LAB RECORD

21CSC303J

Software Engineering and Project Management

Submitted by

Ponnuri Aniruddha [RA2112704010015]

Under the Guidance of

Dr.A.Shanthini

(Associate Professor, Department of Data Science and Business Systems)

In partial fulfillment of the Requirements for the Degree of

M.TECH (Integrated)
COMPUTER SCIENCE WITH SPECIALIZATION IN DATA SCIENCE

DEPARTMENT OF DATA SCIENCE AND BUSINESS SYSTEMS

FACULTY OF ENGINEERING AND TECHNOLOGY

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

MAY 2024

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	1
Title of Experiment	To identify the Software Project, Create Business Case, Arrive at a Problem Statement
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	18/01/2024

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To Frame a project team, analyze and identify a Software project. To create a business case and Arrive at a Problem Statement for the SRM RESEARCH HUB

Team Members:

S. No	Register No	Name	Role
1	**RA2112704010015**	Ponnuri Aniruddha	**Lead/Rep**
2	**RA2112704010018**	Y Shabanya Kishore	**Member**
3	**RA2112704010017**	Vamshi Gadde	**Member**

Project Title:

SRM RESEARCH HUB

Project Description

The Research Paper Repository is a web-based platform designed to facilitate the management and access of research papers. It provides users with the ability to explore and contribute to a curated collection of academic publications, with a focus on papers published by SRM Institute of Science and Technology (SRMIST) researchers. The platform aims to streamline the process of discovering, sharing, and collaborating on research within the academic community.

ONE PAGE BUSINESS CASE TEMPLATE

	DATE	18/01/2024
	SUBMITTED BY	Ponnuri Aniruddha
	TITLE / ROLE	Developer

SRM RESEARCH HUB

THE PROJECT

In bullet points, describe the problem this project aims to solve or the opportunity it aims to develop.

- Current academic research papers are scattered across various sources, making it difficult for researchers to discover and access relevant publications.
- SRM Institute of Science and Technology (SRMIST) research papers may not receive adequate exposure beyond traditional academic circles, hindering their impact and recognition.
- Existing methods for sharing and collaborating on research papers are often cumbersome and lack user-friendly features, leading to inefficiencies in knowledge dissemination and collaboration.
- Researchers require a secure and intuitive platform to access, contribute, and collaborate on research papers while ensuring data privacy and integrity.
- By providing a centralized repository for research papers, the project aims to facilitate collaboration among researchers, students, and academic professionals, fostering innovation and knowledge exchange within the academic community.

THE HISTORY

In bullet points, describe the current situation.

- Academic research papers from SRM Institute of Science and Technology (SRMIST) are scattered across various sources including academic journals, conference proceedings, and institutional repositories.

- Researchers, students, and academic professionals struggle to discover and access relevant SRMIST research papers due to the lack of a centralized platform.

- Existing methods for sharing and collaborating on research papers are often inefficient and fragmented, leading to challenges in knowledge dissemination and collaboration.

- SRMIST research papers may not receive adequate visibility and recognition beyond traditional academic circles, limiting their impact and contribution to the broader research community.

LIMITATIONS

List what could prevent the success of the project, such as the need for expensive equipment, bad weather, lack of special training, etc.

- Limited access to research papers: The project's success may be hindered if there are restrictions or limitations on accessing SRM Institute of Science and Technology (SRMIST) research papers from official sources.

- Technical challenges: Complexities in integrating with SRMIST's official website or obtaining data from various websites may pose technical hurdles to the project's development and functionality.

APPROACH

List what is needed to complete the project.

Research and Analysis:

- Conduct research on existing academic repositories and collaboration platforms.
- Analyze user requirements and preferences within the SRM Institute of Science and Technology (SRMIST) community.
- Investigate technical feasibility and compatibility with SRMIST's official website and data sources.

Development Resources:

- Determine the technologies and frameworks needed for web application development.
- Set up development environments and version control systems for collaborative coding.

Data Integration:

- Establish connections with SRMIST's official website or data sources to fetch research paper metadata.
- Develop scripts to retrieve and parse data from external sources.`
- Implement a data cleansing process to ensure that the data conforms to the database structure.

Database Management:

- Design and implement a scalable database schema for storing user information, research papers, and metadata.
- Optimize database queries and indexing for efficient data retrieval and storage.

BENEFITS

In bullet points, list the benefits that this project will bring to the organization.

- Centralized repository for research papers enhances accessibility and visibility of SRM Institute of Science and Technology (SRMIST) publications.
- Facilitates collaboration and knowledge sharing among researchers, students, and academic professionals within the institution.
- Streamlines the process of discovering, accessing, and citing relevant research papers, thereby fostering academic excellence and innovation.
- Enhances the reputation and recognition of SRMIST as a hub for cutting-edge research and scholarly contributions.
- Encourages interdisciplinary collaboration and cross-departmental engagement by providing a platform for interdisciplinary research exploration.
- Strengthens the institution's research ecosystem by promoting transparency, accountability, and integrity in scholarly communication.
- Empowers researchers and students to showcase their work and contributions to the broader academic community, leading to increased citations and impact.
- Establishes SRMIST as a leader in digital innovation and academic excellence by leveraging modern technologies and best practices in research dissemination and collaboration.

Result:

Thus, the project team formed, the project was described, the business case was prepared and the problem statement was arrived at.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	2
Title of Experiment	Identification of Process Methodology and Stakeholder Description
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	29/01/2024

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To identify the appropriate Process Model for the project and prepare Stakeholder and User Description.

Team Members:

S. No	Register No	Name	Role
1	**RA2112704010015**	Ponnuri Aniruddha	**Rep/Member**
2	**RA2112704010018**	Y Shabanya Kishore	**Member**
3	**RA2112704010017**	Vamshi Gadde	**Member**

Project Title:

SRM RESEARCH HUB

Selection of Methodology (WaterFall Methodology):--

- Well-defined Requirements: If the requirements for the SRM Research Hub are clear from the outset, with little expectation of change, the Waterfall model allows for a systematic progression through the stages of development.
- Sequential Phases: The Waterfall model's sequential nature – with distinct phases for requirements gathering, design, implementation, verification, and maintenance – ensures that each phase can be completed and reviewed for quality before moving on to the next.
- Documentation and Rigor: This model emphasizes rigorous documentation and adherence to initial plans, which can be beneficial for aligning with institutional policies and maintaining clarity of purpose throughout the project lifecycle.
- Stakeholder Communications: It can be easier to communicate progress to stakeholders with a Waterfall approach because the project is divided into distinct stages with concrete deliverables at the end of each phase.

- Resource Planning: The Waterfall model allows for more predictable resource allocation and scheduling since each phase is planned in detail at the start of the project.

Incorporate information to below table regarding stakeholders of the project [Make use of below examples]

Stakeholder Name	Activity/ Area /Phase	Interest	Influence	Priority (High/ Medium/ Low)
Researchers	Access to latest research papers	High	Low	Medium
Students	Access to educational resources	High	High	High
Faculty Members	Research dissemination and collaboration	High	High	High
External Researchers	Access to SRMIST research papers	High	Low	Low

Result:

Thus the Project Methodology was identified and the stakeholders were described.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	3
Title of Experiment	System, Functional and Non-Functional Requirements of the Project
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	05/02/2024

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To identify the system, functional and non-functional requirements for the project.

Team Members:

S No	Register No	Name	Role
1	**RA2112704010015**	Ponnuri Aniruddha	**Rep/Member**
2	**RA2112704010018**	Y Shabanya Kishore	**Member**
3	**RA2112704010017**	Vamshi Gadde	**Member**

Project Title: SRM RESEARCH HUB

System Requirements:

Hardware

- Server infrastructure capable of hosting web services, managing databases, and storing sensitive data.
- Scalable storage solutions can handle increasing volumes of research papers and user data.

Software:

- Web server software and a database management system (such as MySQL or PostgreSQL).
- Frameworks and libraries designed for web application development

Compatibility:

- Compatibility with a variety of research paper file formats (for example, PDF and DOCX).

Functional Requirements

User Authentication and Authorization:

- Users should be able to register for accounts with a valid email address and password.
- Registered users should be able to log in to the website securely.
- The system should enforce password strength requirements and provide options for password recovery and account management.
- Different user roles (e.g., regular user, administrator) should have different levels of access permissions.

Research Paper Discovery and Search:

- Users should be able to browse and search for research papers by title, authors, publication date, keywords, and categories.
- The search functionality should support advanced filtering options to refine search results.
- Users should be able to view detailed information about each research paper, including abstracts, authors, publication details, and related metadata.

.Research Paper Upload and Submission:

- Registered users should have the ability to upload research papers to the platform.
- The upload process should include fields for entering metadata such as title, authors, abstract, keywords, and publication date.
- The system should validate uploaded papers to ensure they meet specified file format and size requirements.
- Uploaded papers should undergo review by administrators before being made publicly accessible.

User Interaction and Collaboration:

- Users should be able to bookmark or save research papers for later reference.
- Users should have the ability to create personal collections or folders to organize and manage saved papers.
- The system should support user comments, annotations, and discussions on individual research papers.
- Collaboration features such as sharing papers with colleagues or inviting collaborators should be available.

Administrative Tools:

- Administrators should have access to tools for managing user accounts, reviewing uploaded papers, and moderating user interactions.
- The system should provide administrative dashboards and reporting tools for monitoring platform usage and performance

Non-Functional Requirements

Usability:

- The website should have a clean and intuitive user interface, with consistent navigation and layout across pages.
- Content should be organized logically, with clear labels and descriptive headings to aid user comprehension.
- The website should be responsive and mobile-friendly, adapting to different screen sizes and devices

Reliability:

- The system should be reliable and resilient, with mechanisms in place to detect and recover from failures automatically.
- Error handling and logging should be implemented to track system errors and provide useful feedback to users and administrators.
- Backup and recovery procedures should be documented and tested regularly to ensure data integrity and availability.

Result

Thus the requirements were identified and accordingly described.

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SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	4
Title of Experiment	Prepare Project Plan based on scope, Calculate Project effort based on resources and Job roles and responsibilities
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	12/02/2024

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To Prepare Project Plan based on scope, Calculate Project effort based on resources, Find Job roles and responsibilities

Team Members:

Sl No	Register No	Name	Role
1	**RA2112704010015**	Ponnuri Aniruddha	**Lead**
2	**RA2112704010018**	Y Shabanya Kishore	**Member**
3	**RA2112704010017**	Vamshi Gadde	**Member**

1. Project Management Plan

Describe the key issues driving the project. **[Min 3 Focus Areas]**

Focus Area	Details
Integration Management	Governance Framework Project Team Structure Roles & Responsibilities of Team Change Management (Change Control, Issue Management) Project Closure
Scope Management	Scope Statement Requirement Management (Gathering, Control, Assumption, Constraint Stakeholder) Define Deliverable Requirement Change Control Activities and Sub-Tasks
Schedule Management	Define Milestones Schedule Control
Cost Management	Estimate Effort Assign Team Budget Control
Quality Management	Quality Assurance: Quality assurance will be managed including governance, roles and responsibilities, tools and techniques and reporting

	Quality Control: Specify the mechanisms to be used to measure and control the quality of the work products
Resource Management	Estimate and Manage the need People: People & Skills Required Finance: Budget Required Physical: Facilities, IT Infrastructure
Stakeholder	Identifying, Analyzing, Engaging Stakeholders
Communication Management	Determine communication requirements, roles and responsibilities, tools and techniques. [Type of Communication, Schedule, Mechanism Recipient]
Risk Management	Identifying, analysing, and prioritizing project risks
Procurement Management	Adhering to organization procurement process

2. Estimation

2.1. Effort and Cost Estimation

Activity Description	**Sub-Task**	**Sub-Task Description**	**Effort (in hours)**	**Cost in INR**
Design the user screen	E1R1A1T1 (Effort-Requirement-Activity-Task)	Designing the User Login page	5	10,000
	E1R1A1T2	Designing the Home Page	7	14,000
	E1R1A1T4	Designing the student dashboard	8	10,000
	E1R1A1T4	Designing the teacher dashboard	8	10,000
	E1R1A1T3	Designing the Back End	10	24,000
Identify Data Source for displaying units of Energy Consumption		Go through Interface contract (Application Data Exchange) documents	5	10,000
		Document	3	6,0000
		Software testing	8	16,000

Effort (hr)	Cost (INR)
1	5,000

2.2. Infrastructure/Resource Cost [CapEx]

Infrastructure Requirement	Qty	Cost per qty	Cost per item
IR1	PC's	4	70,000
IR2	Wi-Fi	1	4,000
	Hosting Server	1	6,000
	Backup Server	1	6,000
	Tie-Up with all Department	NA	NA

2.3 Maintenance and Support Cost [OpEx]

Category	Details	Qty	Cost per qty per annum	Cost per item
People	Network, System, Middleware and DB admin Developer , Support Consultant	3	2,000,000	60,00,000
License	Operating System Database Middleware IDE	10	10000	1,00,000
Infrastructures	Server, Storage and Network	20	20000	4,00,000

Project Team Formation

2.3. Identification Team members

Name	Role	Responsibilities
vamshi	Key Business User (Product Owner)	Provide clear business and user requirements
vamshi,aniruddha	Project Manager	Manage the project
shabanya	Business Analyst	Discuss and Document Requirements
aniruddha	Technical Lead	Design the end-to-end architecture
vamshi	UX Designer	Design the user experience
vamshi	Frontend Developer	Develop user interface
aniruddha	Backend Developer	Design, Develop and Unit Test Services/API/DB
shabanya	Cloud Architect	Design the cost effective, highly available and scalable architecture
shabanya	Cloud Operations	Provision required Services
vamshi	Tester	Define Test Cases and Perform Testing

2.4. Responsibility Assignment Matrix

RACI Matrix	Team Members			
	Activity Tharun (Designer)	Praveen (Developer)	Chidvilas (Project Manager & BA)	Chidvilas - Key Business User
User Requirement Documentation	-	C/I	A	R
Advertisement	C	C	R	
Development	C	R	I	
Website Design	R	A	I	
Testing / Deployment	-	A	C	

Bug Fixes	A	R	I	
Update & Upgrade	-	C	A	

A	Accountable
R	Responsible
C	Consult
I	Inform

Result:

Thus, the Project Plan was documented successfully.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	5
Title of Experiment	Prepare Work breakdown structure, Timeline chart, Risk identification table
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	17/02/2024

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	

Total	**10**	

Staff Signature with date

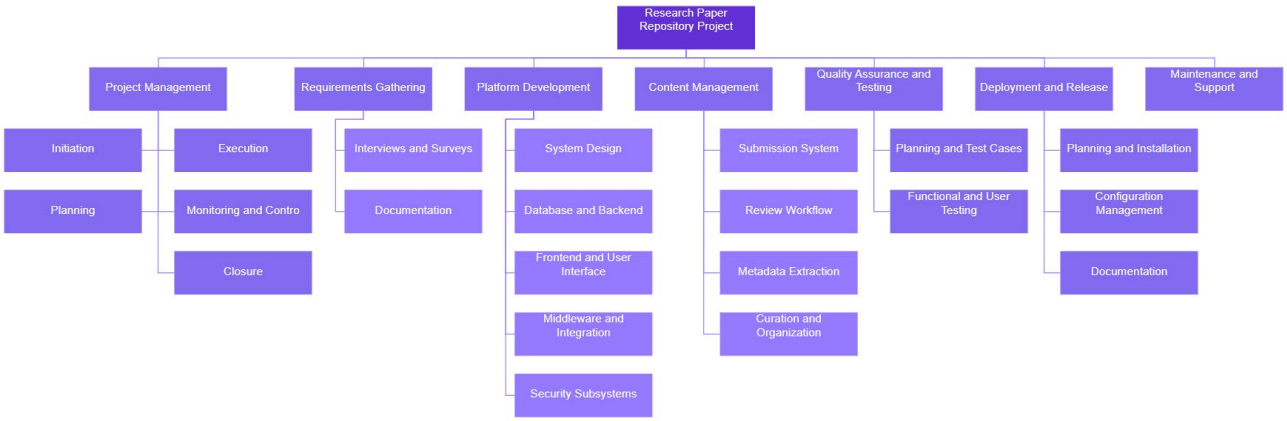
Aim

To Prepare Work breakdown structure, Timeline chart and Risk identification table

Team Members:

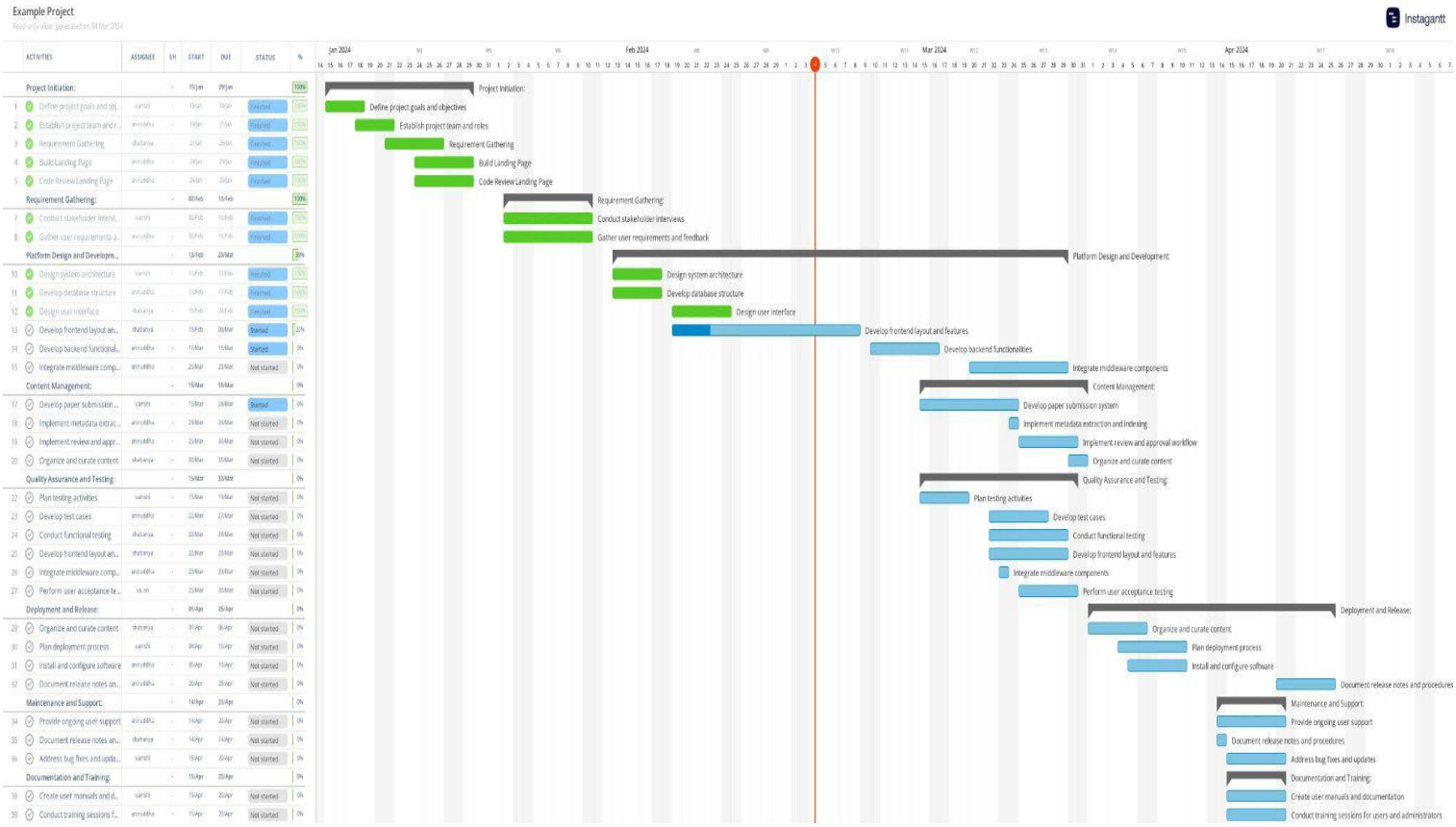
Sl No	Register No	Name	Role
1	**RA2112704010015**	Ponnuri Aniruddha	**Rep**
2	**RA2112704010018**	Y Shabanya Kishore	**Member**
3	**RA2112704010017**	Vamshi Gadde	**Member**

WBS

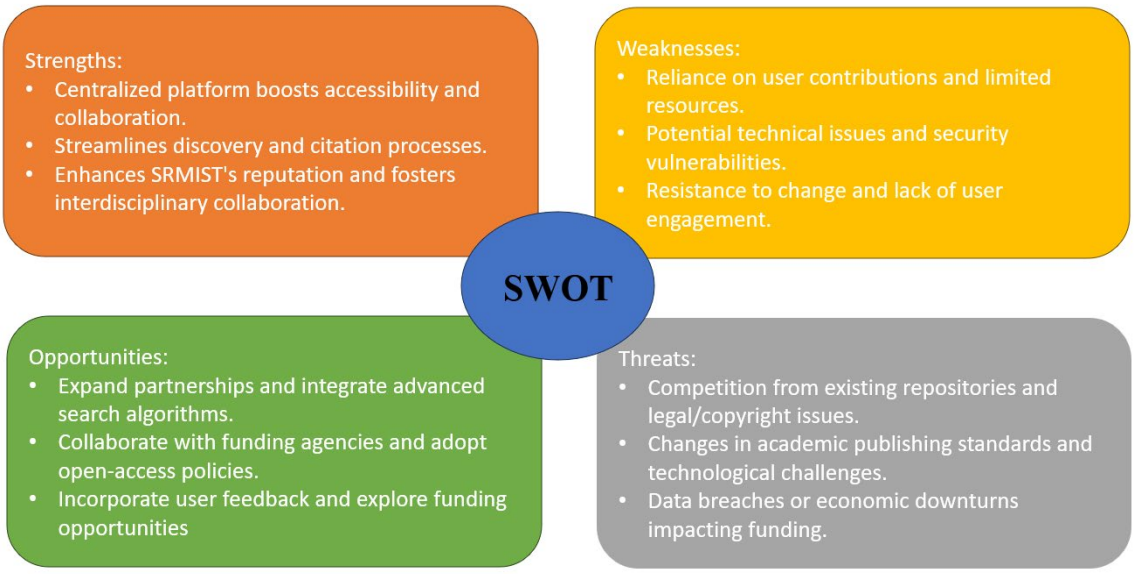


1. **Project Initiation**
    - Define project goals and objectives
    - Establish project team and roles
2. **Requirement Gathering**
    - Conduct stakeholder interviews
    - Gather user requirements and feedback
3. **Platform Design and Development**
    - Design system architecture
    - Develop database structure
    - Design user interface
    - Develop backend functionalities
    - Develop frontend layout and features
    - Integrate middleware components
4. **Content Management**
    - Develop paper submission system
    - Implement review and approval workflow
    - Implement metadata extraction and indexing
    - Organize and curate content
5. **Quality Assurance and Testing**
    - Plan testing activities
    - Develop test cases
    - Conduct functional testing
    - Perform user acceptance testing
6. **Deployment and Release**
    - Plan deployment process
    - Install and configure software
    - Document release notes and procedures
7. **Maintenance and Support**
    - Address bug fixes and updates
    - Provide ongoing user support
8. **Documentation and Training**
    - Create user manuals and documentation
    - Conduct training sessions for users and administrators

TIMELINE – GANTT CHART



RISK ANALYSIS – SWOT & RMMM



Risk	Response Strategy	Examples
Technical Issues	Regular testing and quality assurance	Conducting beta testing before full deployment
	Immediate troubleshooting and bug fixes	Assigning dedicated technical support team
Data Breaches	Enhanced security measures and encryption	Implementing two-factor authentication
	Regular security audits and monitoring	Conducting penetration testing to identify flaws
Content Accuracy	Content moderation and user reporting mechanisms	Establishing review processes for user submissions
	Educating users on proper citation and referencing	Providing guidelines and tutorials on platform
Funding Constraints	Diversifying funding sources and seeking grants	Applying for research grants and sponsorships
	Cost-cutting measures and resource optimization	Streamlining platform development and maintenance

Result:

Thus, the work breakdown structure with timeline chart and risk table were formulated successfully.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	6
Title of Experiment	Design a System Architecture, Use Case and Class Diagram
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	19/02/2024

Mark Split Up

S.No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

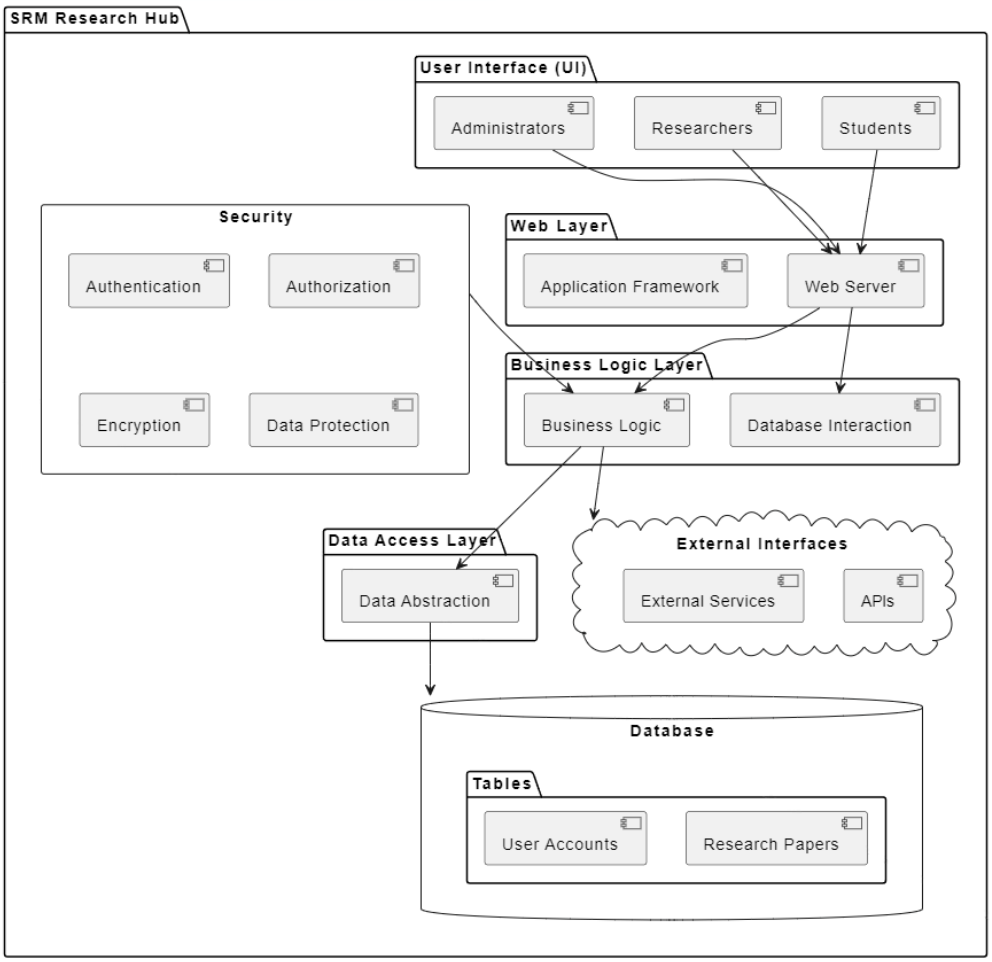
Aim

To Design a System Architecture, Use case and Class Diagram

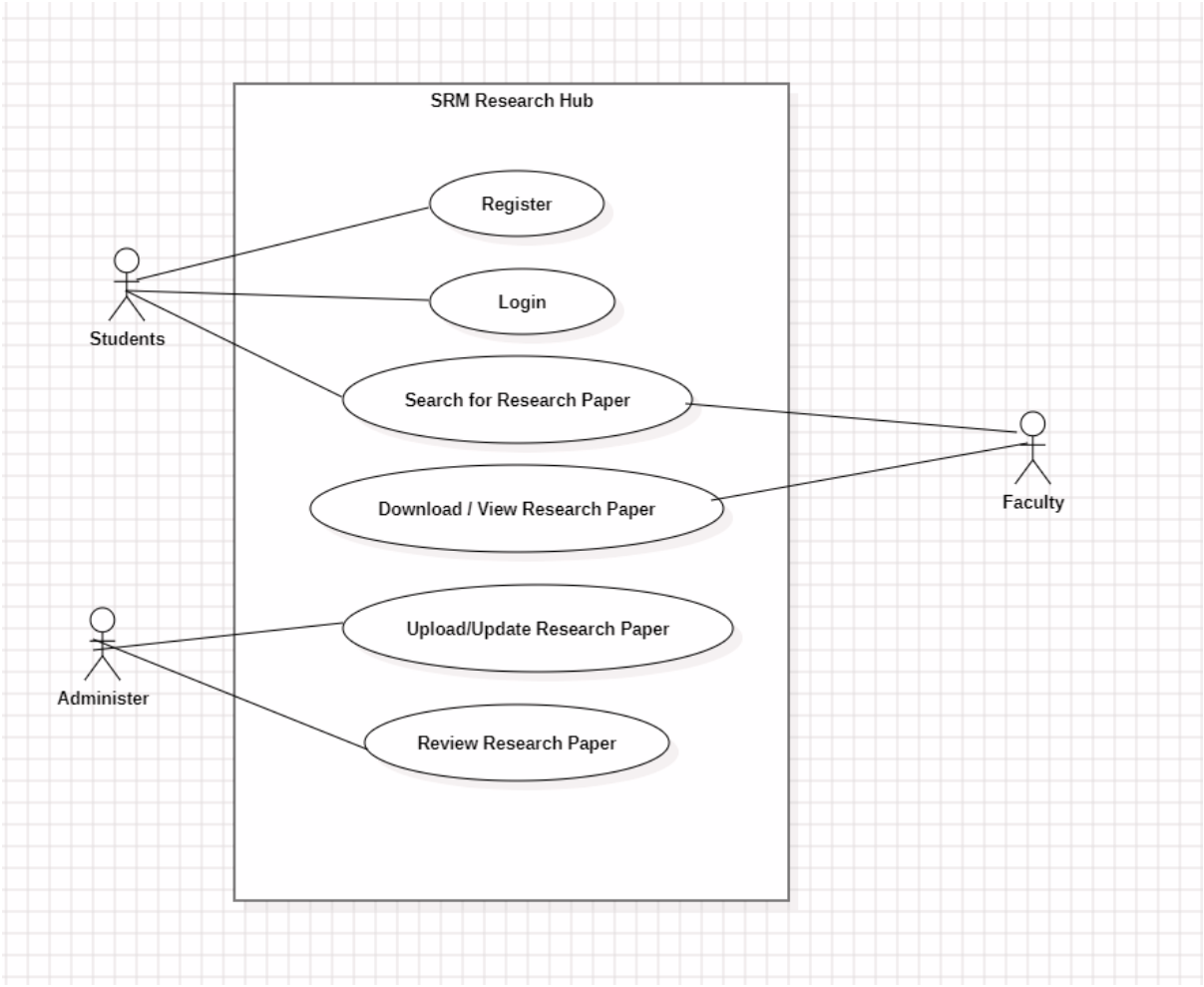
Team Members:

Sl No	Register No	Name	Role
1	RA2112704010015	Ponnuri Aniruddha	Rep
2	RA2112704010018	Y Shabanya Kishore	Member
3	RA2112704010017	Vamshi Gadde	Member

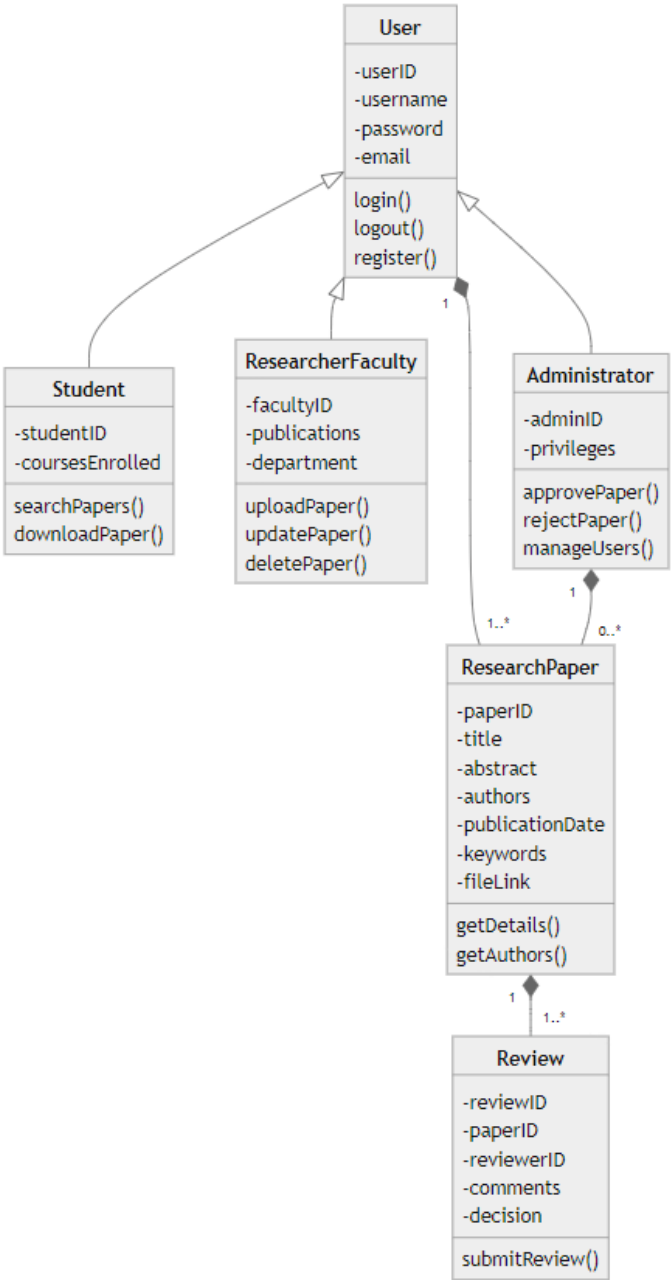
SYSTEM ARCHITECTURE –



USE CASE DIAGRAM



CLASS DIAGRAM



Result:

Thus, the system architecture, use case and class diagram created successfully.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	7
Title of Experiment	Design a Entity relationship diagram
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	26/02/2024

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

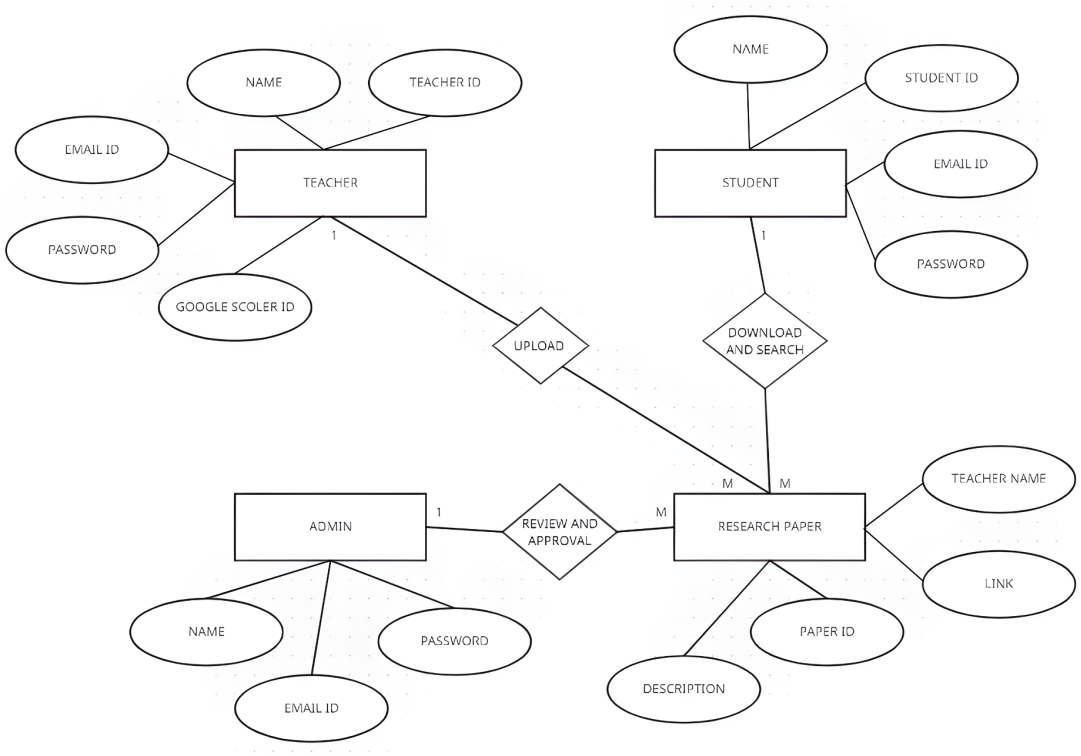
Aim

To create the Entity Relationship Diagram

Team Members:

S No	Register No	Name	Role
1	RA2112704010015	Ponnuri Aniruddha	Rep
2	RA2112704010018	Y Shabanya Kishore	Member
3	RA2112704010017	Vamshi Gadde	Member

ER Diagram



Result:

Thus, the entity relationship diagram was created successfully.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	8
Title of Experiment	Develop a Data Flow Diagram (Process-Up to Level 1)
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	04/03/2024

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

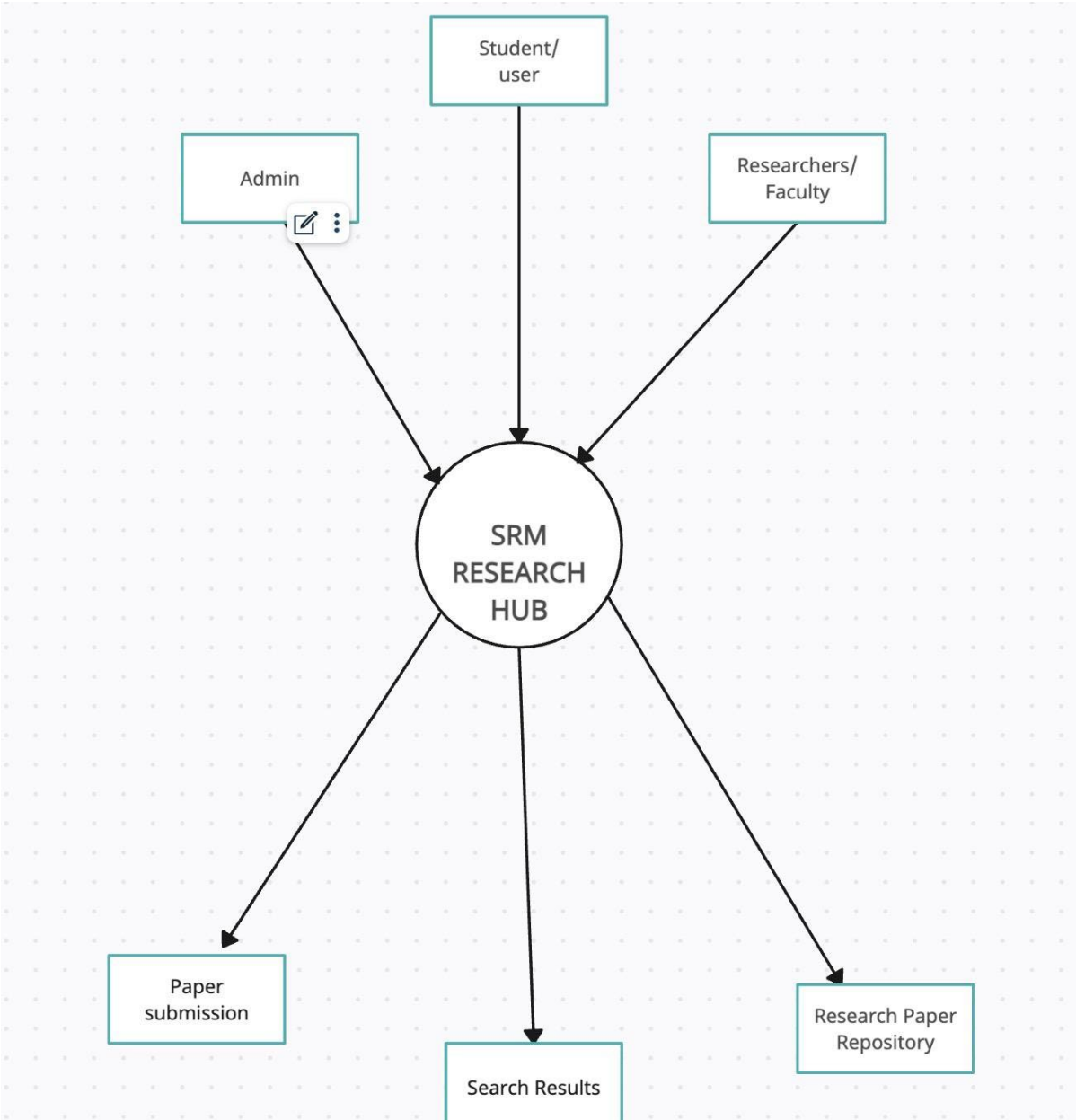
Aim

To develop the data flow diagram up to level 1 for the SRM Research Hub

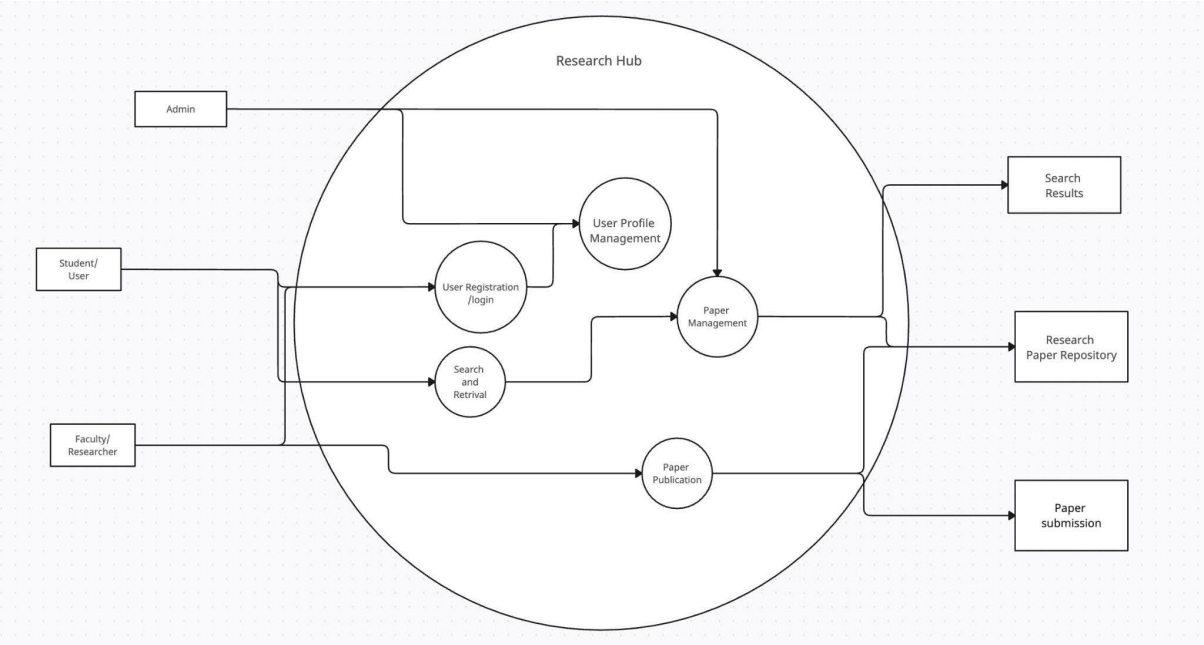
Team Members:

S No	Register No	Name	Role
1	RA2112704010015	Ponnuri Aniruddha	Rep
2	RA2112704010018	Y Shabanya Kishore	Member
3	RA2112704010017	Vamshi Gadde	Member

DFD Level - 0



DFD Level - 1



Result:

Thus, the data flow diagrams have been created for the SRM Research Hub.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	9
Title of Experiment	Design a Sequence and Collaboration Diagram
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	11/03/2024

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

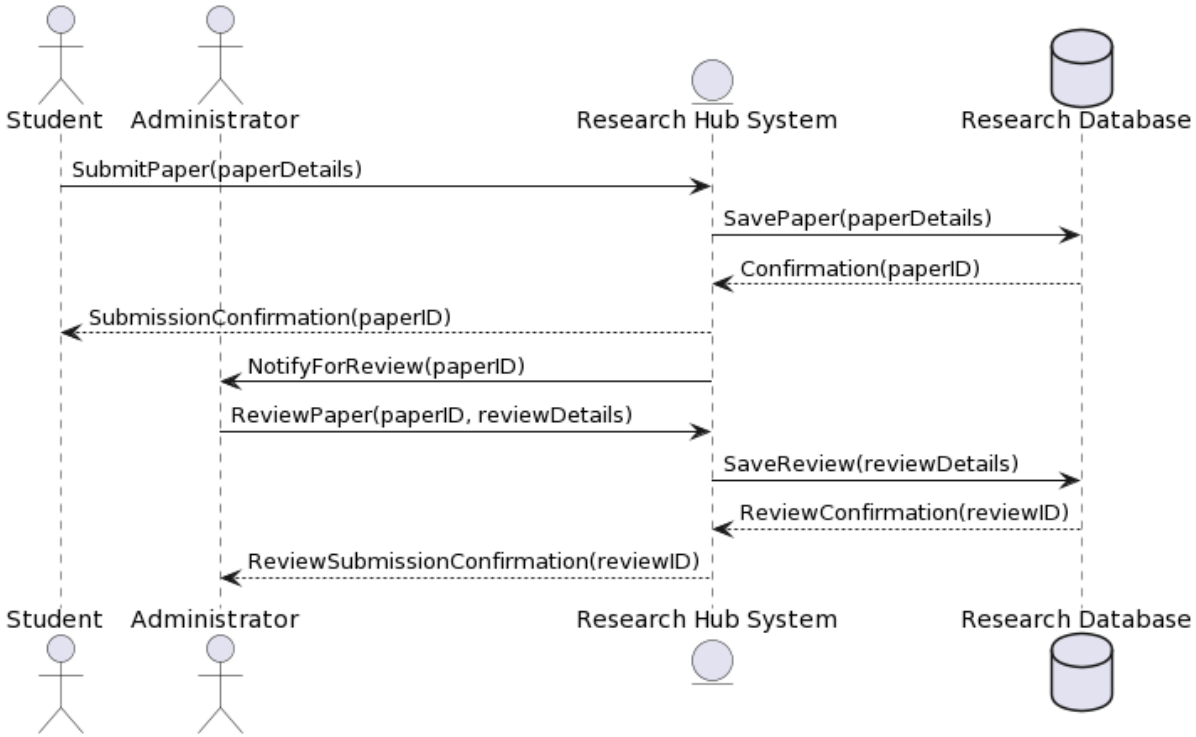
Aim

To create the sequence and collaboration diagram for the SRM RESEARCH HUB

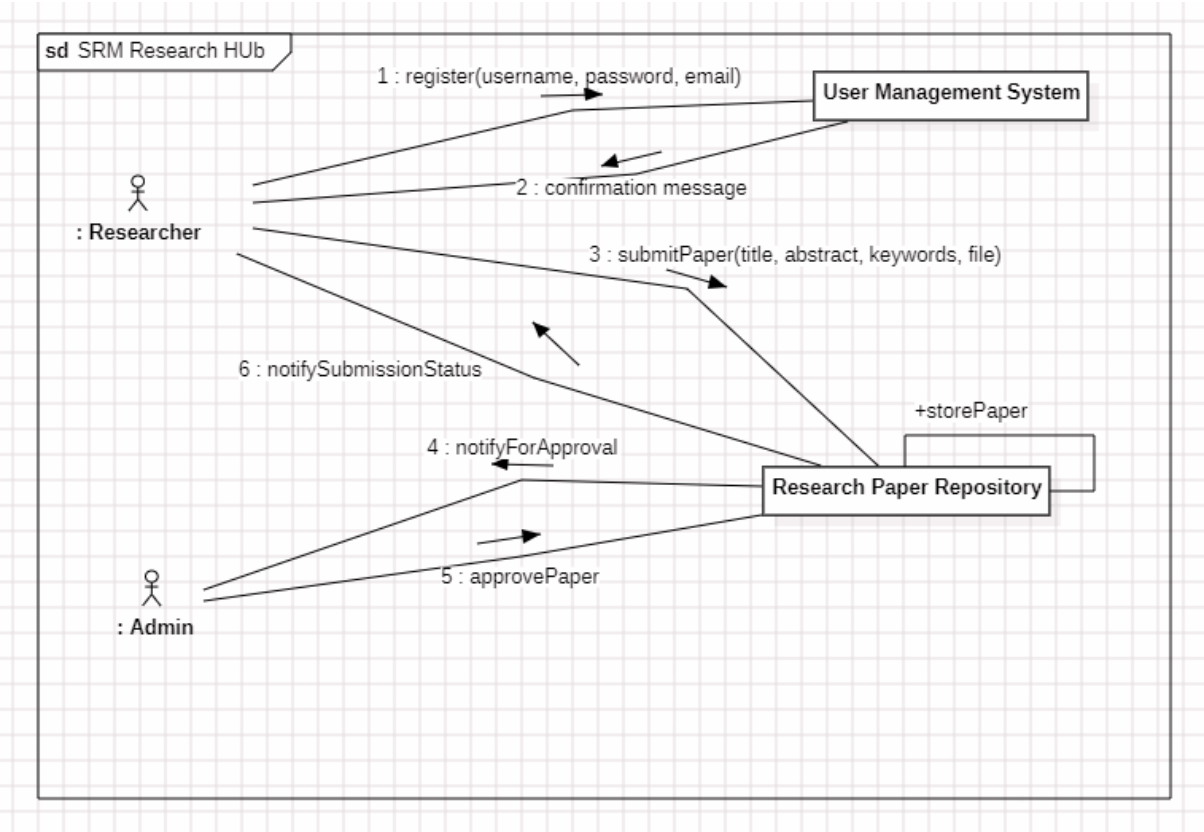
Team Members:

S No	Register No	Name	Role
1	RA2112704010015	Ponnuri Aniruddha	Rep/Member
2	RA2112704010018	Y Shabanya Kishore	Member
3	RA2112704010017	Vamshi Gadde	Member

Sequence Diagram



Collaboration Diagram



Result:

Thus, the sequence and collaboration diagrams were created for the SRM RESEARCH HUB.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	10
Title of Experiment	Develop a Testing Framework/User Interface
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	18/03/2024

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To develop the testing framework and/or user interface framework for the SRM Research Hub

Team Members:

S No	Register No	Name	Role
1	**RA2112704010015**	Ponnuri Aniruddha	**Rep/Member**
2	**RA2112704010018**	Y Shabanya Kishore	**Member**
3	**RA2112704010017**	Vamshi Gadde	**Member**

Executive Summary

The primary objective is to ensure the application functions as intended, meets user requirements, and delivers a high-quality user experience. We will employ a combination of manual and automated testing methodologies to achieve comprehensive coverage of both functional and non-functional aspects.

Test Plan

Scope of Testing:

- Functional Testing:
  - All application modules will be covered, with a focus on core functionalities like user registration, login, research paper management (upload, download, edit, delete), search and filtering, user profiles, and integration with SRMIST sources.
  - Automation will cover critical functionalities and regression testing of core user flows.
  - Manual testing will address specific test cases and edge cases that are less suitable for automation.
- Non-Functional Testing:
  - Performance testing will assess response times, load capacity, and scalability under varying user loads.
  - Usability testing will involve user feedback to evaluate the interface's intuitiveness, learnability, and overall user experience.
  - Security testing will ensure data security, role-based access control, and protection against vulnerabilities.

Category	Methodology	Tools Required	Description
Functional Requirements	Manual & Automated	Test case management tool Automation framework	Manual testing will cover user interaction, user interface elements, and various test cases. Automated testing will focus on critical functionalities, regression testing, and API interactions.
Non-Functional Requirements	Manual & Automated	Performance testing tool (e.g., JMeter, LoadRunner) Usability testing platform (e.g., UserTesting, Lookback) Security scanning tools (e.g., OWASP ZAP, Nessus)	Performance testing will assess response times, load capacity, and scalability using automated tools. Usability testing will involve user recruitment and observation through online platforms. Security testing will employ automated tools for vulnerability scanning and manual penetration testing (if resources permit).

Result:

Thus, the testing framework/user interface framework has been created for the SRM Research Hub.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	11
Title of Experiment	Test Cases
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	26/03/2024

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To develop the test cases manual for the SRM Research Hub

Team Members:

S No	Register No	Name	Role
1	RA2112704010015	Ponnuri Aniruddha	Rep
2	RA2112704010018	Y Shabanya Kishore	Member
3	RA2112704010017	Vamshi Gadde	Member

Functional Test Case

Test ID	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1	Verify User Registration	Accept Valid SRM Registration Number	1. User clicks on "User Registration" link. 2. Enter a valid SRM registration number (e.g., RA2112704010015). 3. Click "Register" button.	User should be directed to the next page for entering more user details.			
2	Verify User Registration	Don't Accept Invalid Registration Number	1. User clicks on "User Registration" link. 2. Enter an invalid registration number (e.g., incorrect format or non-existent number). 3. Click "Register" button.	An error message should be displayed indicating invalid registration number format.			
3	Verify User Login	Successful Login with	1. Enter a registered email	User should be successfully			

		Valid Credentials	address in the username field. 2. Enter the corresponding password in the password field. 3. Click "Login" button.	logged in and directed to the user dashboard.			
4	Verify User Login	Failed Login with Invalid Username	1. Enter an unregistered email address in the username field. 2. Enter a valid password. 3. Click "Login" button.	An error message should be displayed indicating invalid username or password.			
5	Verify User Login	Failed Login with Incorrect Password	1. Enter a registered email address in the username field. 2. Enter an incorrect password. 3. Click "Login" button.	An error message should be displayed indicating invalid username or password.			
6	Verify Research Paper Upload	Upload a Valid PDF Document	1. Navigate to the "Upload Research Paper" section. 2. Select a valid PDF document from the local storage. 3. Click "Upload" button.	The document should be uploaded successfully, and a confirmation message displayed.			
7	Verify Research Paper Upload	Upload an Unsupported File Format	1. Navigate to the "Upload Research Paper" section. 2. Select a file with an unsupported format (e.g., .docx). 3. Click "Upload" button.	An error message should be displayed indicating invalid file format.			

Non-Functional Test Cases

Test ID	Test Scenario	Test Case	Execution	Expected	Actual	Status	Remarks

			Steps	Outcome	Outcome		
1	Performance Testing	Load Capacity	1. Simulate concurrent user logins with increasing load. 2. Monitor response times and system performanc e.	The application should maintain acceptable response times and functionality under increasing load.			
2	Usability Testing	User Interface Clarity	1. Recruit users from the target audience (students, faculty, researcher s). 2. Observe users interacting with the application and record their feedback.	Users should find the interface intuitive and easy to navigate.			
3	Security Testing	Data Encryption	1. Use security testing tools to scan for vulnerabiliti es related to data encryption.	All user data and research papers should be encrypted in transit and at rest.			

Result:

Thus, the test case manual has been created for the SRM Research Hub.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	12
Title of Experiment	Manual Test Case Reporting
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Number	RA2112704010015
Date of Experiment	04/04/2024

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To prepare the manual test case report for the SRM RESEARCH HUB.

Team Members:

S No	Register No	Name	Role
1	RA2112704010015	Ponnuri Aniruddha	Rep/Member
2	RA2112704010018	Y Shabanya Kishore	Member
3	RA2112704010017	Vamshi Gadde	Member

Current Status of the Testing:

The testing of the SRM Research Hub application is currently progressing well, with an overall Amber status. We've made significant headway in functional testing of both User Management (Admin, Student, Teacher) and Paper Repository modules, achieving an overall coverage of 85%. User Login functionality is fully tested (100%), while other areas like User Registration, Profile Management, and Access Control are in progress (update percentages based on your project). Similarly, Paper Repository functionalities like Upload, Search & Filtering, and Download & Viewing are under development with progress (update percentages). Integration testing across modules is the next focus area to ensure a seamless user experience.

Non-functional testing has not yet begun. We'll prioritize completing remaining test cases for the core functionalities and establish a test data management plan to streamline the process. Open communication with stakeholders remains crucial to address any resource limitations and ensure alignment with project goals. By taking these steps, we can achieve a successful testing phase and launch a high-quality SRM Research Hub application.

Present obstacles to proceed further

While the SRM Research Hub testing is progressing well, there are a few obstacles to achieving a complete green status. Integration testing, which ensures smooth interaction between User Management and Paper Repository modules, requires additional focus. Furthermore, a comprehensive test data management plan needs to be established to streamline testing across various user roles and functionalities. Resource limitations might also come into play, potentially slowing down progress.

To address these challenges, scheduling collaborative sessions between functional and development teams will be crucial for seamless integration. Additionally, developing a test data plan outlining data requirements for different test scenarios will optimize testing efficiency. If resource limitations become a bottleneck, expanding the testing team or prioritizing critical functionalities might be necessary. By proactively addressing these obstacles, we can ensure a successful testing phase and deliver a high-quality application.

Engaging Stakeholders:

- Continuous communication with stakeholders will be crucial for addressing these challenges and ensuring project success.
- Stakeholders can provide valuable feedback on user needs and system priorities.
- Collaboration will help maintain alignment with project goals and secure necessary resources for a smooth testing completion.

Next Steps:

- Prioritize completion of remaining test cases for User Management and Paper Repository modules.
- Conduct comprehensive integration testing to ensure seamless user experience across modules.
- Finalize a test data management plan to streamline test execution.
- Address resource limitations through collaboration or prioritization strategies.
- Maintain open communication with stakeholders to ensure project goals are met.

Category	Progress Against Plan	Status
Functional Testing	Amber	ICompleted
Non-Functional Testing	Amber	In-Progress

Functional	Test Case Coverage (%)	Status
User Login	100	Completed
Student page	70	In-Progress
Teacher Page	65	In-Progress
Admin Page	70	In-Progress
Research Paper Database	75	In-Progress

Result:

Thus, the test case report has been created for the SRM RESEARCH HUB.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 21CSC303J

Course Name: Software Engineering and Project Management

Experiment No	13
Title of Experiment	Provide the details of Architecture Design/Framework/Implementation
Name of the candidate	Ponnuri Aniruddha
Team Members	Vamshi Gadde (RA2112704010017) Y Shabanya Kishore (RA2112704010018)
Register Numbers	RA2112704010015
Date of Experiment	15/04/2024

Mark Split Up

S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

Aim

To provide the details of architectural design/framework/implementation

Team Members:

S No	Register No	Name	Role
1	RA2112704010015	Ponnuri Aniruddha	Rep/Member
2	RA2112704010018	Y Shabanya Kishore	Member
3	RA2112704010017	Vamshi Gadde	Member

Framework and Implementation:

Frontend: React.js

Backend: Node.js with Express framework

Database: MongoDB

Architectural Design:

Frontend: Built with React.js, this layer handles user interactions, rendering dynamic content, and presenting the user interface.

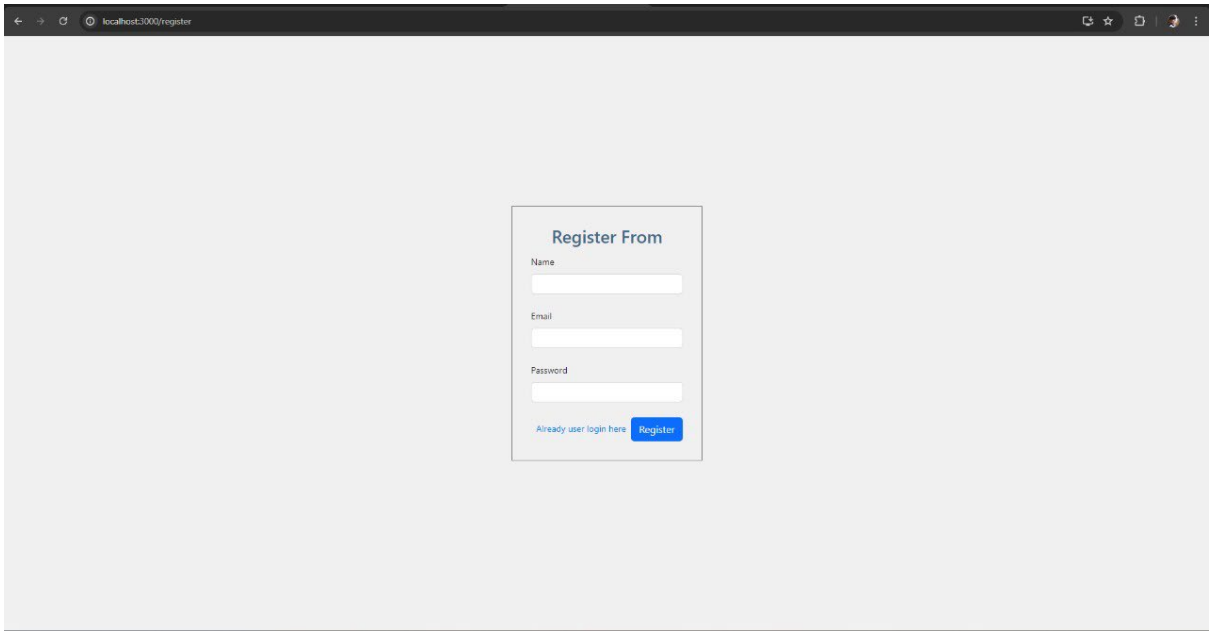
Backend: Implemented using Node.js with Express framework, this layer processes user requests, interacts with the database, and performs core application logic.

Database: MongoDB serves as the NoSQL database, storing research papers, user information, and other application data.

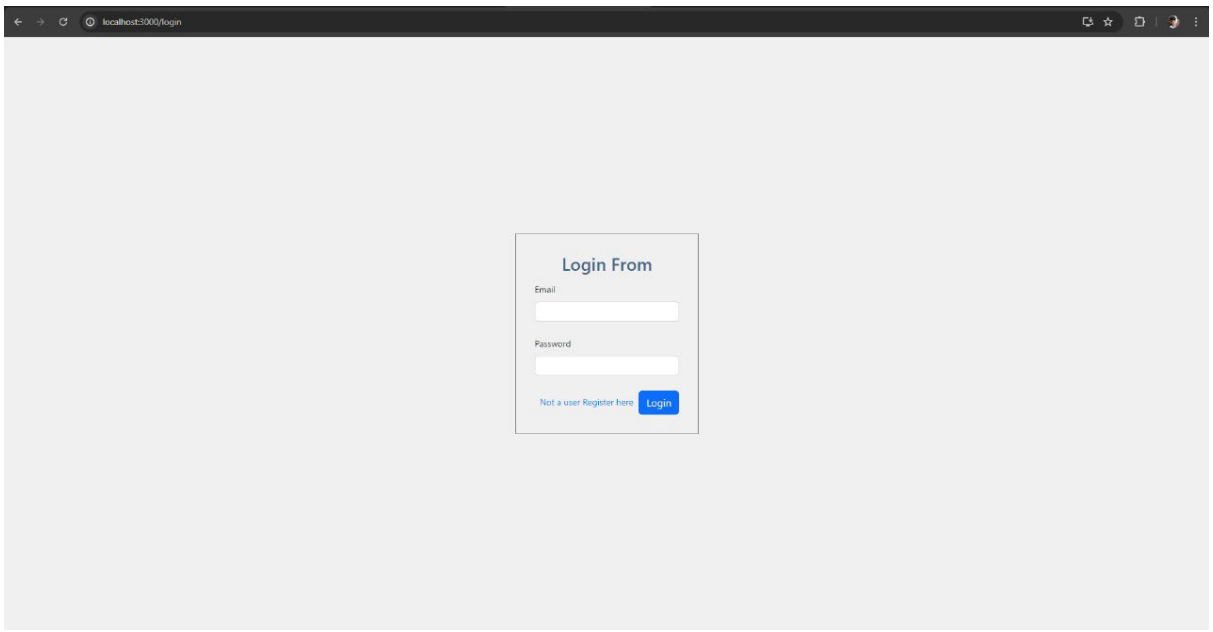
User Management Module:

Description: This module handles user registration, login, profile management, and authorization.

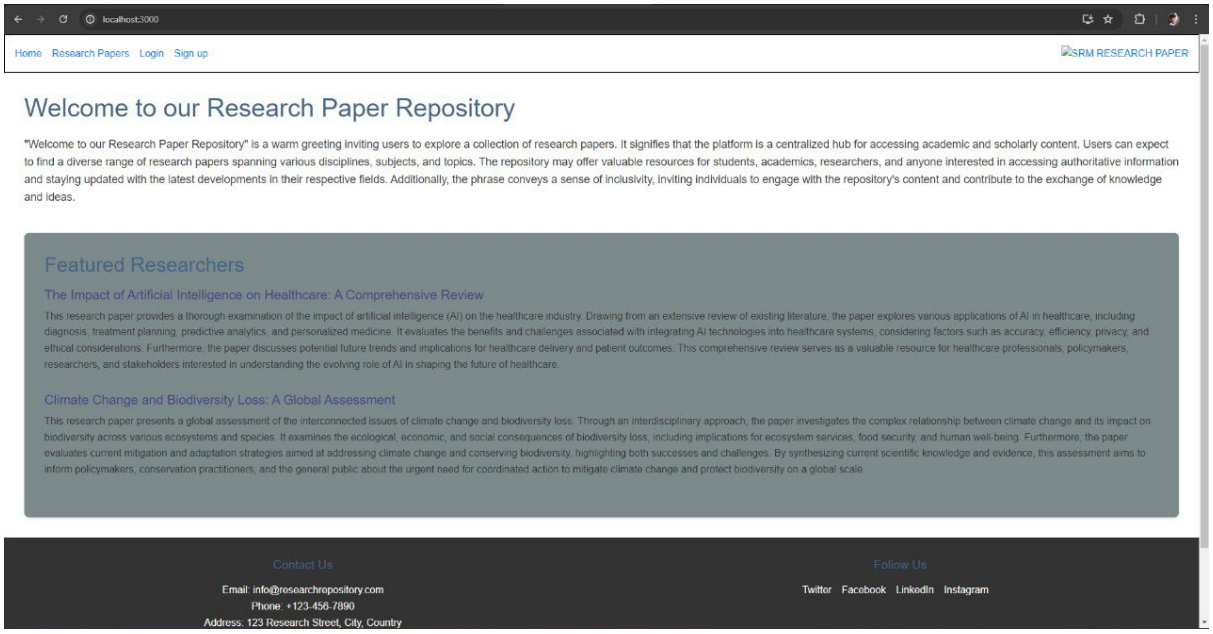
User Registration:



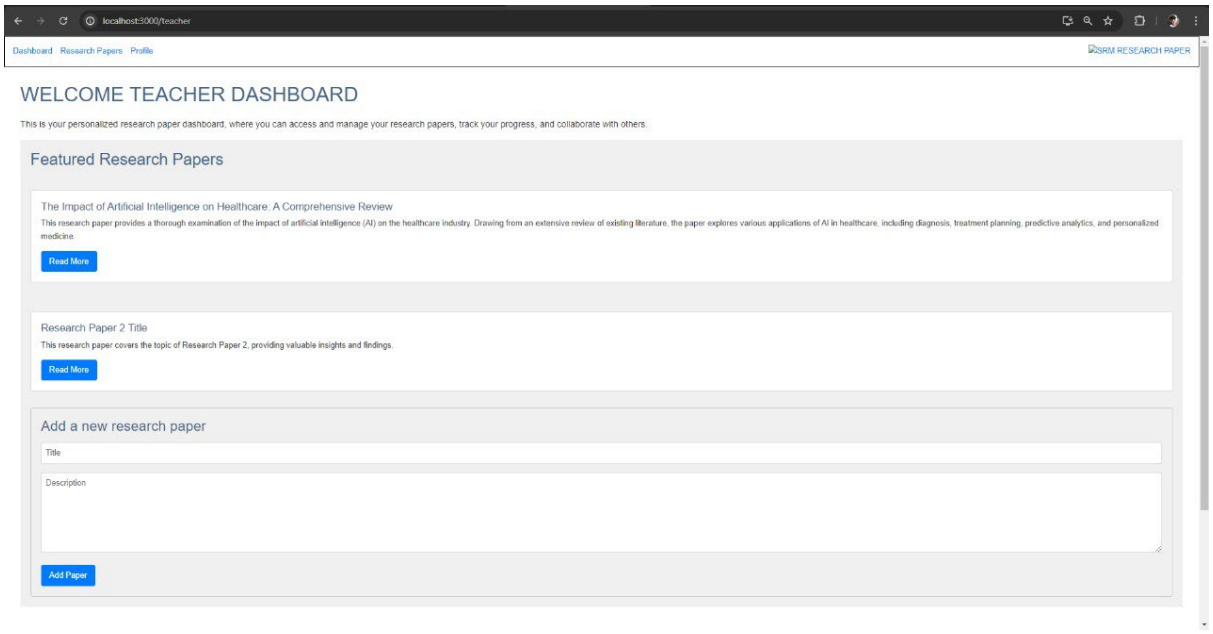
User Login:



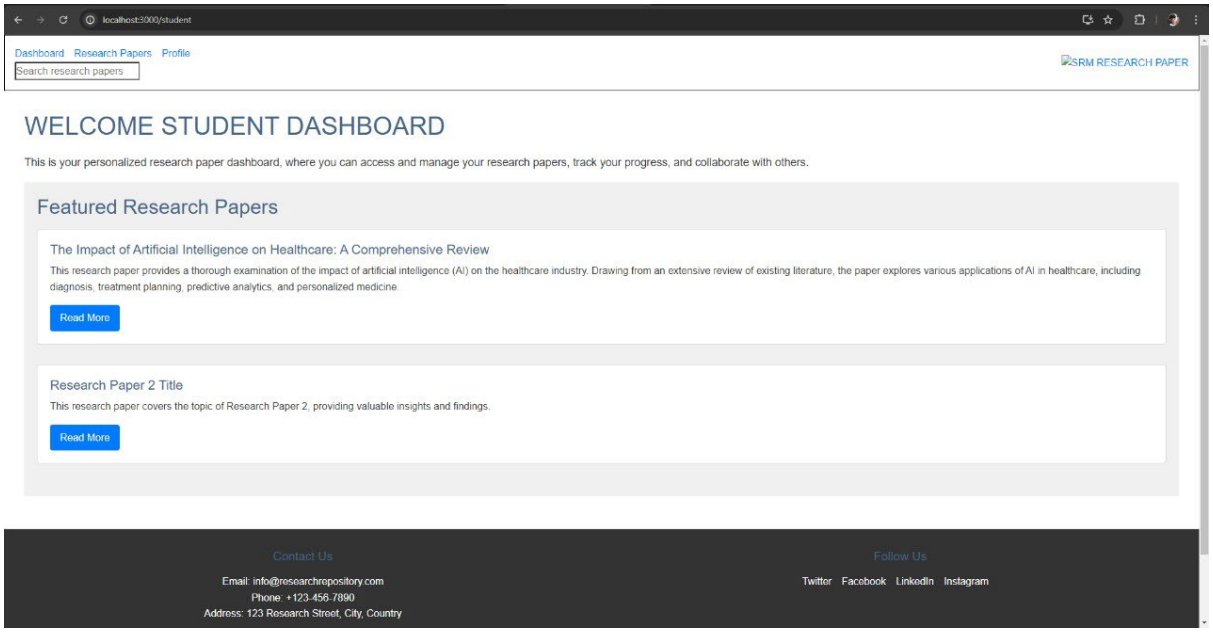
Home Page (Landing Page):



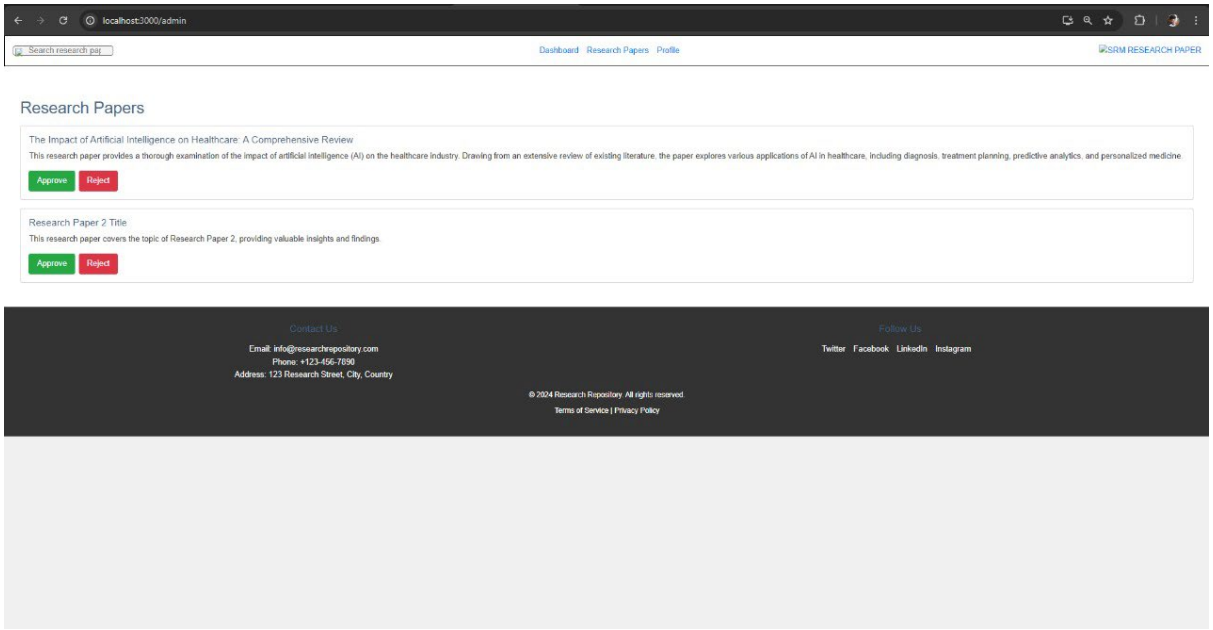
Teacher Dashboard:



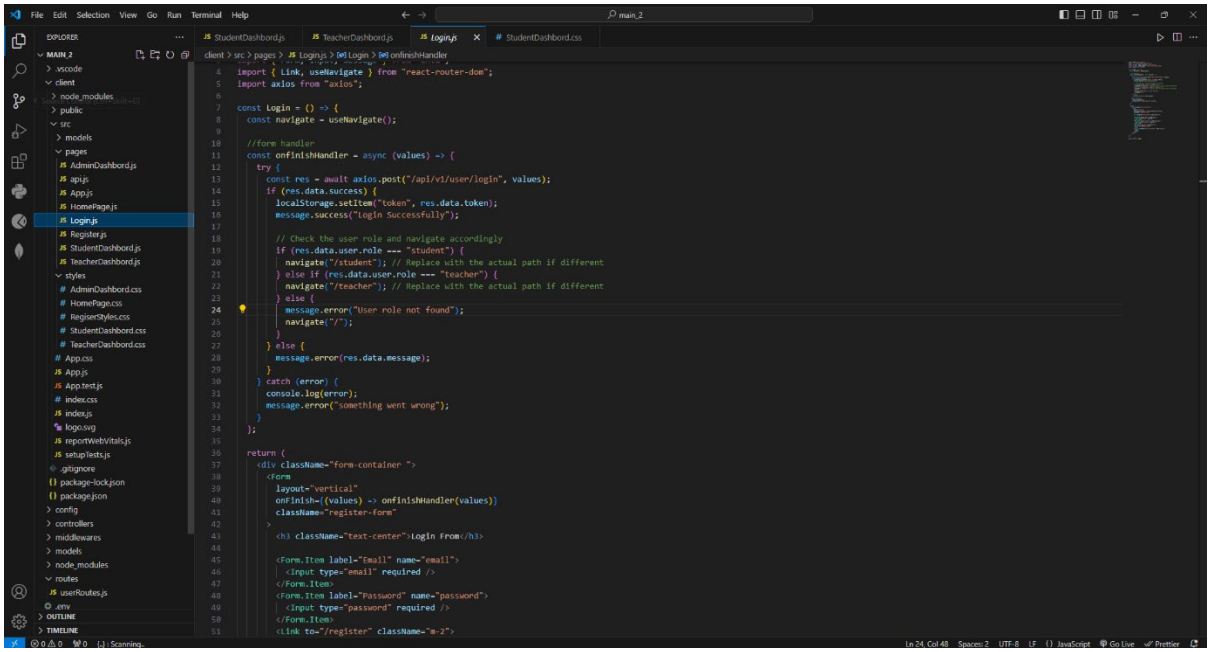
Student dashboard:



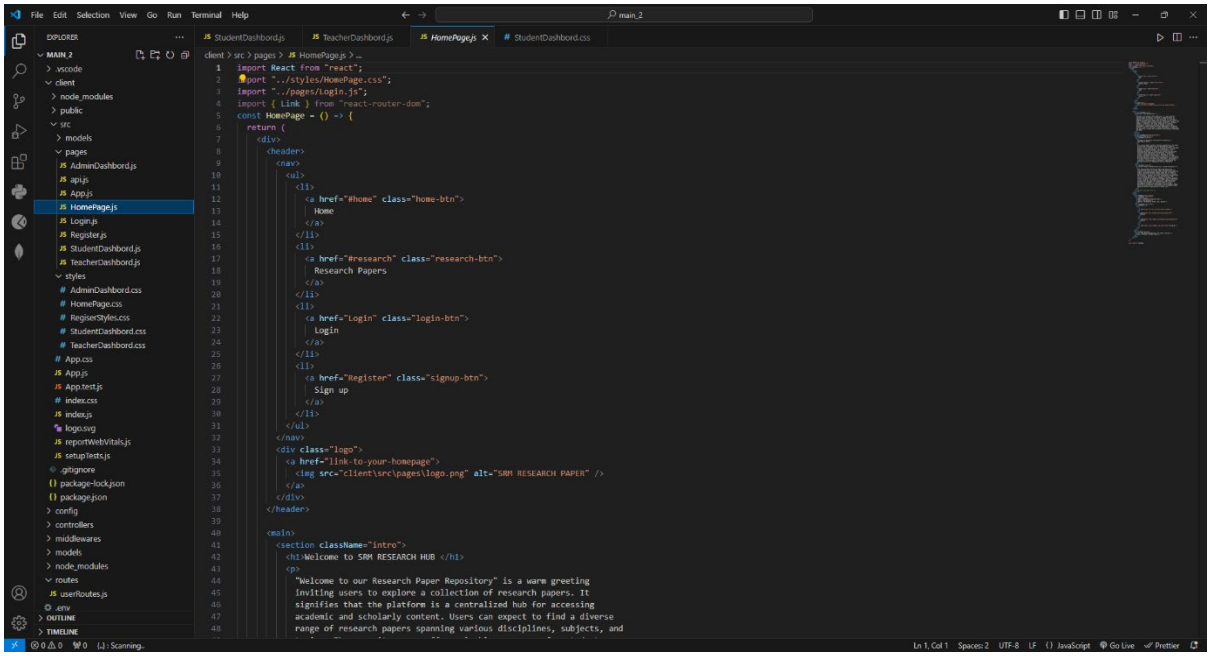
Admin Dashboard:



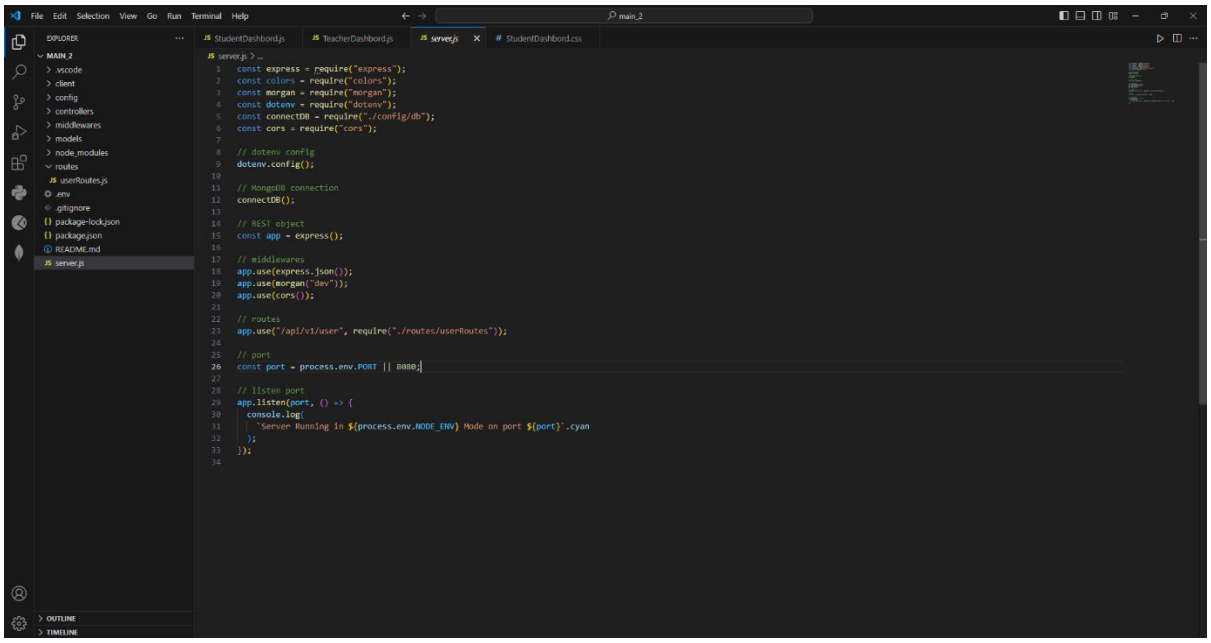
Code: --



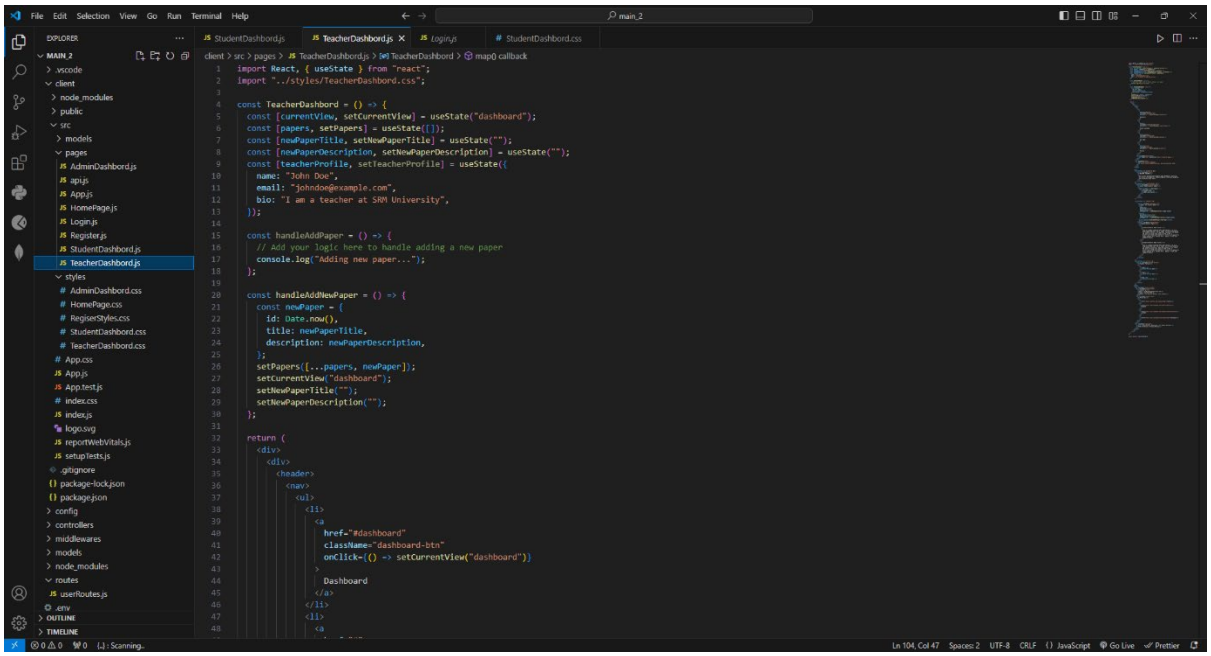
```
import { Link, useNavigate } from "react-router-dom";
import axios from "axios";

const Login = () => {
  const navigate = useNavigate();

  //form handler
  const onFinishHandler = async (values) => {
    try {
      const res = await axios.post("/api/v1/user/login", values);
      if (res.data.success) {
        localStorage.setItem("token", res.data.token);
        message.success("Login Successfully");

        // Check the user role and navigate accordingly
        if (res.data.user.role === "student") {
          navigate("/student"); // Replace with the actual path if different
        } else if (res.data.user.role === "teacher") {
          navigate("/teacher"); // Replace with the actual path if different
        } else {
          message.error("User role not found");
          navigate("/");
        }
      } else {
        message.error(res.data.message);
      }
    } catch (error) {
      console.log(error);
      message.error("something went wrong");
    }
  };

  return (
    <div className="form-container ">
      <Form
        layout="vertical"
        onFinish={(values) => onFinishHandler(values)}
        className="register-form"
      >
        <h3 className="text-center">Login From</h3>

        <Form.Item label="Email" name="email">
          <Input type="email" required />
        </Form.Item>
        <Form.Item label="Password" name="password">
          <Input type="password" required />
        </Form.Item>
        <Link to="/register" className="m-2">
```



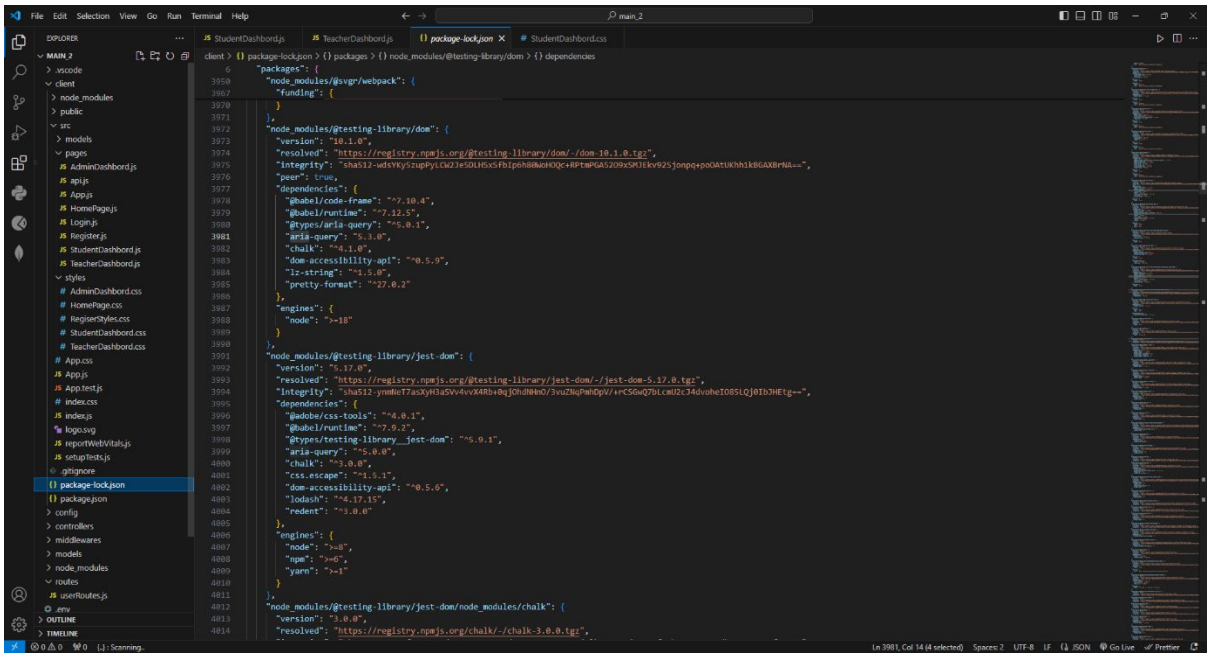
```
import React from "react";
import "../styles/HomePage.css";
import "../pages/Login.js";
import { Link } from "react-router-dom";
const HomePage = () => {
  return (
    <div>
      <header>
        <nav>
          <ul>
            <li>
              <a href="#home" class="home-btn">
                Home
              </a>
            </li>
            <li>
              <a href="#research" class="research-btn">
                Research Papers
              </a>
            </li>
            <li>
              <a href="Login" class="login-btn">
                Login
              </a>
            </li>
            <li>
              <a href="Register" class="signup-btn">
                Sign up
              </a>
            </li>
          </ul>
        </nav>
        <div class="logo">
          <a href="link-to-your-homepage">
            <img src="client\src\pages\logo.png" alt="SRM RESEARCH PAPER" />
          </a>
        </div>
      </header>

      <main>
        <section class="intro">
          <h1>Welcome to SRM RESEARCH HUB </h1>
          <p>
            "Welcome to our Research Paper Repository" is a warm greeting
            inviting users to explore a collection of research papers. It
            signifies that the platform is a centralized hub for accessing
            academic and scholarly content. Users can expect to find a diverse
            range of research papers spanning various disciplines, subjects, and
```

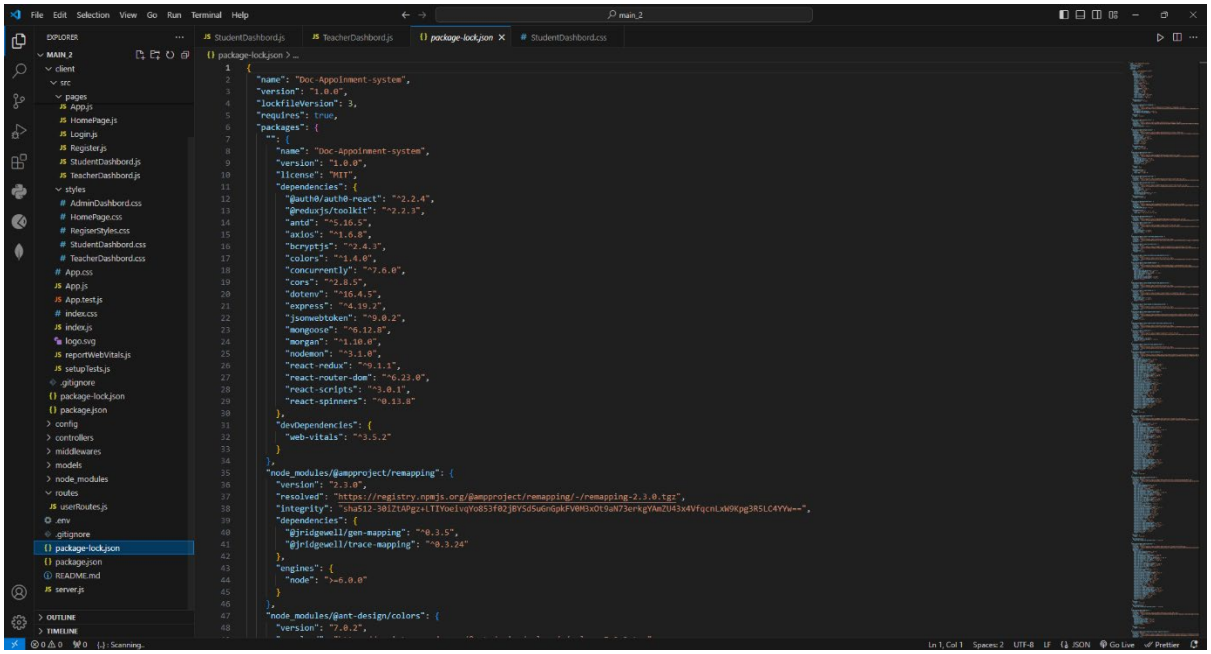


```
const express = require("express");
const colors = require("colors");
const morgan = require("morgan");
const dotenv = require("dotenv");
const connectDB = require("./config/db");
const cors = require("cors");

// dotenv config
dotenv.config();

// MongoDB connection
connectDB();

// REST object
const app = express();

// middlewares
app.use(express.json());
app.use(morgan("dev"));
app.use(cors());

// routes
app.use("/api/v1/user", require("./routes/userRoutes"));

// port
const port = process.env.PORT || 8080;

// listen port
app.listen(port, () => {
  console.log(
    `Server Running in ${process.env.NODE_ENV} Mode on port ${port}`.cyan
  );
});
```



```
import React, { useState } from "react";
import "../styles/TeacherDashbord.css";

const TeacherDashbord = () => {
  const [currentView, setCurrentView] = useState("dashboard");
  const [papers, setPapers] = useState([]);
  const [newPaperTitle, setNewPaperTitle] = useState("");
  const [newPaperDescription, setNewPaperDescription] = useState("");
  const [teacherProfile, setTeacherProfile] = useState({
    name: "John Doe",
    email: "johndoe@example.com",
    bio: "I am a teacher at SRM University",
  });

  const handleAddPaper = () => {
    // Add your logic here to handle adding a new paper
    console.log("Adding new paper...");
  };

  const handleAddNewPaper = () => {
    const newPaper = {
      id: Date.now(),
      title: newPaperTitle,
      description: newPaperDescription,
    };
    setPapers([...papers, newPaper]);
    setCurrentView("dashboard");
    setNewPaperTitle("");
    setNewPaperDescription("");
  };

  return (
    <div>
      <div>
        <header>
          <nav>
            <ul>
              <li>
                <a
                  href="#dashboard"
                  className="dashboard-btn"
                  onClick={() => setCurrentView("dashboard")}
                >
                  Dashboard
                </a>
              </li>
              <li>
                <a
```





Result:

Thus, the details of architectural design/framework/implementation along with the screenshots were provided.