BIRLA INSTITUTE OF TECHNOLOGY

SOFTWARE ENGINEERING PROJECT

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Module 1: Canteen

1. Requirements and Description

M1 Req1 : Listing of All the Items in Inventory

Description: We will list all the items which will include their following attributes (i.e., Item Name, Item Cost, Item Quantity Present, Number of that item required per month, sale per month/day). This list will be updated accordingly after the purchase.

M1 Req2 : Inventory Management for Packaged Food Items

Description: In the inventory, all the packaged food items should be mentioned individually. (For example, if the item is Lays, then it should have details of all the flavours available and variants thereof). If the order is made then, according to the order, the inventory should be updated, i.e., a deduction in number should be made after the purchase.

M1 Req3 : Inventory Management for Non Packaged Food Items

Description: In this, basic details of raw materials required for a particular non packaged food item will be set, and after ordering, the same amount will be deducted from the total amount present in the inventory. (For example, if the order is for a single plate of Maggie, then the system will deduct 1 packet of Maggie and 200g of onion.)

M1 Req4 : Vendor Supply

Description: This will include a list of items which are to be bought from the specific vendor, including vendor attributes (i.e., vendor name, vendor location, vendor's contact details, items ordered, number of specific items ordered, total bill, advance payment, pending bill).

M1 Req5 : Inventory Alert

Description: We will set a parameter for each item individually, and when the item quantity goes below the set parameter, the system will alert the admin about the same. This will include alerts for both packaged food items and the raw materials used for non packaged food items.

M1 Req6 : Order Computerization

Description: This will basically computerise the whole order system of the canteen. When the user comes to order, he has to provide the details of the order items (i.e., food item name and quantity) along with the customer's details (i.e., name, roll number).

M1 Req7 : Token system for Orders

Description: Once an order is placed, the system will provide a unique token number (serial wise) for the customer. The token number will decide which order is to be prepared and served first. This will help to provide a better service despite any bias.

M1 Req8 : Online Ordering

Description: The software will also include a system for online ordering of the food items. It will basically have the whole menu and the user can select the items to order from the comfort of their own home. The order will have the different attributes (i.e., food item name, quantity, name of customer, address).

M1 Req9 : Prepaid Payment Methods

Description: We will provide an option for prepaid payment on the specific order. In this user will get an option to pay for the order in advance through online payment methods. This will help the convenience of the user.

M1 Req10 : Postpaid Payment Methods

Description: We will provide an option for postpaid payment on the specific order. In this user will get an option to select COD (cash on delivery) option and can pay when the order reaches his destination.

M1 Req11 : Delivery System

Description: Since we have added a system of online ordering, we will also include the system of delivery which will help in management of online orders easily. The information of order along with the information of buyer will be sent (i.e., buyer Name, buyer address).

M1 Req12 : Billing System

Description: Since all the system and everything is being computerised so billing is also one of the most important parts. This will basically generate a bill for the specific order so that users

can get information about each item's price and total amount to be paid. Previously there was no system of bill and it was calculated verbally but now it will have a proper bill.

M1 Req13 : Today's Special

Description: This will basically help users to know which item is on the special menu for the specific date and it will be prompted when a user is about to make an order. This will help users to get a suggestion of which food item to order.

M1 Req14 : Bill History

Description: Bill history will basically have a history of all the transactions made by the students. It will have different attributes (i.e., name of student, food item, date, total amount). It will also have data of complete selling of food items on a particular day, week and month.

M1 Req15 : Order Forecasting based on most popular food

Description: In this requirement we will forecast the most popular food / most ordered food at that specific time so that we can get an idea of which food item is going to be sold the most. (For example at evening time the most ordered food is Maggie then we will get the information about it). All the forecasting will be based on the previous purchase datas.

M1 Req16 : Feedback

Description: We will add a feedback system in our software so that each student can provide feedback about the food quality, staff management and also about the software so that we can modify the software accordingly.

M1 Req17 : Staff Management

Description: The software will also contain information about all the staff working in the canteen. It will maintain the number of days they work along with the details of their salary and holiday list. This will help to manage the canteen easily.

M1 Req18 : Online Payment

Description: We will add features of payment through online modes such as UPI by scanning the QR code for each bill. This will make the process very smooth and convenient.
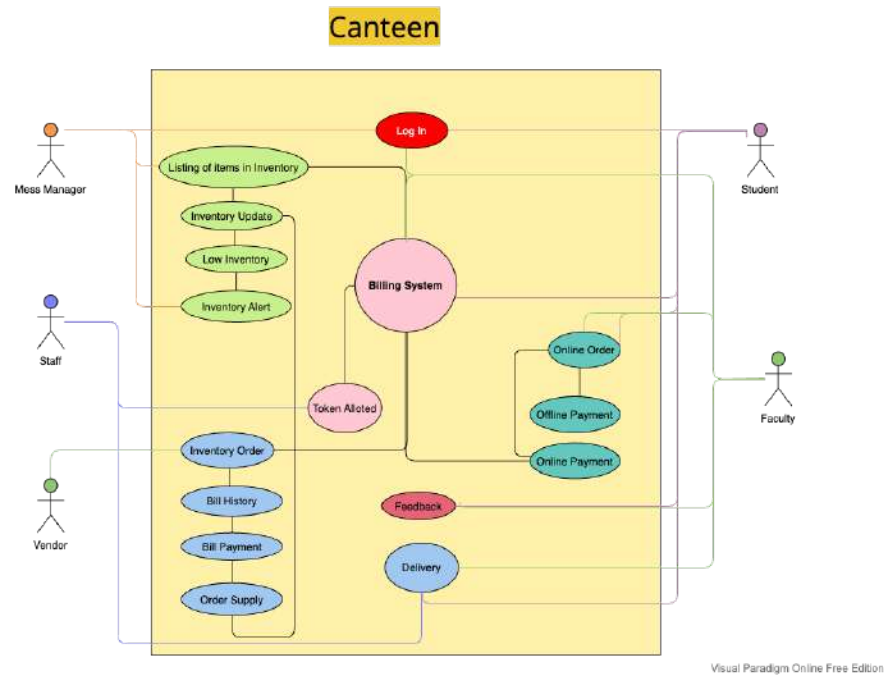
2. Use Case Diagram

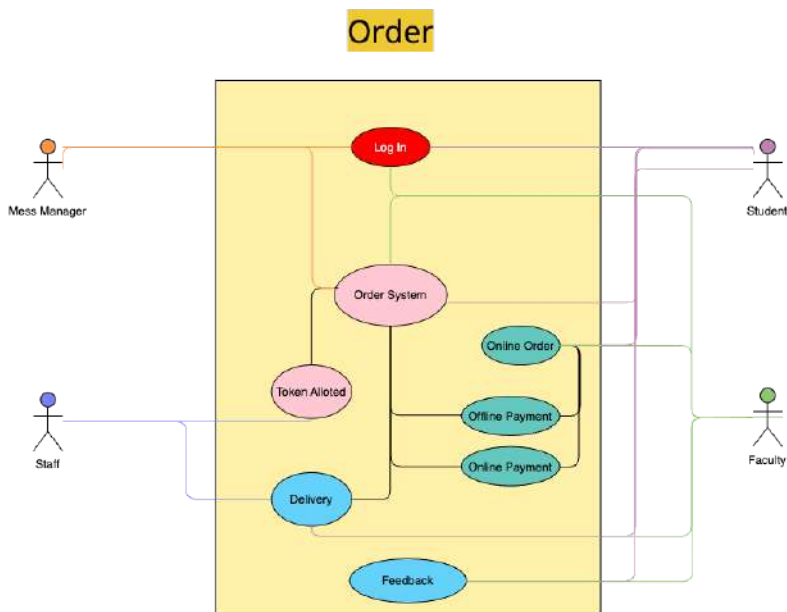
Figure 1.1.1 Use Case Diagram for Canteen

Figure 1.1.2 Use Case Diagram for Order

Figure 1.1.3 Use Case Diagram for Vendor
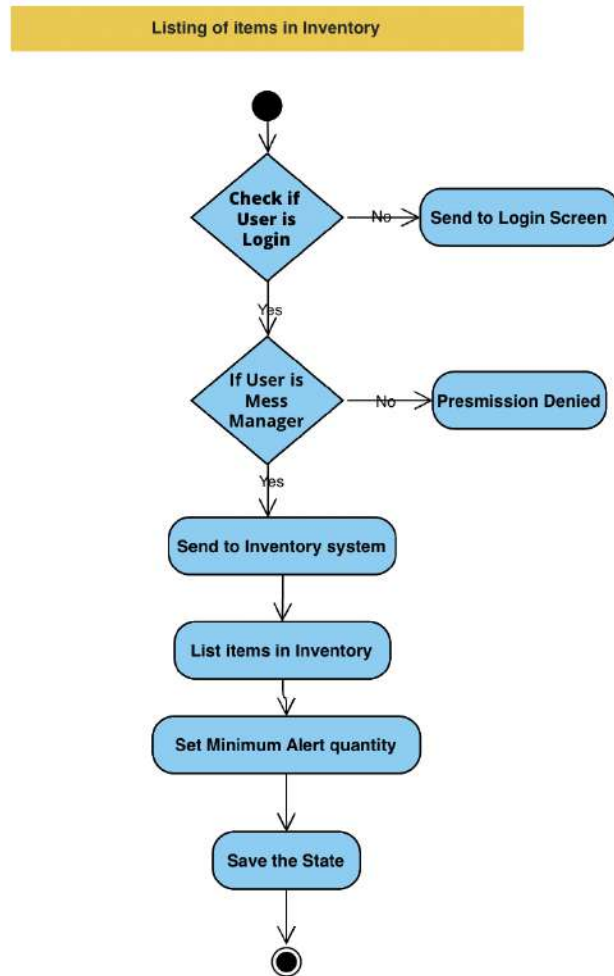
3. Activity Diagram

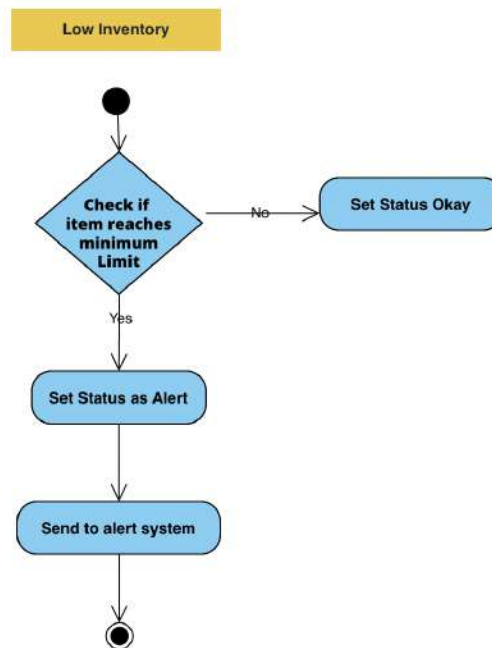Figure 1.2.1 Activity Diagram Listing of items in Inventory
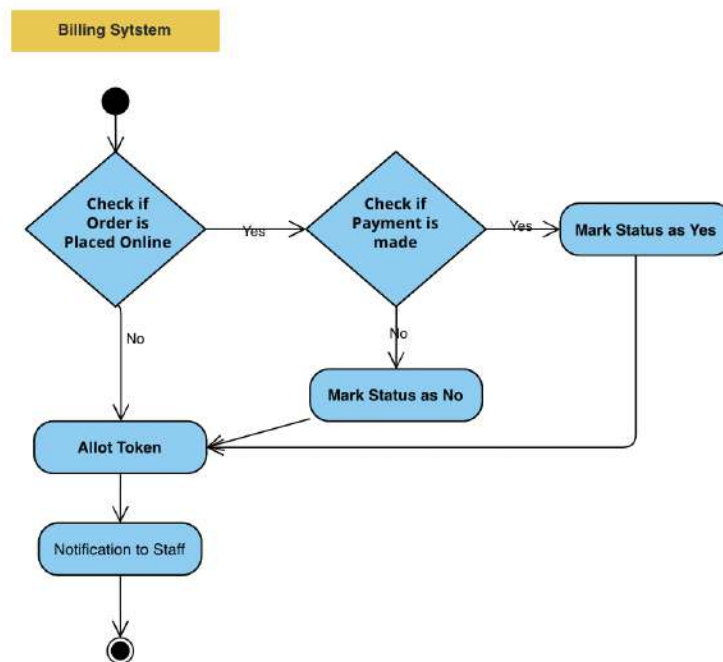
Figure 1.2.2 Activity Diagram of Low Inventory
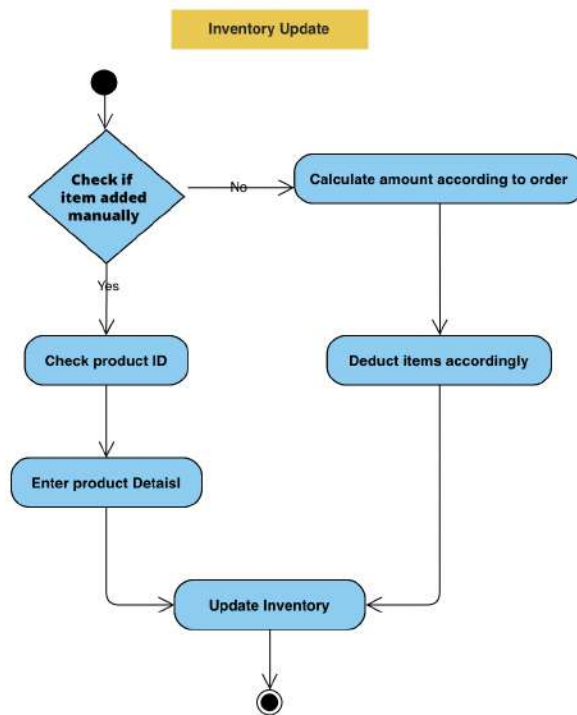

Figure 1.2.3 Activity Diagram of Billing System

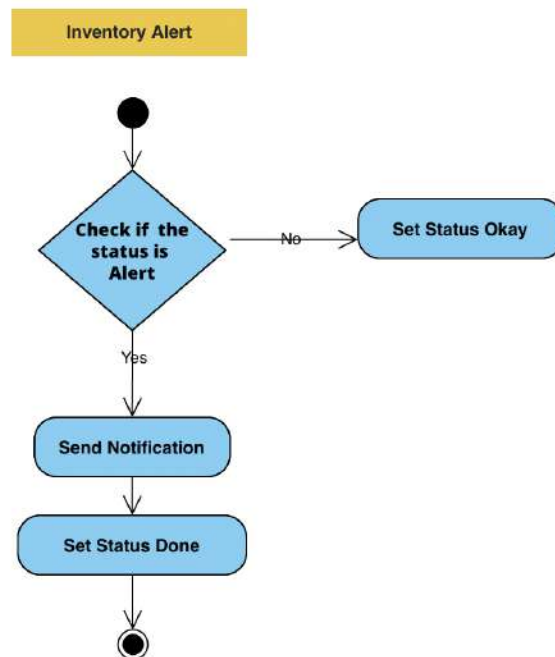**Figure 1.2.4 Activity Diagram of Inventory Update**

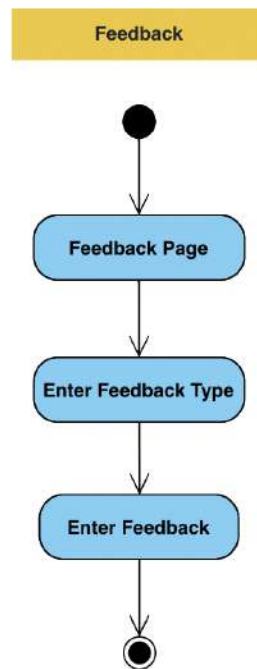**Figure 1.2.5 Activity Diagram of Inventory Alert**

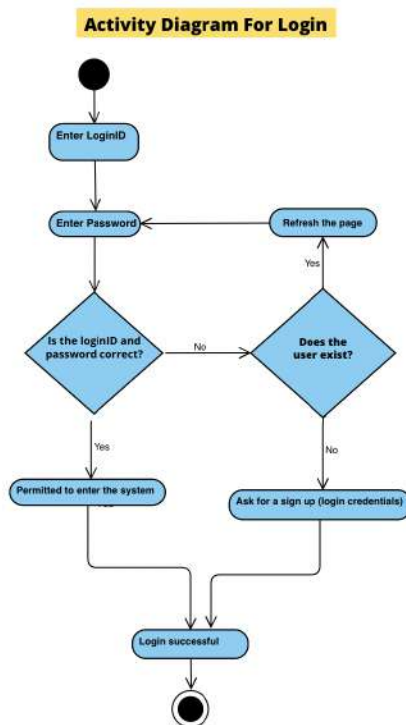**Figure 1.2.6 Activity Diagram of Feedback**

Figure 1.2.7 Activity Diagram for Login

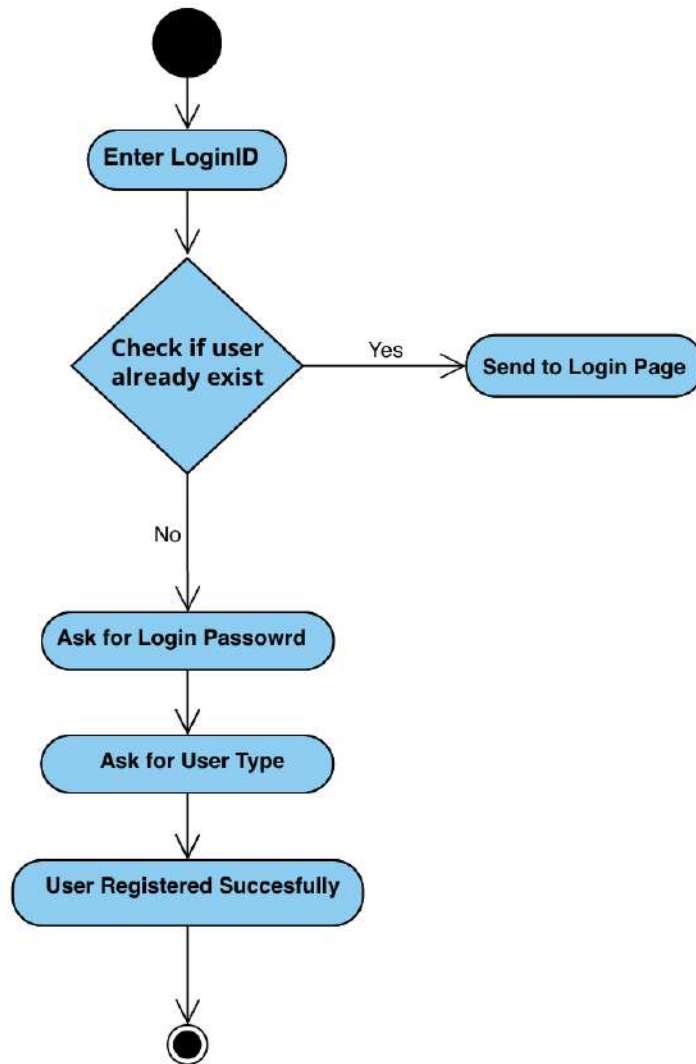# Activity Diagram For Register

Figure 1.2.8 Activity Diagram for Register
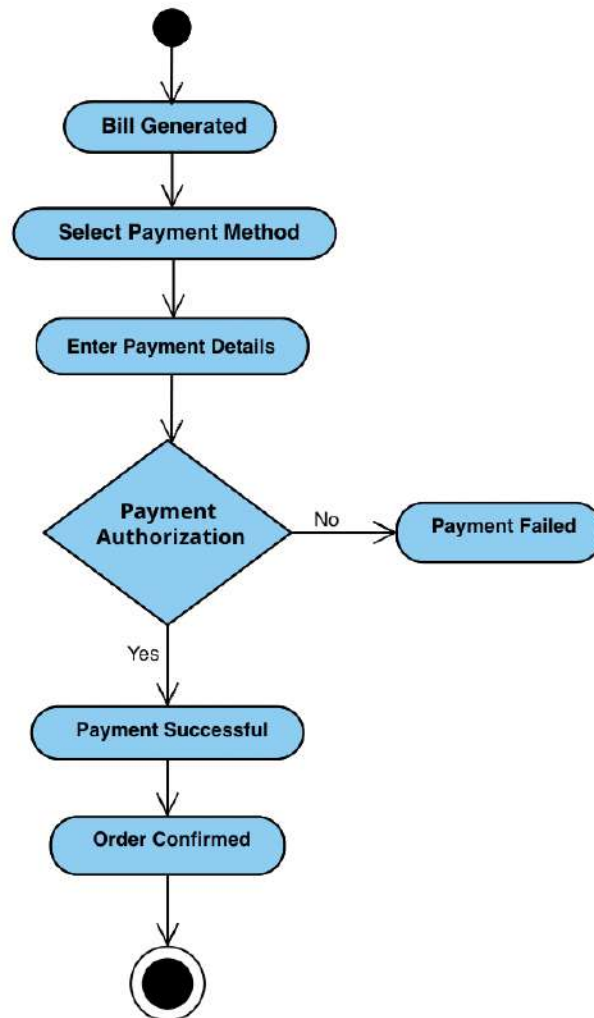
Activity Diagram For Online Payment

Figure 1.2.9 Activity Diagram for Online Payment
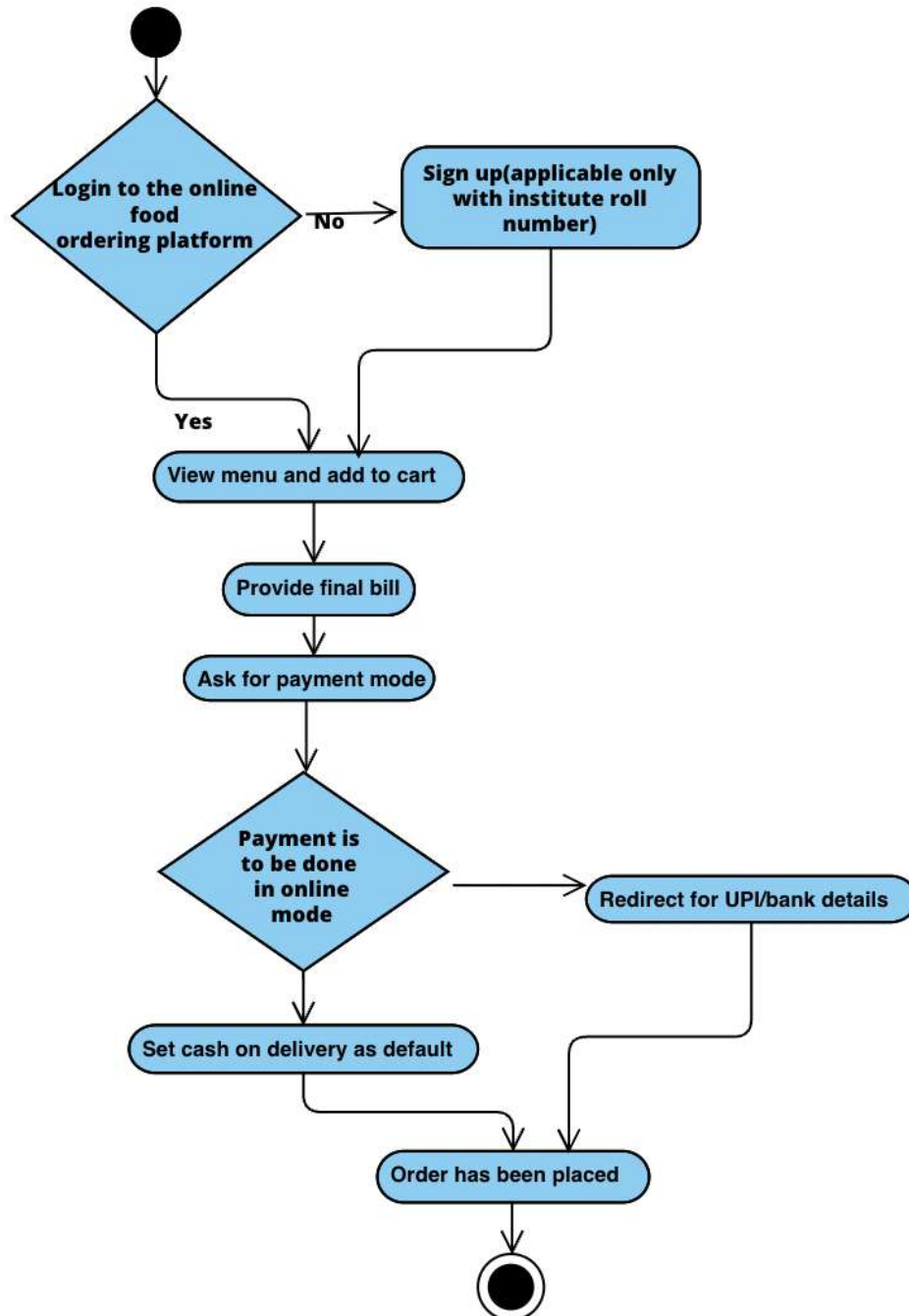
Activity Diagram for Online Order

Figure 1.2.10 Activity Diagram for Online Order

Module 2: Accounts

1. Requirements and Description

M2 Req1 : Banking Management

Description: We can utilise banking management to monitor all banking activities. There are multiple benefits when it comes to banking management tools and solutions. They eliminate many trips to the bank, offer secured transactions, diminish operation costs and execute swift payoffs.

M2 Req2 : Budget Management

Description: We can create, maintain, update and adhere to budgets with this accessory. Craft an adequate budget that aligns with the college's needs. This requirement offers accurate real-time information, simple budgeting practices, in-depth reporting and reduced expenses.

M2 Req3 : Financial Statements

Description: We can implement general ledger balancing, journal entries, bank reconciliations, chart of accounts and accounts payable and receivable. These tools even permit us to perform tasks and print reports automatically.

M2 Req4 : Inventory Management

Description: Inventory enables us to gain a real-time estimate of our available stock. We can also establish minimum quantities for items and receive notifications when we hit this preset number to avoid stockouts. This program integrates perfectly with the accounting department so the officials know how much has been spent on things.

M2 Req5 : Billing

Description: Automating the billing processes should be a no-brainer. Tasks that take staff hours or even days may take the billing system minutes. And with less human intervention, we're guaranteed fewer human errors. We may also want a system that supports multiple payment methods. Other notable benefits include bank connections, fixed assets and mobility.

M2 Req6 : Expense Reporting

Description: In a nutshell, expense reporting is intended for processing and paying. This basically includes understanding how the institution spends the provided funds in accordance with the established policies. The major users here are students, employees and faculty. If violations occur, the officials can review them and take the appropriate measures.

M2 Req7 : Analysing data

Description: Like any other department, the accounting department also needs the ability to exchange data efficiently and conveniently. An accounting solution should be developed with reporting and analytics varied features. We can design an application that will only allow specific users such as the account officers to have access to all the confidential information.

M2 Req8 : Fixed Assets

Description: An asset is something that has value for an organisation such as a computer, athletic equipment, vehicle, dorm furniture, and what form the value is, depends on the organisation and its stakeholders. Colleges and universities are responsible for managing a large number of assets, buildings, and equipment. These assets may be located at various buildings. They need to be tracked and maintained. That also includes keeping up with service requests and maintenance schedules so that the assets are consistently usable and do not interrupt the learning environment.

M2 Req9 : Payroll Generation

Description: Payroll is another important aspect that needs to be included in the requirements list. Repaying all the dues of the company and people working in the company is accounted for in this software. Payroll is an important part of this module because it streamlines the records of students and employees starting from their accounts management, their leaves (sick, regular, uninformed), overtime pays, and recording other essential details.

M2 Req10 : Use of Barcode Scanners

Description: Because assets are always on the go on and off campus, the use of built-in barcode scanning mobile technology is a game-changer for higher-education asset tracking. With a scanner accessible from university staff's smartphone or tablet, he/she can scan a barcode, and in an instant, have access to an asset's age, maintenance history, manufacturer, serial number, size, capacity, replacement cost, location, previous users, and so much more. In the instance that maintenance is needed, work orders can be produced from a central database and the work can be tracked to completion.

M2 Req11 : Security of Data

Description: When there is accounting and finance, the word security holds great importance. Within financial accounts, there lies much confidential information about the company. So it is necessary to ensure security at different levels. All the details of the accounting departments must be confidential and secured with passcodes within the organisation.

M2 Req12 : Cloud Solution

Description: It is not feasible when we work on a server that works within a certain proximity. The dependency on mobile applications comes into the picture. This is a huge plus to be able to develop a system that can be accessed from anywhere. The cloud solution allows teams to access the system from any place, on any computer, and without the need to install anything if we choose a cloud solution.

M2 Req13 : Student Payments

Description: It should keep track of all the payments done in online or offline mode. Particularly, it should include a portal having all the payment requirement modes like UPI, credit/debit cards, NEFT/RTGS and instalment methods. The official should be able to enter, edit, modify and delete payments. A complete database of the student information and all the payments done is required.

M2 Req14 : Ordering Products

Description: It includes tasks such as managing shipments of orders so shipments go directly from vendor to customer; creating suggested purchase orders based on information maintained by the system; track vendor partner number by detail line; receive purchase orders in full or process partial receipts.

M2 Req15 : Technical Support

Description: The technical consulting and support approach must be quick and effective. As the department will solely rely on systems and related softwares, it will be necessary to have an effective technical support team. Experts will ensure that your problems are resolved in a much better way. We should confirm that the software provider will be able to respond to the queries within a reasonable time frame.

M2 Req16 : User-friendliness

Description: This a very important checkpoint on this requirement list. To have user-intuitive and friendly software that streamlines the work and makes it simpler for users. Accounting for financial information is already tough and time-consuming. This may require users to put their whole time into managing and creating records. So building software that is fast, productive, and user-friendly is a huge plus.

2. Use Case Diagram

3. Activity Diagram

4. Sequence Diagram

Module 3: Faculty Recruitment

1. Requirements and Description

M3 Req1 : Login page

Description: The user name and password must be entered on the login screen in order to access the site. If the user is not already registered, a "Register" button will appear, leading to a registration form.

The registration form will ask:
- Applicant name
- Qualification
- DOB
- Gender
- Ph No
- Email ID
- Address

M3 Req2 : Home page

Description: In order to navigate the software, the homepage will feature a number of different menus.
- Job Menu
- Personal Details Menu
- Interview Booking Menu
- Query And Report Problem Menu
- Screening Test Booking Menu
- Result Menu

M3 Req3 : Resume

Description: This will take user to the form page to fill the resume, where user can add the applicant's information, including their name, qualifications (upload a resume), DOB, gender, and email address.

M3 Req4 : Job box

Description: Once we click on a certain job option, it will display the description of the post, basic qualifications, preferred qualifications, and an Apply Now button.

M3 Req5 : Apply Menu

Description: It will display a list of all open positions and should come equipped with a filtering option so that users may narrow down the list to only the positions that suit their needs.

M3 Req6 : Apply process

Description: The "apply now" button took us to a page where we could upload our resume and personal details before giving us the chance to review and submit our application.

M3 Req7 : Screening Test Booking

Description: A thorough review of the applicant's resume will follow the selection of the desired position. Once user receives the confirmation, user can select from the following options in the screening test booking menu:
- Pick a time slot
- Pick a date

Downloading the necessary admission card is possible after the preceding steps have been taken.

M3 Req8 : Login portal for Recruiter

Description: This is the login page for necessary staff members, who must input their credentials to access a dashboard with the following recruitment-related options.
You'll require the following credentials:
- loginID
- password

M3 Req9 : Recruiter Dashboard

Description: It will have the following menus:
- Publish Job Notification
- Inspect Resume Against Job
- Interview Schedule Manager

M3 Req10 : Job Notification

Description: It enables the recruiter to post job notifications for openings in the faculty of the selected branch. He may include job descriptions and list both required and desired qualifications. After completion, it will be published on the institute's website's notice window.

M3 Req11 : Inspect Job Notification

Description: It enables the recruiter to determine how many applicants there are, sort through their resumes, and accept or reject them for the preliminary interview.

M3 Req12 : Interview Schedule Manager

Description: It will enable the recruiter to view various applicants' preferred interview dates and enable him to modify dates as necessary. It will also enable the recruiter to determine the timing of the interview and the room number for the interview.

M3 Req13 : Result Section

Description: After passing the screening test, the applicant can determine whether they are eligible for the interview round and offer a link to the interview booking page.

M3 Req14 : Interview Slot

Description: A applicant who had successfully completed the screening test round would be given access to the interview booking menu, where he or she may select a necessary day for an interview.

M3 Req15 : Support Channel

Description: This option will take us to a form where we may email questions about a specific employment function as well as any issues with the application process, scheduling interviews, scheduling screening tests, etc.
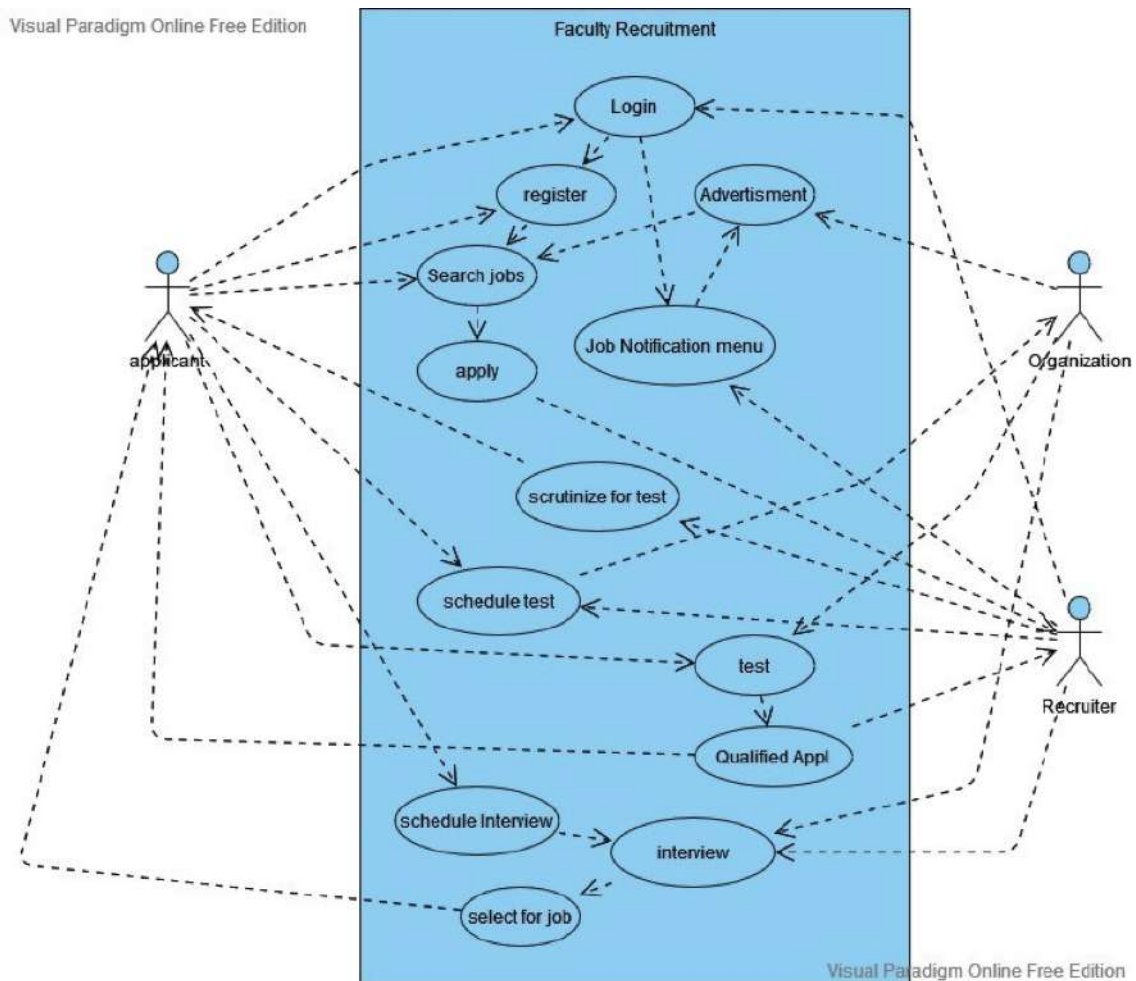
2. Use Case Diagram

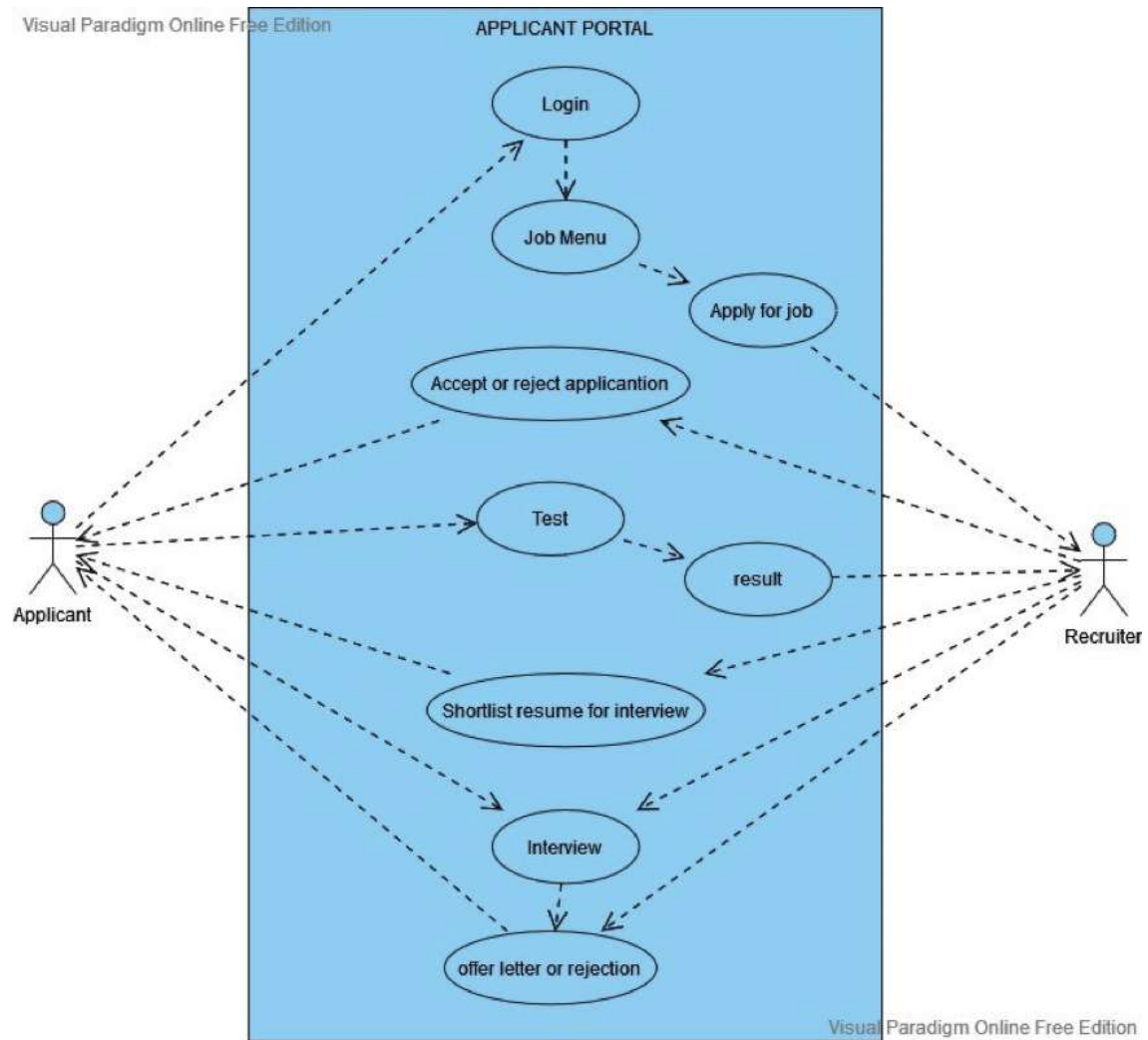
Fig 3.1.1 Faculty Recruitment portal
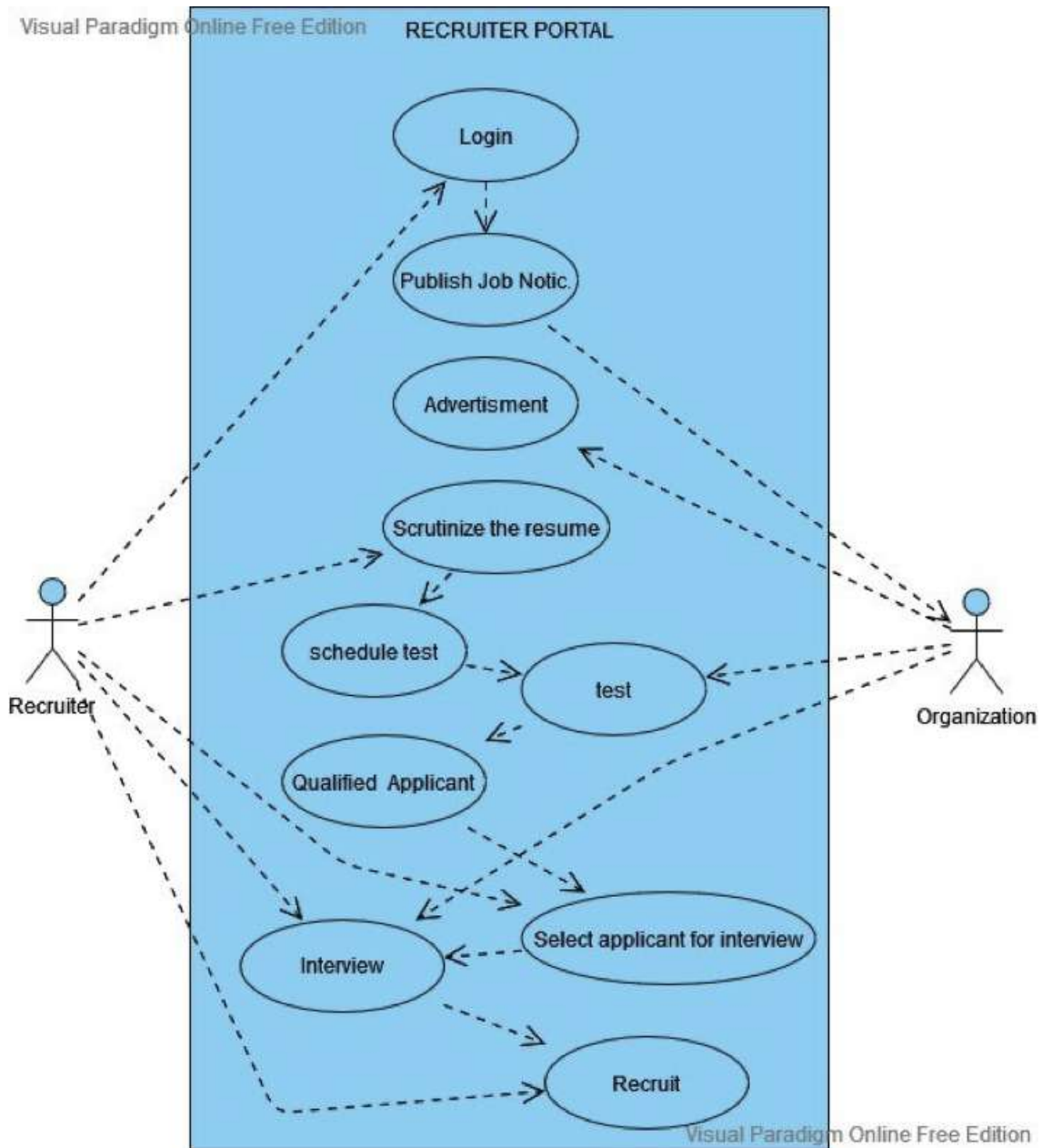
Fig 3.1.2 Applicant portal

Fig 3.1.3 Recruiter portal

3. Activity Diagram

Visual Paradigm Online Free Edition

Start

select the home screen

select the personal details

change the required description

upload new resume?
Yes / No

Refresh the screen

upload the resume

review details

Confirm chages?
No / Yes

Changes done

Visual Paradigm Online Free Edition
End

Fig 3.2.1 Login menu

Start

click the Job menu

Choose the required post

Fill form for job and upload

No

refresh screen

Yes

form submitted ?

No

confirm Application applied

End

Fig 3.2.2 Job Application submission

Start

```
┌─────────────────────────────┐
│  select schedule Test Menu  │
└─────────────────────────────┘
```

```
┌─────────────────────────────┐
│      Enter Application ID    │
└─────────────────────────────┘
```

No

Register new exam

```
┌─────────────────────────────────┐
│  Choose the date from Calender  │
└─────────────────────────────────┘
```

No

Confirm date?

```
┌─────────────────────────────┐
│      Download Admit Card     │
└─────────────────────────────┘
```

End

Fig 3.2.3 Select exam date

Start

choose the schedule test option

display the calender

select the required date of exam

refresh the screen

No

Yes

Confirm date of exam?

sent the specified date to recruiter

generate the admit card

End
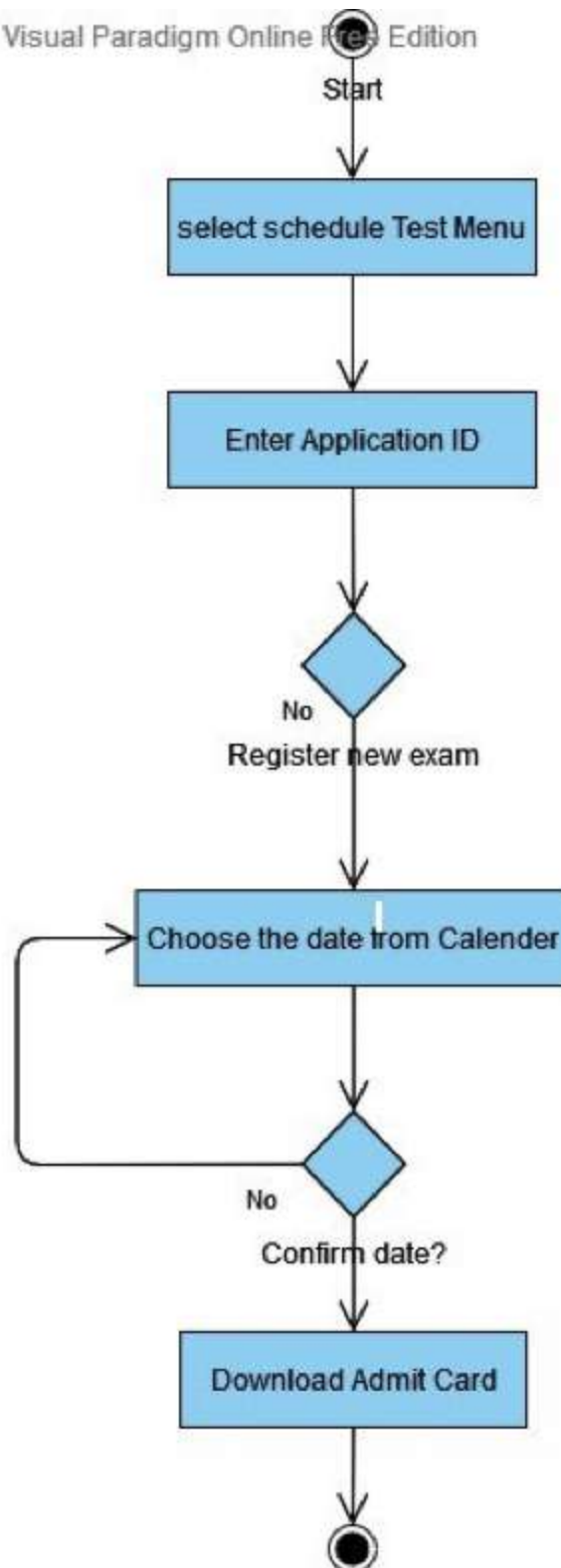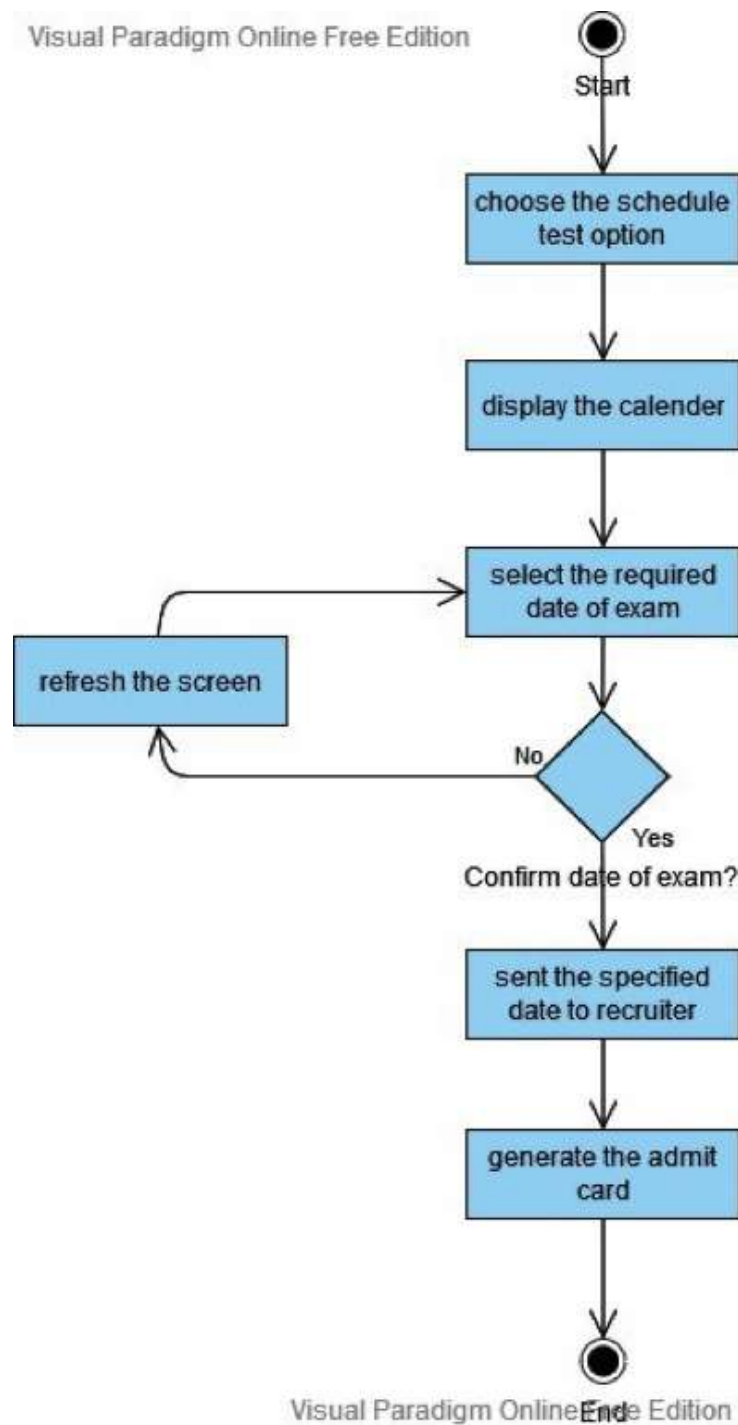
Fig 3.2.4 Generate Admit card
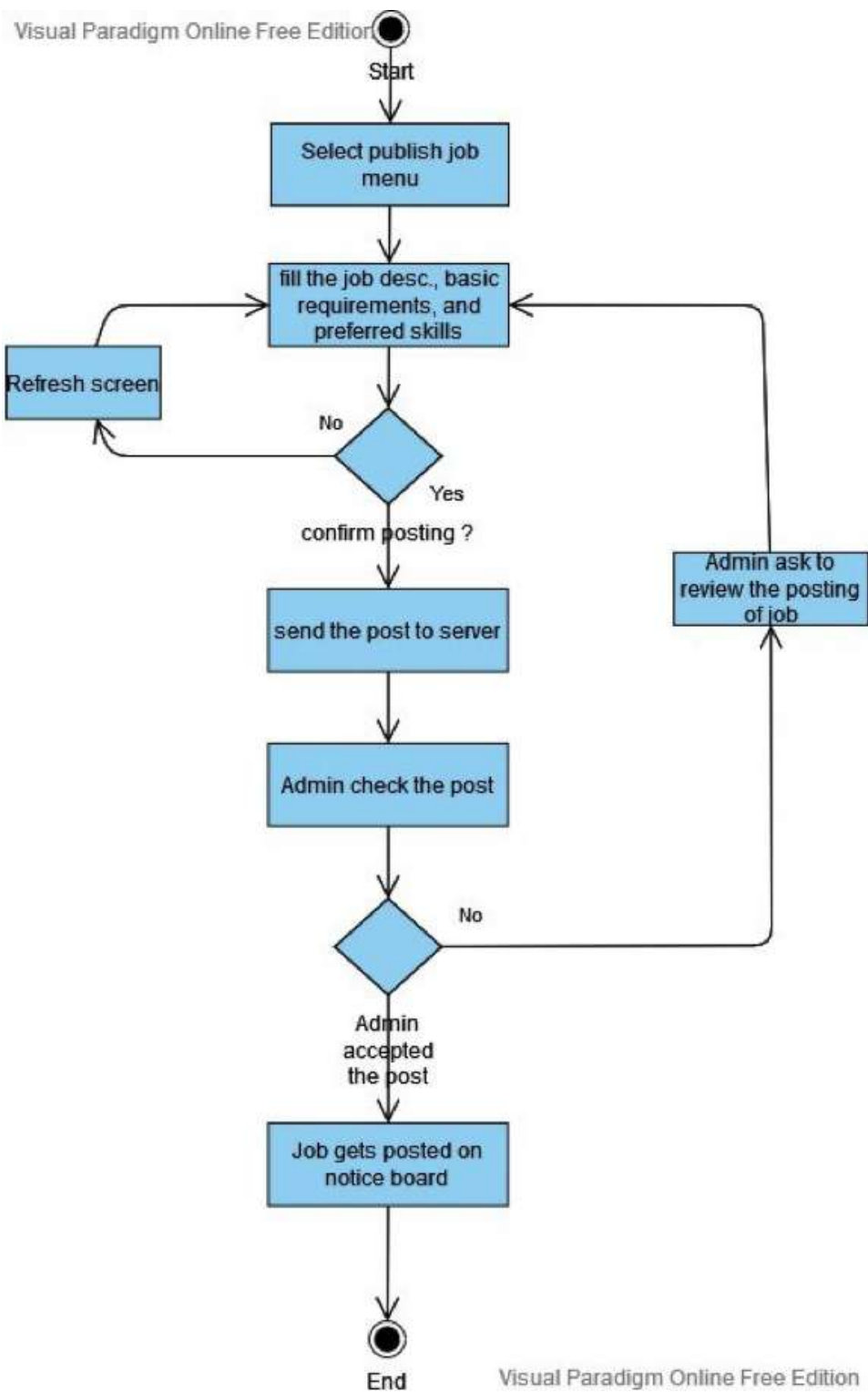
Fig 3.2.5 Job posting

Fig 3.2.6 Screening menu

Start

Select set Interview
menu

choose exam result of
screening test for
specified job listing

select top 15
candidate

select 5 candidate on
basis of reume

Refresh the
candidate list

No

confirm the selection of candidates?

send interview
notification

End
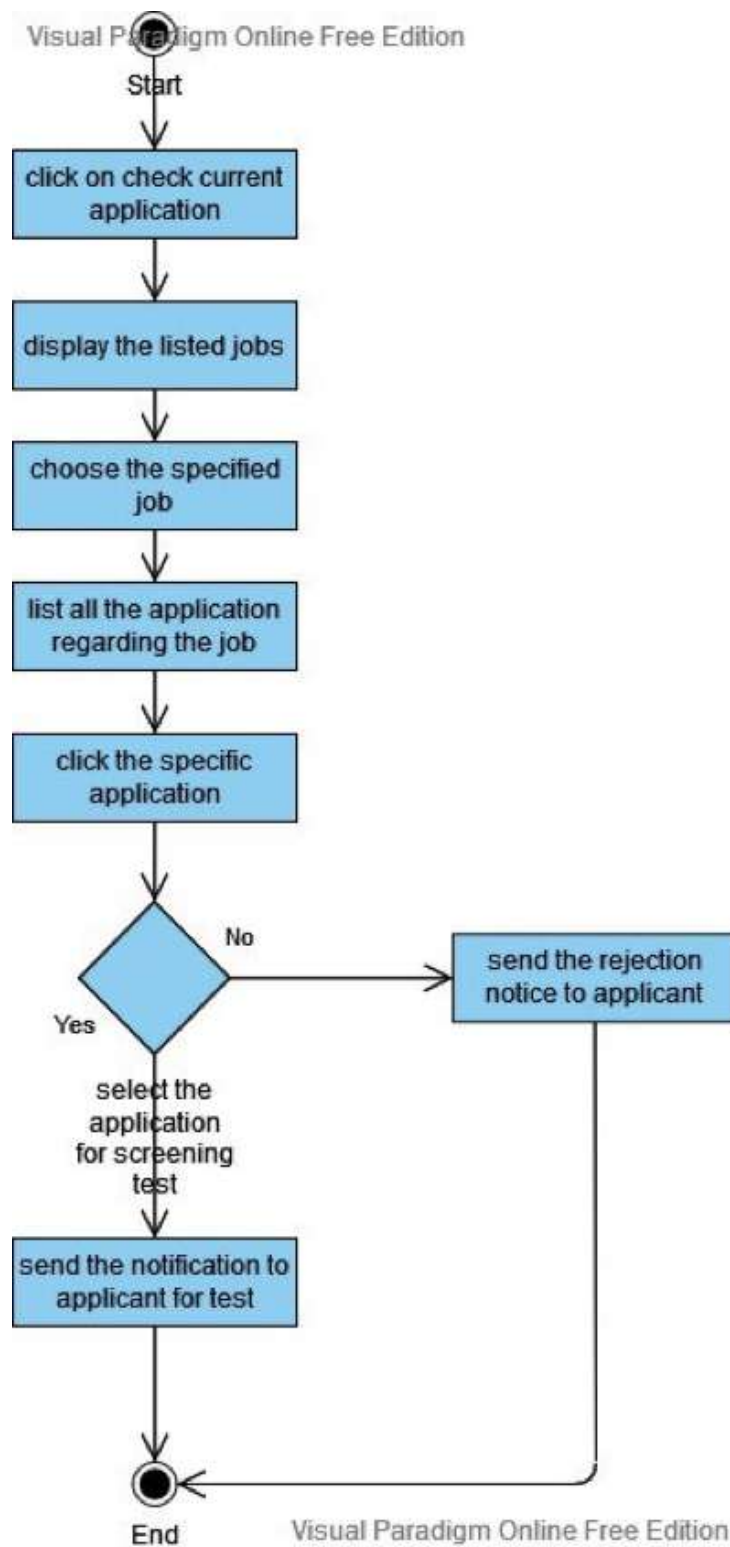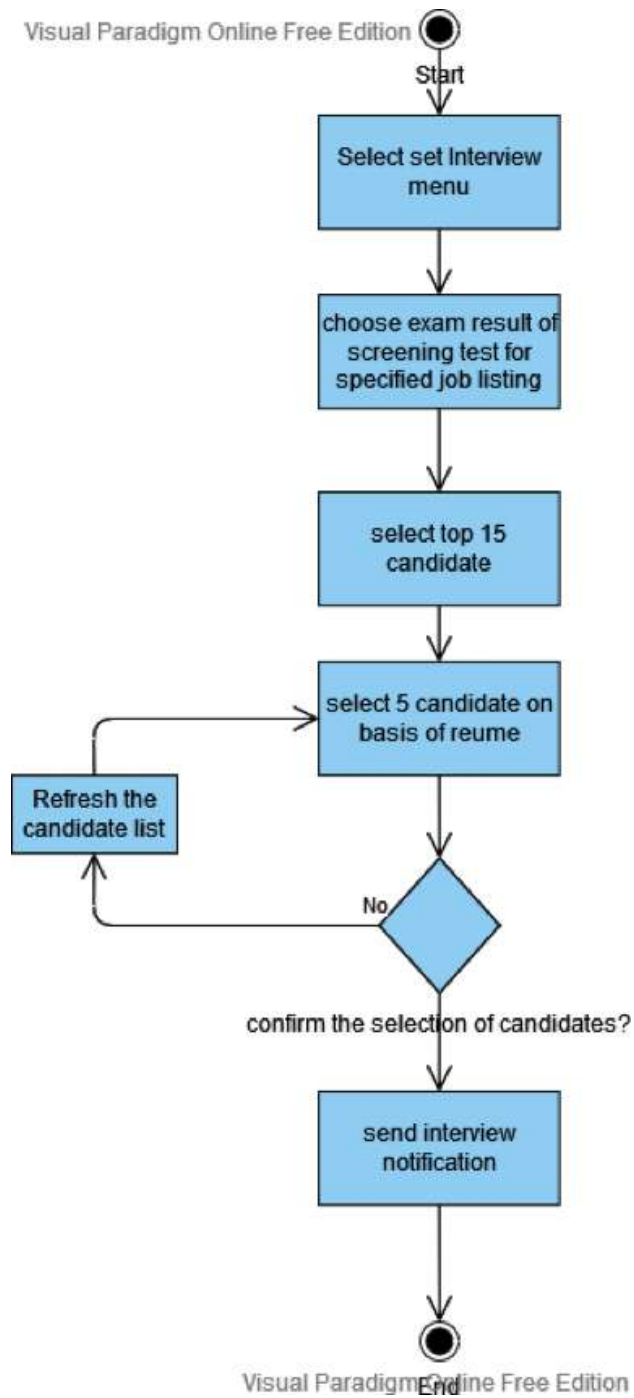
Fig 3.2.7 Selecting candidate for interview

Start

select arrange
interview room oprtion

select the room size

select date of
interview

display avail room

Refresh the screen

select the room

No

Yes

Confirm the room booking

Send the request of
room booking

End
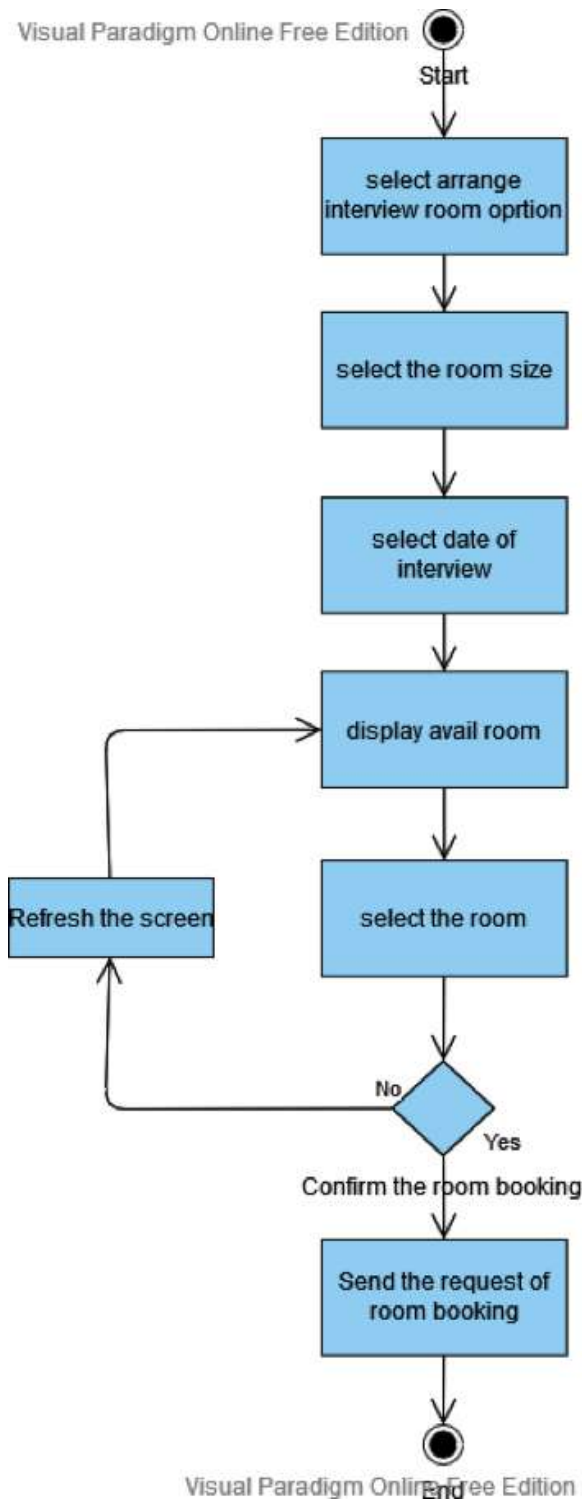
Fig 3.2.8 Interview room allotment

Start

select the home
screen

select the
personal details

change the
required
description

No

Yes

upload new resume?

Refresh the
screen

upload the
resume

review details

No

Yes

Confirm chages?

Changes done

End
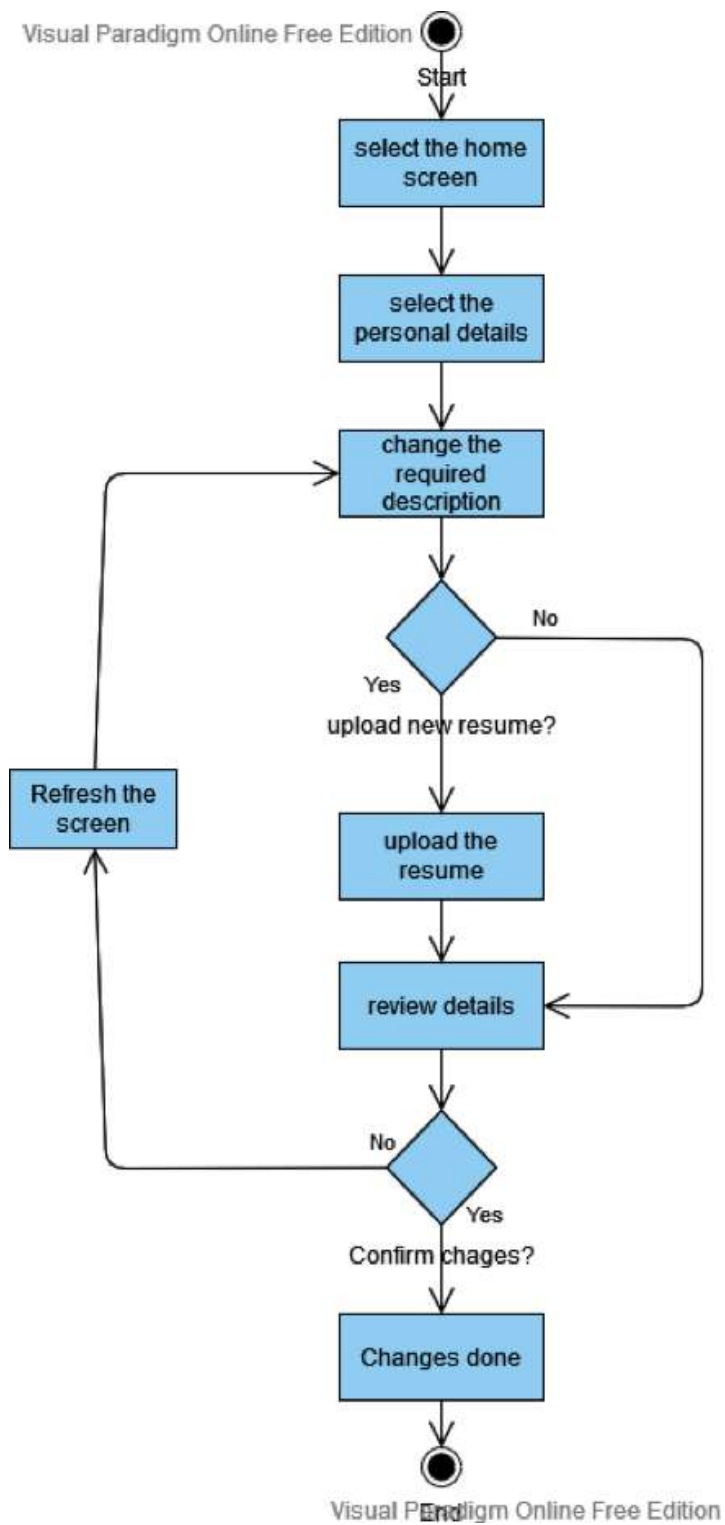
Fig 3.2.9 Person details change

4. Sequence Diagram
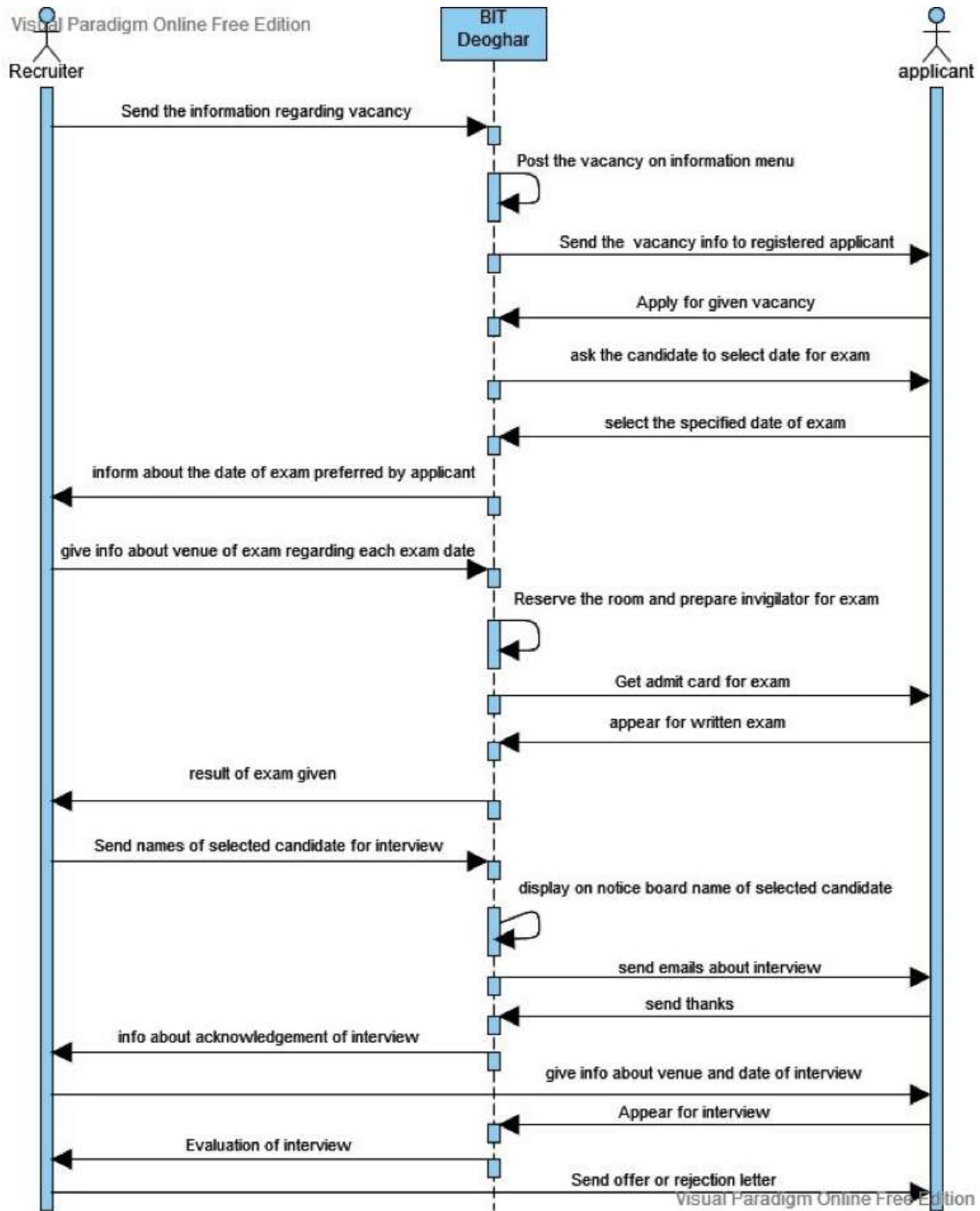
Figure 3.3 Sequence Diagram for Faculty Recruitment

Module 4： Placement Cell

1. Requirements and Description

M4 Req1 : Registration

Description: TPO should get a page where they can register students of the institute on the portal, so that the other users except those who are actually eligible for applying to the companies should not get access to the portal.

M4 Req2 : Login

Description: Students who are eligible by all the norms of the college after registration must be eligible to login to their respective profile, students on their first try goes to the Forget Password section to generate a password for the first time using their official E-Mail (an E-Mail to be sent to generate new password) and on successful generation of the new password they can login to the portal and access various opportunities.

M4 Req3 : Update Student Details

Description: Students must have access to update their own personal profile and its attributes except for those which can't be changed like Roll Number, whereas TPO must have access to edit and update details of all the students.

M4 Req4 : Search for Student Details

Description: TPO must have access to all the Students Details which makes it difficult for him to access a particular Student Profile, so as to resolve this issue TPO should get an option to search a particular student and perform operation on it like updating his profile and so on.

M4 Req5 : Add/ Update Company Details

Description: TPO must get an option to list a company and its offerings as well as requirements, though companies won't be able to edit these details for prevention of discrepancies. Companies will have to send proposal to TPO for addition or modification.

M4 Req6 : View Companies and their Details

Description: Students and TPO must be able to view details of companies i.e., their offerings and requirements so that Students can apply as per their eligibility and interests.

M4 Req7 : Restrict Placed Students from applying

Description: If a student approves his/her offer from a company he/she must be restricted from applying to other companies so that other students get better chances of placement.

M4 Req8 : Upload Resume/ CV

Description: Students must get an option to upload their resume or CV so that it can be forwarded to the company they apply for, the submission must be restricted for file type and size (File Type: PDF, Size must be less than 10MB). Also, a student must be restricted to submit a single file only.

M4 Req9 : Apply for Company

Description: A Student must get an option to apply for a company as per their interest. Applier can apply for multiple companies at a time but must be restricted to move further with their application once they accept offer letter of any company.

M4 Req10 : Send Proposal to TPO

Description: Companies must get a conversational platform to send proposal to TPO and communicate with TPO for any discrepancies and vice versa.

M4 Req11 : View Details of Students applied

Description: Companies must get an option to view details of students who applied for their company only. They must also get an option to download the resume/ CV of respective students.

M4 Req12 : Selection Approval

Description: Companies after completing their sorting and selection procedure must get an option to approve and roll-out the offer letters to top candidates of their list.

M4 Req13 : Result Declaration

Description: Soon after the students accepts the offer a result is to be declared by the company and TPO so that all the students get notified about the final results.

2. Use Case Diagram
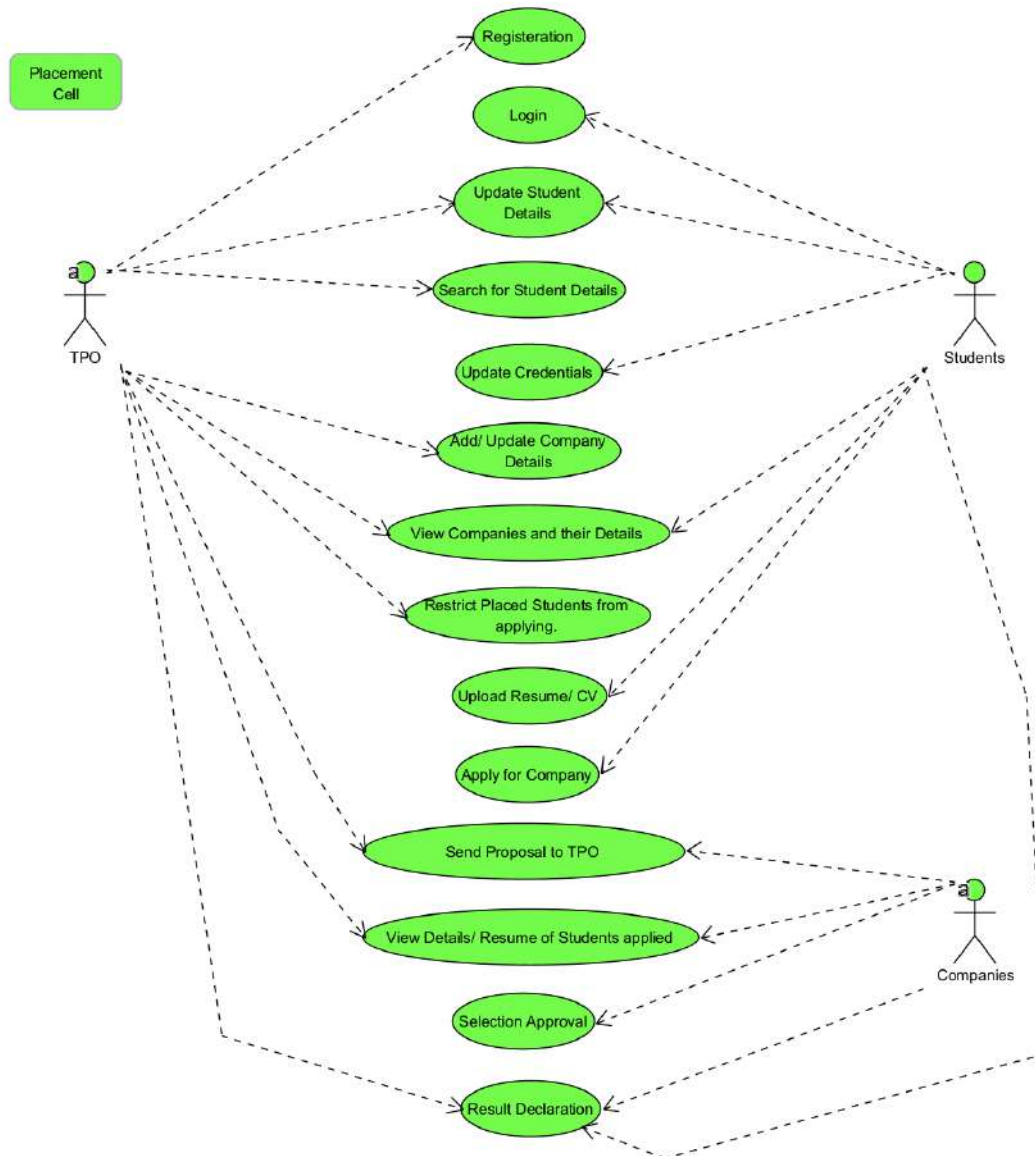
Figure 4.1.1 Use Case Diagram

3. Activity Diagram
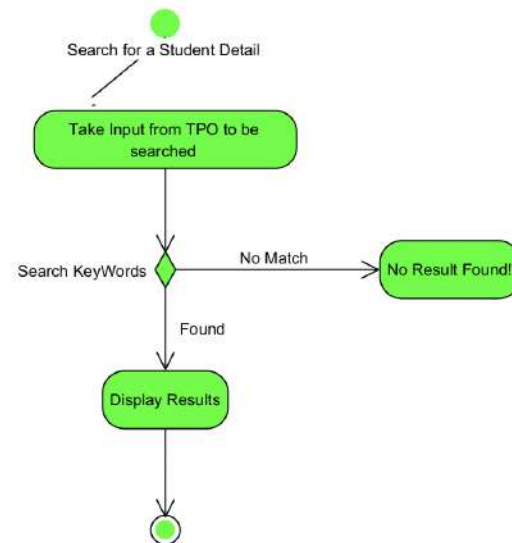
Figure 4.2.1 Activity Diagram for Placement Cell
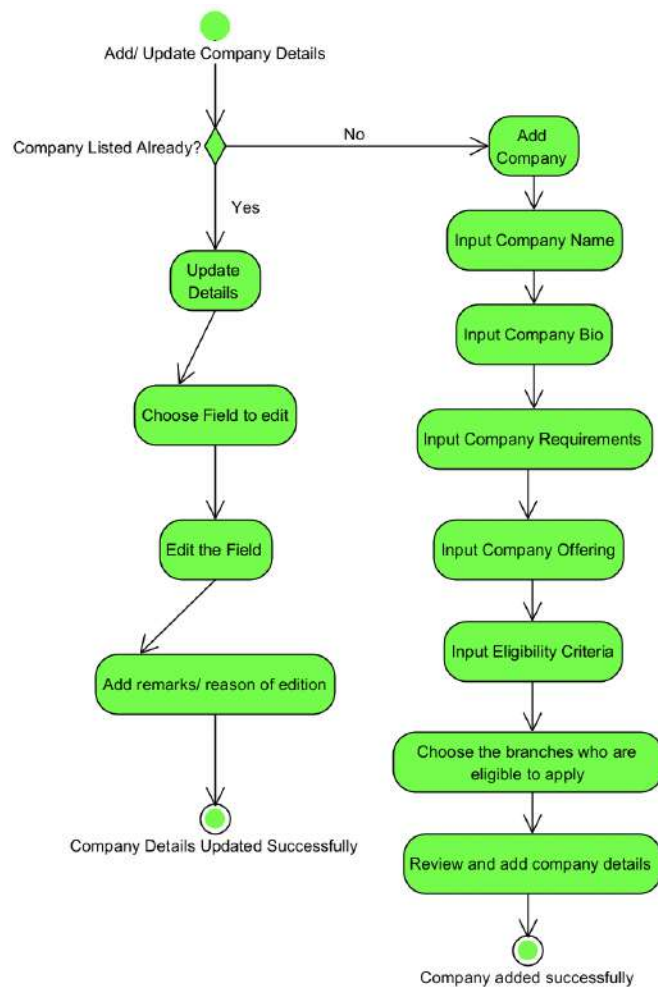
Figure 4.2.2 Activity Diagram for Placement Cell
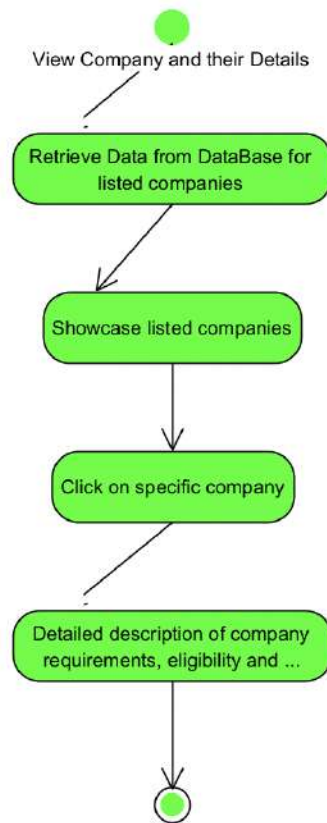
Figure 4.2.3 Activity Diagram for Placement Cell
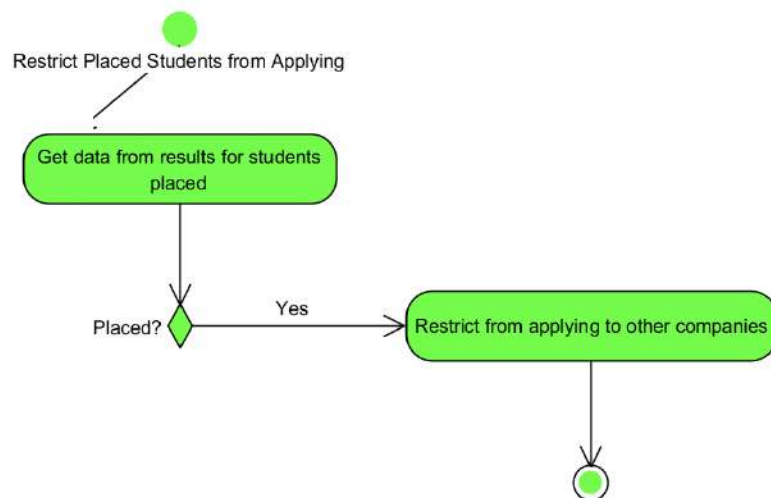
Figure 4.2.4 Activity Diagram for Placement Cell
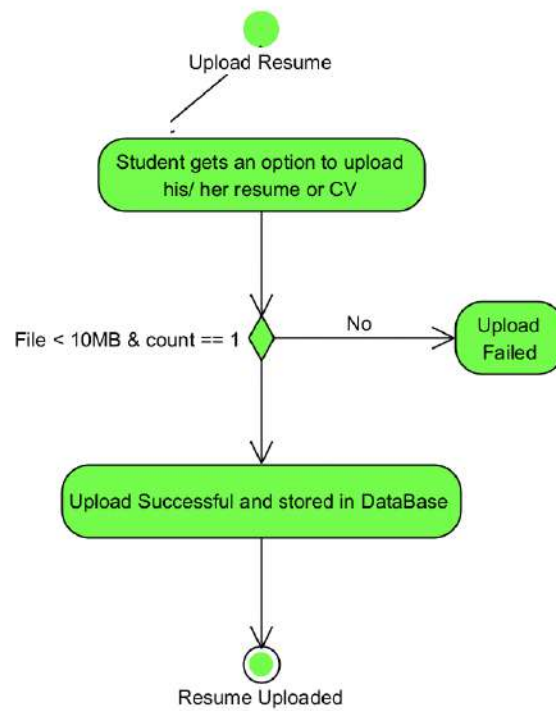
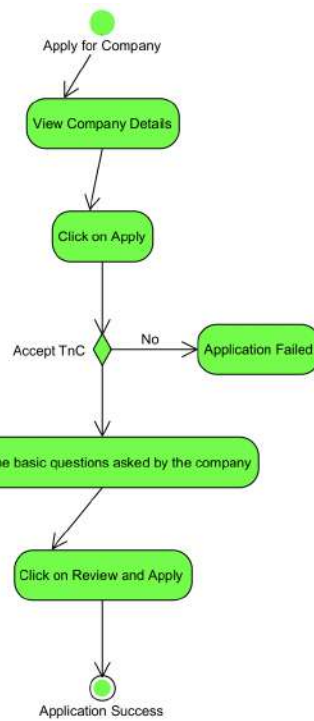**Figure 4.2.5 Activity Diagram for Placement Cell**

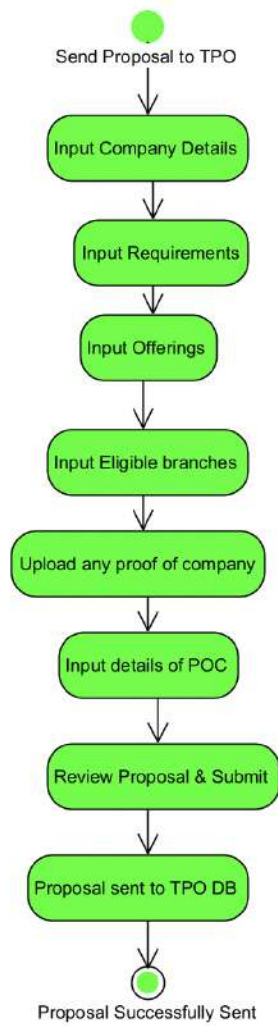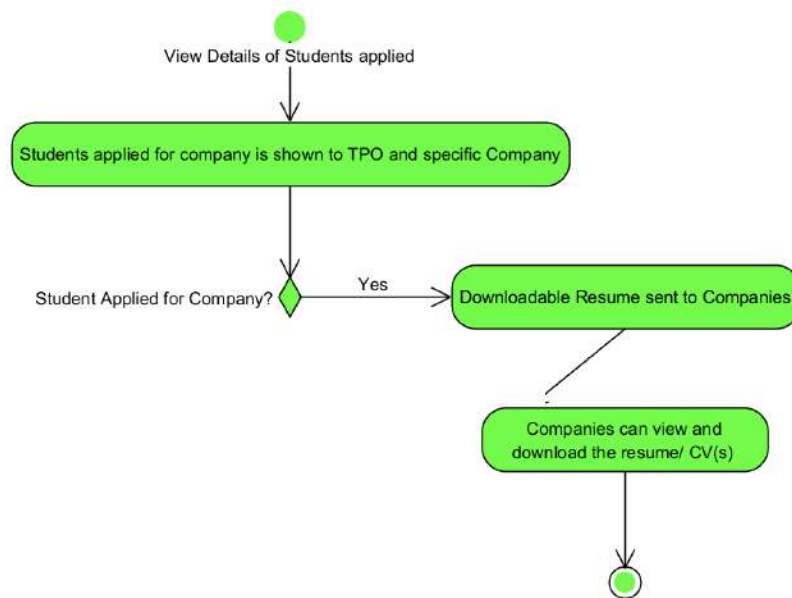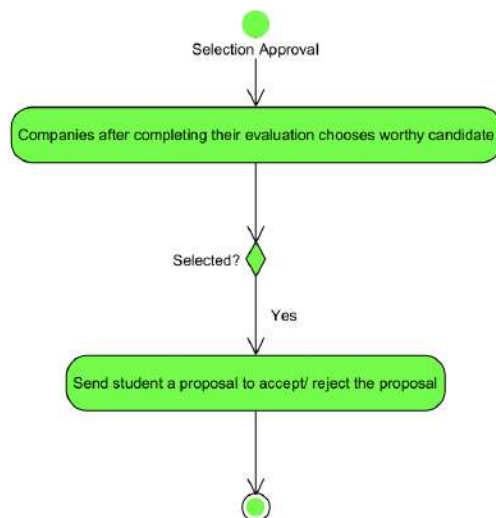**Figure 4.2.6 Activity Diagram for Placement Cell**

Figure 4.2.7 Activity Diagram for Placement Cell

Figure 4.2.8 Activity Diagram for Placement Cell

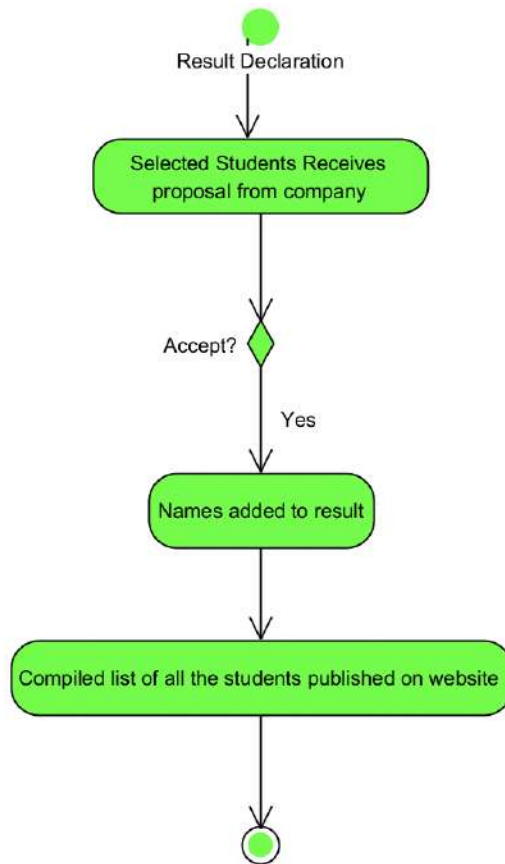**Figure 4.2.9 Activity Diagram for Placement Cell**

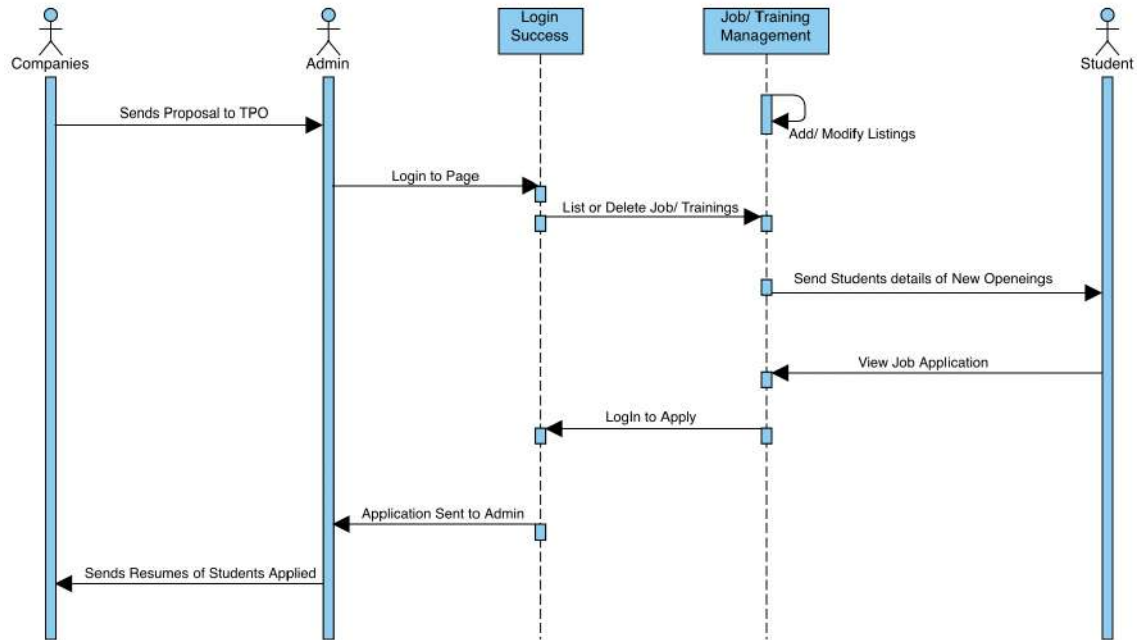**Figure 4.2.10 Activity Diagram for Placement Cell**

4. Sequence Diagram

Figure 4.3 Sequence Diagram for Placement Cell