIN MARKS:	4004/ 5300	C.G.P.A:	3.63	PERCENTAGE:	75.55%

FIGURE 4.30: List Of Academic Positions

Description:: List of positions holder of every department.

4.9.10 Annually list of successful or passed out students

The screenshot shows the official website of the University of Sindh, Directorate of Examinations. At the top, there is a logo of the university and navigation links for Home, Results, Course Scheme, Faculty, Comments, and Contact Us. Social media icons for Twitter, Facebook, and RSS feed are also present. The main content area is titled 'List of Successful Candidates' under 'Semester Examinations'. It features two dropdown menus: 'Department' set to 'COMPUTER SCIENCE' and 'Exam. Year' set to '2013'. A blue 'Display' button is located at the bottom left of the form. A copyright notice at the bottom states: 'Copyright 2015 University of Sindh, Jamshoro, 76080, Sindh, Pakistan. exam.usindh.edu.pk. All Rights Reserved.'

FIGURE 4.31: List of successful candidates

Description: Student can see their List of successful candidates of every department by select the department and select the academic year

4.9.11 Response of sucessful candidates

BS (COMPUTER SCIENCE) FOURTH YEAR REGULAR BATCH (2010) MEDICAL								
S.NO.	ROLL NO.	NAME	FATHER'S NAME	SURNAME	C.G.P.A	PERCENTAGE	OBTAIN MARKS	TOTAL MARKS
1	2K10/CSM/259	HUMZA	ABDUL BARI	FAROOQUI	3.67	74.85	3967	5300
2	2K10/CSM/150	NEELAM	NIAZ MUHAMMAD	MEMON	3.66	78.43	4157	5300
3	2K10/CSM/112	BABY SANAM	IRSHAD AHMED	SHAIKH	3.63	75.55	4004	5300
4	2K10/CSM/184	NEELAM	RIAZ AHMED ALIAS SHAFAQATULLAH	MEMON	3.63	74.21	3933	5300
5	2K10/CSM/158	RUQAYA	ROSHAN ALI	GILAL	3.63	73.15	3877	5300
6	2K10/CSM/151	NOSHEEN RANI	MUHAMMAD ASHRAF	ARAIN	3.58	73.89	3916	5300
7	2K10/CSM/146	NASEEM Kouser	SARDAR ALI	ARAIN	3.56	74.00	3922	5300
8	2K10/CSM/145	NARMEEN	MUSHTAQE AHMED	MEMON	3.55	72.04	3818	5300
9	2K10/CSM/164	SARIYA QAISER	MOHAMMAD QAISER RAUN	MUGHAL	3.52	73.23	3881	5300

FIGURE 4.32: Response of sucessful candidates

Description:Student can see the successful candidates list.

4.9.12 Course Scheme

The screenshot shows the 'Course Scheme' section of the University of Sindh website. At the top, there is a logo of the university and social media links (YouTube, Facebook, LinkedIn, and RSS). Below the logo, the text 'University of Sindh' and 'Directorate of Examinations' is displayed. A navigation bar at the top includes links for Home, Results, Course Scheme (which is highlighted in blue), Faculty, Comments, and Contact Us. The main content area is titled 'Course Scheme' and 'Semester Examinations'. It features three dropdown menus: 'Department' set to 'COMPUTER SCIENCE', 'Program' set to 'BS (COMPUTER SCIENCE)', and 'Scheme Year' set to '2004'. A blue button labeled 'View Course Scheme' is located below these dropdowns. At the bottom of the page, a dark footer bar contains the copyright information: 'Copyright 2015 University of Sindh, Jamshoro, 76080, Sindh, Pakistan. exam.usindh.edu.pk. All Rights Reserved.'

FIGURE 4.33: Course Scheme

Description: Student can see their Course Scheme of every department by select the department and select the scheme year.

4.9.13 Response of Course Scheme

BS (CS) MEDICAL/COMMERCE PART-I						
FIRST SEMESTER						
S.NO.	CRS No.	SUBJECTS	C.HR.	MN.MRK	MX.MRK	
1	COMP310	INTRODUCTION TO COMPUTER SCIENCE	3	40	100	
2	COMP311	COMPUTER PROGRAMMING (C LANGUAGE)	3	40	100	
3	COMP312	COMPUTER PROGRAMMING (C LANGUAGE) (LAB)	1	40	100	
4	COMP313	BASIC ELECTRONICS	3	40	100	
5	ENGL300	ENGLISH	3	40	100	
6	MATH300	ALGEBRA & ELEMENTARY TRIGONOMETRY	3	40	100	
7	PKST300	PAKISTAN STUDIES	2	40	100	
SECOND SEMESTER						
S.NO.	CRS No.	SUBJECTS	C.HR.	MN.MRK	MX.MRK	
1	BUAD301	FINANCIAL ACCOUNTING & FINANCIAL MANAGEMENT	3	40	100	
2	COMP314	FUNDAMENTALS OF ALGORITHMS	3	40	100	
3	COMP315	FUNDAMENTALS OF ALGORITHMS (LAB)	1	40	100	
4	COMP316	ELECTRONIC CIRCUIT	3	40	100	
5	ENGL301	ENGLISH	3	40	100	
6	ISST301	ISLAMIC STUDIES	2	40	100	
7	MATH301	BASIC CALCULUS & ANALYTICAL GEOMETRY OF 2D	3	40	100	

FIGURE 4.34: Response of Course Scheme

Description: List of Course Schemes.

4.9.14 Faculty

The screenshot shows a website for the University of Sindh, Directorate of Examinations. At the top, there is a logo and the text "University of Sindh" and "Directorate of Examinations". Below the header is a navigation bar with links for Home, Results, Course Scheme, Faculty (which is highlighted in blue), Comments, and Contact Us. There are also social media icons for YouTube, Facebook, Twitter, and RSS. The main content area is titled "Faculty" and shows a table of 10 faculty members. The table has columns for SNO, NAME, DISIGNATION, and EMAIL. The faculty members listed are:

SNO	NAME	DISIGNATION	EMAIL
1	Abdul Sattar Soomro	Professor	abdul.sattar@usindh.edu.pk
2	Riaz Ahmed Memon	Professor	driaz@usindh.edu.pk
3	Saleem Chандio	Professor	saleem@usindh.edu.pk
4	Noor Ahmed Shaikh	Professor (Retd)	dmoorahmed@usindh.edu.pk
5	Zain-Ul-Abdin Khuhro	Associate Professor	zain@usindh.edu.pk
6	Abdul Ghafoor Memon	Associate Professor	ghafoor@usindh.edu.pk
7	Abdul Waseem Shaikh	Associate Professor	awshaikh@usindh.edu.pk
8	Ayaz Keerio	Associate Professor	ayaz@usindh.edu.pk
9	Farhat Naureen Memon	Assistant Professor	farhatnm@usindh.edu.pk
10	Yasir Arfat Malkani	Assistant Professor	yasir.malkani@usindh.edu.pk

FIGURE 4.35: Faculty

Description: List of Faculty.

4.9.15 Comments and Complains

The screenshot shows the 'Comments' section of the University of Sindh Directorate of Examinations website. At the top, there is a logo and the text 'University of Sindh Directorate of Examinations'. Below the header, a navigation bar includes links for Home, Results, Course Scheme, Faculty, Comments (which is highlighted in blue), and Contact Us. Social media icons for YouTube, Facebook, LinkedIn, and Twitter are also present. The main content area features a heading 'Your Comments & Views Are Valuable For Us'. On the left, there is a 'General Inquiries' sidebar with contact information: New Examination Building, University of Sindh, Allama I.I.Kazi Campus, Jamshoro-76080, Sindh, Pakistan. It also lists phone numbers (+92-22-9213162, +92-31-23188231, +92-32-13042480), an email address (exam@usindh.edu.pk), and a website (exam.usindh.edu.pk). A 'Business Hours' section indicates Monday through Friday from 8 am to 4 pm, Saturday Closed, and Sunday Closed. The right side of the page contains a form for submitting a comment. It includes fields for 'Select' (set to 'Complain'), 'Name*' (User Name), 'Email*', 'Cell No*', 'Subject*', and a large 'Message:' area with placeholder text 'comment here..'. There are also social media sharing icons at the bottom of the page.

FIGURE 4.36: Comments and Complains

Description: You can submit your views and ideas in comment box

Chapter 5

SUMMARY AND FUTURE WORK

5.1 Conclusion

We have introduced a software system, through which both, the students and the administration of the university will get the benefits. Through this system, the long procedures of fee payment, events notification and information regarding any academic inquiry will easily be provided to the students through sms service within seconds. This system will save the time and money of the university staff and the students.

5.2 Future Work

In future all payment system will be integrated in this system such as certificate fees, degree fees, admission fees etc. In future all notification will be send to cell phone. Example: timetable, new schedule, test score, exam score, fees payment notification, prepare degree certificate, etc. In future all Banking Transaction Perform through Mobile Using (SMS). Example: Like UBL Bank

Appendix A

Coding

A.1 Connect.java

```
// Connect.java
import java.io.*;
import java.util.TooManyListenersException;
import java.util.logging.Level;
import java.util.logging.Logger;
import javax.comm.CommPortIdentifier;
import javax.comm.SerialPort;
import javax.comm.SerialPortEvent;
import javax.comm.SerialPortEventListener;

public abstract class Connect implements SerialPortEventListener
{

    private boolean autoDeleteMessage = false;

    String line1 ;
    String line2 ;
    int index=0;

    CommPortIdentifier portId;
    String messageString = "Dont consider this sms, just for testing....:-D";
    char ch = '!';
}
```

```
String dest ="";  
String s = "";  
InputStream inputStream;  
  
SerialPort serialPort;  
OutputStream outputStream;  
// Connect Serial Port of Bluetooth  
public Connect(String port) throws Exception  
{  
    portId = CommPortIdentifier.getPortIdentifier(port);  
  
    serialPort = (SerialPort) portId.open("Sms_GSM", 0);  
    System.out.println("SMS Sending....Port Found");  
  
    inputStream = serialPort.getInputStream();  
    outputStream = serialPort.getOutputStream();  
  
    serialPort.notifyOnDataAvailable(true);  
  
  
    serialPort.setSerialPortParams(9600,SerialPort.DATABITS_8,SerialPort.STOPBITS_1,  
    SerialPort.PARITY_NONE);  
    System.out.println("setted serial port parameters");  
    recieve();  
}  
  
  
public void addEventListener(SerialPort serial){  
  
    try{  
        serialPort.addEventListener(this);  
    }  
    catch (TooManyListenersException e){  
        System.out.println("Exception in Adding Listener" + e);  
    }  
}  
  
@Override
```

```
public void serialEvent(SerialPortEvent event)
{
    BufferedReader input = new BufferedReader(new
InputStreamReader(inputStream));
    index = 0;
    if(event.getEventType()==SerialPortEvent.DATA_AVAILABLE){
        try {
            while((s=input.readLine())!=null){
                System.out.println("line : "+s);
                if(s.contains("CMTI")){
                    new Thread(){
                        public void run(){
                            if((index=s.indexOf(, ))!=-1){
                                s=s.substring(index+1);
                                index = Integer.parseInt(s.trim());
                                System.out.println("Index:"+index);
                                try {
                                    outputStream.write("AT+CMGF=1\r\n".getBytes());
                                    outputStream.write(("AT+CMGR="+index+"\r\n").getBytes());
                                    outputStream.flush();
                                    Thread.sleep(200);
                                } catch (Exception ex) {
                                    ex.printStackTrace();
                                }
                            }
                        }
                    }.start();
                }
                if(s.contains("+CMGR:")){
                    String msg = (s+"\n"+input.readLine());
                    System.out.println("Message: "+msg);
                    String from = msg.split(",")[1];
                }
            }
        }
    }
}
```

```
        String message =
msg.substring(msg.lastIndexOf("\\""+")+1);

        handleMessage(from.replaceAll("\\\"", ""),message );
        if(autoDeleteMessage)deleteMessage(index);
    }

}

} catch (IOException ex) {
    ex.printStackTrace();
}

}

// Send SMS TO CLINET
synchronized public void send(String phoneNo,String message){
    dest = ch + phoneNo + ch;
    messageString = message;
    System.out.println("To: "+dest);
    System.out.println("Message: "+message);

    line1 = "AT+CMGF=1\n";
    line2 = "AT+CMGS=\"" + dest + "\n";

    //String line1 = "AT+CREG=2";
    //String line2 = "AT+CGREG?";
    try
    {
        Thread.sleep(400);
        System.out.println("now sending...");

        outputStream.write(line1.getBytes());
        outputStream.write(line2.getBytes());
        outputStream.write(messageString.getBytes());
        outputStream.write(26);
        outputStream.flush();
        Thread.sleep(400);
    }
}
```

```
        catch (Exception e)
        {
            System.out.println("Error writing message " + e);
        }

    }

// READ CONTACT

public void contactEntries(int index){
    String command = "AT+CPBR="+index+"\r\n";
    try{
        outputStream.write(command.getBytes());
        outputStream.flush();
        byte[] b = new byte[20];
        inputStream.read(b , 0,20);
        String s = new String(b,0,b.length());
        System.out.println("read : "+s+": length"+s.trim().length());
    }catch (Exception e){
        System.out.println("Error writing message " + e);
    }
}

//RECIEVE SMS

public void recieve(){
    try{
        String s = "AT+CNMI=1,1,0,0,0\r";
        String source = "AT+CPMS=\"SM\"\r\n";
        outputStream.write(s.getBytes());
        outputStream.write(source.getBytes());
        outputStream.flush();
        addEventListener(serialPort);
    }catch(Exception ex){ex.printStackTrace();}
}

// DELETE MESSAGE FROM SIM

synchronized public void deleteMessage(int index){
    String source = "AT+CMGD="+index+"\r\n";
    try {
        outputStream.write(source.getBytes());
        outputStream.flush();
    }
```

```
        } catch (IOException ex) {
            Logger.getLogger(Connect.class.getName()).log(Level.SEVERE, null,
            ex);
        }

    }

    public void setAutoMessageDeleteFromSIM(boolean b){
        this.autoDeleteMessage = b;
    }

    public abstract void handleMessage(String phoneNumber, String message);
}
```

A.2 SMS Demo

```
//SMSDemo.java
public class SMSDemo {

    public static void main(String[] args) throws Exception {
        Connect con = new Connect("COM6"){
            @Override
            public void handleMessage(String phoneNumber, String message) {
                System.out.println(" Recieved Text:"+message+" Phone Number
Of Message: "+phoneNumber);
            }
        };

        con.setAutoMessageDeleteFromSIM(true);
        con.send("+923332836705", "Test Message Send");
    }
}
```

Appendix B

CONTENT MANAGEMET SYSTEM

B.1 Main Page Of Software

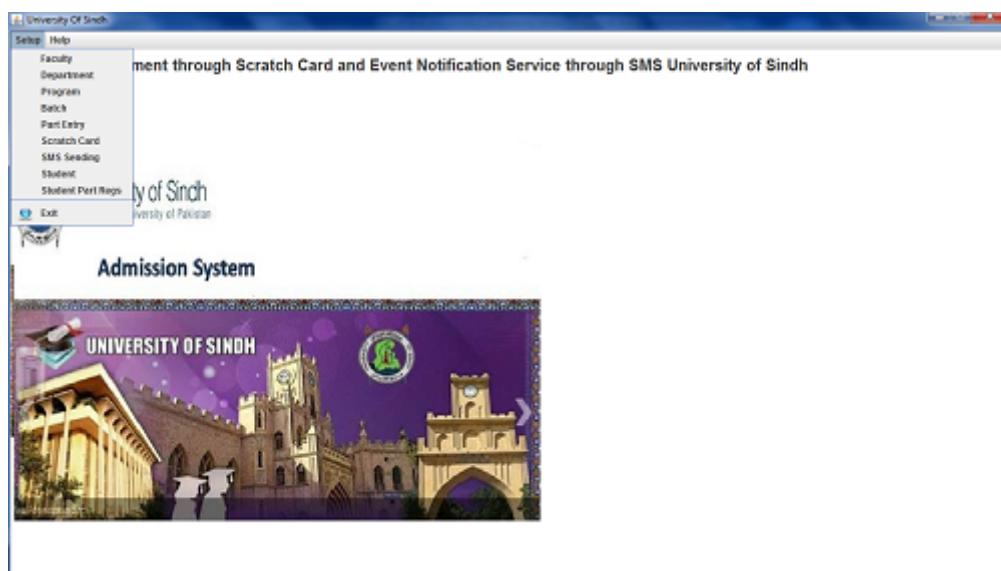


FIGURE B.1: Main page

Description: It shows the main windows of software

B.2 Generate Scratch Card

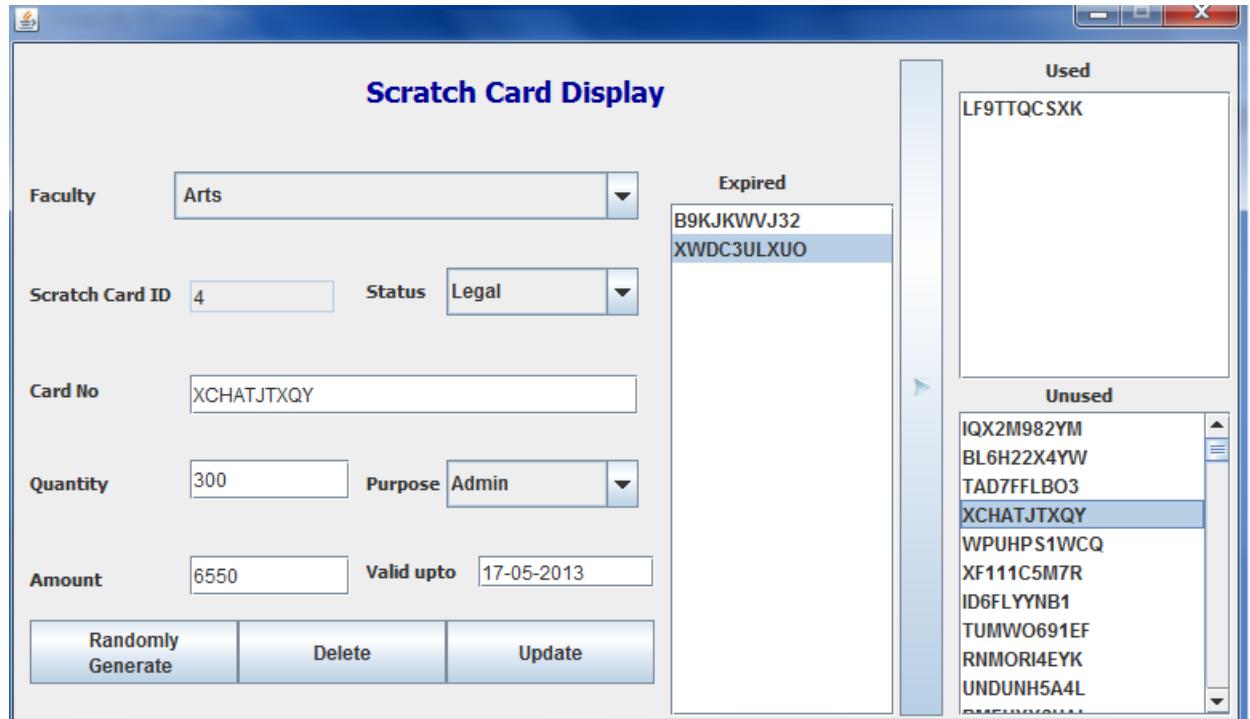


FIGURE B.2: Generate Scratch Card

Description: It shows that University generate various types of cards with specific prices, designed according to the fee structure. For example, cards for admission and examination fee will of different price. The card for any certificate issuance will be of different price. The card contains specific series of numbers. These card numbers are store in university database. The card are sold to the various shops in the university, where the students can buy the card and pay fees

B.3 Faculty Information

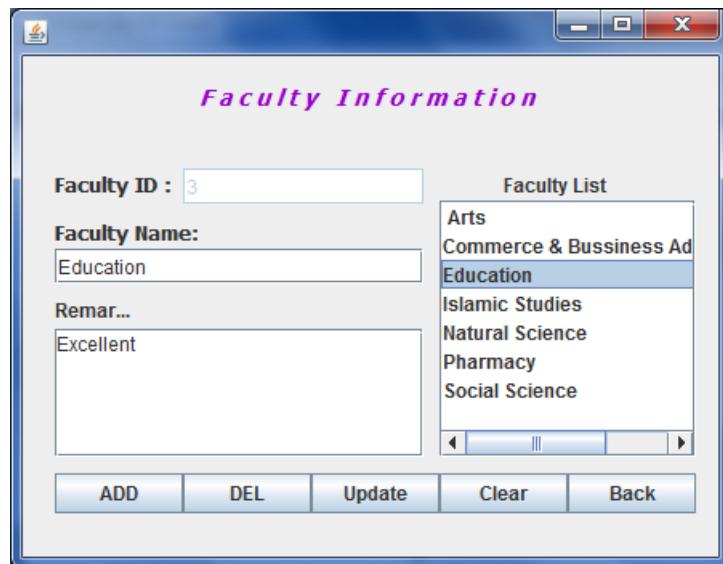


FIGURE B.3: Faculty Information

Description: It show that to add faculty example university of Sindh eight faculties currently faculty natural science arts, Islamic studies, education commerce and business Administration, Pharmacy and Faculty of Law.

B.4 Department Information

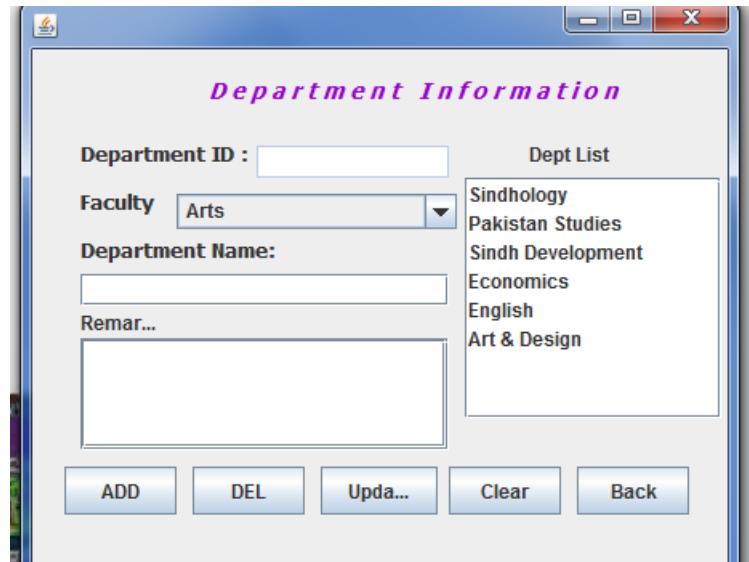


FIGURE B.4: Department Information

Description: It show that add department faculty wise. Example: arts faculty contains Sindhi, English, Urdu department.

B.5 Program Information

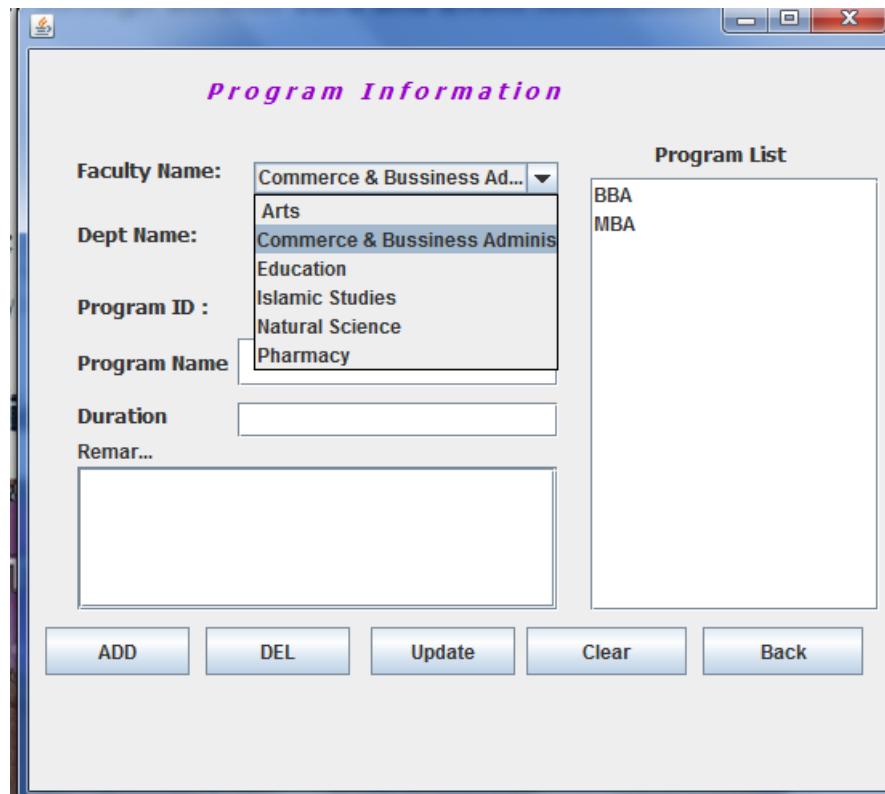


FIGURE B.5: Program Information

Description: It show that insert or add program.one department offers one or more degree programs such as computer science department offers BS(CS), MSC(Pass), MCS, PGD(CS), MPhil and PHD in computer science.

B.6 Batch Information

The screenshot shows a Windows application window titled "Batch Information". On the left, there are several input fields and dropdown menus:

- Fac Name: Arts
- Dept Name: Sindhology
- Program: B.Sc
- Batch ID: (empty)
- Batch Year: (empty)
- Shift: Morning
- Session: Spring
- Group: Morning (selected)
- Remarks: (empty text area)

To the right of these fields is a vertical list labeled "Batch List" containing the years: 2011, 2005, 2005, and 2006. At the bottom of the window are five buttons: ADD, DEL, Update, Clear, and Back.

FIGURE B.6: Batch Information

Description: It show that insert or add batches.one department offers one or more degree programs such as computer science department offers BS(CS), MSC(Pass), MCS, PGD(CS), MPhil and PHD in computer science. One program offers one or more batches such as BS (CS) contains 2010, 2011, 2012 batches etc.

B.7 Student Information

STUDENT INFORMATION

Faculty Name	Arts
Department name	Sindhology
Program Name	B.Sc
Batch Year	2011
Group	No Group
Shift	Morning
Student ID	9
Student Name	Danish
Father Name	Asif
Surname	Lagari
NIC No	24536-56363546-5
Roll No	2k11/cse/28
Address	Tharparkar
Remarks	

Student List

- Nabeel Ahmed
- Azhar Ali
- Azhar Ali
- Aliasad
- Alyshan
- Ajaz
- Amjad
- Azhar Ali
- Basid
- Daniyal
- Deepak
- Danish
- Faiz Mohammad
- Fatima
- Hamad Ali
- Hamza
- Imtiaz Ali
- Inam
- Javed Qureshi
- Junaid Khan
- Jameel Hyder
- Jafar Ali
- Jonny Dsoza
- Jameela
- Kamran

Buttons: ADD, DEL, Update, Clear, Back

FIGURE B.7: Student Information

Description: It show that insert or add students.one department offers one or more degree programs such as computer science department offers BS(CS), MSC(Pass), MCS, PGD(CS), MPhil and PHD in computer science. One program offers one or more batches such as BS (CS) contains 2010, 2011, 2012 batches etc. One Batch contain one or more students. Example in 2010 has 80 students add data of each student. We store roll number, phone number and other information phone number useful for sending event notification and roll number useful for fees payment and identification of student etc.

B.8 Part Information

The screenshot shows a Windows application window titled 'Parts'. The main title bar is 'Parts' and the window title is 'PART'. The interface is divided into several sections:

- Department:** A dropdown menu showing 'Biotechnology' at the top, followed by 'Art & Design', 'Biochemistry', and other options.
- Program:** A dropdown menu showing 'Biotechnology', 'Business Administration', 'Chemistry', 'Commerce', 'Computer Science', and 'Department Of Education'. 'Biochemistry' is highlighted.
- Batch:** A dropdown menu showing '2010', '2011', '2012', and '2013'.
- Group:** Two dropdown menus: 'Pre-Engineering' and 'Session' (set to 'Spring').
- Part ID:** A text input field.
- Part Year:** A text input field.
- Part:** A dropdown menu showing '1'.
- Remarks:** A large text area.
- Action Buttons:** A row of four buttons: 'Add', 'Delete', 'Update', and 'Clear'.

FIGURE B.8: Part Information

Description: It show that insert or add parts.one department offers one or more degree programs such as science department offers BS(CS), MSC(Pass), MCS, PGD(CS), MPhil and PHD in computer science. One program offers one or more batches such as BS (CS) contains 2010, 2011, 2012 batches etc.one batch contains one or more parts such as 2010 batch of computer science contains 4 parts

B.9 Student Part Registration

STUDENT PART REGISTRATION

Faculty Name	Arts	Roll No	Nabeel Ahmed
Department name	Sindhology	2k11/cse/55	
Program Name	B.Sc	2k11/cse/56	
Batch Year	2011	2k11/cse/57	
Group	Pre-Engineering	Part	1
Shift	Morning	Roll No	2k11/cse/55
Session	Spring	Delete Selected	Paste
0%			
Information		Remarks	
Student Name	Aliasad		
Father Name	Maqsood		
Surname	Khaskheli		
NIC No	1231-123231-4	Roll No	2k11/cse/20
Scratch Card#		Part	1 4
Status	Legal	Amount	Challan No
		Date Of Paid	18-01-2013
		Update	

FIGURE B.9: Student Part Registration

Description: It shows that insert or add parts.one department offers one or more degree programs such as computer science department offers BS(CS), MSC(Pass), MCS, PGD(CS), MPhil and PHD in computer science. One program offers one or more batches such as BS (CS) contains 2010, 2011, 2012 batches etc.one batch contains one or more parts such as 2010 batch of computer science contains 4 parts and we register the students in each part or we shift the students.

Bibliography

- [1] Ivar Jacobson, James Rumbaugh, and Grady Booch. *The unified modeling language user guide*. Addison Wesley, 1999.