

Student Management APPLICATION PROJECT.

Project Name: Student Management Application Project.

Type: Documentation

Date: 23/06/2020



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A Major Project Report

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In partial fulfilment for the award of the degree of

B.C.A

In

Stream

Global College of Science and Technology



23/06/2020

BONAFIDE CERTIFICATE

Certified that this project work was carried out under my supervision

"Student Management Application Software" is the bonafide work of

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Acknowledgement

We take this opportunity to express our deep gratitude and sincerest thank to our project mentor, Mr.
for giving most valuable suggestion, helpful guidance and encouragement in the execution of this project work.

We will like to give a special mention to my colleagues. Last but not the least we are grateful to all the faculty member of Global College of science and Technology or their support.

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1. Introduction

There is very growth of university, colleges and educational intuition in India. In addition, numerous companies and industries are arriving India and India is growing the same to have better business around world. Therefore, there is huge inflow and outflow of data around the world. To store the data and process it, we need offline and online software and programming. Mainly advent of Computer, calculator and software introduced to process simple to complex calculation. However, today other than that storing small data to huge amount data in a secure locker like bank is a tough challenge. Here locker is todays Database that stores huge amount data.

My project complies with storing, retrieving data and calculation of data. Every institute manages its employees or an educational intuition manages data of students. My project based on the same concept of managing data of college and university admitted student, and payment of each students, retrieving their data and payments with calculations.

2. Historical Facts

Hardware Basis

Punch Card, One of the earliest methods of data storage used with early computers were punch cards. These consisted of paper and had holes that were punched by machine or by hand. The holes in predefined positions, together with the absence of holes, represented digital information to be read by computers or machines. On the usual punch card, holes can be punched in 80 columns and 12 lines. **Magnetic Tape**, With the introduction of magnetic tapes as a storage medium in the 1960s, it was suddenly possible to store significantly larger amounts of data. One roll of magnetic tape could store as much information as 10,000 punch cards, which is why it became extremely popular for storing data until the mid-1980s. What is more, magnetic tape was also re-writeable – a fact that revolutionized the way that data was backed up. And, with magnetic tape, storage media was also used for the first time for private purposes – many of you still know magnetic tape as a tape or compact cassette for music. **Hard Drive**, IBM had been developing the world's first hard disk drive (HDD) since 1953. IBM introduced it to the market in 1956.

Floppy Disk, The first floppy disk was introduced in 1969 by IBM and was a read-only 8-inch disk that could store 80 kB of data (that is about 1,000 punch cards). By 1973, the storage size had increased to 256 kb of data, being rewritable as well. Later on, the floppy disk grew smaller, to a 3.5-inch disk, while at the same time allowing for more storage space, about 250 MB in the late 1990s. By being cheaper and more flexible than hard disks, floppy disks became very popular. **CD/DVD**, With the introduction of Compact Discs (CDs), the relatively low capacity of the floppy disk became a thing of the past. First invented by Philips and Sony together in 1979 as a digital audio disc, over the years it became a common way for home users and small businesses to do their backup once it became more affordable. **Flash Drives, Data Centers, and Cloud**, At the turn of the 21st century, USB sticks and external hard drives came to the market. Nowadays, you will not find USB sticks that do not hold multiple gigabytes, while for early models, it was normal to hold only a few megabytes of data. The same development goes for external hard drives,

while at the same time the costs per gigabyte became lower over the years. With data centres and the cloud, data storage has been taken to a completely new level. It will be interesting to see what the future holds. What seems to be sure is this: With the ever-increasing data every day, the sky is the limit.

Software Basis:

During Punch Card era, FORTRAN used to get used to enter data. While moving to floppy disk already Microsoft stepped in the race using Windows also Linux was used. Program like C, C++ and Java with HTML and Databases came to exist in last era of floppy disk with demand of high storage. Then Hard Disk drives were introduced with high-level server workstations. Small data can be stored within CD/DVD s and pen drives and carried forward. In addition, todays introduction of cloud data storage have increased to a new height. Regulatory softwares therefore used earlier to maintain Database were Microsoft office, later shifted to SQL, MYSQL and PL/SQL programmes integrated with Web Technologies.

3. Need for management software

Institution like college, schools etc. have management software to manage admission, batch process and semesters with fees. Benefits:

- 1) Technologies and upgraded software to benefit smooth handling Of Data.
- 2) Effortless project planning needed deciding its costs, scope and schedule.
- 3) Balanced Resource Management.
- 4) Improved team collaboration.
- 5) Student Satisfaction.
- 6) Proper Data Analysis.
- 7) Fewer Errors than Pen and paper if made by user only.
- 8) User-friendly.
- 9) Easy to use.

4. Hardware And Software specification

Maximum System Requirements

- *RAM-2GB.
- *HARD DISK-5GB.
- *PROCESSOR-INTEL PENTIUM 4.
- *KEYBOARD-104 Keys.
- *Mouse.
- *OS: Linux/Windows.

Software Requirements

- *XAMP/WAMP for Windows for SQL and Apache connection.
- *LAMP for Linux.
- *Java Swing and AWT(Abstract Window Toolkit) GUI(Graphical User Interface) platform like Eclipse and NetBeans.
- *JDBC(Java Database Connectivity).

5. Software Requirement Analysis

5.1 XAMP, WAMP and LAMP

5.1.1 XAMP

For windows, we have to install [XAMPP](https://www.apachefriends.org/download.html).



Fig: Logo of XAMPP

After downloading XAMPP from the given link: -

<https://www.apachefriends.org/download.html>, we have to open XAMPP folder from the location:-

[Drive name / folder name] such as: - [C:\xampp] and keep our files inside htdocs named folder as it can access hypertext documents. We have to see that XAMPP control panel is opened and APACHE and MYSQL services are running.

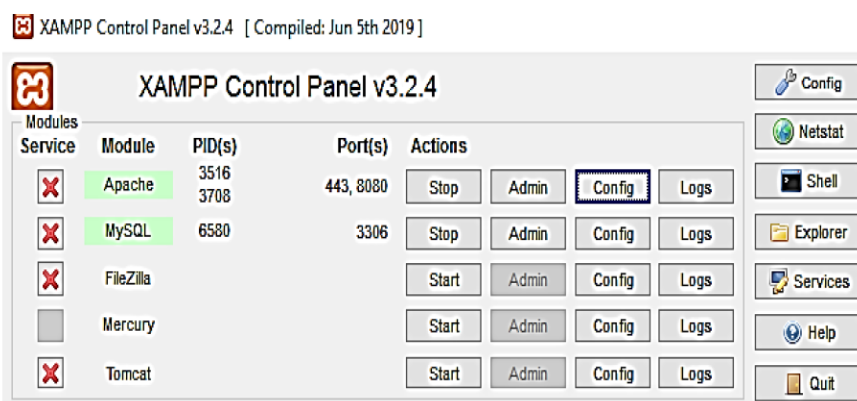


Fig: Control Panel of XAMPP

5.1.2 WAMP

Another software we can install and continue is WAMP, which we have used



Fig: WAMP Logo

After downloading [WAMP](https://sourceforge.net/projects/wampserver/files/) from this link (<https://sourceforge.net/projects/wampserver/files/>) We have to open WAMP folder just like XAMP and search for “www” folder from where we can keep our files so that we can access hypertext mark-up files from browser . Here we have to see that Apache and MYSQL is running and if we have a port problem, same way we have to correct it.



Fig: WAMP Panel Sidebar

5.1.3 Lamp for Linux



Fig: LAMP logo

There are several Linux operating system such as UBUNTU, CENTOS, and FEDORA etc. Hence, we have to search online for solution of how to install lamp in Linux.

5.2 Eclipse , NetBeans and JDBC connectivity

Eclipse and NetBeans both provide **Java Abstract Window Toolkit** classes including java swing. Moreover, through **JDBC (Java Database Connectivity)**, we connect the database, here we used “**mysql-connector-java-5.1.49.jar**” we connect MYSQL database.



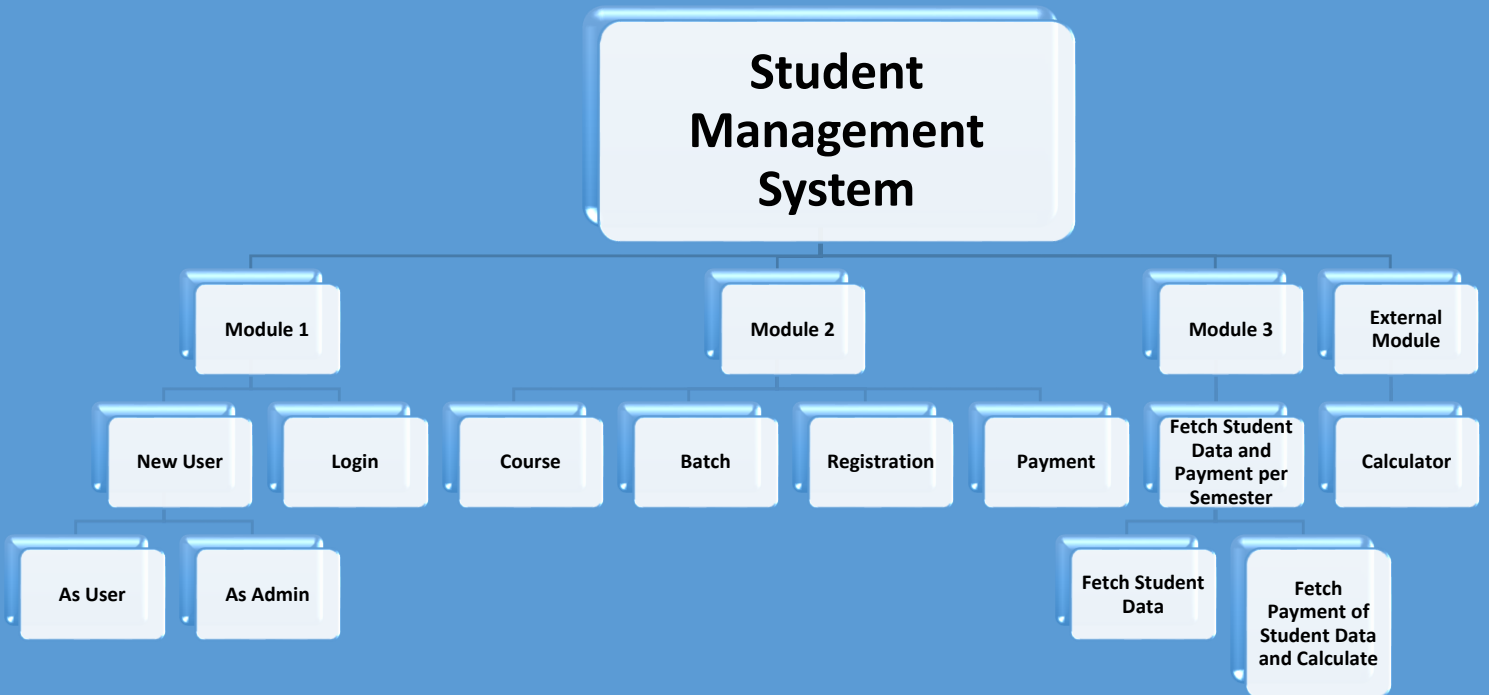
Fig: Eclipse Logo



Fig: NetBeans Logo

6 Project Modules

Project divided into different modules as shown below:-



7 Design of our Project, which include Use Case, Activity, ER diagram and DFD.

7.1 Use Case Table










Level 0	Level 1	Level 2	Process
Student Management System	Entry to Application	New User Login	  User Admin
	Entry of Datas of Students	Course Batch Registration Payment	  User Admin
	Fetch Datas of Students	Student Details Payment of Students	  User Admin
	Calculations	Payment Calculations Calculator	  User Admin
	Maintenance	Student's profile Database	 Admin

Fig: User Case Table.

7.2 User Case Diagram.

7.2.2 User case diagram of Entry to Student Management Application

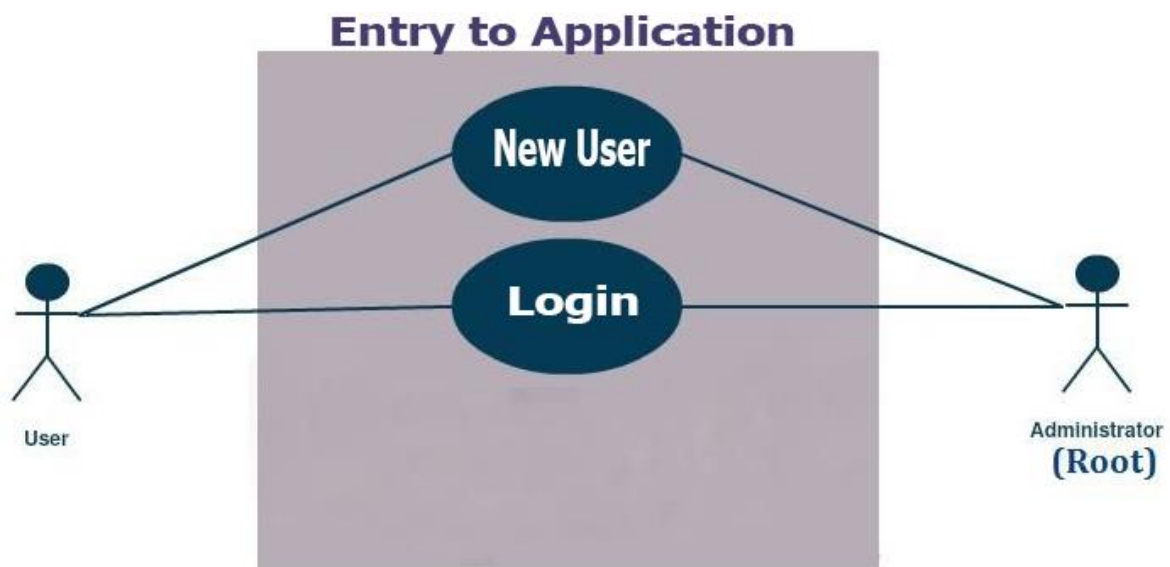


Fig: User case diagram of Entry to Student Management Application

7.2.3 User case diagram of Entry of Data of Students in Student Management Application

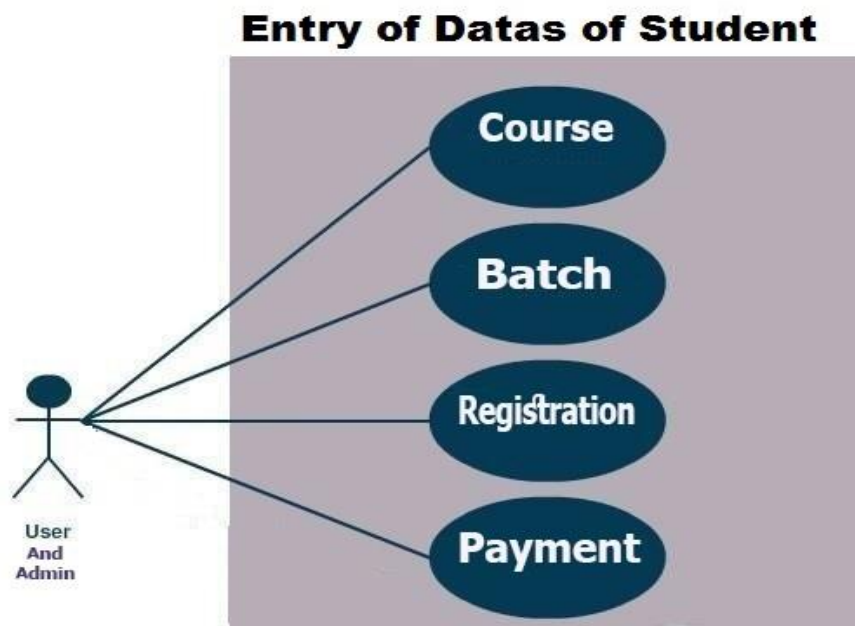


Fig: User case diagram of Entry of Data to Student Management Application

7.2.4 User case diagram of fetching data of Students.

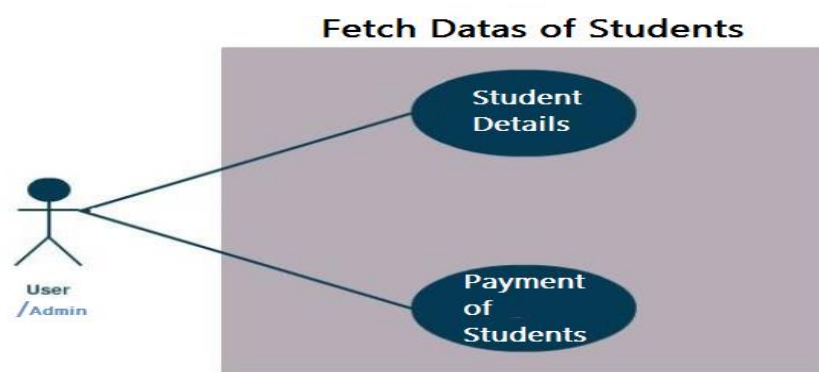


Figure : Fetch Datas of Students

7.2.5 User Case diagram of Calculation

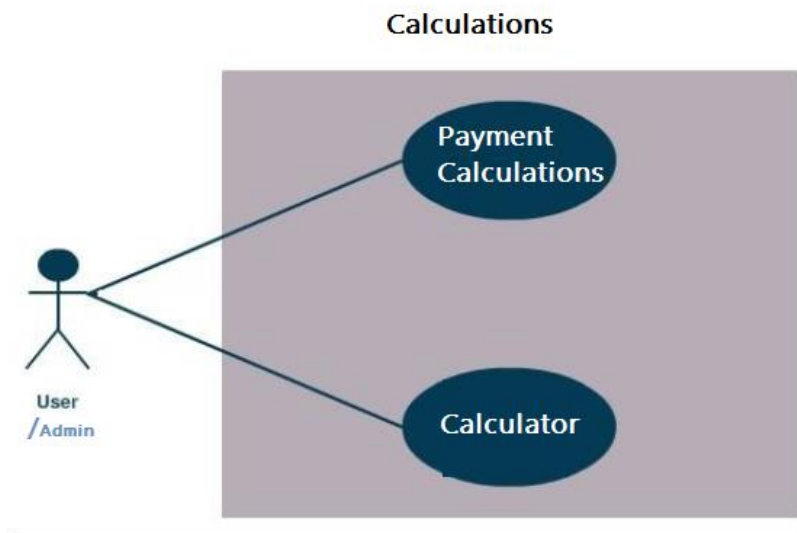


Figure : Calculations

7.2.6 User Case Diagram of Maintenance

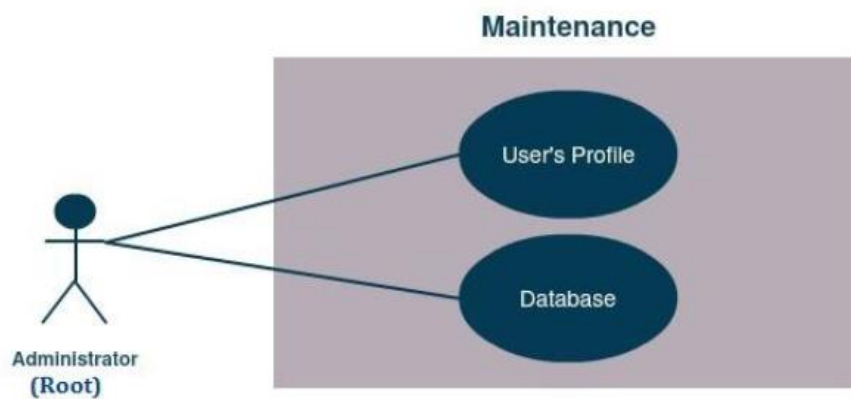


Figure : Use Case Diagram of Maintenance

8 Activity Diagram

8.1 Activity Diagram of Student Management Software

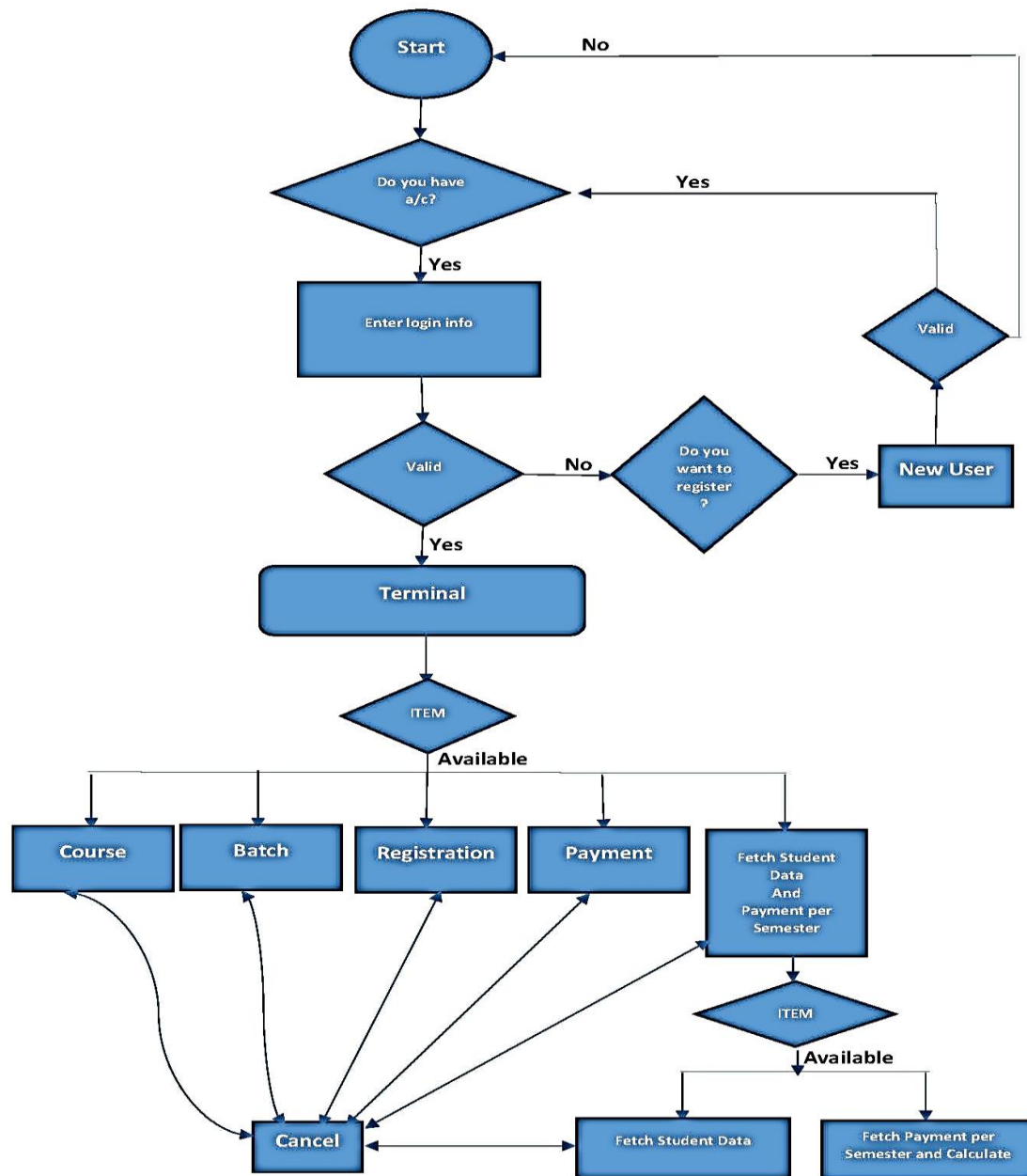


Fig: Activity Diagram of Student Management Software

8.2 Activity Diagram of Maintenance

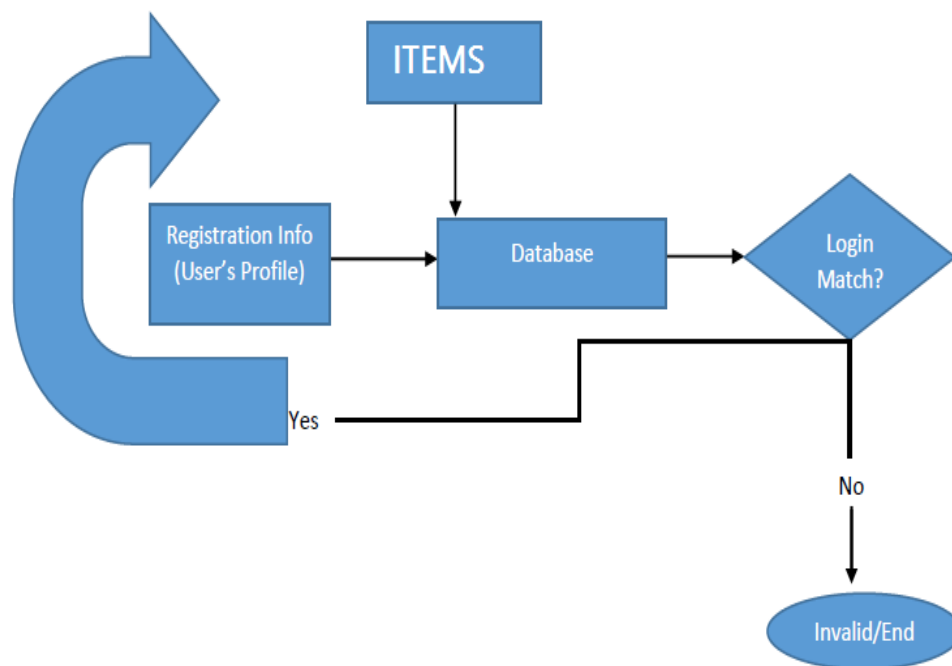


Fig: Activity Diagram of Maintenance

9 Data Flow Diagram

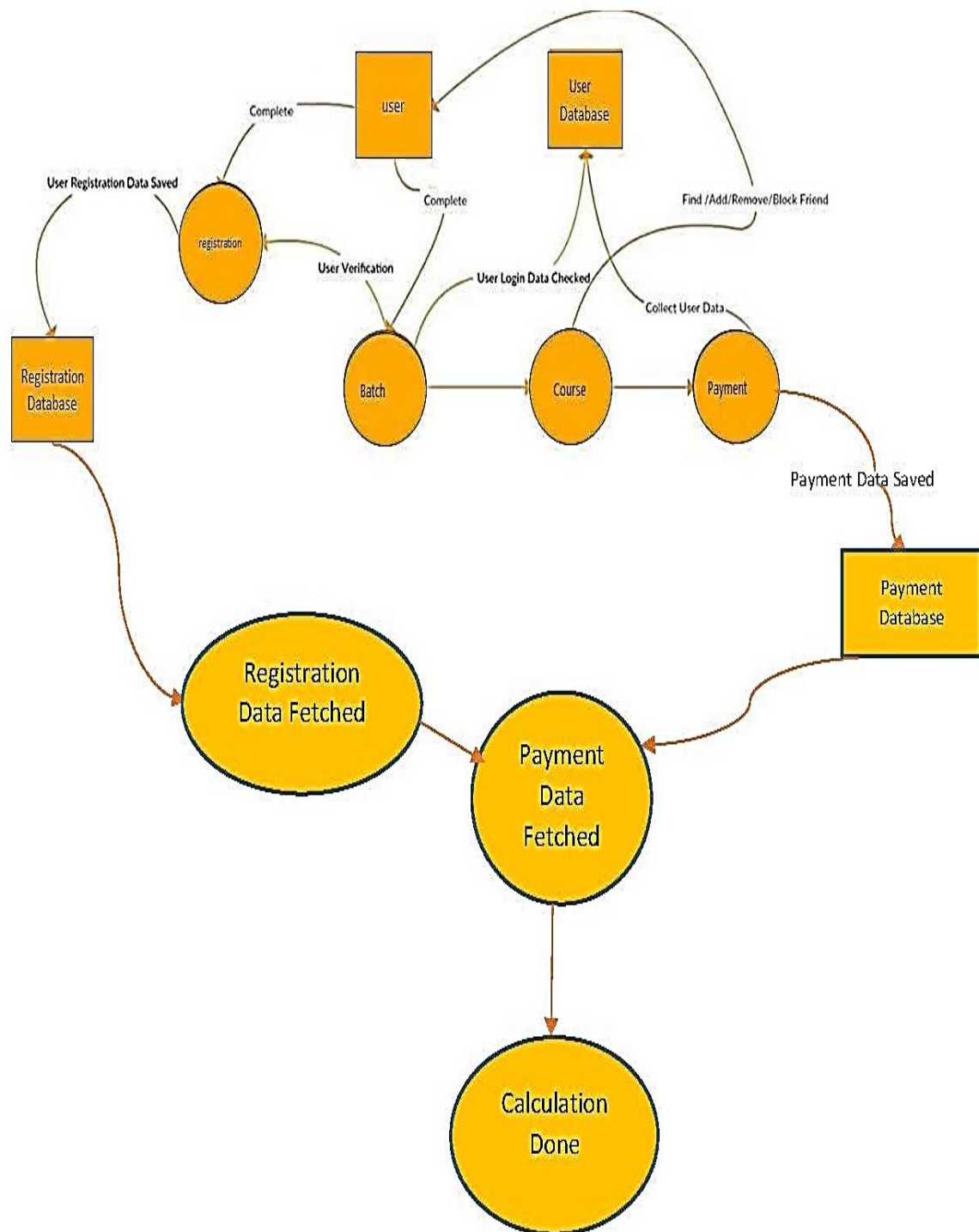


Fig: Data Flow Diagram

10 Methodology

- 10.1 New User:** This maintains the Username, Password, Confirm password, User Type: User and Admin. It have add and cancel button. Add button helps to add details in the database. Cancel button to close the window of New User.
- 10.2 Log In:** This maintain Username and Password. If a user is new to the management software and register themselves by clicking new user. Through matching credential of login and password, one can log in and see the terminal consisting of items: Course, Batch, Registration, Payment and Fetch Student Data and Payment per Semester. Cancel button to close the terminal.
- 10.3 Course:** Course is there to add the course names available in colleges given by University. It have course name and duration.
- 10.4 Batch:** Batch is the tab, which is made to identify the year and its relative batch in the college. It has Batch name, Year and Cancel button.
- 10.5 Registration:** It add the newly registered data of students. It has Roll No. , First name, Middle name, Last name, Mobile No. , Registration id, Semester, Gender, Course, Batch, Telephone, Birth Date, Address. Save button will save data to database. Cancel will close the window.

10.6 Payment: Just type the roll no. and click on the fetch button to get the data of student according to roll no. from the registration database. Then put Semester and amount and save it to database. Cancel is to close the window.

10.7 Fetch Student Data and Payment per Semester :

10.7.a Fetch Student Data: Just click on fetch, to get all the fields of the student's data entered during registration.

10.7.b Payment Data Fetch and Calculate:

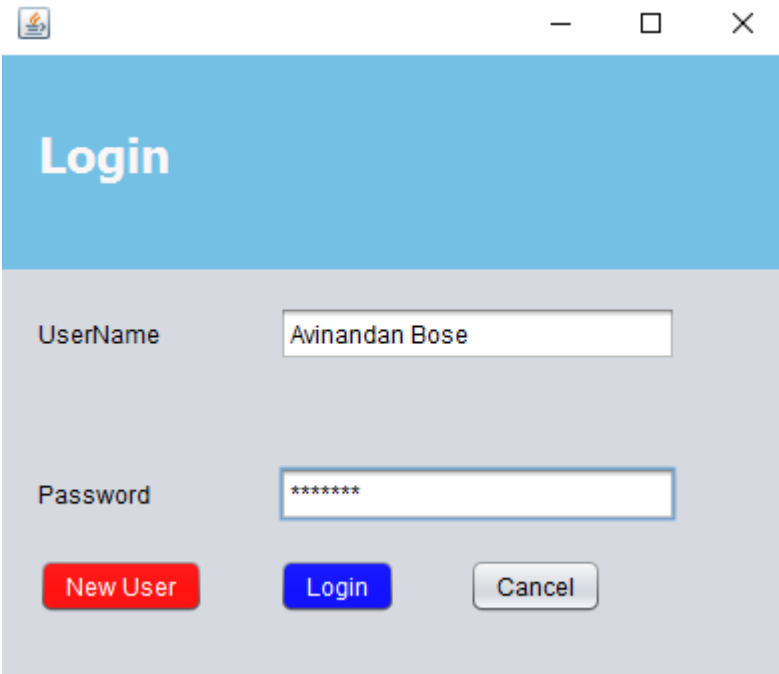
Just type the roll no. and click on fetch to get all the Semester payment and it will automatically calculate the total of all semesters and present it to the window. Clear the field button will clear all the fields.

10.8 Calculator (external): The calculator is used to calculate the semester total if needed. However, its function is not limited to only calculating total but it has numerous function too of a simple calculator.

11 User Manual :

11.1 Process

11.2 Login: - At first when we open the Application, we have this window, to enter the User name and Password, to have our next window. If we are new user, then we have to go to new user option to register ourselves as new user.



The screenshot shows a standard login dialog box. The title bar at the top contains a small icon on the left and standard window controls (minimize, maximize, close) on the right. The main area has a light blue header with the word "Login" in a bold, white font. Below this, the form is divided into two sections. The first section is labeled "UserName" and contains a text input field with the name "Avinandan Bose". The second section is labeled "Password" and contains a password input field with seven asterisks "*****". At the bottom of the form, there are three buttons: a red button labeled "New User", a blue button labeled "Login", and a grey button labeled "Cancel".

Fig: Log In

11.3 New User: This window is for registering the new user and declaring its user type. It has name and password, through which we can log in.

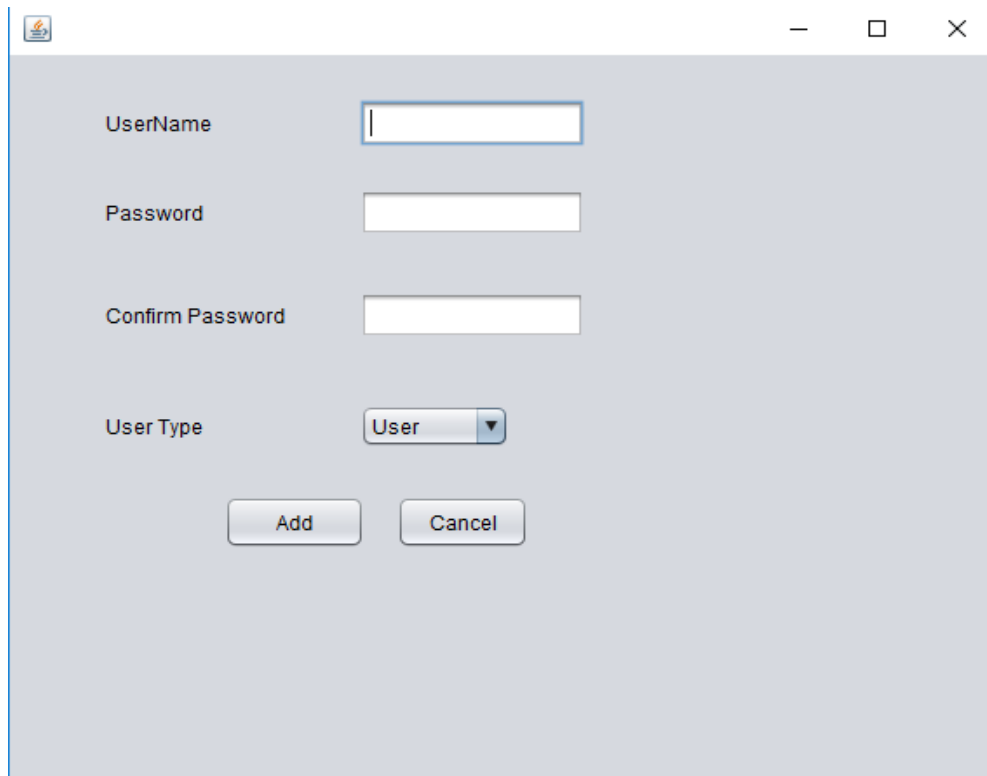
A screenshot of a 'New User' registration window. The window has a light gray background and a blue border. At the top left is a small icon, and at the top right are standard window controls (minimize, maximize, close). The form contains four labels on the left: 'UserName', 'Password', 'Confirm Password', and 'User Type'. To the right of each label is an input field. The 'UserName' field is a text box with a blue border. The 'Password' and 'Confirm Password' fields are white text boxes. The 'User Type' field is a dropdown menu with 'User' selected and a downward arrow. At the bottom of the form are two buttons: 'Add' and 'Cancel', both with a light gray gradient and rounded corners.

Fig: New User

11.4 Course: It has course name and duration. The add button which will add course name and duration to database. Cancel will close the window.

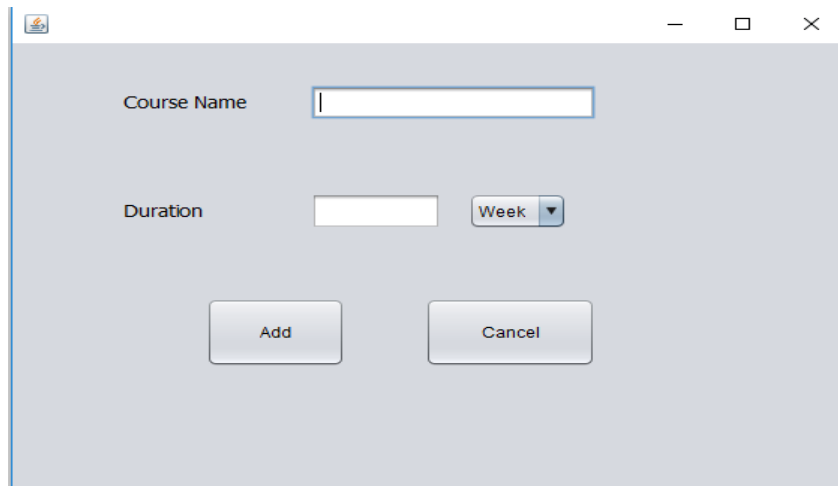
A screenshot of a software window titled 'Course'. The window has a light gray background and a standard Windows-style title bar with minimize, maximize, and close buttons. Inside the window, there are two input fields: 'Course Name' and 'Duration'. The 'Course Name' field is a single-line text box. The 'Duration' field is a single-line text box followed by a dropdown menu currently set to 'Week'. Below these fields are two buttons: 'Add' and 'Cancel', positioned side-by-side.

Fig: Course

11.5 Batch: It has batch name and duration. Add button will add both to the database while cancel will close the window.

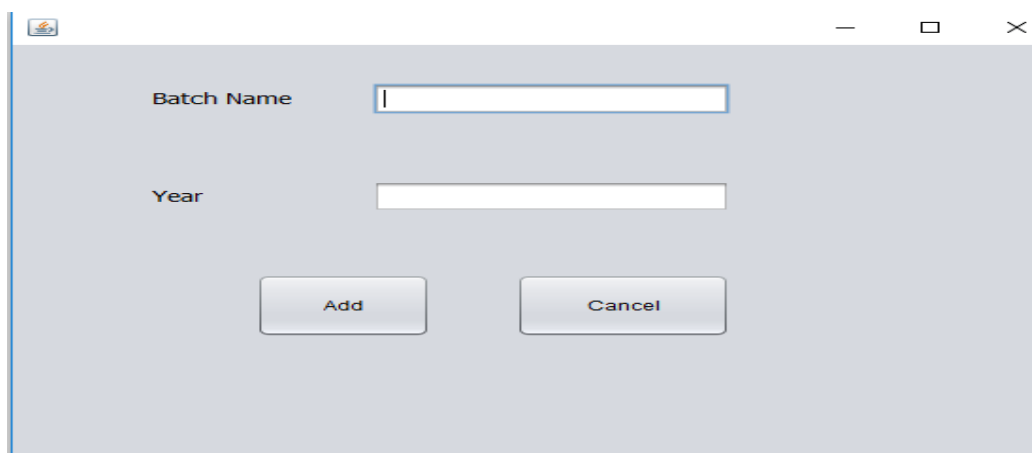
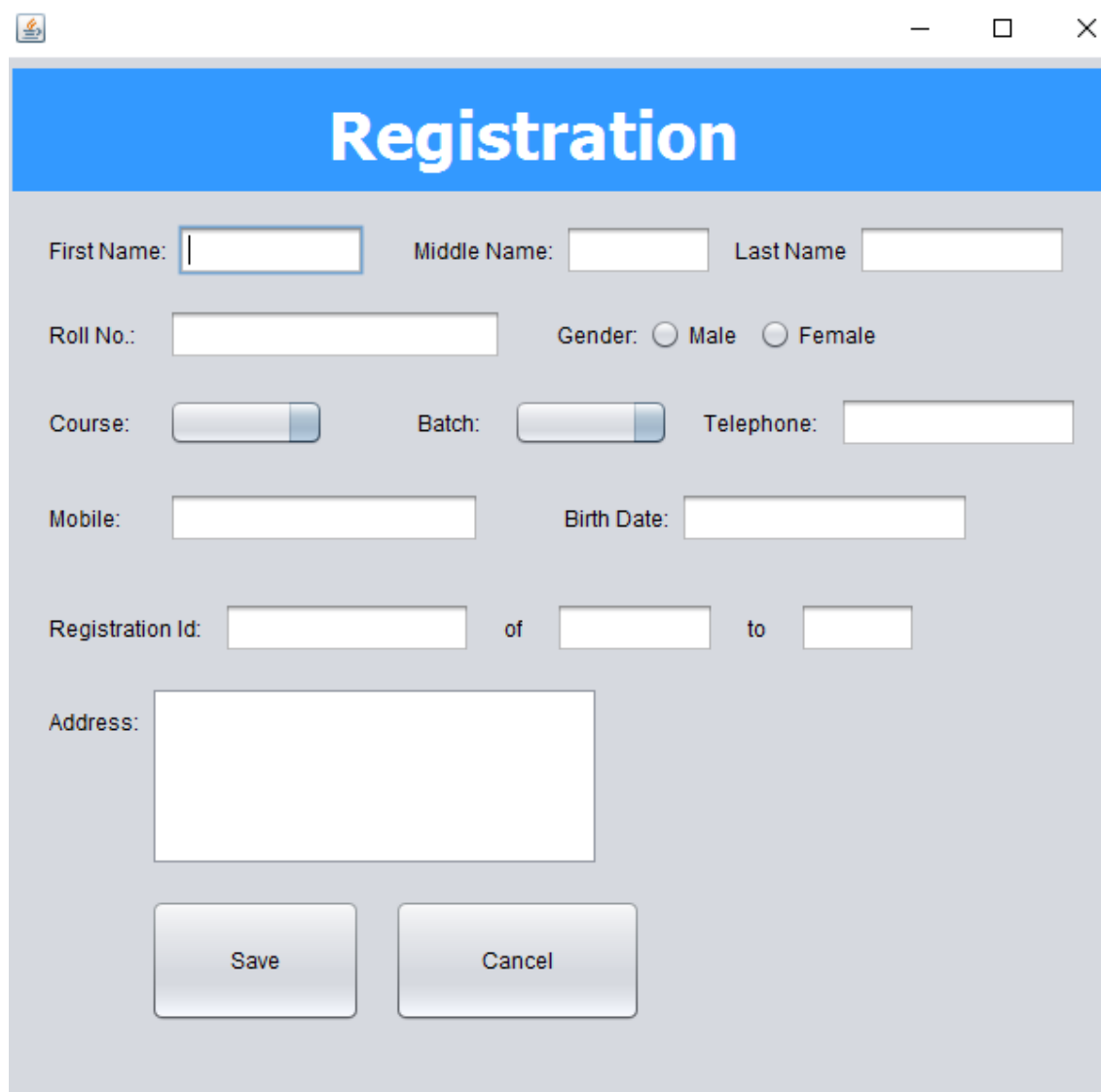
A screenshot of a software window titled 'Batch'. The window has a light gray background and a standard Windows-style title bar with minimize, maximize, and close buttons. Inside the window, there are two input fields: 'Batch Name' and 'Year'. Both are single-line text boxes. Below these fields are two buttons: 'Add' and 'Cancel', positioned side-by-side.

Fig: Batch

11.6 Registration :- Registration have First , Middle and Last Name with Roll No, Gender choice – male and female , course, batch, telephone , mobile, birth date, registration id and address. Save will save all data to registration database. Cancel will close the window.

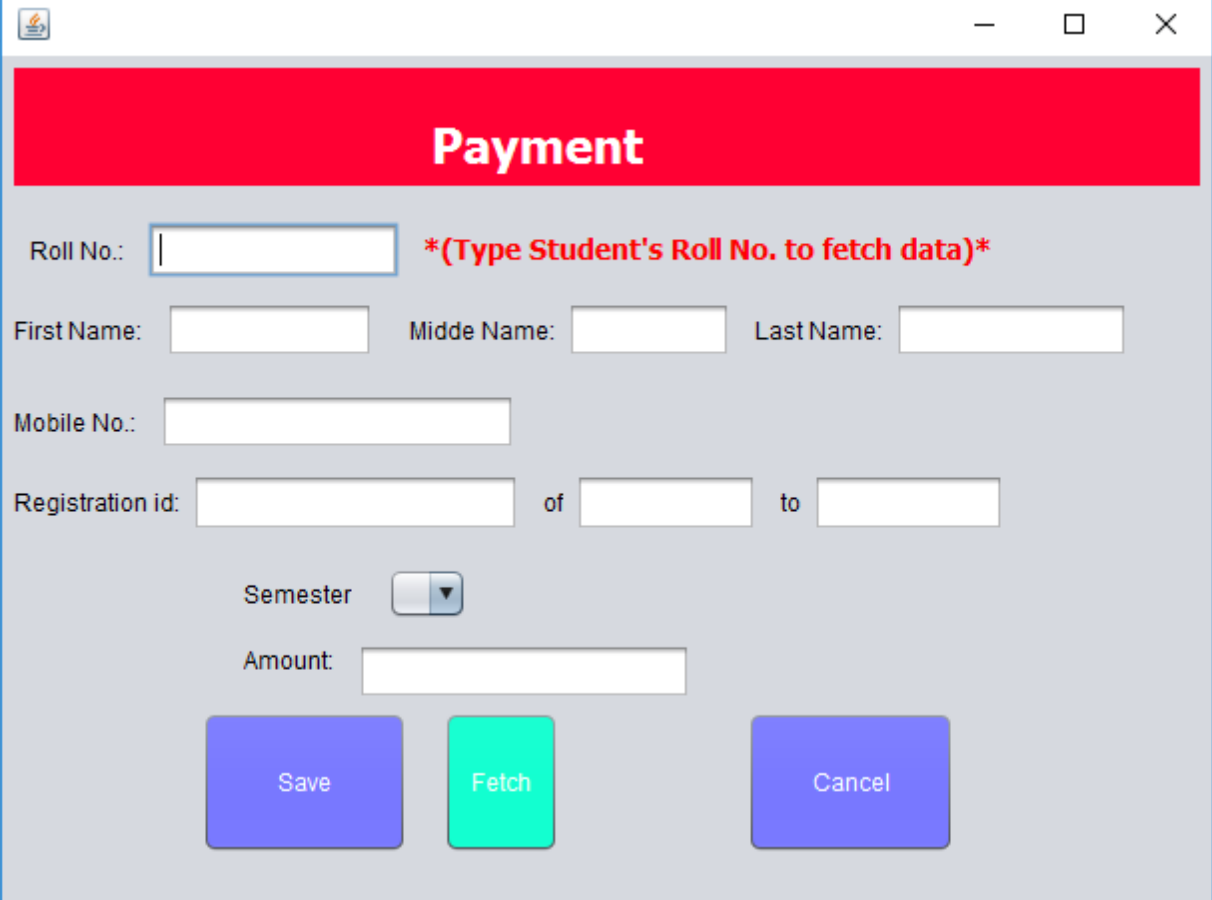


The image shows a software window titled "Registration" with a blue header bar. The window contains several input fields and two buttons. The fields are arranged in a grid-like fashion. The "First Name", "Middle Name", and "Last Name" fields are at the top. Below them are "Roll No.", "Gender" (with radio buttons for Male and Female), "Course", "Batch", and "Telephone". The "Mobile" and "Birth Date" fields are in the next row. The "Registration Id" field is followed by "of" and "to" labels and another field. The "Address" field is a larger text area. At the bottom are "Save" and "Cancel" buttons.

Registration		
First Name:	<input type="text"/>	Middle Name: <input type="text"/>
		Last Name: <input type="text"/>
Roll No.:	<input type="text"/>	Gender: <input type="radio"/> Male <input type="radio"/> Female
Course:	<input type="text"/>	Batch: <input type="text"/>
		Telephone: <input type="text"/>
Mobile:	<input type="text"/>	Birth Date: <input type="text"/>
Registration Id:	<input type="text"/>	of <input type="text"/> to <input type="text"/>
Address:	<input type="text"/>	
Save		Cancel

Fig: Registration.

11.7 Payment: Just type the roll no. and click on the fetch button to get the data of student according to roll no. from the registration database. Then put Semester and amount and save it to database. Cancel is to close the window.



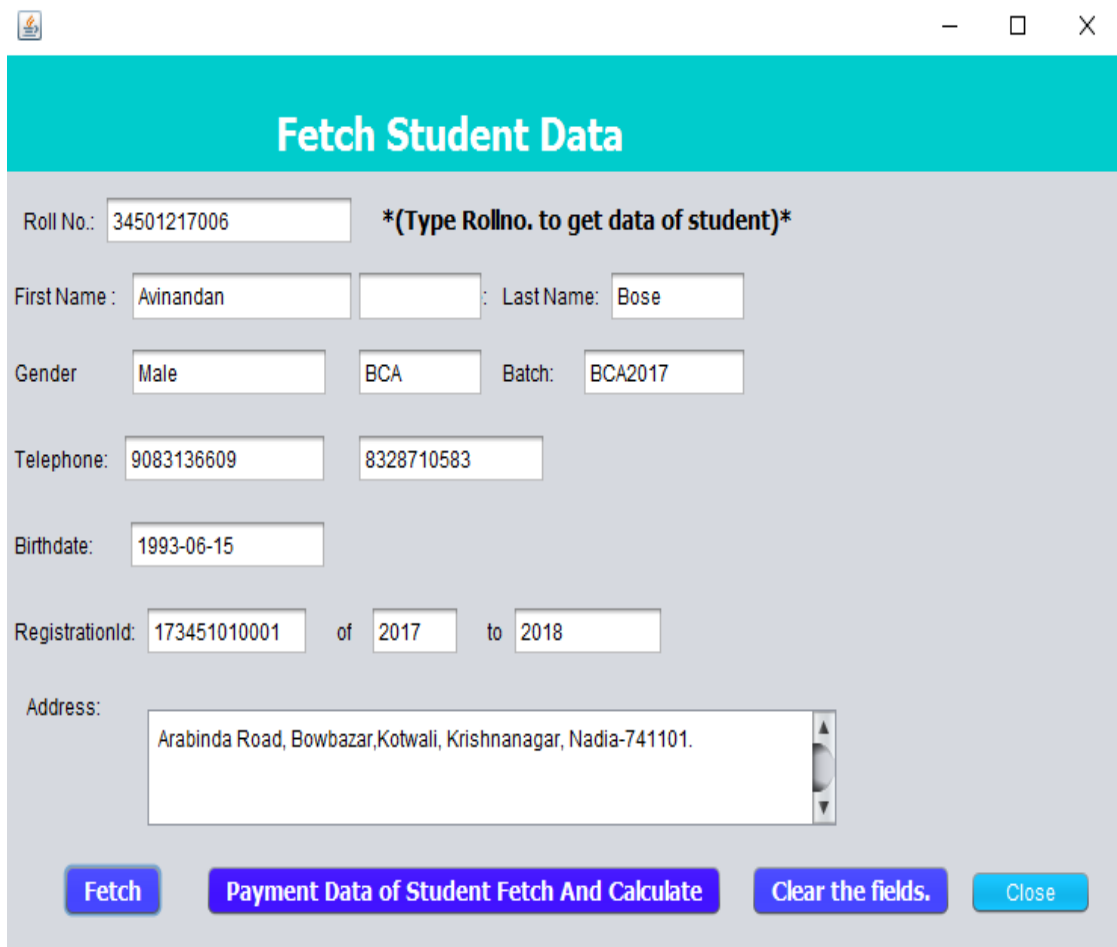
The screenshot shows a window titled "Payment" with a red header. The form contains the following fields and controls:

- Roll No.:** A text input field followed by the instruction ***(Type Student's Roll No. to fetch data)*** in red.
- First Name:** A text input field.
- Midde Name:** A text input field.
- Last Name:** A text input field.
- Mobile No.:** A text input field.
- Registration id:** A text input field followed by the word "of", another text input field, and the word "to", followed by a third text input field.
- Semester:** A dropdown menu.
- Amount:** A text input field.
- Buttons:** Three buttons at the bottom: "Save" (blue), "Fetch" (cyan), and "Cancel" (blue).

Fig: Payment

11.8 Fetch Student Data and Payment per Semester:

11.8.a Fetch Student Data: Just click on fetch, to get all the fields of the student's data entered during registration.



Fetch Student Data

Roll No.: 34501217006 *(Type Rollno. to get data of student)*

First Name : Avinandan : Last Name: Bose

Gender Male BCA Batch: BCA2017

Telephone: 9083136609 8328710583

Birthdate: 1993-06-15

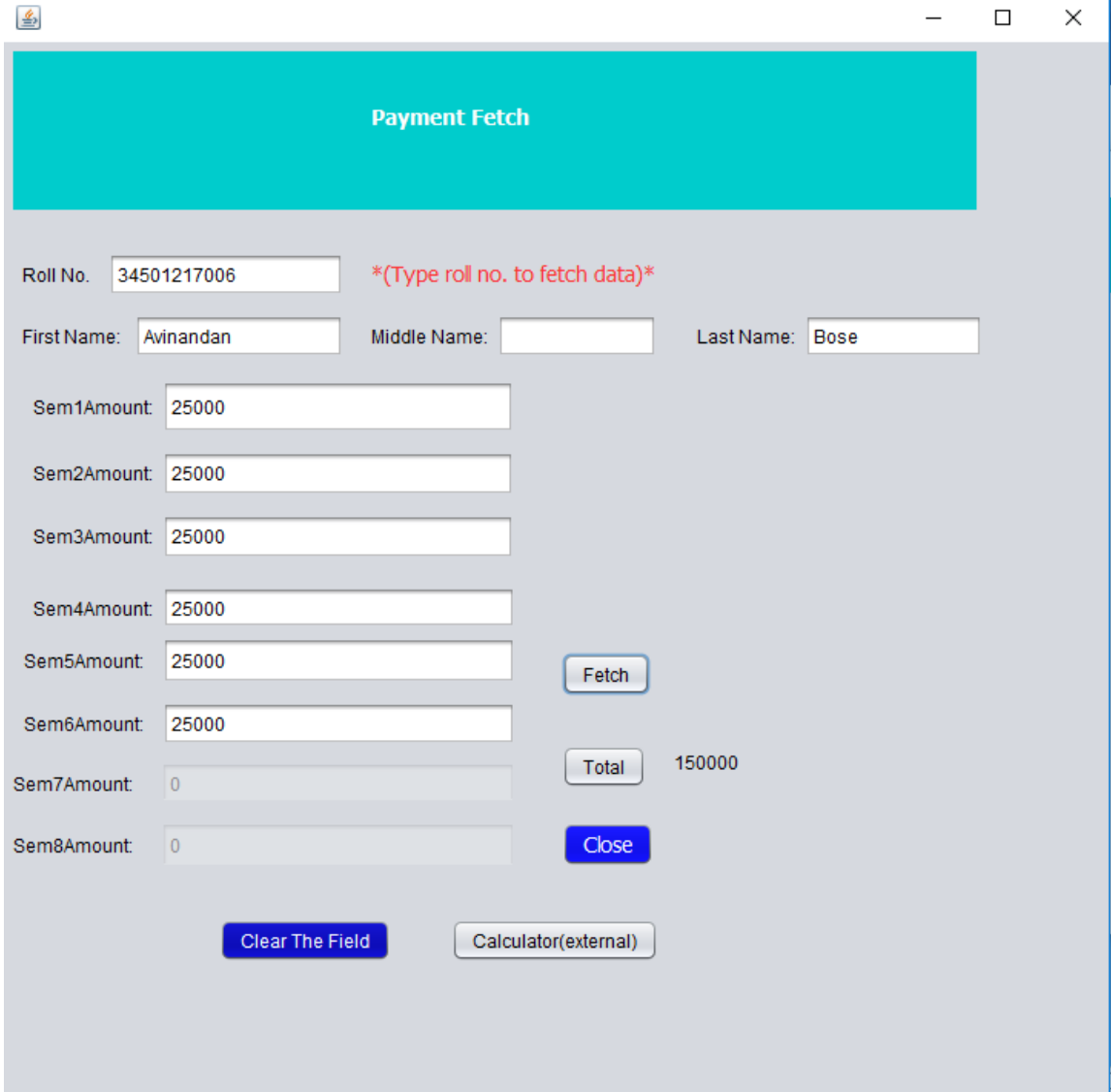
RegistrationId: 173451010001 of 2017 to 2018

Address: Arabinda Road, Bowbazar, Kotwali, Krishnanagar, Nadia-741101.

Fetch Payment Data of Student Fetch And Calculate Clear the fields. Close

Fig: Fetch Student Data

11.8.b Payment Data Fetch: Just type the roll no. and click on fetch to get all the Semester payment and it will automatically calculate the total of all semesters and present it to the window. Clear the field button will clear all the fields.



The screenshot shows a window titled "Payment Fetch" with a teal header. The form contains the following fields and controls:

- Roll No.:** A text box containing "34501217006". To its right is a red instruction: **(Type roll no. to fetch data)**.
- First Name:** A text box containing "Avinandan".
- Middle Name:** An empty text box.
- Last Name:** A text box containing "Bose".
- Sem1Amount:** A text box containing "25000".
- Sem2Amount:** A text box containing "25000".
- Sem3Amount:** A text box containing "25000".
- Sem4Amount:** A text box containing "25000".
- Sem5Amount:** A text box containing "25000".
- Sem6Amount:** A text box containing "25000".
- Sem7Amount:** A text box containing "0".
- Sem8Amount:** A text box containing "0".
- Fetch:** A button located to the right of the Sem5Amount field.
- Total:** A label showing the calculated total "150000".
- Close:** A blue button located below the Total label.
- Clear The Field:** A blue button at the bottom center.
- Calculator(external):** A button at the bottom right.

Fig: Payment Data Fetch

11.9 Calculator (External): The calculator is used to calculate the semester total if needed. However, its function is not limited to only calculating total but it has numerous function too of a simple calculator.

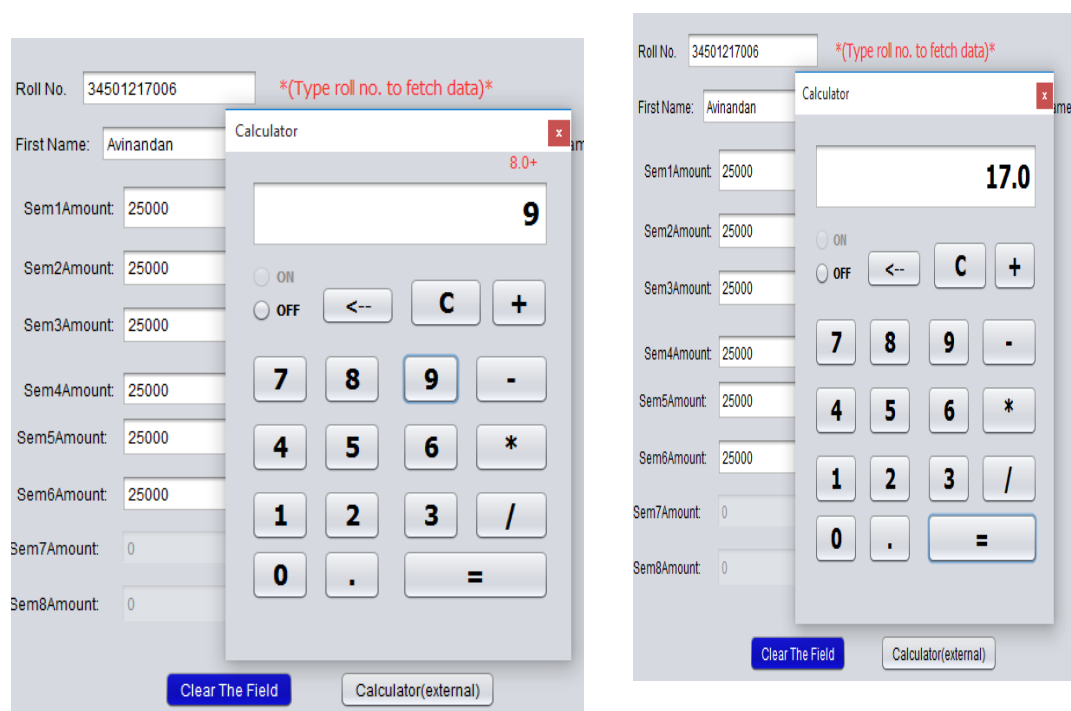


Fig: Calculator

20. References for the project:

1. <https://www.youtube.com/>
2. Core And Advanced Java BlackBook, published by Dreamtech
3. The Complete Reference Java, written by Patrick Naughton and Herbert Schildt.
4. JDBC 4.2, Servlet 3.1 and JSP 2.3, Black Book.
5. Java Server Programming (JEE7), Black Book, published by Dreamtech.
6. <https://docs.oracle.com/en/java/>

The End of the Documentation