Client Requirements

For

NITC CSED Purchase Manager

Project Owner: Sreenivasan M

Course: CS4096D Software Engineering Laboratory

Prepared by:-

Group Number: 10

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Problem Statement

- To provide essential expenditures to the users (faculties, students, and official staffs of CSED) of NIT Calicut.
- Users can create a request to purchase required resources.
- HOD can Approve/Hold/Reject the requests made by user.
- If status of request changes (approve/hold/reject) then the user will get notified or if he wishes to he can also check status on his dashboard.

- If request is approved then the user should be able to make an official request to the CSED office.

Overview

In college there are always requirements of new resources like furniture, systems and many things to improve facilities for the students and to improve the infrastructure of the college. So to reduce the complexity of the members in making conversation between the officials for the resource purchasing it is required to develop an interface.

Users:

HOD, faculties, students and official staff of CSE department can use this application for managing and maintaining their purchase of resources and can make a record of it.

Requirements in the perspective of Client

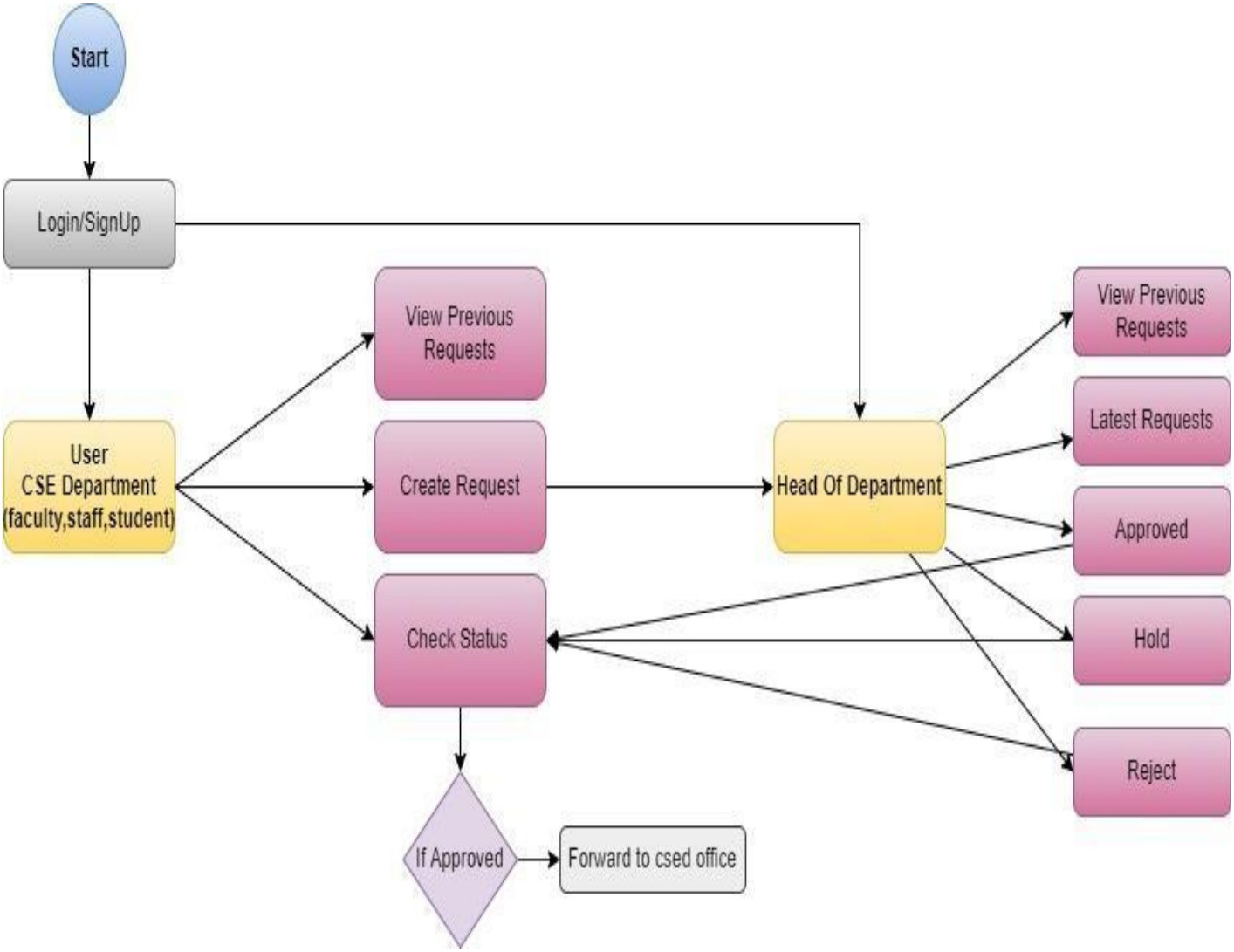
- The system shall allow new users to register to the Application.
- System should allow existing users to login using valid credentials.
- System should allow the user to select the user type (HOD/faculty/staff/student).
- System should allow User (faculty/staff/students) to make a request of requirements to HOD for approval.
- System should allow User (faculty/staff/student) to see their previous requests by searching (by request ID/date) or sorting (by date).
- System should allow User (faculty/staff/student) to check status by entering request ID.
- HOD can approve/hold/reject the request. If rejected give a valid reason.
- System should allow User (faculty/staff/student) to see their previous requests by searching (by request ID/date) or sorting (by date).

Similar Software

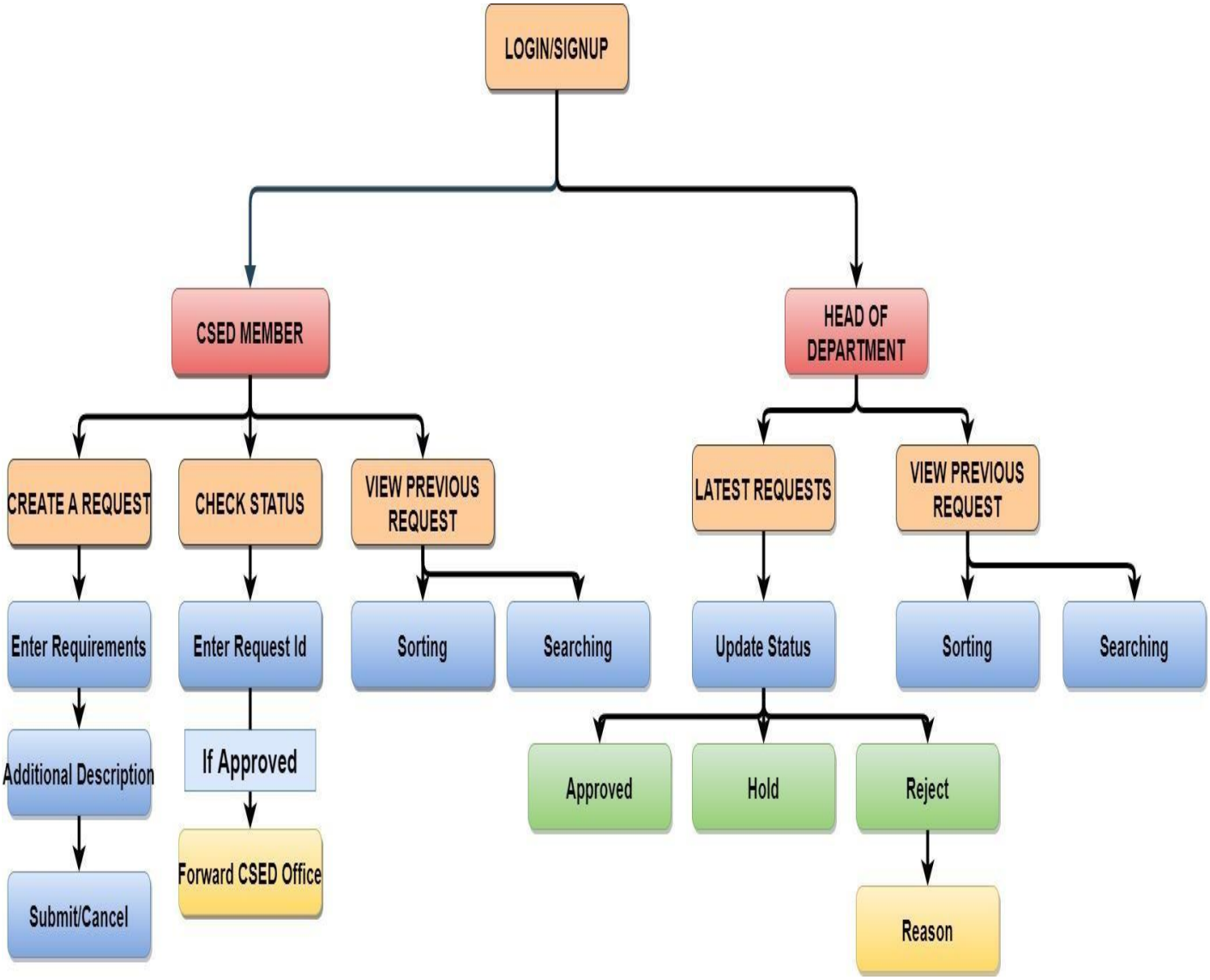
Some websites which implements similar ideas:

 Integrify Purchase request- integrify.com/purchase-requests

Workflow Diagram



Hierarchy Diagram


LOGIN/SIGNUP
CSED MEMBER
HEAD OF DEPARTMENT
CREATE A REQUEST
CHECK STATUS
VIEW PREVIOUS REQUEST
LATEST REQUESTS
VIEW PREVIOUS REQUEST
Enter Requirements
Enter Request Id
Sorting
Searching
Update Status
Sorting
Searching
Additional Description
If Approved
Approved
Hold
Reject
Submit/Cancel
Forward CSED Office
Reason

Software Requirements Specification

for

10-NITC CSED Purchase Manager

Version <1.0>

Prepared by

Team Number: 09

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Project Owner: **SREENIVASAN M**

Course: **CS4096D Software Engineering Laboratory**

Date: **January 23, 2022**

Revisions

Version	Primary Author(s)	Description of Version	Date Completed
1.0	Sheenam Waris Janvi Agrawal Jayant Parganiha	Initial Phase	23/01/2022

1 Introduction

This document lays out a project plan for the “NITC CSED Purchase Manager”. The plan will include, but is not limited to, product functionality, product design and implementation, scope of the project from the perspective of team members, and the identified requirements.

1.1 Document Purpose

Purchase Manager application provides an easily accessible space for CSED people (users) to quickly request for the purchasing resources for the department. It enables users after approving the request by HOD, to make an official request to the CSED office. The primary goal of this application is to create request, store previous requests, and process the information digitally. This will provide more flexibility to communicate between CSED peoples and HOD and others. Also perfectly maintains the communication hierarchy.

1.2 Product Scope

This application is an authorized from NITC department to all CSED members. Being able to see the status of all your orders in one place is a huge benefit to automating the purchase order process. User can easily see important moments in the PO process, like which purchase requisitions have been approved or rejected. Getting purchase requisitions approved is faster and easier with an automated system. User can send them directly to the HOD for approving them through the system reducing bottlenecks.

1.3 Intended Audience and Document Overview

The intended readers of this document are the developers working on “CSED Purchase Manager Application”, the project manager, mentor, testers, and users directly or indirectly working on or using this system.

1.4 Definitions, Acronyms and Abbreviations

NITC: National Institute of Technology, Calicut
CSED: Computer Science & Engineering Department
HOD: Head of Department

1.5 Document Conventions

In general, this document follows the IEEE formatting requirements. Use Arial font size 11, or 12 throughout the document for text. Use italics for comments. Document text should be single spaced and maintain the 1” margins found in this template.

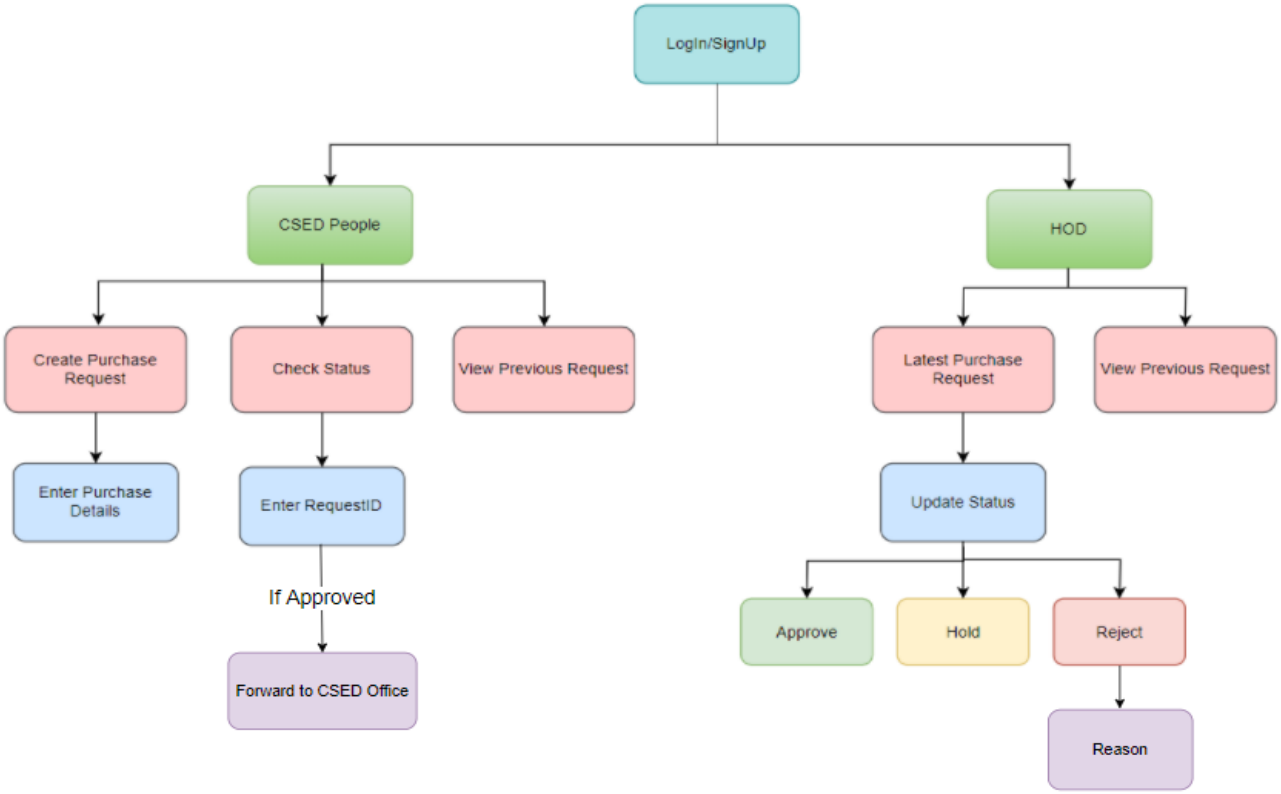
1.6 References and Acknowledgments

https://relevant.software/blog/software-requirements-specification-srs-document/
https://app.diagrams.net/
https://www.canva.com/en_gb/

2 Overall Description

2.1 Product Overview

In today's world, communication happens at the speed of light. Orders are made in passing over the phone, via email, and even through texting. Foregoing formal confirmation of an order means that we may forget important order details. Note that the purchase order process is one part of a broader procurement process that includes everything from identifying the need for a good or service. More in-depth information about the Purchasing process and requisitioning for supplies, equipment and services is available by contacting via application.



2.2 Product Functionality

- Registration/Authentication
- Login/Logout
- Select User Type (CSED Member/HOD)
- Create a new request.
- Enter Department Details.
- Enter Purchase Requirements.
- Add Additional Description if any.

- Submit/ Cancel request form.
- Check Status of previous requests.
- View Previous Requests made by the CSED member.
- Search Request based on request ID.
- Change Status of Requests as Approved/Hold/Reject (Reason if rejected).
- View Previous Requests of CSED member.

2.3 Design and Implementation Constraints

The product is a web application. React JavaScript library shall be used to build the User Interface. Java/Python shall be used for backend control. The application shall be deployed to an online hosting service provider along with a managed online NoSQL database. Software Development Life Cycle will be followed.

2.4 Assumptions and Dependencies

- Internet Connection Require
- Part of CSED

3 Specific Requirements

3.1 External Interface Requirements

3.1.1 User Interfaces

Login Display:

All CSED members shall first login on this page using their NITC email ID and Password. If already logged in, the users shall see the add request and status interface. If not registered yet, clicking on ‘Sign Up’ will take the user to the Register Display interface.

Register Display:

Unregistered users shall first register by providing a NITC Email-id, a Password & unique CSED ID.

Add a request:

Users can add new purchase request, add description and details about item in this interface. The changes will be saved in real-time.

CSED Members UI

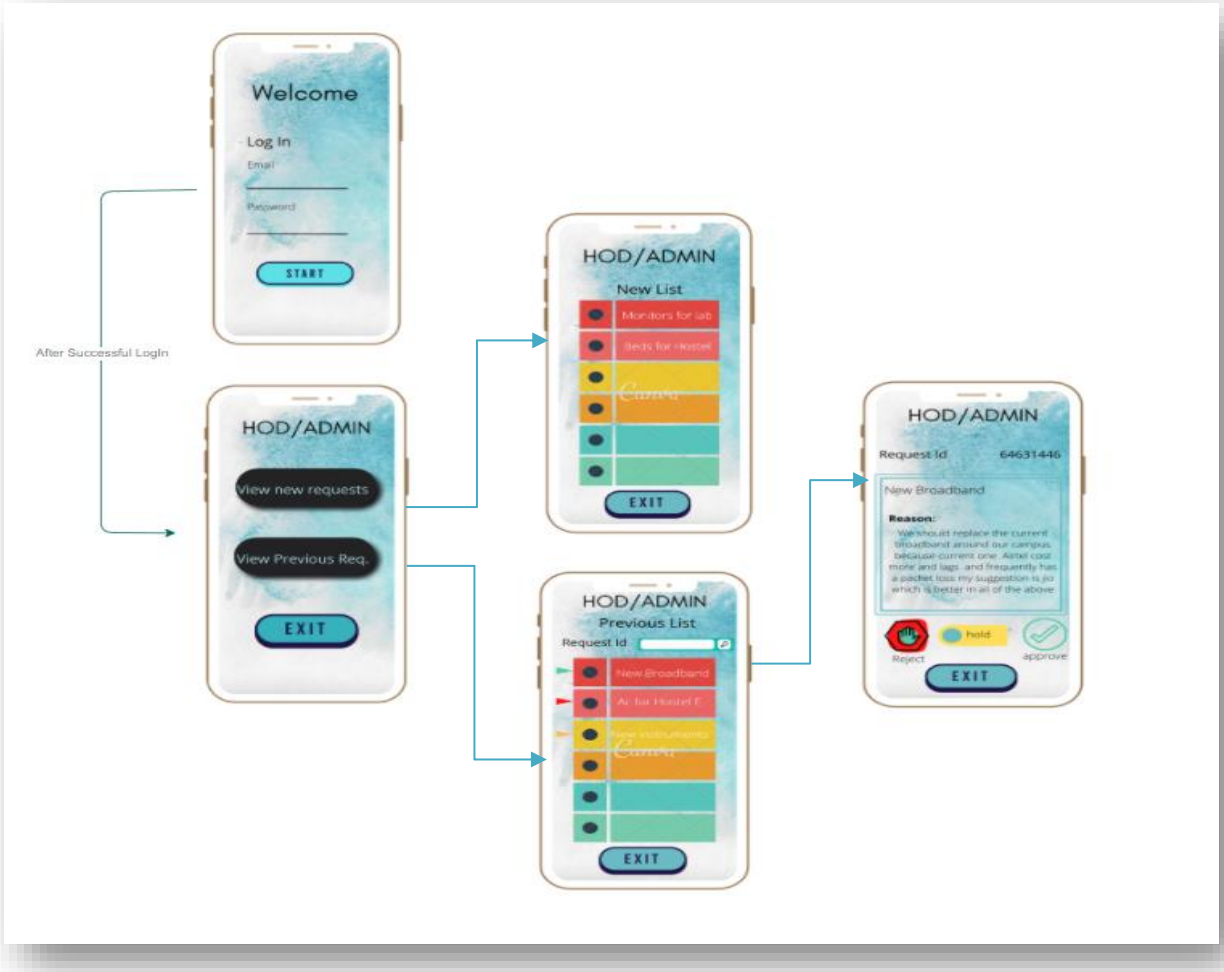
Check Status:

Users can search by request ID which they get after making a purchase request. Searched request will then be displayed the status of purchase order.

Display previous request:

Users can see all the request they have created for purchase as rectangular cards stacked as a list. Users can click on the search option to access search functionality using request ID.

HOD/Admin UI



Login Display:

HOD/Admin shall first login on the page directly. There won't be any need for admin to register.

Display New request:

HOD can see all the new request users have created for purchase as rectangular cards stacked as a list. After clicking to the request, it will be forwarded to purchase details.

Display previous request:

HOD can see all the previous request user have created for purchase as rectangular cards stacked as a list and see their status for each purchase.

Update Status:

HOD can update purchase request status as Approve/Hold/Reject made by the user. Updated request will then be displayed to user as the status of purchase order.

3.1.2 Hardware Interfaces

No additional hardware interface needed. Any device capable of running a browser can use the application.

3.1.3 Software Interfaces

This is a standalone web application.

3.2 Functional Requirements

F1: The system shall allow new users to register to the Application.

F2: The system shall allow existing users to login using valid credentials.

F3: The system shall allow the user to select the type (HOD/CSED Member)

F4: The system shall allow the CSED member to make request to HOD.

F5: The system shall allow the CSED member to add purchase requirements and description.

F6: The system shall record the date and time of creation of each request.

F7: System should allow User (faculty/staff/student) to see their previous requests

by searching (by request ID/date) or sorting (by date)

F8: System should allow User (faculty/staff/student) to check status by entering

request ID

F9: The system shall allow the CSED Member to search request based.

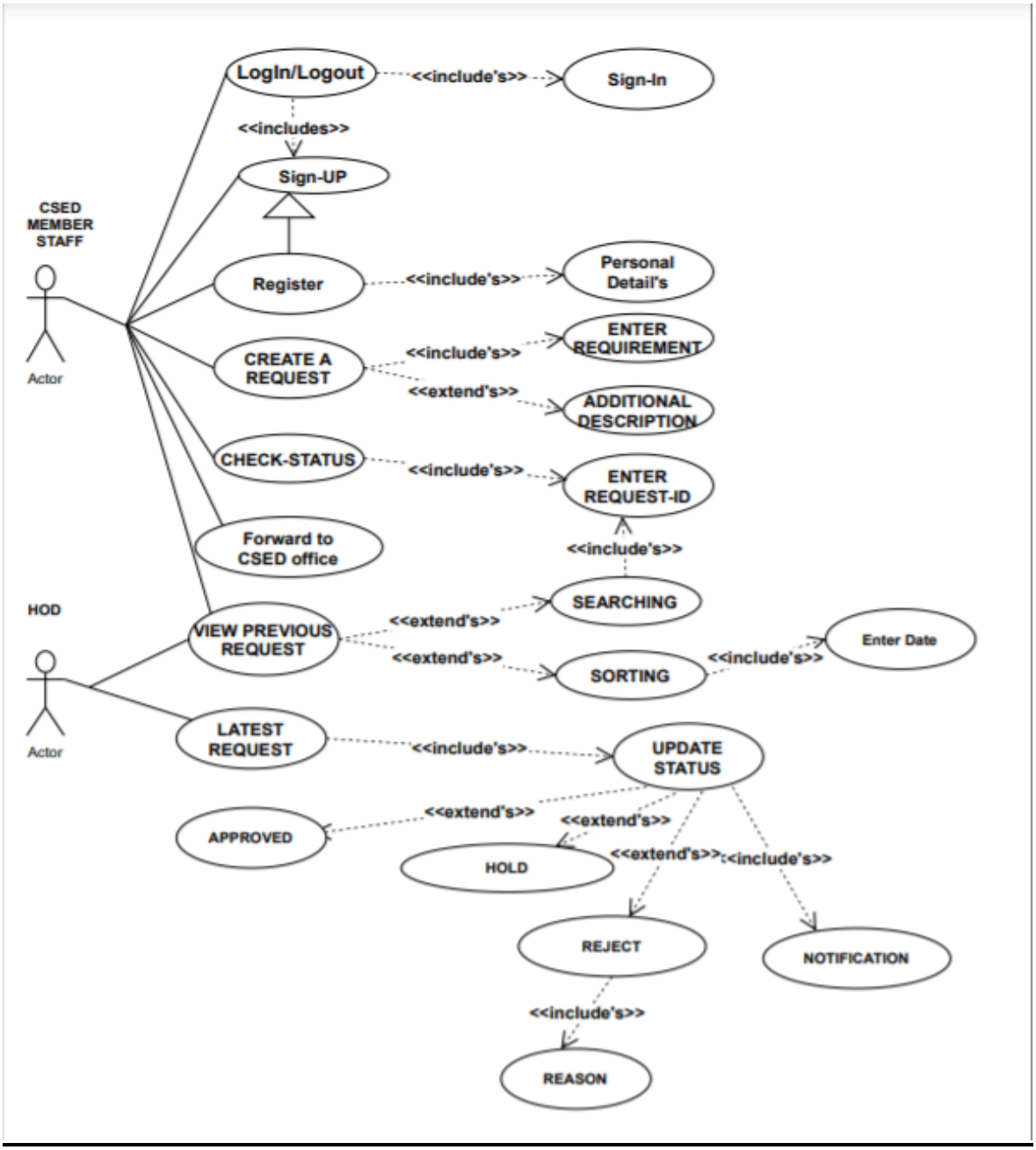
F10: The system shall allow the HOD to see the latest and previous request made by user.

F11: The system shall allow the HOD to Approve/Hold/Reject the requests made by user.

F12: The System shall allow to Users If request is approved then they should be able to make an official request to the CSED office.

3.3 Use Case Model

Use Case Diagram



3.3.1 Use Case #1(SignUP/Register)

Author – Sheenam Waris

Purpose - To enrol the new User to the application.

Requirements Traceability – F1

Priority - High, users should be able to create an account so as to access the facilities provided by this system

Preconditions - The user must be the Part of NIT Calicut CSED department and had their department-ID.

Post conditions - The User can sign-in to the system.

Actors – CSED Member/Staff/Faculty(Human)

Extends – None

Flow of Events

1.Basic Flow - A new user must have to enter his NITC email address, contact information, user name, password.
2.Alternative Flow - If the data provided is redundant or invalid then the user will get an error message.
3.Exceptions - - Invalid email address or account already exists.

Includes – None

3.3.2 Use Case #2 (Login/Logout)

Author – Sheenam Waris
Purpose - Allow user to log-in or log-out from the application.

Requirements Traceability – F2

Priority - High, users need to Log In to create notes and access the features of the system.

Preconditions - If user want to Sign-in then the user must be registered into the system.

Post conditions - After Log-In user get the access to the Application.

Actors - CSED MEMBER/STAFF/STUDENT,HOD(Human)

Flow of Events

1. Basic Flow - If user click on sign-in button then it loads the sign-in page. User Enters ID and Password then Home-Page Loads.

2. Alternative Flow - If user click on sign-Up button, then Register Form opens.

3.Exceptions – If the entered email address or password is incorrect, the user will be asked to re-enter the credentials.

3.3.3 Use Case #3(Personal Details)

Author – Sheenam Waris

Purpose - To enter the data for registration, Data includes Name, Department, Contact, Address.

Requirements Traceability – F3

Priority – High, User should add all required details

Preconditions - Must be the member of CSED.

Post conditions - User will get their profile after the details entered.

Actors - CSED Member/Faculty/Staff

Flow of Events

1. Basic Flow - Enters the Details and System Validate the Details.

3.3.4 Use Case #4(Create Request)

Author – Sheenam Waris

Purpose - It allows the user to make a request of their requirement.

Requirements Traceability – F4

Priority – Medium, User make request for purchase when it needs

Preconditions - The User want must be part of CSED Department.

Post conditions - After Adding the requirement it is sent to HOD for approval and a Request-ID is given to each request.

Actors – CSED Member/Faculty/Staff (Human)

Extends – Enter Description.

Flow of Events

1. Basic Flow - The user will enter the detail and request will be created.

Includes - Enter Requirement.

3.3.5 Use Case #5(Add Requirements)

Author – Sheenam Waris

Purpose - To enter the requirement for purchasing

Requirements Traceability – F5

Priority – High, when User create request then should add related requirements.

Preconditions - None

Post conditions - The request can be searched or displayed later by the member as well as by HOD.

Actors – CSED Member/Faculty/Staff (Human)

Extends – None

Flow of Events

1. Basic Flow - User will enter the requirement details related to purchase order.

Includes – None

3.3.6 Use Case #6 (Add-description)

Author – Jayant Parganiha

Purpose - To enter the additional description of the requirement.

Requirements Traceability – F5

Priority - High, users should be able to give a description of their request.

Preconditions - The User must define each details appropriately.

Post conditions - The requirement is specified.

Actors – CSED Member/Staff/Faculty

Extends – None

Flow of Events

1. Basic Flow - User Enters the Detail of the requirements then system save the information to the database.
2. Alternative Flow - none
3. Exceptions - none

Includes – None

3.3.7 Use Case #7 (Check-status)

Author – Jayant Parganiha

Purpose - It helps CSED member can check status of the request they made by entering their request-id.

Requirements Traceability – F8

Priority – High, user should be able to see his request status.

Preconditions - The request must be made earlier.

Post conditions - User can have detailed information of the requirement and look over to the status of the request.

Actors – CSED Member/Staff/Faculty (Human)

Extends – None

Flow of Events

1. Basic Flow - If user want to check status of their request they must enter their request-id then system will match the id and display the details.
2. Alternative Flow - none
3. Exceptions - none

Includes – None

3.3.8 Use Case #8 (View Previous Request)

Author – Jayant Parganiha

Purpose - The HOD can view the overall request.
The CSED can view their own request made earlier.

Requirements Traceability – F7

Priority – High, user should be able to view their previous request.

Preconditions - The Given request must be Present in the database.

Post conditions - The user will get the display of request info.

Actors – CSED Member/Staff/Faculty, HOD(Human)

Extends – None

Flow of Events

1. Basic Flow - The user will have a view of request as list.
2. Alternative Flow - None
3. Exceptions - None

Includes -None

3.3.9 Use Case #9 (Searching)

Author – Jayant Parganiha

Purpose - To display the overview of the searched request according to the date and request-id specified.

Requirements Traceability – F7

Priority – High, user should be able to search the request.

Preconditions - The request must be made earlier.

Post conditions -user will get the detailed information of the particular request.

Actors – CSED Member/Staff/Faculty, HOD (Human)

Extends – None

Flow of Events

1. Basic Flow - The user (CSED member) must give the request-id and HOD can search according to date then system will abstract the data from database.
2. Alternative Flow - None
3. Exceptions - None

Includes -None

3.3.10 Use Case #10 (Sorting)

Author – Jayant Parganiha

Purpose - 1. User can have the organised view of data.
2. The abstract view of Data can be shown.

Requirements Traceability – F7

Priority – Medium, as sorting is optional.

Preconditions - The searched item must be present in the data.

Post conditions - The user can save the time of finding their item.

Actors – CSED Member/Staff/Faculty, HOD(Human)

Extends – None

Flow of Events

1. Basic Flow - If the user applies sort option, then the system views the organised view of the data.
2. Alternative Flow - None
3. Exceptions - None

Includes -None

3.3.11 Use-Case #11(Latest-Request)

Author- Janvi Agrawal

Purpose- HOD receive the request made by CSED Member's.

Requirement Traceability- F10

Priority- High, Here the HOD will be able to see all the latest request been made.

Precondition- The Member had made the request to hod.

Post condition- The HOD will make decision.

Actors- HOD(Human)

Extends-None.

Flow of Events-

1. Basic Flow -HOD received the request now he/she can view the latest request.
2. Alternative Flow – None.
3. Exceptions – None.

Includes- Update Request.

Notes/Issues- None.

3.3.12 Use-Case #12(Update-Request)

Author- Janvi Agrawal

Purpose- HOD will decide here whether to approve, reject or hold the request.

Requirement Traceability- F11

Priority- High, Here the request is been waiting for the decision of HOD.

Precondition- The Request had not been approved or rejected earlier.

Post condition- The members will receive the decision of HOD.

Actors- HOD(Human)

Extends-Approved, Hold, Reject.

Flow of Events-

1. Basic Flow -HOD will update the latest request.

2. Alternative Flow - If HOD want to update the Request then system will load the Update request section.
3. Exceptions – If the request is already been approved or rejected then cannot be updated .

Includes- Notification.

Notes/Issues- After the update the Member's are been notified with the decision.

3.3.13 Use-Case #13(Approved)

Author- Janvi Agrawal

Purpose-HOD will approve the request then it will be notified to the respective member.

Requirement Traceability- F11

Priority- High, This use case will decide whether the Request will be forwarded to the department or not.

Precondition- The HOD might not rejected it earlier.

Post conditions- The members will receive the decision of HOD.

Actors- HOD(Human)

Extends-None.

Flow of Events-

1. Basic Flow -HOD will approve the latest request and the system will notify the user.
2. Alternative Flow - If HOD approve the request then the Members of CSED will forward it to the CSED Department.
3. Exceptions – None.

Includes- Forward to CSED Department.

Notes/Issues- None.

3.3.14 Use-Case #14(Hold)

Author- Janvi Agrawal

Purpose-HOD will Hold the request then it will be notified to the respective member.

Requirement Traceability- F11

Priority- High,This use case will behold the request and can be confirmed later.

Precondition- The HOD might not rejected it earlier.

Post conditions- The members will receive the decision of HOD.

Actors- HOD(Human)

Extends-None.

Flow of Events-

1. Basic Flow -HOD will Hold the latest request and the system will notify the user.
2. Alternative Flow - If HOD hold the request then later they can update the decision.
3. Exceptions – If HOD hold the request then the request might be approved or rejected later.

Includes- None.

Notes/Issues- None.

3.3.15 Use-Case #15(Reject)

Author- Janvi Agrawal

Purpose-HOD will reject the request then it will be notified to the respective member.

Requirement Traceability- F11

Priority- High, this use case will reject the request.

Precondition- The HOD might not rejected it earlier.

Post conditions-The system will demand the reason for rejection and the members will receive the decision of HOD.

Actors- HOD(Human)

Extends-None.

Flow of Events-

1. Basic Flow -HOD will reject the latest request and the system will ask the reason then notify the user.
2. Alternative Flow - None.
3. Exceptions – None.

Includes- Reason.

Notes/Issues- None.

3.3.16 Use-Case #16(Reason)

Author- Janvi Agrawal

Purpose-HOD will give appropriate reason for rejection.

Requirement Traceability- F11

Priority- Medium, This use case will record the reason for rejection.

Precondition- The HOD must rejected the request.

Post conditions- The members will receive the decision of HOD.

Actors- HOD(Human)

Extends-None.

Flow of Events-

1. Basic Flow –HOD must enter the valid reason for rejection then the system will notify the member with the reason of rejection.
2. Alternative Flow - None.
3. Exceptions – None.

Includes- None.

Notes/Issues- None.

3.3.17 Use-Case #17(Notification)

Author- Janvi Agrawal

Purpose-System will send notification of the updated status.

Requirement Traceability- F11

Priority- High, This use case will notify the member's with the decision.

Precondition- The HOD must update the request.

Post conditions- The members will receive the decision of HOD.

Actors- System

Extends-None.

Flow of Events-

1. Basic Flow -HOD will approve/reject/hold the latest request and the system will notify the user..
2. Alternative Flow - If HOD reject the request then the Reason is asked and the CSED member is notified along with the reason of rejection.
3. Exceptions – None.

Includes- None.

3.3.18 Use-Case #18(Forward to CSED Office)

Author- Janvi Agrawal

Purpose-After the approval of HOD the CSED Member will forward the request to CSED department.

Requirement Traceability- F12

Priority- High, The Department will make purchase according to the request

Precondition- The HOD must approve the request.

Post conditions- The department will make purchase according to the request.

Actors- CSED member(Human)

Extends-None.

Flow of Events-

1. Basic Flow –CSED member will forward the request to department after the approval of HOD.
2. Alternative Flow - None.
3. Exceptions – None.

Includes- None.

4 Other Non-functional Requirements

4.1 Performance Requirements

- Must serve multiple users concurrently
- faster purchase order approval
- Fast and responsive lightweight UI
- Fast retrieval of large number of requests

4.2 Safety and Security Requirements

- User information like Email Id and password should be protected and unauthorised access should be denied
- Passwords must be hashed and salted before storage in Database
- Only Authenticated users should be able to access their section of Database
- Users should be allowed to change their passwords
- Better for end-to-end purchasing visibility
- All note data shall be stored in the Database in real-time to prevent data loss
- Database and Hosting security should be handled by the online Database and Hosting service used by the application

4.3 Software Quality Attributes

4.3.1 Scalability

When the user data increases, the application should be capable of handling them without delay as it will have Google's Firebase as database and authentication system which has a regional and multi-region solution and hence, the project will be highly scalable.

4.3.2 Capacity

At a time, application can serve 1 million users as we will be using Cloud Fire store which offers 1 million concurrent connections per database and 10000 writes per second which is more than enough for most use cases.

4.3.3 Availability

The website will be hosted using Firebase hosting solutions and hence the website will be available 24 X 7.

4.3.4 Usability

Application should be user friendly so that it is easy for user to use and can efficiently use so as to accomplish their goals of using the application, moreover it should have a pleasant design.

4.3.5 Reliability

Cloud Fire store houses your data across multiple data centers in distinct regions, ensuring global scalability and strong reliability.

4.3.6 Data Integrity

Best practices for Cloud Fire store data management will be used to ensure data consistency. Cloud Fire store ensures that the data is always secure and safe.

4.3.7 Recoverability

Data can be recovered through the export and import system of Cloud Fire store and data can be managed offline. Data can be exported to an offline system every day and imported back in case of accidental data loss.

5 Other Requirements

Some requirements might be added for the product.

Once a requisition is approved and purchase order is forwarded to department office then department can select vendors and proceed order details. User can receive purchase order invoice through application and examine the order details.

Function Point Analysis

FPA provides different estimation mechanism within it for development and maintenance projects. (Having different multiplication factors). This approach computes the total function points (FP) value for the project, by totalling general system characteristics scores and then applying the following weights: inputs, outputs, inquiries, and master files.

Unadjusted Function Point:

Domain characteristics	Count		Weighting factor			Count
			Low	Average	High	
No of External input	6	*	3	4	6	18
No of External output	3	*	4	5	7	12
No of External Inquiries	4	*	3	4	6	12
No of Internal Logical files	4	*	7	10	15	28
No of external interface Files	2	*	5	7	10	10
Count total						80

Count Total=80

Now calculate the Functional Points using

FP = count total *0.65 + 0.01 Σ(Fi)

FP = count total *0.65 + 0.01 Σ(Fi)

= 80 * (0.65 +0.01 * 39)

= 80 * 1.04

FP = 83.2

(where Σ(Fi) =39 i.e. the questions answered using a scale that ranges from 0 to 5 in total 14 questions from below table of characteristics)

No.	General System Characteristics	Score
1	Are data communications required?	3
2	Are there distributed processing functions?	4
3	Is performance critical?	4
4	Will the system run in an existing, heavily utilized operational environment?	1
5	Does the on-line data entry require the input transaction to be built over multiple screens or operations?	3
6	Does the system require on-line data entry?	5
7	Was the application designed for end-user efficiency?	3
8	Are the master files updated on-line?	3
9	Is the internal processing complex?	2
10	Is the code to be designed reusable?	4
11	Are conversion and installation included in the design?	0
12	Does the system require reliable backup and recovery?	0
13	Is the system designed for multiple installations in different organizations?	4
14	Is the application designed to facilitate change and ease of use by the user?	3

Advantages Of Function Points Analysis :-

- This is a tool used to measure the software quality and product analysis in the early stages of application development.
- It provides the productivity solution for the evaluation of work based on defined units.
- It is independent of technologies used and can be used throughout the whole life cycle of the application.
- It helps to estimate the cost and resources required for the development and maintenance of the application.

Disadvantages Of Function Points Analysis :-

- It is a time-consuming method.
- It requires subjective evaluation and involves many judgements.
- Due to subjective evaluation the accuracy rate of evaluation is low.
- This method has no specific technique of validation.

Appendix A - Activity Log

18 Jan 2022, 5:00pm (Duration: 30mins)	Discussed about the project structure and client requirements document then asked everyone to read previously submitted SRS for the same topic.
19 Jan 2022, 09:30PM (Duration: 30mins)	Decided who will work on which part- • **Sheenam Waris** had to work on Introduction section, Assumptions & Dependencies and document Conventions. • **Janvi Agrawal** had to work on Use case diagram, Product overview and Functional requirements. • **Jayant Parganiha** had to work on non-functional requirements and User Interfaces.
22 Jan 2022, 04:00pm (Duration: 2hrs)	We gathered all the information, discussed the collective ideas and Use Case Diagram together, divided the 18 use cases with eachother.
23 Jan 2022, 11:00 am (Duration: 5hrs)	Typed the document using a collaborative platform, where each team member did the assigned work

Thank You!

Design Document

for

NITC CSED Purchase Manager

Version<2.0>

Prepared by Team 9:
(Based on SRS Version 1.0 prepared by Team 9)

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Project Owner: **SREENIVASAN M**

Course: **CS4096 Software Engineering Laboratory**

Date: **February 23,2022**

Glossary

Online Hosting	It is a type of Internet hosting service that allows individuals and organizations to make their website accessible via the World Wide Web.
User Interface	A user interface is the point of human-computer interaction and communication on a device, webpage, or app.
React JavaScript	It is an open-source, front end, JavaScript library for building user interfaces or UI components.

Table of contents

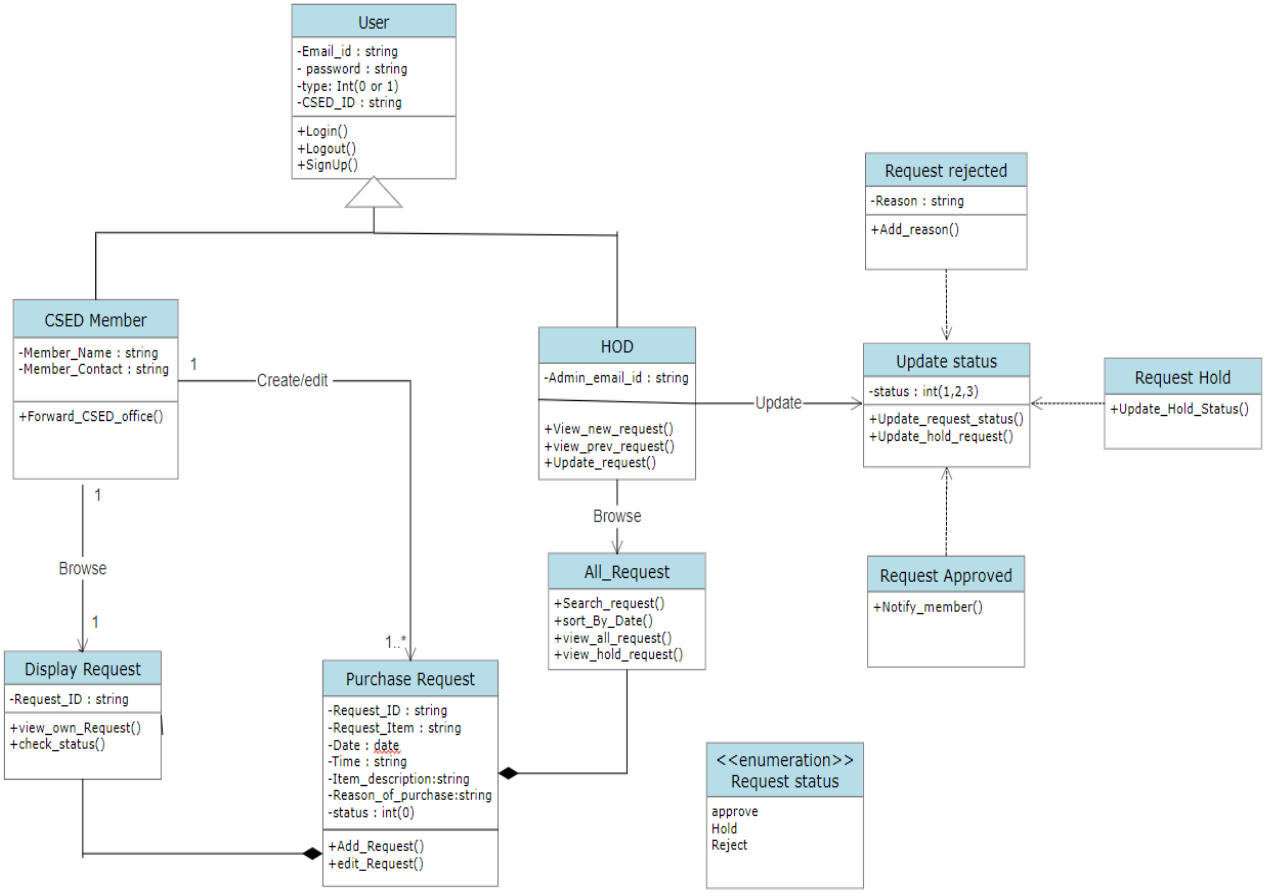
1. Detailed Design through UML diagrams

1.1 System model using Class Diagram

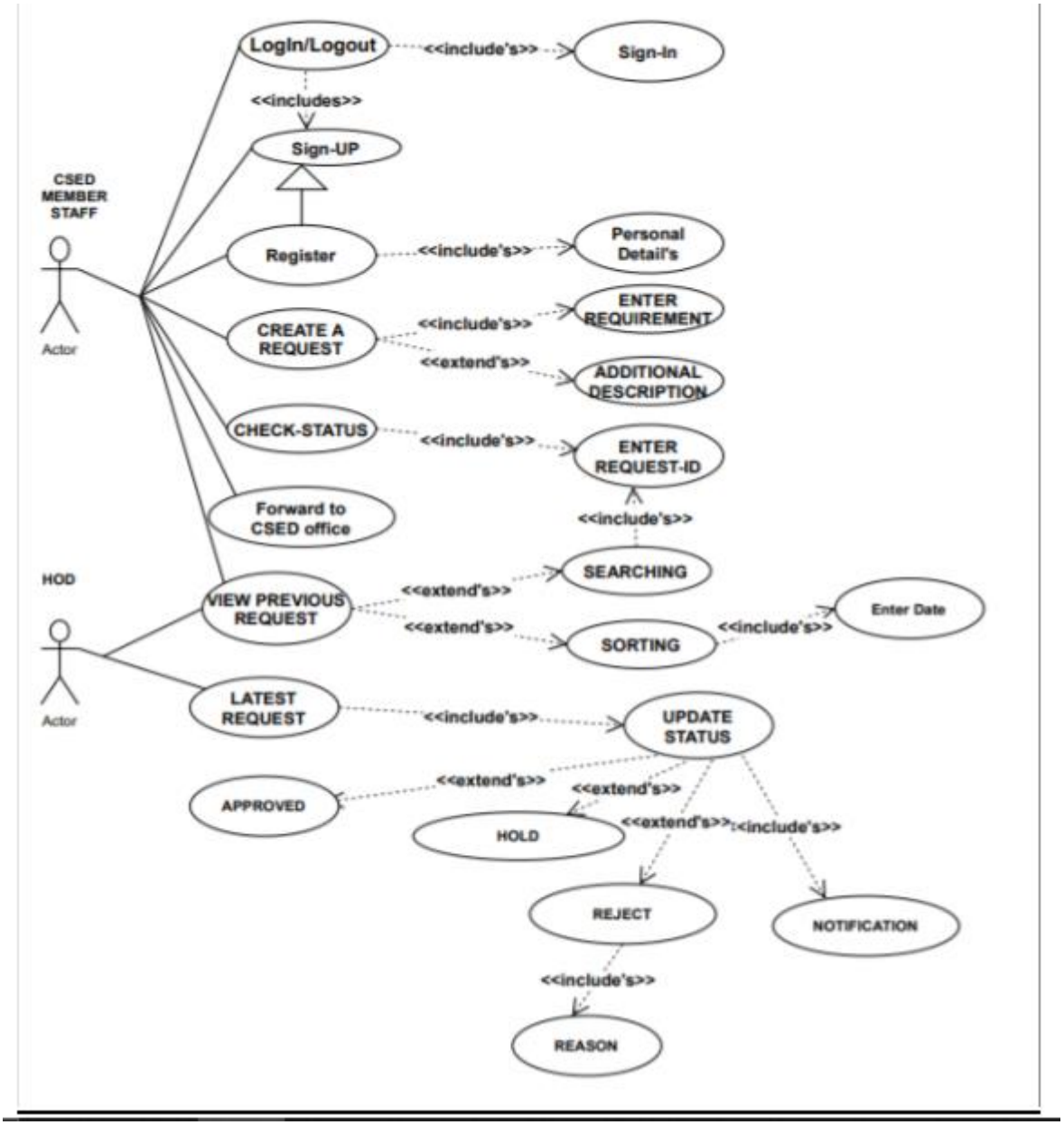
1.1.1 Class Diagram

In this application we are assuming 10 classes with some functionality and attributes.

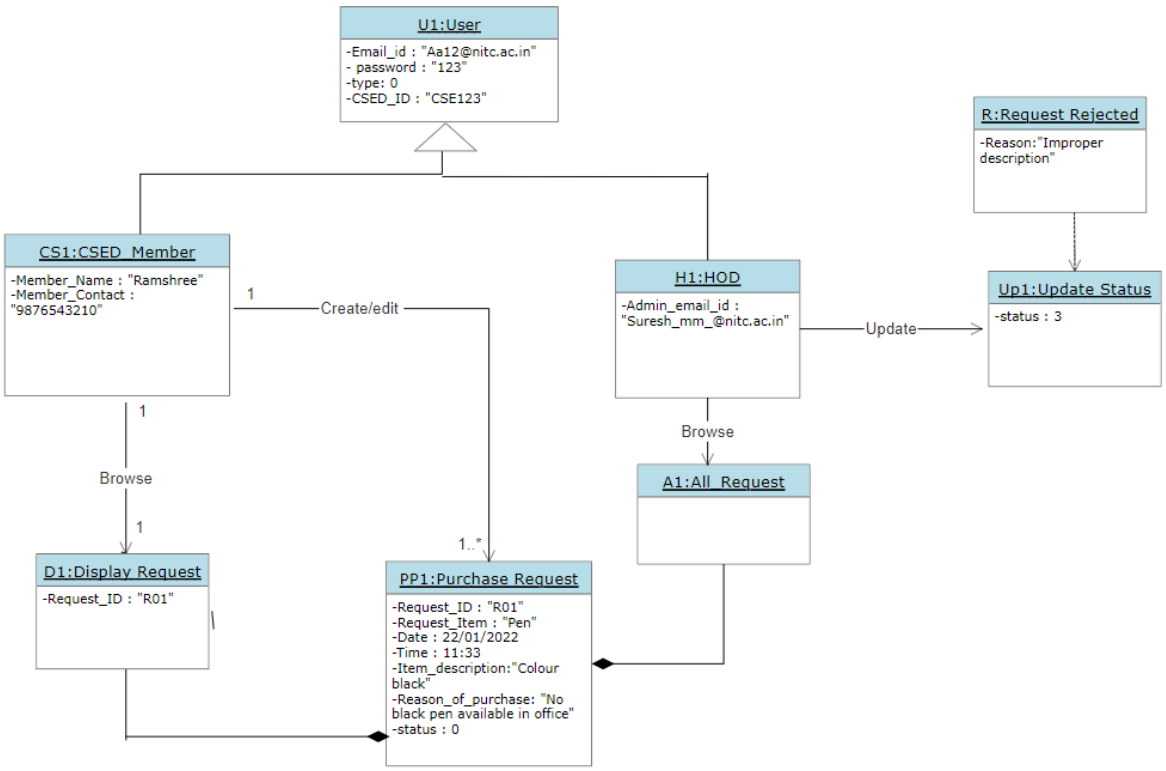
- User-user is of two types HOD and a normal CSED member contains email id, and CSED_ID.
- Display Request-this contains request id which is to be displayed as a string.
- Purchase Request-this class contains all the data about request.
- All_Request-this class will allow HOD to see all the request and sort them by date or search.
- Update status-this class contains attribute status as it determines the approve, hold or reject status.



1.2 Responsibilities - Use case Diagram



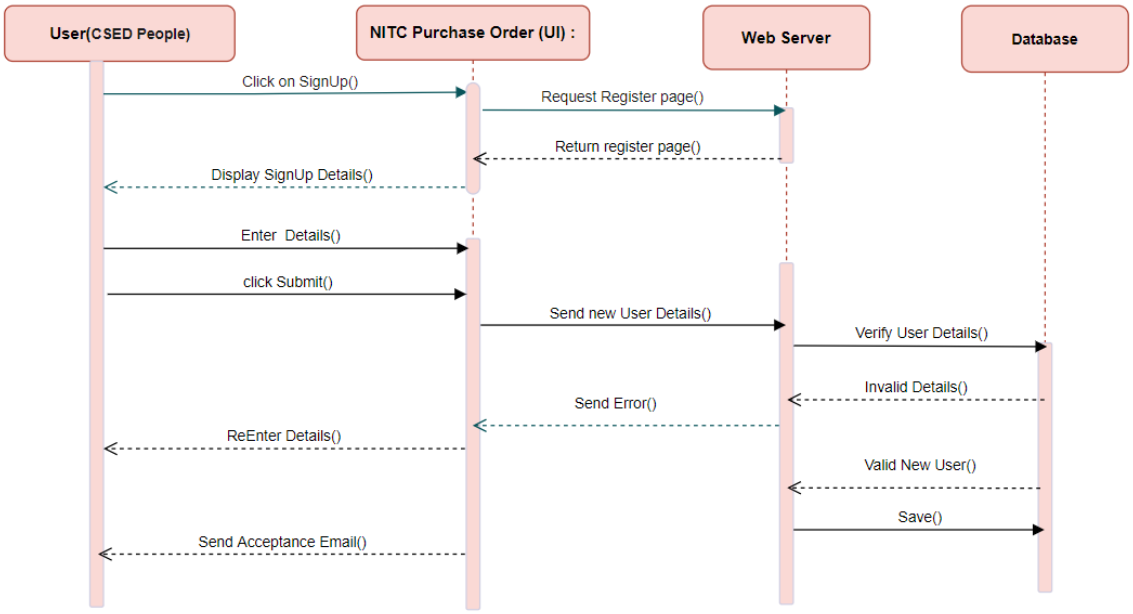
1.3 Static snapshot of the system - Object Diagram



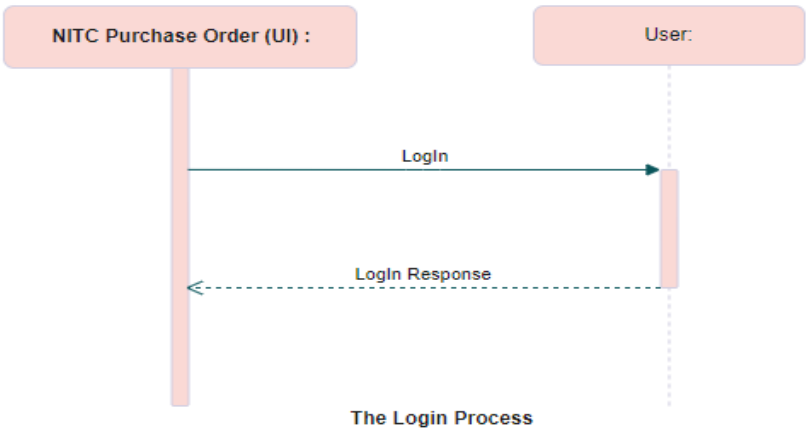
1.4 System Interactions through Sequence Diagrams

1.4.1 Register/Login

This sequence diagram is covering the scenario of register /login. Firstly, users have to enter details to register in the system then he/she will be allowed to login and provided login details will be verified from the database. If provided login details are correct, users will be allowed to access features of system



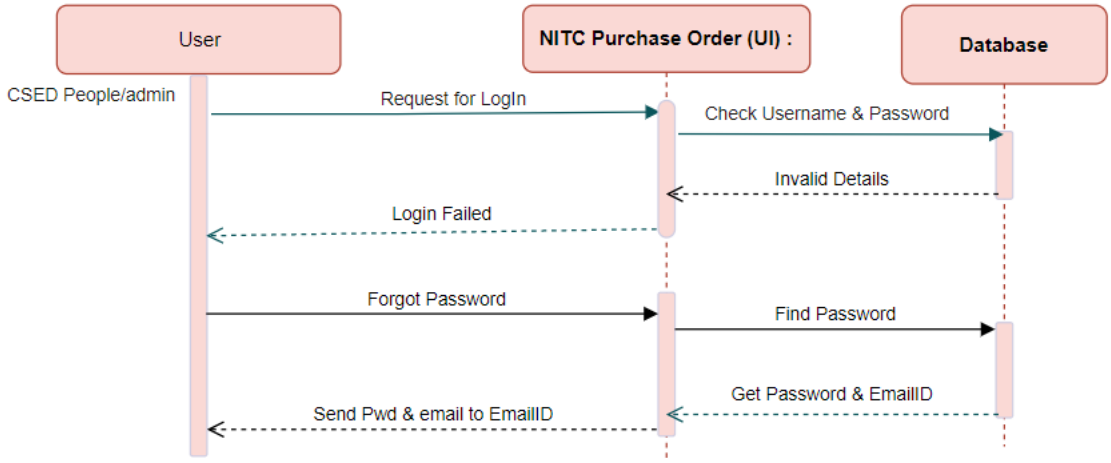
User Registration Process



The Login Process

1.4.2 Invalid Login/Forgot Password

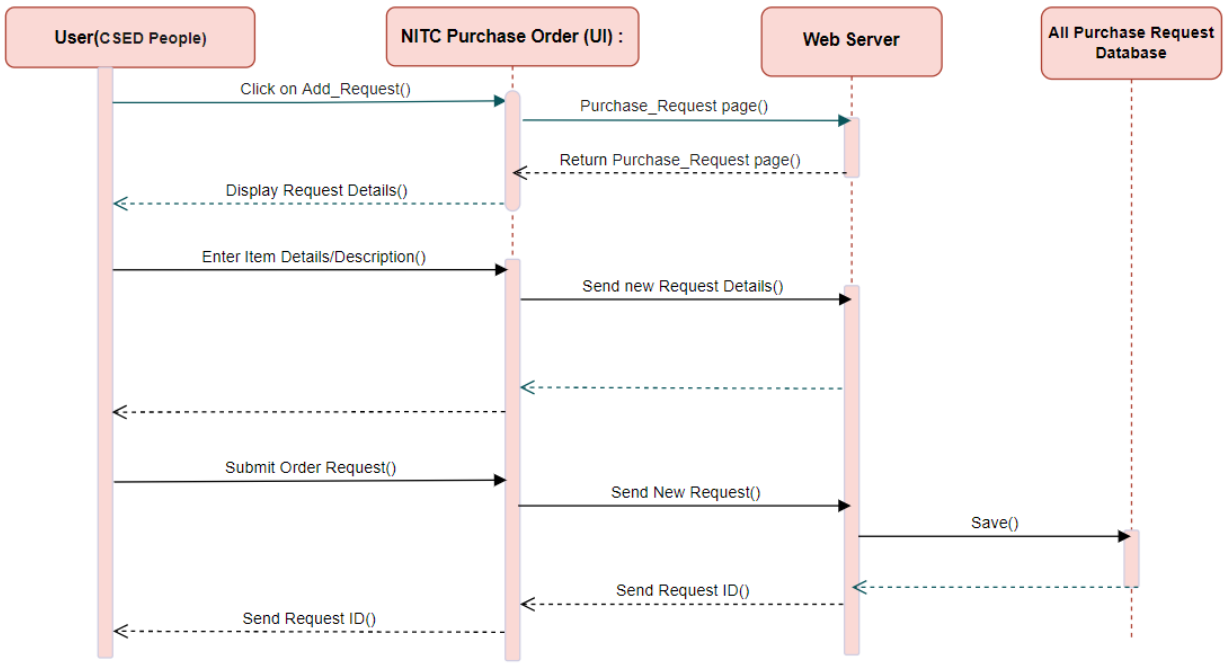
This sequence diagram is covering the scenario of Invalid Login/Forgot Password. If user has entered login details, then provided login details are invalid, users will be allowed to access forgot password feature and system will send password/user-id to respective email-id.



Invalid Login/Forgot Password Process

1.4.3 Create Purchase Request

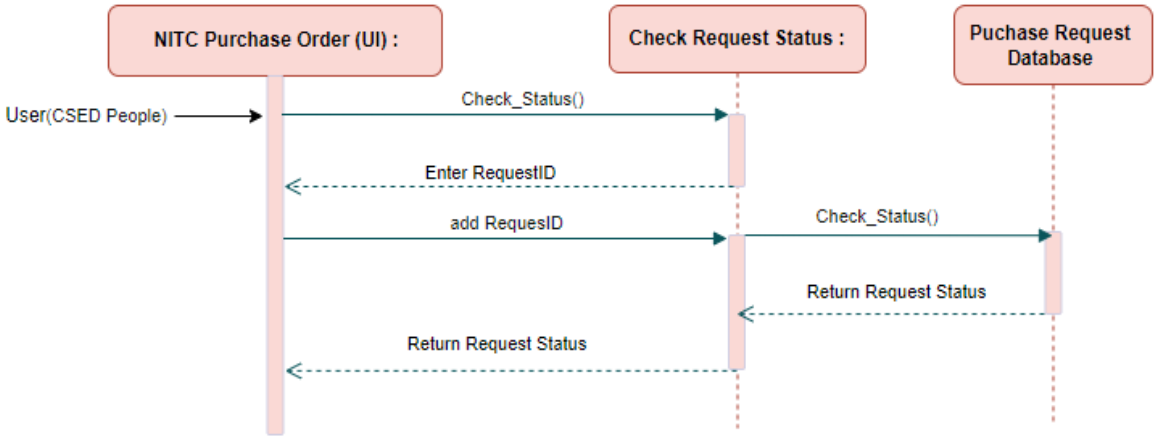
This sequence diagram is covering scenarios of creating new purchase request on system. As user selects to create new request, he/she will be provided feature like enter item details, purpose, quantity etc. After submitting request will be saved to database and a request-id will generate.



Create Purchase Request Process

1.4.4 Check Purchase Request Status

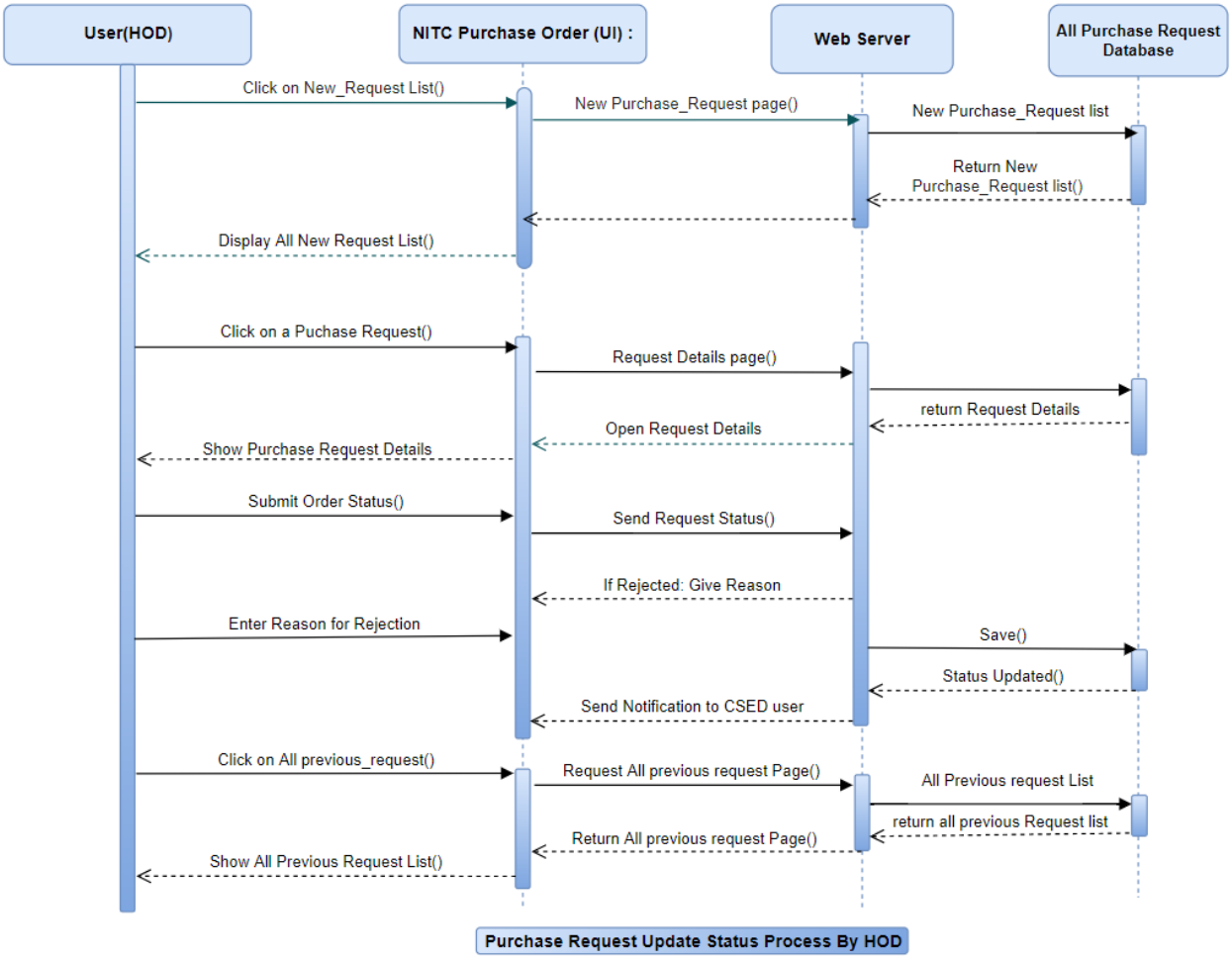
This sequence diagram is covering the scenario of searching request status. As the user chooses to check request status he/she will be ask to enter request-id of purchase request and that request will be fetched from database .



Check Request Process

1.4.5 HOD Update Process

This sequence diagram is covering the scenario of Updating Purchase Request by HOD (Head of Department). Once HOD will update the status then user will be able to see updated status and if request will be approved then user will be able send to CSED office, the request will also be updated & forwarded from the database.

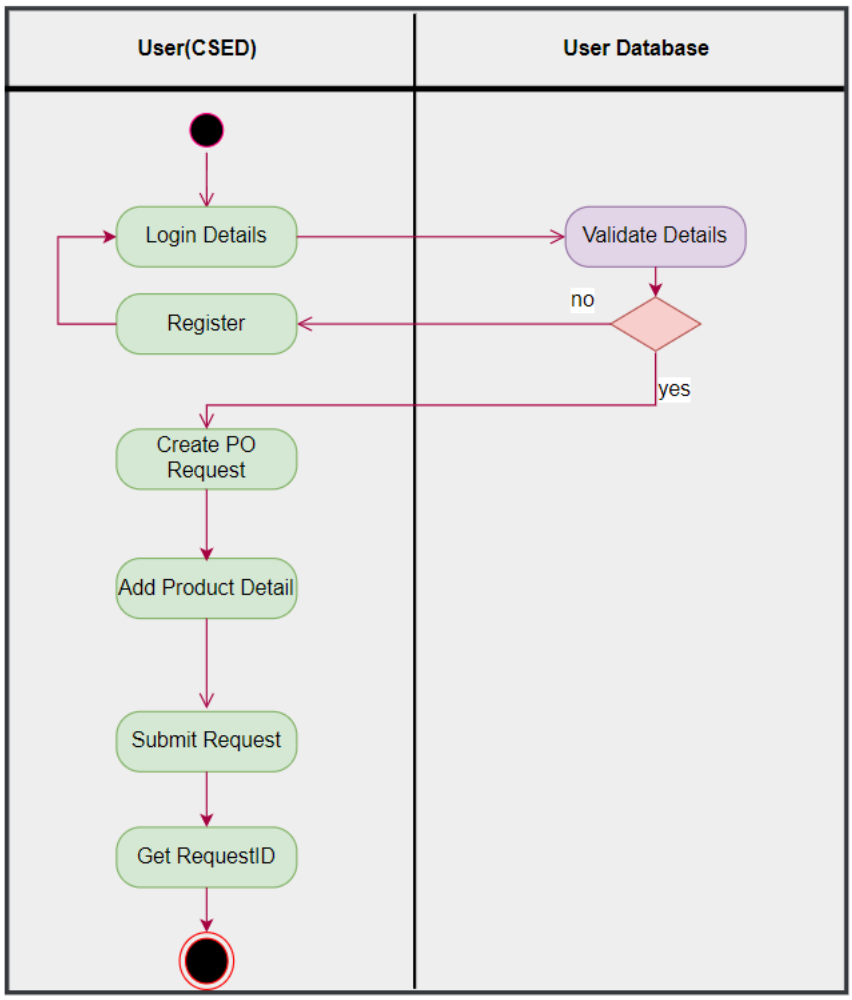


1.5 Control and Data Flows through Activity Diagrams

The flow of the system is depicted using these activity diagrams, how the system behaves, how system data is circulated throughout the system is answered in these diagrams.

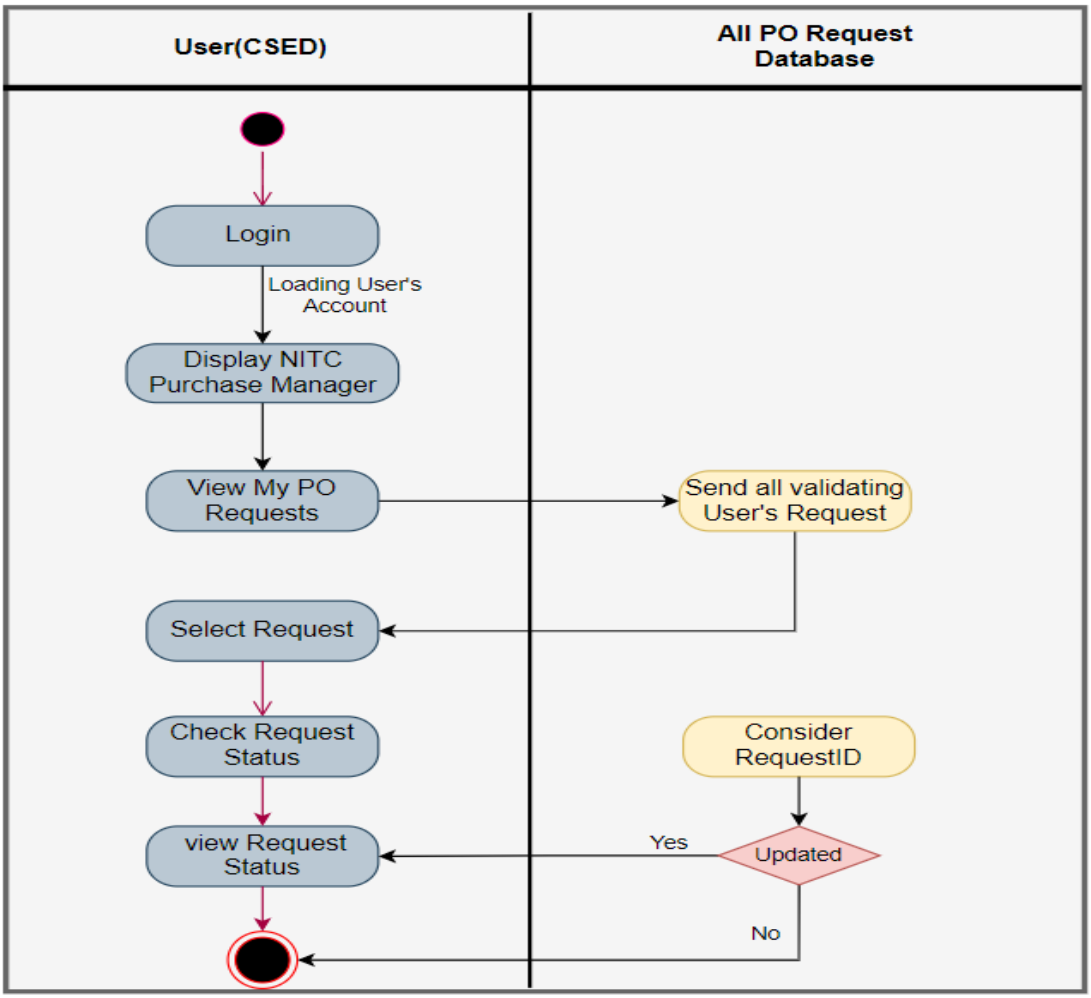
1.5.1 Create Purchase Request Activity Diagram

This activity diagram shows the login system if the user is a normal CSED member. Firstly, user will login, if not registered user has to sign up. User can create a new request, add the details and submit the request.



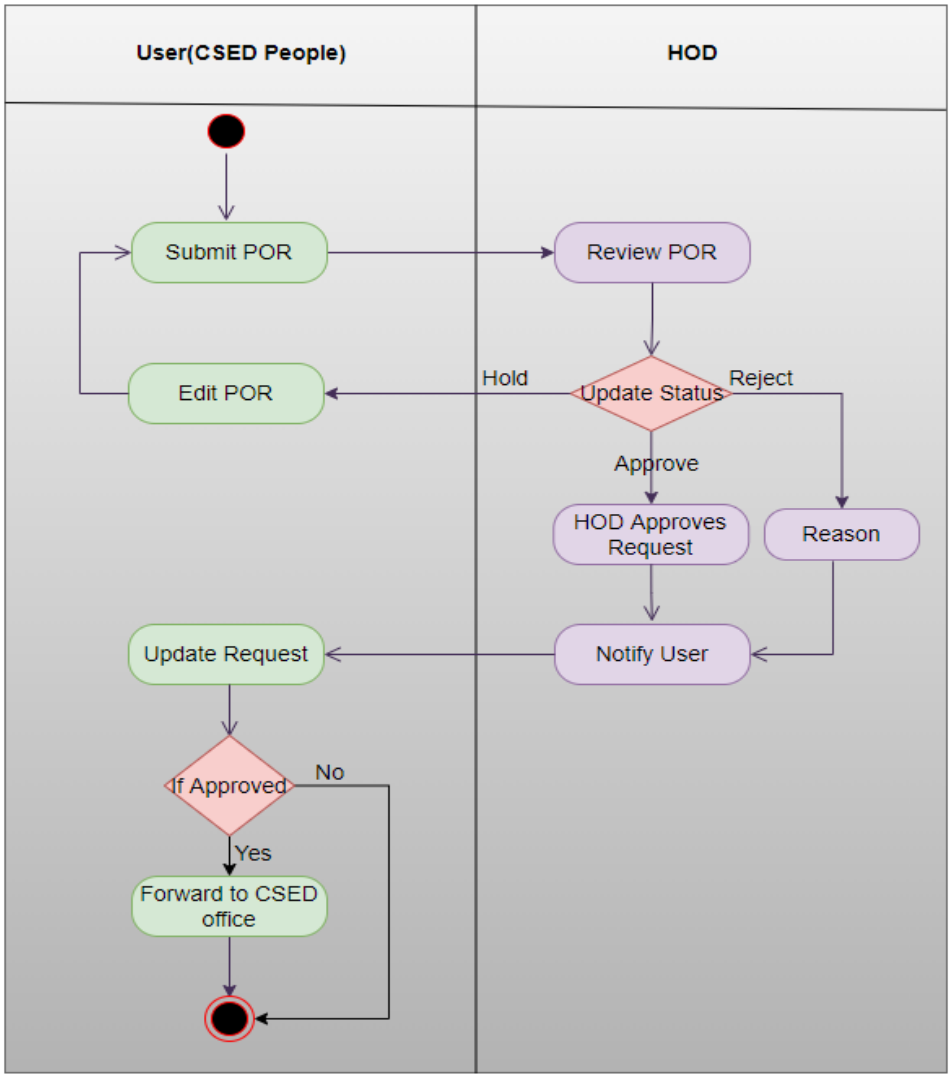
1.5.2 Display Request List & Status Activity Diagram

This activity diagram shows the Display request of user. When user logins he choses the display option and all his previous request will be visible.


User(CSED)
All PO Request Database
Login
Loading User's Account
Display NITC Purchase Manager
View My PO Requests
Send all validating User's Request
Select Request
Check Request Status
Consider RequestID
view Request Status
Yes
Updated
No

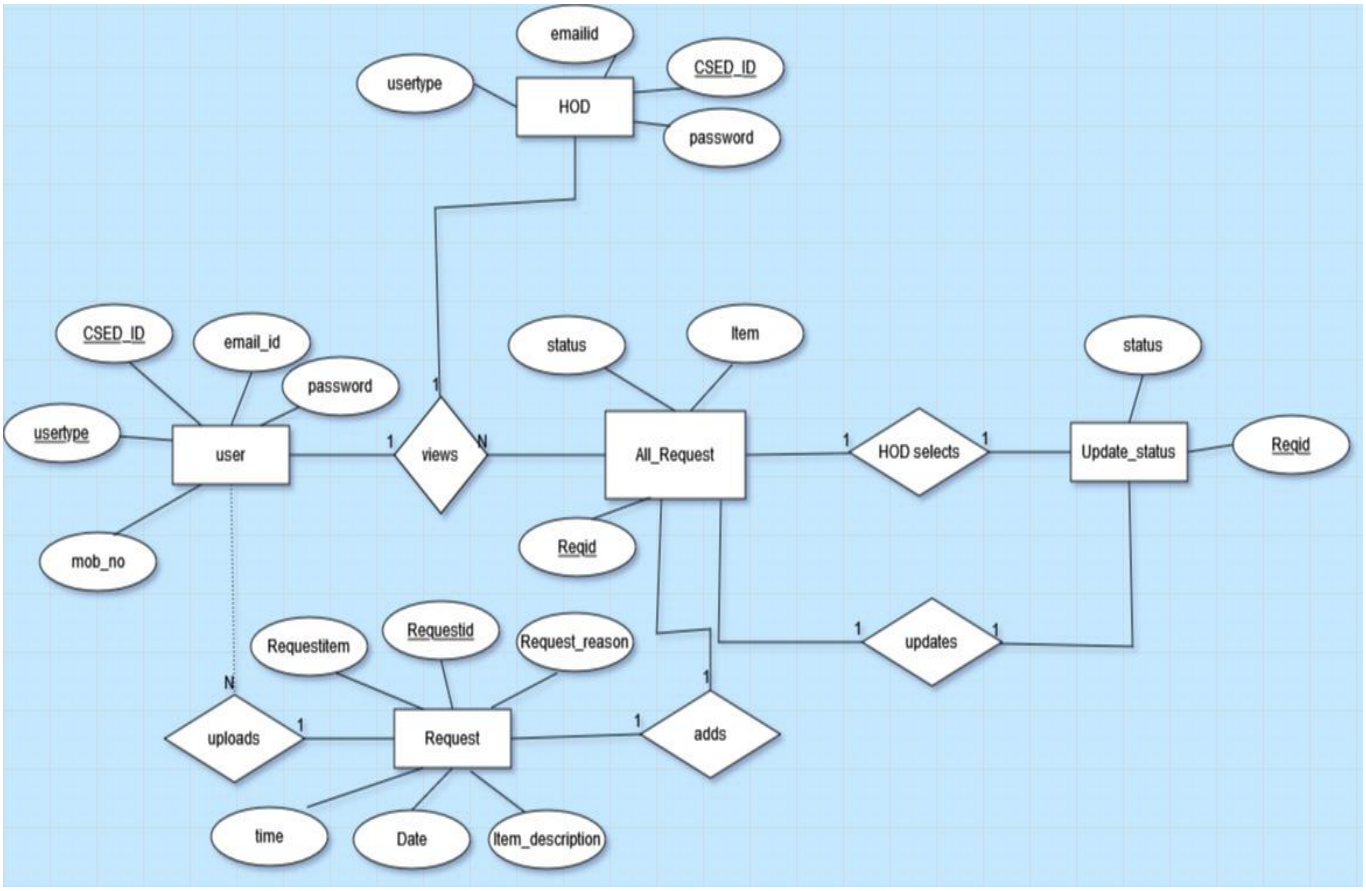
1.5.3 Update Request Status by HOD Activity Diagram

This activity diagram shows the updating done by the HOD in the request given by a CSED member. HOD reviews the request and decides to hold, approve or reject.



2. Database Design

2.1 ER Diagram



3. Implementation Plans

3.1 Technology Stack

The product is a web application. React JavaScript library shall be used to build the User Interface. The application shall be deployed to an online hosting service provider. Visual Studio code is used as IDE.MERN stack is being used in this development. The application shall be deployed to an online hosting service provider

3.2 User Interface Prototyping

Login Display:

All CSED members shall first login on this page using their NITC email ID and Password. If already logged in, the users shall see the add request and status interface. If not registered yet, clicking on ‘Sign Up’ will take the user to the Register Display interface

Register Display:

Unregistered users shall first register by providing a NITC Email-id, a Password & unique.

CSED ID:

Add a request: Users can add new purchase request, add description and details about item in this interface. The changes will be saved in real-time.

CSED Members UI

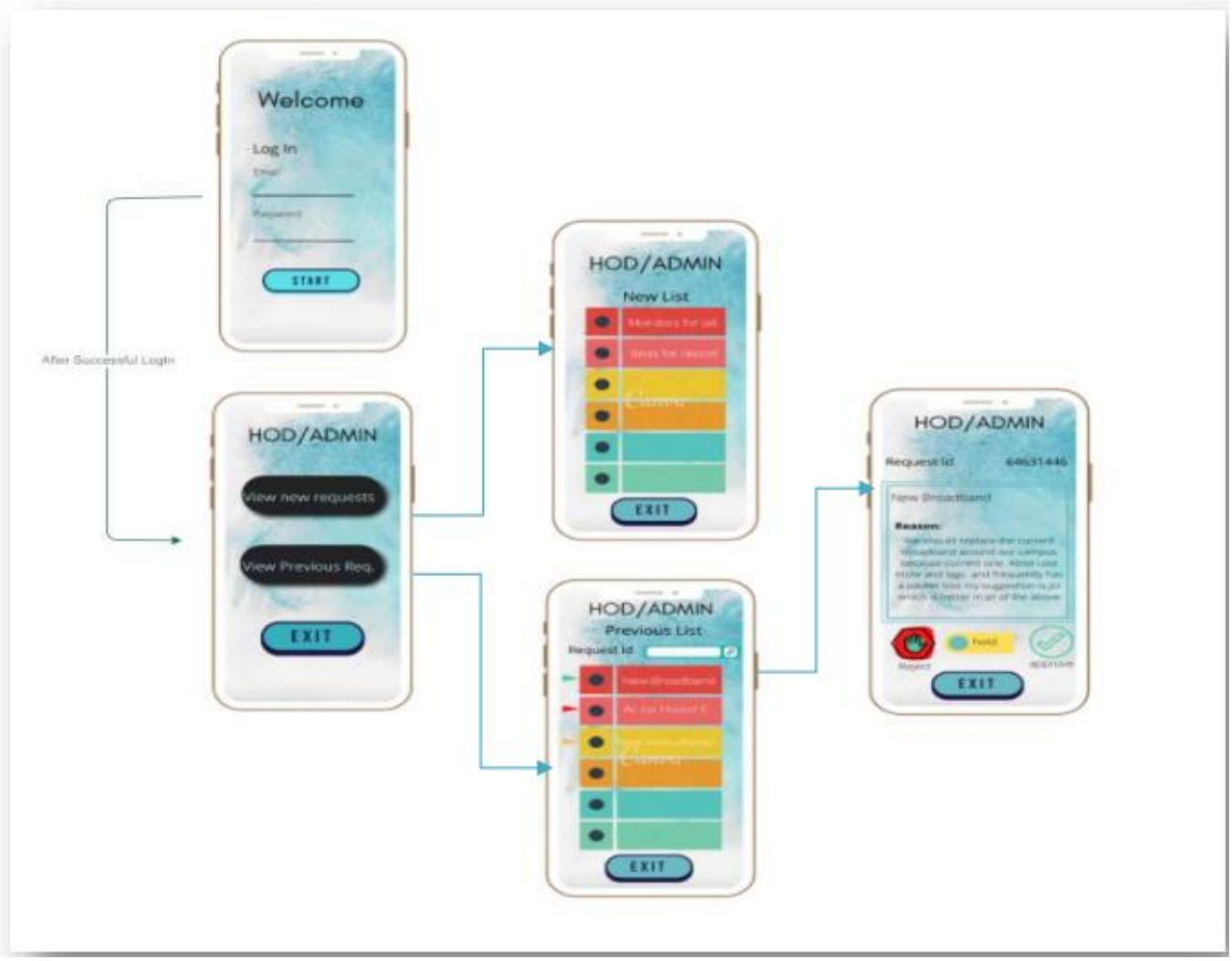
Check Status:

Users can search by request ID which they get after making a purchase request. Searched request will then be displayed the status of purchase order.

Display previous request:

Users can see all the request they have created for purchase as rectangular cards stacked as a list. Users can click on the search option to access search functionality using request ID.

HOD/Admin UI



Login Display:

HOD/Admin shall first login on the page directly. There won't be any need for admin to register.

Display New request:

HOD can see all the new request users have created for purchase as rectangular cards stacked as a list. After clicking to the request, it will be forwarded to purchase details.

Display previous request:

HOD can see all the previous request user have created for purchase as rectangular cards stacked as a list and see their status for each purchase. 10 Update Status: HOD can update purchase request status as Approve/Hold/Reject made by the user. Updated request will then be displayed to user as the status of purchase order.

4. Test Cases

4.1 Test Case #1 (TC_login_01)

Author: Sheenam Waris
Test Case Description:

Test scenario: Check the Login functionality
Test case: Enter a valid username and valid password

Pre-Conditions:

- Need to be the part of NIT Calicut CSED department.
- Must be registered to the application earlier and had their valid Password

Test Steps:

- *Enter Username*
- *Enter Password*
- *Enter User Type*

Click Login button

Test Data:
Username: abcd@nitc.ac.in
Password: 123Aa@
User Type: 1(CSED Member)

Expected Result:
Successful login

Post Condition:
Home page is shown using which CSED member can make purchase Request, View Their request.

4.2 Test Case #2 (TC_UserType_02)

Author: Janvi Agrawal
Test Case Description:

Test scenario: Check the Login functionality
Test case: Check for the user Type

Pre-Conditions:

- Need to be the part of NIT Calicut CSED department.
- Must be registered to the application earlier and had their valid Password

Test Steps:

- *Enter Username*
- *Enter Password*
- *Enter User Type*

Click Login button

Test Data:
Username: abcd@nitc.ac.in
Password: 123Aa@
User Type: 0(HOD)

Expected Result:

- If the CSED member enter the User Type as 0(HOD) then an error message will be popped out stating to enter the valid User type.

Post Condition:
User cannot get in to the system.

4.3 Test Case #3 (TC_Valid_Purchase_Request_03)

Author: Jayant Parganiha
Test Case Description:
Test scenario: Check for the valid creation of purchase request
Test case: Enter valid details in the purchase request.

Pre-Conditions:

- Must be logged-in CSED Member making request.

Test Steps:

- *Request ID*
- *Enter Request Item*
- *Date*
- *Time*
- *Enter Item description*
- *Enter Reason of purchase*
- *Enter status*

Click Submit Button

Test Data:
Request ID: R01(auto)
Request Item: Keyboard

Date: 19/02/2022 (auto)
Time: 7:09(auto)
Item description: Quantity 5, Colour: Black, Wireless
Reason of purchase: old keyboard is damaged.
Status : 0(new request)
Expected Result:
Successful submission.
Message Box containing request id, time, date.
Post Condition:
Member has their request id and can be used for further reference.

4.4 Test Case #4 (TC_check_status_04)

Author: Sheenam Waris
Test Case Description:
Test scenario: Check the Request status
Test case: Enter a valid Request_id

Pre-Conditions:
- Need to be the part of NIT Calicut CSED department.
- Must had made the request earlier and has Request Id

Test Steps:
- *Enter Request_Id*

Click Check button

Test Data:
Request_id: R01

Expected Result:
Status box is displayed for read only purpose

Post Condition:
CSED Member can check their current status of request it is approved, hold or reject.

4.5 Test Case #5 (TC_Update_request_01)

Author: Jayant Parganiha
Test Case Description:
Test scenario: Check Request update
Test case: Check the access right for Update status

Pre-Conditions:

- Must be the admin of the application
- The current Request status must be 0(new Request)

Test Steps:

- Click on new Request Tab.
- List of requests Select one request.
- Enter Request status
- Click on update status.

Test Data:

Request Status: 1.
Update status button.

Expected Result:

Request has been approved.

Post Condition:

Request cannot be updated again and the CSED member sent the request to CSED office.

4.6 Test Case #6 (TC_Update_request_02)

Author: Janvi Agrawal
Test Case Description:

Test scenario: Check Request update
Test case: Check the Request has been Rejected.

Pre-Conditions:

- Must be the admin of the application and already rejected the request

Test Steps:

Request status
Click on next.
Enter Reason of Rejection
Click Submit.

Test Data:

Request Status: 3(auto).
Click next
Reason of ejection: There is no need to purchase this item.

Expected Result:

Successful.

Post Condition:

Request cannot be updated again and the CSED member will get to know the reason of rejection.

4.7 Test Case #7 (TC_Browse_By_Member_03)

Author: Janvi Agrawal
Test Case Description:

Test scenario: Check Searching and sorting
Test case: Check Valid Request_ID or valid Date

Pre-Conditions:

- Must be the admin of the application and already rejected the request

Test Steps:

Enter Request ID
Click on Search
Click on sort new request option

Test Data:

Request ID: R01
Click on Search
Click on sort new request option

Expected Result:

Successful.

Post Condition:

After the process the member can see their request relevant to the current date.

4.8 Test Case #8 (TC_Browse_By_HOD_03)

Author: Sheenam Waris
Test Case Description:

Test scenario: Check Searching and sorting
Test case: Rearrange according to Date

Pre-Conditions:

- Must be the admin of the application and already rejected the request

Test Steps:

Click on sort new request option

Test Data:

Click on sort new request option

Expected Result:

List of new Request will appear first

Post Condition:

After the process HOD can see all the request relevant to the current date.

4.9 Test Case #9 (TC_Register_01)

Author: Jayant Parganiha
Test Case Description:

Test scenario: Check the Registration of new user.
Test case: Enter a valid Email_ID and valid CSED_ID

Pre-Conditions:

- Need to be the part of NIT Calicut CSED department.

Test Steps:

- *Enter Email_ID*
- *Enter CSED_ID*
- *Enter Member Name*
- *Enter Member Contact*
- *User Type*

Click Register button

Test Data:
Email_ID: abcd@gmail.com
CSED_ID: 123Aa@
Member Name ABC
Member Contact 9081754677
User Type: 1(Auto)

Expected Result:
Error message (Invalid Email_ID please enter NITC email id)

Post Condition:
No user outside the part of NITC can access to the application

5. Traceability Matrix

Using Design Elements

	Design elements	**1.4.1**	**3.2**	**1.5.1**	**1.5.2**	**1.4.4**	**1.4.5**	**1.5.3**
Requirements								
F1		X						
F2		X						
F3			X					
F4				X				
F5					X			
F6						X		
F7							X	
F8								X
F9					X			

Using Test-Cases

Requirements ↓	**Test Cases →**	**4.1**	**4.2**	**4.3**	**4.4**	**4.5**	**4.6**	**4.7**	**4.8**	**4.9**
F1										X
F2		X								
F3			X							
F4				X						
F5									X	
F6					X					
F7						X				
F8							X			
F9								X		

References

https://kissflow.com/procurement/purchase-order/purchase-order-process/
https://app.diagrams.net/
https://scrolltest.com/

Thank You