Software Engineering and Project Management

LAB REPORT

Submitted by

Mukund Maheshwari [RA2011028010086]
Vaibhavi Tandon [RA2011028010087]
Karanam Jaya Vardhan [RA2011028010088]

Under the Guidance of

Dr. K. Deepa Thilak

In partial satisfaction of the requirements for the degree of

BACHELOR OF TECHNOLOGY
in
COMPUTER SCIENCE ENGINEERING

with specialization in Cloud Computing

SCHOOL OF COMPUTING

COLLEGE OF ENGINEERING AND TECHNOLOGY

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

KATTANKULATHUR - 603203

JUNE 2022

SRM INSTITUTION OF SCIENCE AND TECHNOLOGY
KATTANKULATHUR-603203

BONAFIDE CERTIFICATE

Certified that this lab report titled **"T!ding"** is the bonafide work done by Mukund Maheshwari [RA2011028010086], Vaibhavi Tandon [RA2011028010087] and Karanam Jaya Vardhan [RA2011028010088] who carried out the lab exercises under my supervision. Certified further, that to the best of my knowledge the work reported herein does not form part of any other work.

SIGNATURE

Dr. K. Deepa Thilak

SEPM – Course Faculty

Department of Networking and Communication

List Of Experiments

List Of Figures

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Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

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	Vaibhavi Tandon
Team Members	Mukund Maheshwari Karanam Jaya Vardhan
Register Number	RA201102810087 RA201102810086 RA201102810088
Date of Experiment	16-03-2022

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 ***TIDING.***

Team Members:

S. No	Register No	Name	Role
1	RA2011028010086	Mukund Maheshwari	Lead/Rep
2	RA2011028010087	Vaibhavi Tandon	Member
3	RA2011028010088	Karanam Jaya Vardhan	Member

ONE PAGE BUSINESS CASE TEMPLATE

DATE	16-03-2022
SUBMITTED BY	Vaibhavi Tandon (RA2011028010087) Mukund Maheshwari (RA2011028010086) Karanam Jaya Vardhan (RA2011028010088)
TITLE / ROLE	TIDING

THE PROJECT

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

- "***TIDING***" is going to be a forum-based website, where users can post their ideas, thoughts and questions.
- In our project "***TIDING***", we will provide a navigation bar, so that users can easily navigate and search for their ideas or queries in their respective field of interest.
- Users can basically create a post and edit, delete and comment on their own post after "**Sign in**".
- Other users can also comment, like, dislike and share other user's posts after Sign in. Users can also follow other user's account.

THE HISTORY

In bullet points, describe the current situation.

- Busy online discussion forums may cause **information overload** (A large volume of messages and advertisements can be overwhelming and hard to follow).
- Participants **may go off-topic** within a particular discussion thread.
- **Time lag** between commenting and receiving a response can be awfully long.
- **Poor UI** – Many forum sites have poor UI, which always confuses the users.

LIMITATIONS

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

- **Getting your forum off the ground**
  -The hardest task with any forum is to get it established. No-one is going to join or start contributing to an empty forum so, initially, it is up to you to create the topics and start posting.
- **Establishing the rules**
  -Well-run forums have clear rules about how members are expected to behave when posting. This usually requires them not to post things which are offensive or illegal, for example, using bad language, posting copyrighted images, or making defamatory comments.
- **Preventing spam**
  -Whilst many people use forums to find help or discuss things with others, there are some that use them for more selfish purposes.

APPROACH

List what is needed to complete the project.

- **PLANNING:**
  - What is the purpose of this website?
  - Who will use this website?
- **DESIGNING AND DEVELOPMENT:**
  - Design website layout and logo.
  - Developing website using HTML, CSS, JAVASCRIPT and NODE JS.
- **TESTING:**
  - After development we have to check whether site content is correct or not, and it is working properly.
- **LAST STEP (LAUNCHING AND MAINTENANCE):**
  - After testing, the last thing to do is launch the website and check maintenance.

BENEFITS

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

- **Organize information**
  It creates a central place for discussions to take place, which can be organized into categories and topics.
- **Group collaboration**
  It allows scores, hundreds, or even thousands of people to collaborate while remaining anonymous.
- **Monetization**
  People or organizations want to set up a platform where people can have discussions, post videos/photos/files, etc. that they can easily scale and make money from.
- **Convert prospects**
  An online forum is a great way to supplement your sales process. People can see the answers to commonly asked questions, ask new questions, see how active and engaged people are with the company, see how many other people love the product, etc..

Result

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

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Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	2
Title of Experiment	Identification of Process Methodology and Stakeholder Description
Name of the candidate	Vaibhavi Tandon
Team Members	Mukund Maheshwari Karanam Jaya Vardhan
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	16-03-2022

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:

Sl No	Register No	Name	Role
1	RA2011028010086	**Mukund Maheshwari**	**Rep/Member**
2	RA2011028010087	**Vaibhavi Tandon**	**Member**
3	RA2011028010088	**Karanam Jaya Vardhan**	**Member**

Project Title: ‘ *TIDING* ’

Project Methodology: R.A.D. Model

Why RAD Model?

- **High flexibility and adaptability:** Requirements can be changed at any time. The developers are able to make adjustments quickly during the development process.
- **More focus on development:** With a shorter planning phase, the team has more focus on iterative design construction and development.
- **Optimized team efficiency:** Thanks to RAD methodology you can divide the project down into more manageable tasks and measure the software more effectively.
- **Reduced development time and faster delivery:** The time between prototypes and iterations is shortened.
- **A focus on customer satisfaction:** RAD uses client feedback for further iterations and allows for high-level collaboration and coordination between investors.
- **Reduced risks:** Stakeholders can discuss and address code vulnerabilities while keeping development processes going.

Agile vs. R.A.D.

Agile	R.A.D.
The Agile model does not recommend developing prototypes but emphasizes the systematic development of each incremental feature at the end of each iteration.	The central theme of RAD is based on designing quick and dirty prototypes, which are then refined into production quality code.
Agile projects logically break down the solution into features that are incrementally developed and delivered.	The developers using the RAD model focus on developing all the features of an application by first doing it badly and then successively improving the code over time.
The Agile team only demonstrates completed work to the customer after each iteration.	Whereas RAD teams demonstrate to customers screen mockup and prototypes, that may be based on simplifications such as table lookup rather than actual computations.
The Agile model is not suitable for small projects as it is difficult to divide the project into small parts that can be incrementally developed.	When the company has not developed an almost similar type of project, then it is hard to use the RAD model as it is unable to reuse the existing code.

Stakeholder Name	Activity/ Area /Phase	Interest	Influence	Priority
Project leader	Distributing task/ Full-stack Developer(Both Frontend and Backend developer)	High	High	1
Project Manager/Project Designer	Frontend Developer (UI & UX designer). Designing of optimized web pages	High	High	1
Backend Developer	Responsible for testing and integration of the work done by the front end developers and maintenance of software programs	High	High	1
End user	Using the website	Medium	High	2

Result

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

Department Of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

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	VAIBHAVI TANDON (RA2011028010087)
Team Members	MUKUND MAHESHWARI (RA2011028010086) KARANAM JAYA VARDHAN (RA2011028010088)
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	30-03-2022

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	RA2011028010086	Mukund Maheshwari	Rep/Member
2	RA2011028010087	Vaibhavi Tandon	Member
3	RA2011028010088	Karanam Jaya Vardhan	Member

Project Title: ***Tiding***

System Requirements:

Requirement	Requirement Specification	Department	Name of business users	Status
IR1	Development Machine with 4 GB Ram and Quad core	Technical Team	All members	Pending
IR2	Code Repository - (GitHub)	Technical Team	All members	Pending
IR3	Cloud Storage - (AWS)	Technical Team	All members	Pending

Functional Requirements:

Requirement	Requirement Specification	Department	Name of Business User	Status
FR1	Registration The site should allow the users to create a new user id or login through their existing user id.	Deployment	Mukund Maheshwari	Pending
FR2	Tracking The site should display user recent activities on the site i.e., their search history, recent comments/ posts , etc.	Deployment	Vaibhavi Tandon	Pending
FR3	Comments The site should allow the users to comment /reply to other user's post.	Deployment	Jaya Vardhan	Pending
FR4	The site should have a feedback/report system so that users can review their experience traveling with us.	Deployment	Jaya Vardhan	Pending
FR5	The site should allow the users to make changes in their user id.	Deployment	Mukund Maheshwari	Pending

Non-Functional Requirements:

Requirement	Category of NFR	Requirement Specification	Department Name of Business User	Status
NFR1	Performance	The site should load fast enough i.e., less than 3 seconds	All members	Pending
NFR2	Availability	The site should be available all the time i.e., 24X7.	All members	Pending
NFR3	Usability	The site layout should be user friendly, and users should be able to navigate through the site easily.	All members	Pending
NFR4	Usability	The site should have contrasting color, graphics and fonts.	All members	Pending
NFR5	Performance	The site response time should be minimum i.e., less than 7 seconds.	All members	Pending
NFR6	Security	The site should keep user personal data safe.	All members	Pending
NFR7	Scalability	Service should scale to serve 1000 requests per second over 5 minutes timespan.	All members	Pending

Result

Thus the requirements were identified and accordingly described.

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Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

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	VAIBHAVI TANDON
Team Members	MUKUND MAHESHWARI KARANAM JAYA VARDHAN
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	31-03-2022

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	RA2011028010086	MUKUND MAHESHWARI	**Lead**
2	RA2011028010087	VAIBHAVI TANDON	**Member**
3	RA2011028010088	KARANAM JAYA VARDHAN	**Member**

1. Project Management Plan

Describe the key issues driving the project.

Focus Area	Details
Integration Management	Project Team Structure: Roles & Responsibilities of Team: project sponsor, project manager, developer, technical expert, tester. Backend Integration: Mukund Maheshwari, Karanam Jaya Vardhan Frontend Integration: Vaibhavi tandon Change Management: Change Control, Issue Management Project Closure: Handing over the complete software to the customer and acquiring their feedback
Scope Management	Scope Statement: We aim to deliver a system to let people share their ideas and experience with each other. Requirement Management: Involve gathering requirements and documentation, process control, and communication with stakeholders. Time Period: 14-15 weeks

Schedule Management	Define Milestones Milestones are: 1. Resource Gathering: 1 Week 2. Gathering adequate workforce: 3 Weeks 3. Project Development: 7-8 Weeks 4. Testing and Integration: 2 weeks 5. deployment: 1 Week Schedule Control by the project manager to ensure each activity is on time
Cost Management	Estimate Effort: 47 Hours Assign Team: about 15 hours/ week per member Budget Control: Budget is estimated to be of 68,00,000 INR

2. Estimation

2.1. Effort and Cost Estimation

Activity Description	Sub-Task	Sub-Task Description	Effort (in hours)	Number of people	Cost in INR
Design the user screen	**E1R1A1T1 (Effort-Requirement-Activity-Task)**	Confirm the user requirements (acceptance criteria)	10	2	10,000
	E1R1A1T2	Making users site for users	10	4	20,000
	E1R1A1T3	Making dashboard for admin	15	3	22,500
Making a system and connecting it with the database	**E1R1A2T1**	Ensuring the data which is uploaded correctly	18	4	36,000
	E1R1A2T2	Confirm user is able a add or receive data	22	2	22,000

Effort (hr)	Cost (INR)
1	500

2.2. Infrastructure/Resource Cost [CapEx]

Infrastructure Requirement	Qty	Cost per qty	Cost per item
IR1 Computer system and internet facility	5	70,000	3,50,000
IR2 Firewall and data security tools	3	10,000	30,000
IR3(AWS)	2	50,000	1,00,000

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	20,00,000	60,00,000
License	**Operating System** **Database** **Middleware** **IDE**	10	10,000	1,00,000
Infrastructures	**Server, Storage, Cloud and Network**	Depends on demand	Pay as you go	-

3. Project Team Formation

3.1. Identification Team members

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

3.2. Responsibility Assignment Matrix

RACI Matrix	Team Members			
Activity	**JAYA VARDHAN KARANAM(BA)**	**VAIBHAVI TANDON (Developer)**	**MUKUND MAHESHWARI (Project Manager)**	**MUKUND MAHESHWARI (Key Business User)**
User Requirement Documentation	A	C/I	I	R
Market Research	R	C	A	I
Advertising	R	A	A	I
Design	A	R	R	I
Story Boarding	A	A	R	I
Funding	R	R	R	I
Production	A	R	A	I
Distribution	C	R	R	A

A	Accountable
R	Responsible
C	Consult
I	Inform

Result:

Thus, the Project Plan was documented successfully.

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Department of Networking and Communications

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

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	VAIBHAVI TANDON
Team Members	MUKUND MAHESHWARI KARANAM JAYA VARDHAN
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	07-04-2022

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	**RA2011028010086**	MUKUND MAHESHWARI	**Rep**
2	**RA2011028010087**	VAIBHAVI TANDON	**Member**
3	**RA2011028010088**	KARANAM JAYA VARDHAN	**Member**

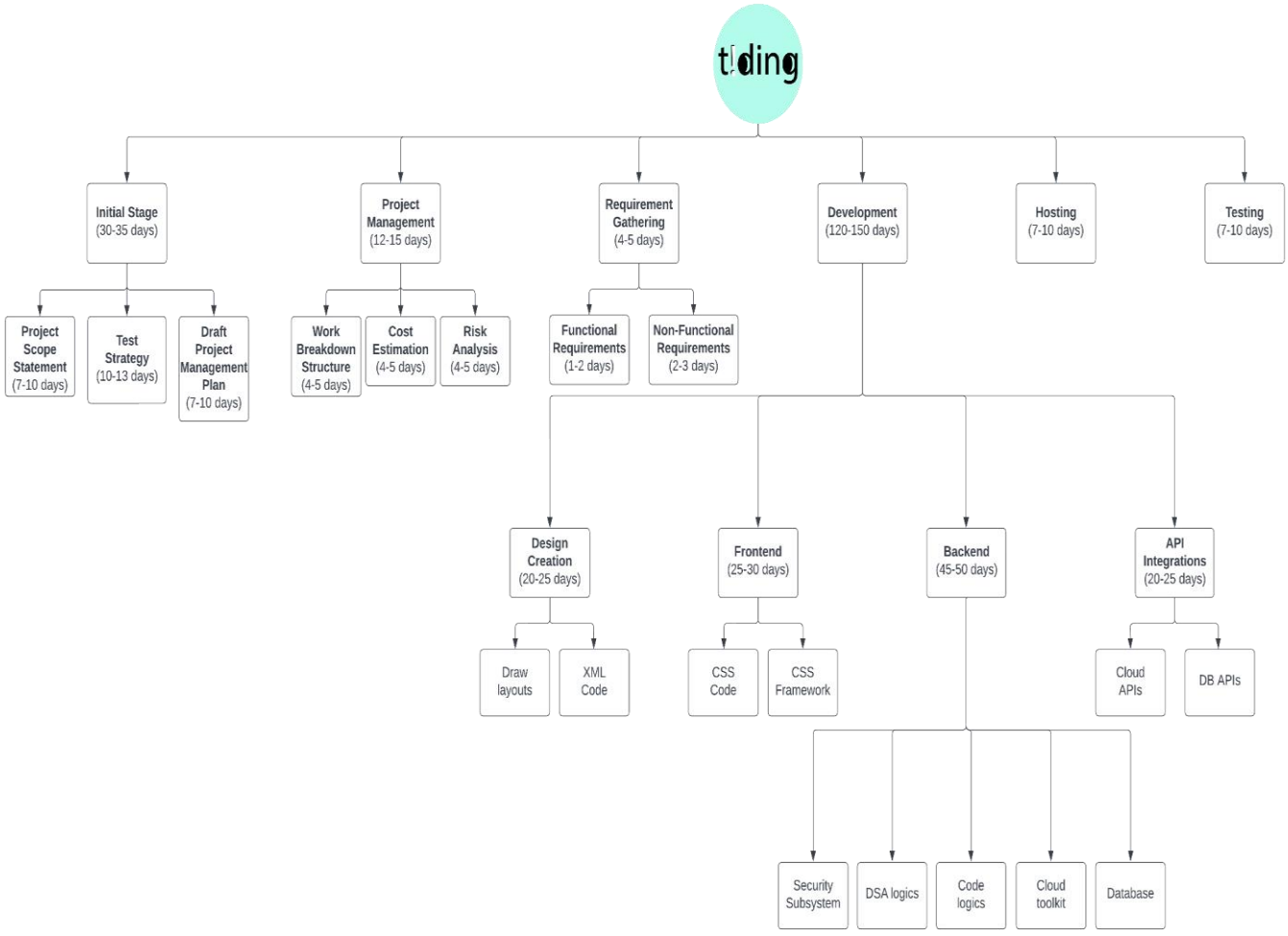

Figure 5.1 Work breakdown structure

1. Initial Stage

1.1 *Project Scope Statement*
1.2 *Test Strategy*
1.3 *Draft Project Management Plan*

2. Project Management

2.1 *Work Breakdown Structure*
2.2 *Cost estimation*
2.3 *Risk Analysis*

3. Requirement Gathering

3.1 *Functional Requirement*
3.2 *Non Functional Requirement*

4. Development

4.1 Design creation

4.1.1 *Figma*
4.1.2 *XML*

4.2 Front-End Development

4.2.1 *HTML, CSS, JavaScript*
4.2.2 *Bootstrap*

4.3 Back End Development

4.3.1 *Security Subsystems*
4.3.2 *Java*
4.3.3 *C++*
4.3.4 *AWS SDKs*
4.3.5 *MongoDB*

4.4 API Integrations

4.4.1 *AWS API*
4.4.2 *JSON*

5. Hosting

6. Testing

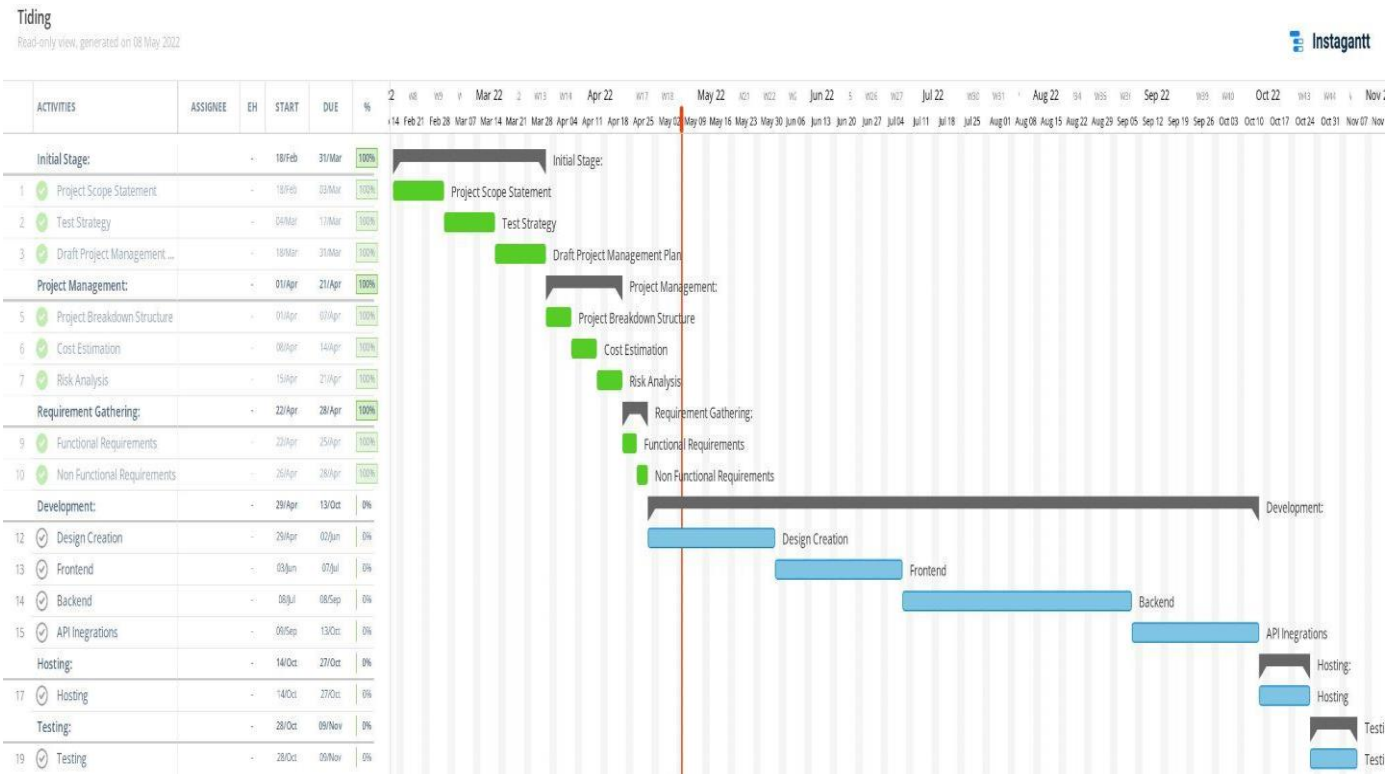

Figure 5.2 Gantt chart

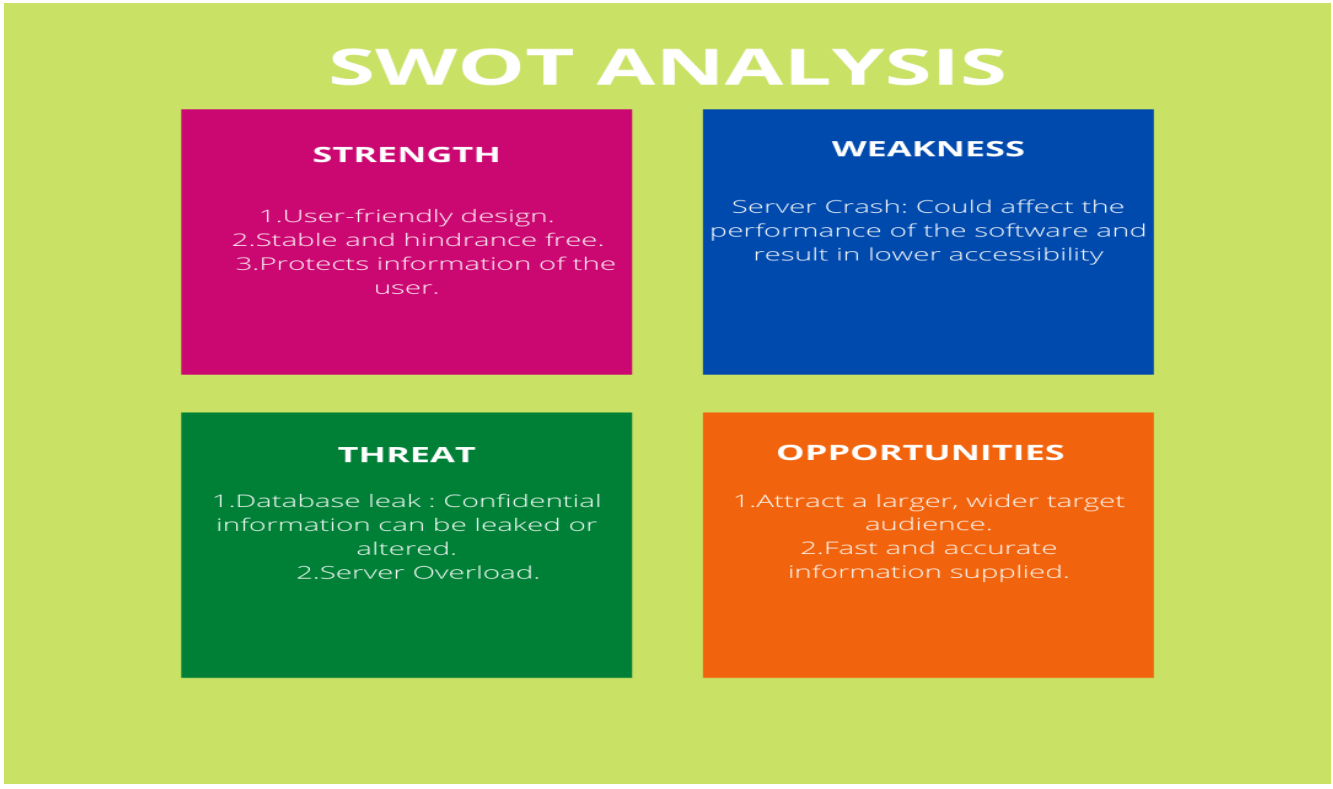

Figure 5.3 SWOT Analysis

Response	Action	Example
Avoid	●Prevent server overload by providing only limited number of users access at a time	● Reviewing the schedule. ● Check industry standards at every step. ● Test the website on various hardware and check the output and smoothness.
Transfer	● Security framework	● Integration of firewalls and other security frameworks.
Mitigate	● Deleting the database of a particular user if a breach is found.	● In the case of a DB breach, delete data.
Accept	● Encrypting the data and verification of user before giving access to data	● Buying servers in advance for un- forecasted events is not feasible for small-scale projects.

Risks	Impact
Extending deadlines	3
Losing functionality and smoothness.	2
Writing codes that low-level systems can not handle.	2
Security framework	1
Deleting the database of a particular user if a breach is found	2
Shortage of server space and cloud storage	1

Result:

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

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SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

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	Vaibhavi Tandon (RA2011028010087)
Team Members	Mukund Maheshwari Karanam Jaya Vardhan
Register Number	RA2011028010086 RA2011028010088
Date of Experiment	18-04-2022

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	RA2011028010086	Mukund Maheshwari	**Rep**
2	RA2011028010087	Vaibhavi Tandon	**Member**
3	RA2011028010088	Karanam Jaya Vardhan	**Member**

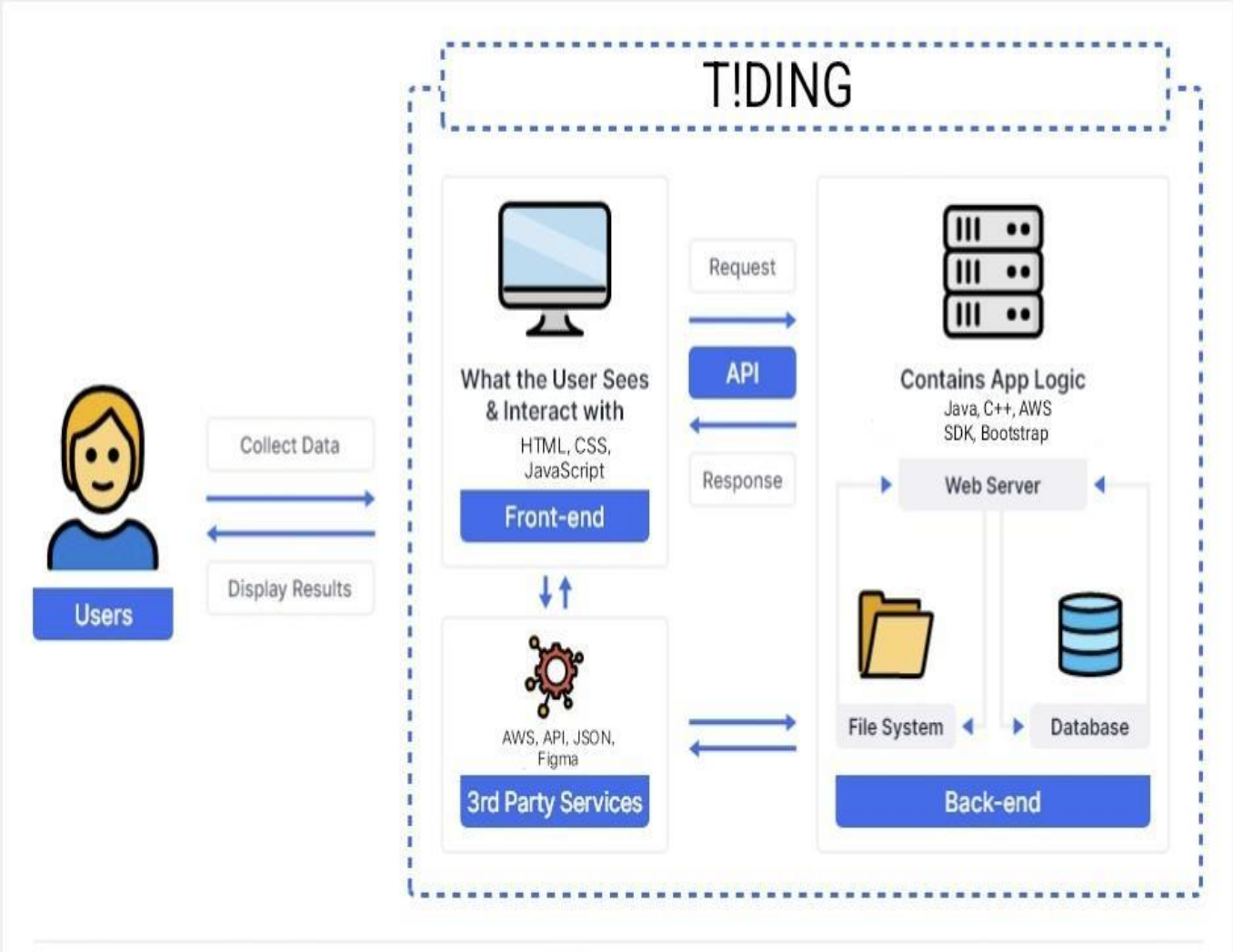

Figure 6.1 SYSTEM ARCHITECTURE DIAGRAM

Figure 6.2 USE CASE DIAGRAM

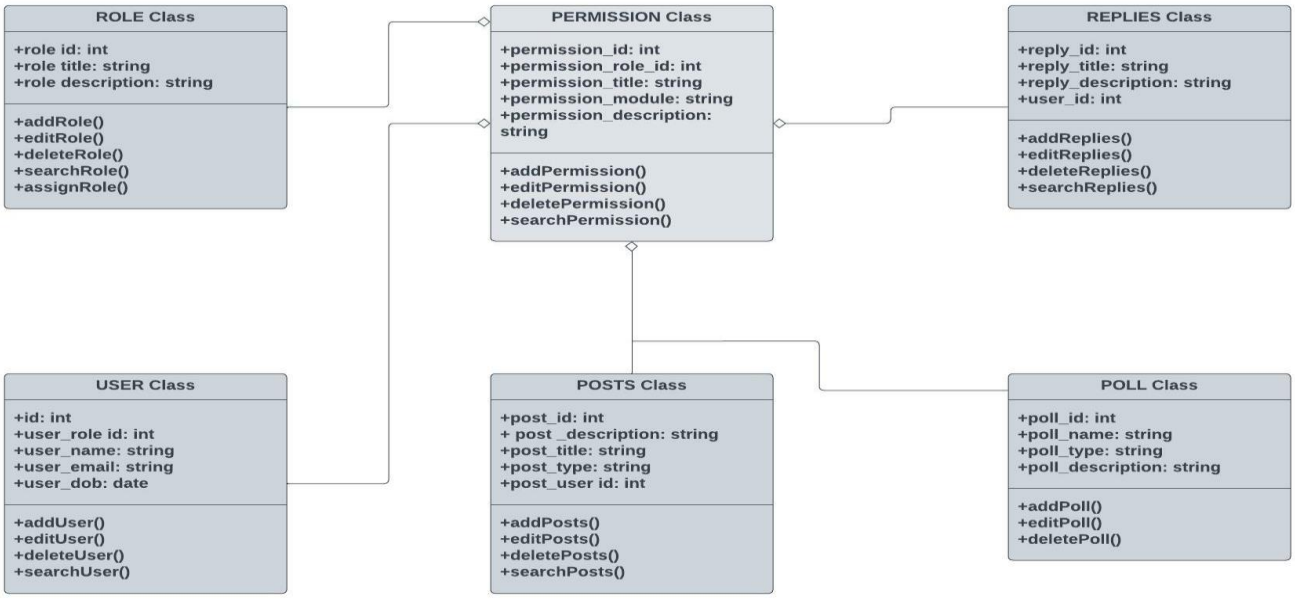

Figure 6.3 CLASS DIAGRAM

Result:

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

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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	7
Title of Experiment	Design a Entity relationship diagram
Name of the candidate	Vaibhavi Tandon (RA2011028010087)
Team Members	Mukund Maheshwari Karanam Jaya Vardhan
Register Number	RA2011028010086 RA2011028010088
Date of Experiment	18-04-2022

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	RA2011028010086	Mukund Maheshwari	**Rep**
2	RA2011028010087	Vaibhavi Tandon	**Member**
3	RA2011028010088	Karanam Jaya Vardhan	**Member**

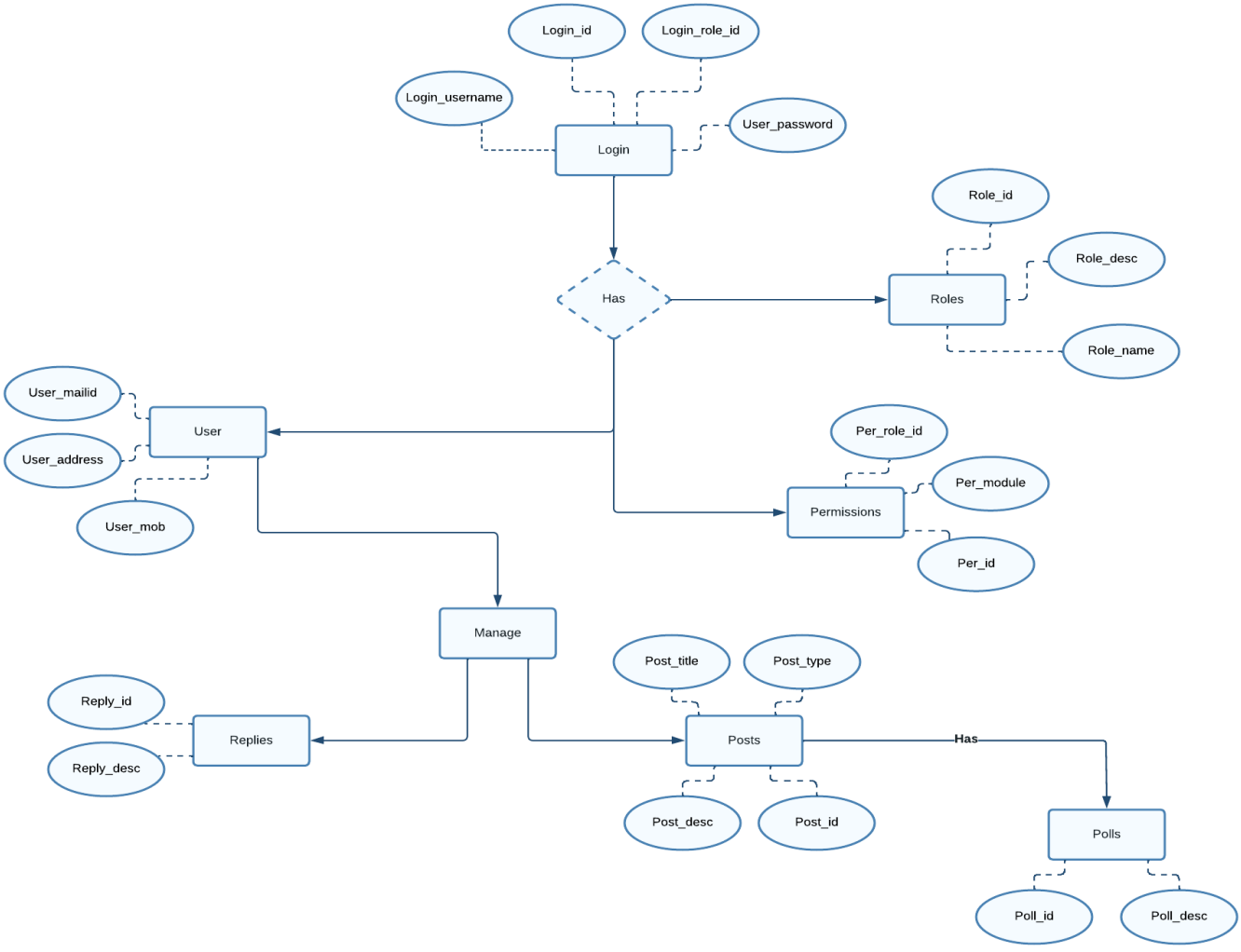

Figure 7.1 ER Diagram

Result:

Thus, the entity relationship diagram was created successfully.

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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

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	Vaibhavi Tandon (RA2011028010087)
Team Members	Mukund Maheshwari Karanam Jaya Vardhan
Register Number	RA2011028010086 RA2011028010088
Date of Experiment	25-04-2022

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 <project name>

Team Members:

S No	Register No	Name	Role
1	RA2011028010086	Mukund Maheshwari	**Rep**
2	RA2011028010087	Vaibhavi Tandon	**Member**
3	RA2011028010088	Karanam Jaya Vardhan	**Member**

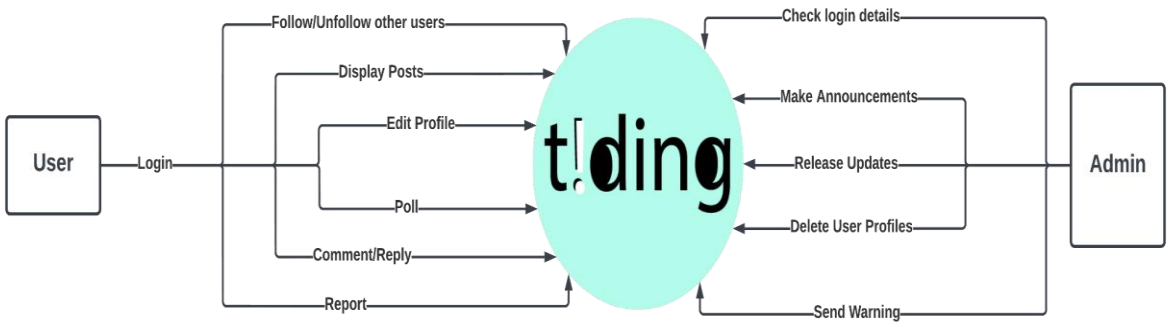

Figure 8.1 DFD Level 0

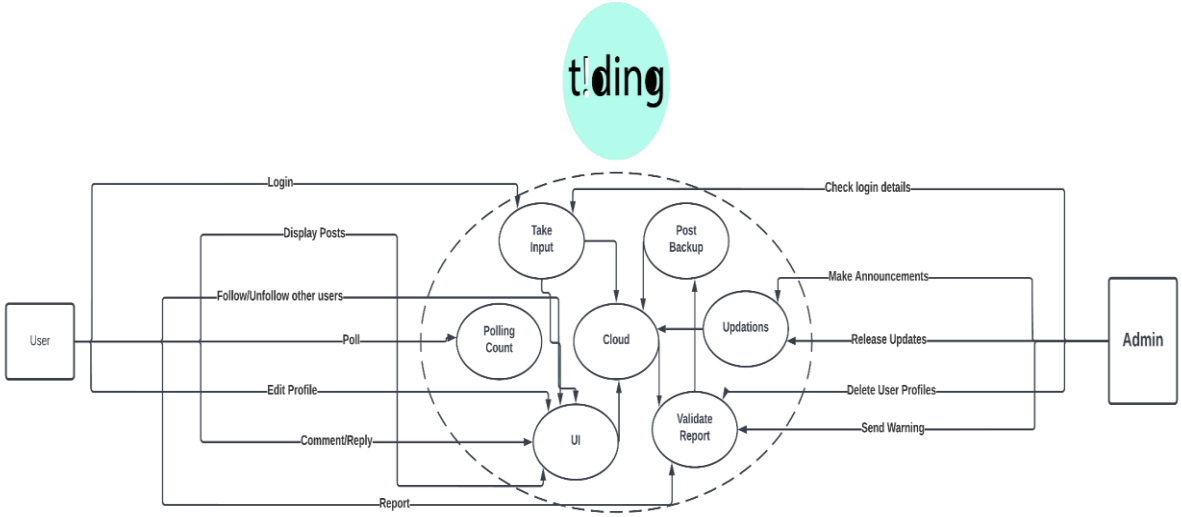

Figure 8.2 DFD Level 1

Result: Thus, the data flow diagrams have been created for the **T!DING**.

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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	9
Title of Experiment	Design a Sequence and Collaboration Diagram
Name of the candidate	VAIBHAVI TANDON
Team Members	MUKUND MAHESHWARI KARANAM JAYA VARDHAN
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	10-05-2022

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 T!ding.

Team Members:

S No	Register No	Name	Role
1	**RA2011028010086**	MUKUND MAHESHWARI	**Rep/Member**
2	**RA2011028010087**	VAIBHAVI TANDON	**Member**
3	**RA2011028010088**	KARANAM JAYA VARDHAN	**Member**

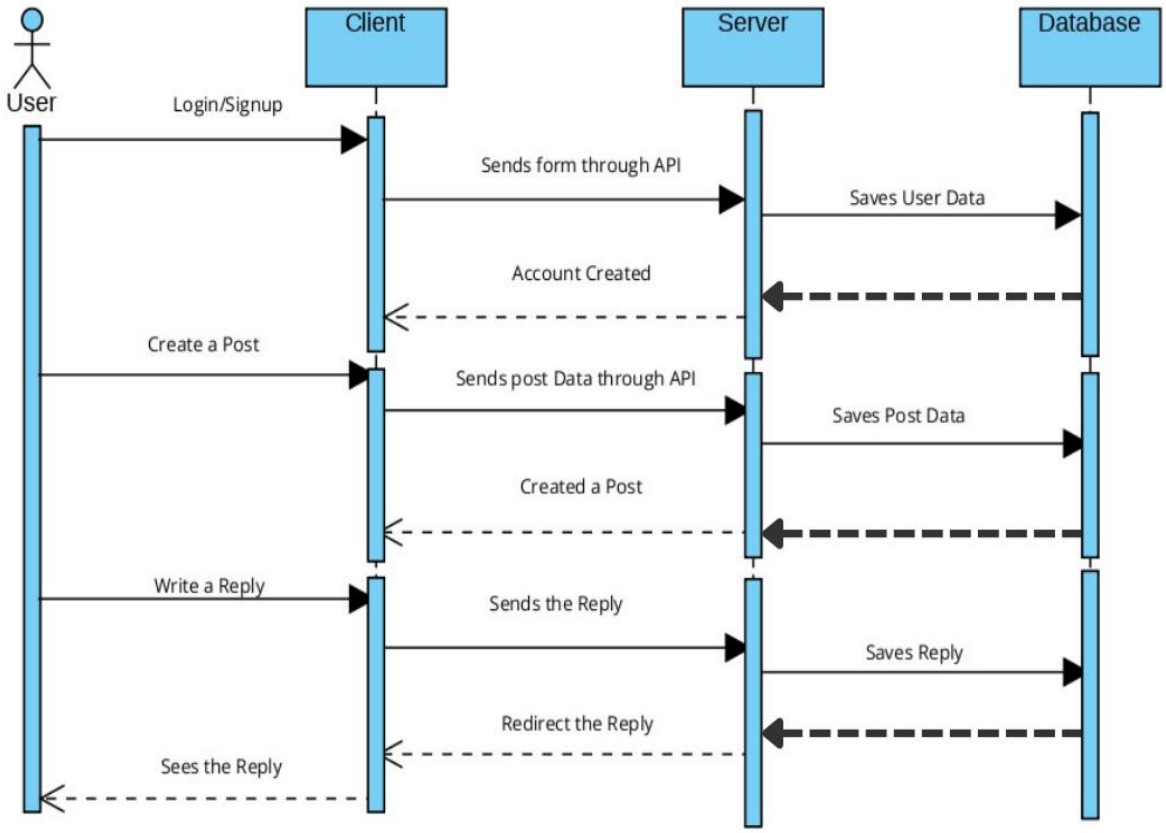

Figure 9.1 Sequence Diagram

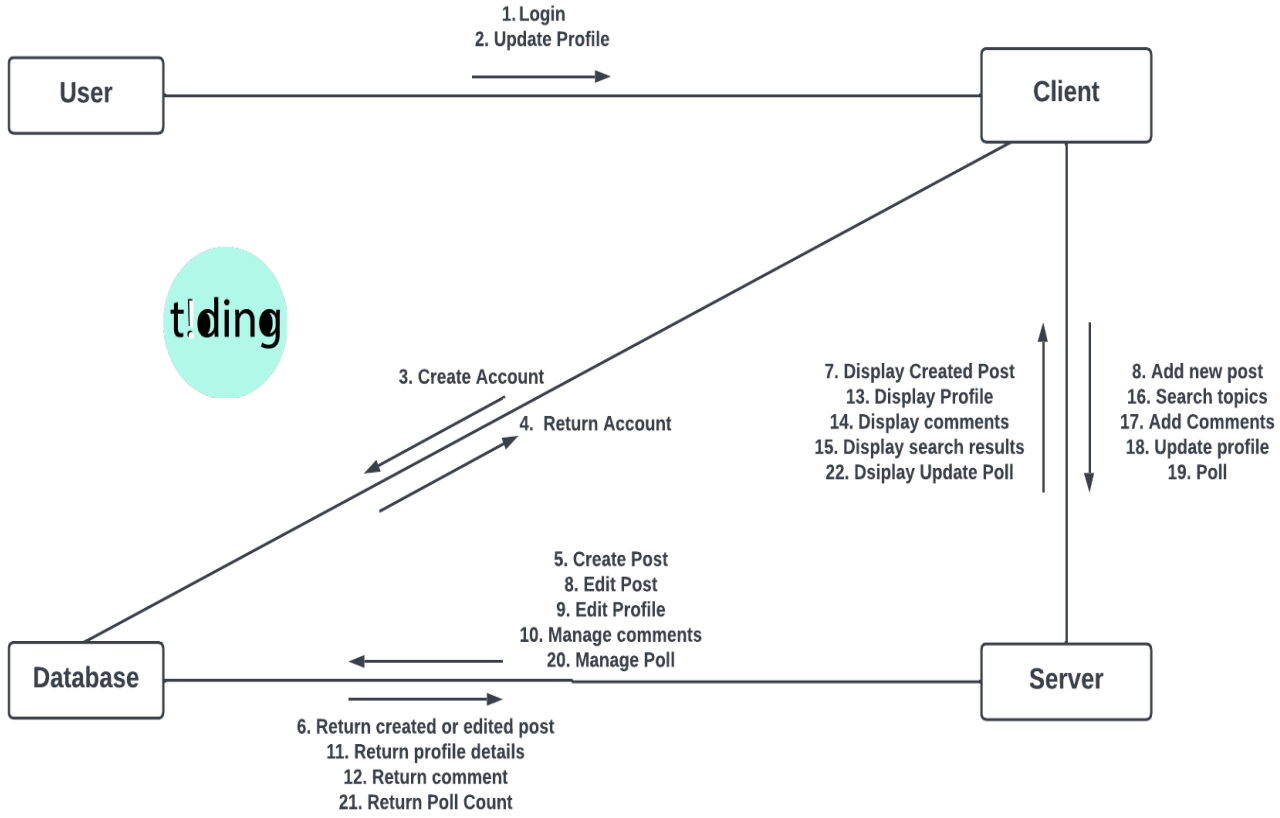

Figure 9.2 Collaboration Diagram

Result:

Thus, the sequence and collaboration diagrams were created for the T!ding.

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School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	10
Title of Experiment	Develop a Testing Framework/User Interface
Name of the candidate	VAIBHAVI TANDON
Team Members	MUKUND MAHESHWARI KARANAM JAYA VARDHAN
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	17-05-2022

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 T!iding.

Team Members:

S No	Register No	Name	Role
1	**RA2011028010086**	MUKUND MAHESHWARI	**Rep/Member**
2	**RA2011028010087**	VAIBHAVI TANDON	**Member**
3	**RA2011028010088**	KARANAM JAYA VARDHAN	**Member**

Test Plan

We as a team have decided that the testing will follow a sequential approach, as it goes well with the RAD method of software development. We will 1st go through components, then test the archetype and then other minute details. After completing the functional testing, we will move on to the testing of NFR (Non-functional requirements)

Scope of Testing

Functional Testing:

Testing is done on these 4 stages/steps-

- **Unit testing**- Unit testing is the first level of testing and will be performed by the developers themselves. It is the process of ensuring individual components of a piece of software at the code level are functional and work as they were designed to.

- **Integration testing**- After each unit is thoroughly tested, it is integrated with other units to create modules or components that are designed to perform specific tasks or activities.

- **System testing**- System testing is a black box testing method used to evaluate the completed and integrated system, as a whole, to ensure it meets specified requirements

- **Acceptance testing**- Acceptance testing is the last phase of functional testing and is used to assess whether or not the final piece of software is ready for delivery.

Non- Functional Testing:

- **Performance testing-** is a non-functional testing technique used to determine how an application will behave under various conditions.

- **Security testing -** With the presence of cloud-based testing platforms and cyber-attacks, there is a growing concern and need for the security of data being used and stored in software. Security testing is a non-functional software testing technique used to determine if the information and data in a system is protected.

- **Usability testing-** Usability testing is a testing method that measures an application's ease-of-use from the end-user perspective and is often performed during the system or acceptance testing stages.

- **Compatibility testing-** Compatibility testing is used to gauge how an application or piece of software will work in different environments

Types of Testing, Methodology, Tools

Category	Methodology	Tools Required
Functional Requirements	● Manual	● Selenium ● TestComplete ● Watir
Non-functional Requirements	● Manual ● User/Crowd Validation	● Selenium ● JMeter ● Neoload

Result:

Thus, the testing framework/user interface framework has been created for the T!ding.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	11
Title of Experiment	Test Cases
Name of the candidate	VAIBHAVI TANDON
Team Members	MUKUND MAHESHWARI KARANAM JAYA VARDHAN
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	24-05-2022

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 T!ding.

Team Members:

S No	Register No	Name	Role
1	**RA2011028010086**	MUKUND MAHESHWARI	**Lead**
2	**RA2011028010087**	VAIBHAVI TANDON	**Member**
3	**RA2011028010088**	KARANAM JAYA VARDHAN	**Member**

Test Case

Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
TD_FTC_01	Verify user registration	Accept valid email id	1. User clicks on signup with gmail 2. Chooses valid Gmail Id and clicks sign up	Users should be taken to the next screen when the email ID is valid	Users should be taken to the home screen for further application	PASS	SUCCESS
TD_FTC_02	Username unique while registering.	Username is unique.	1.Open user registration page. 2.Fill out the details in the registration page	If the username is unique there should be no pop up indicating that the username already exists.	If the username is unique there should be no pop up indicating that the username already exists.	PASS	SUCCESS
TD_FTC_03	Username unique while registering.	Username is not unique.	1. Open user registration page. 2.Fill out the details in the registration page.	If the username is not unique there should be a pop up indicating that the username already exists.	If the username is not unique there should be a pop up indicating that the username already exists.	FAIL	SUCCESS

TD_FTC_04	Length of the password should be at least 5 characters while registering.	Length of the password is 0 characters.	1.Open user registration page. 2.Fill out the details in the registration page.	If the password length is 0 after clicking the submit button there should be a pop up indicating that password length should be at least 5 characters.	If the password length is 0 after clicking the submit button there should be a pop up indicating that password length should be at least 5 characters.	FAIL	SUCCESS
TD_FTC_05	Length of the password should be at least 5 characters while registering.	Length of the password is 4 characters.	1.Open user registration page. 2.Fill out the details in the registration page.	If the password length is 4 after clicking the submit button there should be a pop up indicating that password length should be at least 5 characters.	If the password length is 4 after clicking the submit button there should be a pop up indicating that password length should be at least 5 characters.	FAIL	SUCCESS
TD_FTC_06	Length of the password should be at least 5 characters while registering.	Length of the password is 5 characters.	1.Open user registration page. 2.Fill out the details in the registration page.	If the password length is 5 after clicking the submit button there should not be a pop up indicating that password length should be at least 5 characters	If the password length is 5 after clicking the submit button there should not be a pop up indicating that password length should be at least 5 characters.	PASS	SUCCESS
TD_FTC_07	If an already existing user enters with username and password	Accept valid user credentials	1. User will go to the homepage where the user can see all the questions and categories	Users can choose their category	Users can view the questions posted by other users	PASS	SUCCESS

TD_FTC_08	If an already existing user enters with username and password	If the user enters invalid username.	1.Open user login page. 2.Fill out the details in the login page.	There should be a pop up indicating that the username does not exist.	There should be a pop up indicating that the username does not exist.	FAIL	SUCCESS
TD_FTC_09	If an already existing user enters with username and password	If the user enters a valid username but incorrect password.	1.Open user login page. 2.Fill out the details in the login page.	There should be a pop up indicating that the password is incorrect.	There should be a pop up indicating that the password is incorrect.	FAIL	SUCCESS
TD_FTC_10	User entering the homepage of the site for posting question or answer	To check whether the post is created successfully	User will go to home page where user can see all the questions and categories	User clicks on the post question key	Question posted successfully on users profile	PASS	SUCCESS
TD_FTC_11	User entering the site to edit, if needed	To check if the post is edited succesfully	User clicks on the edit key to edit the question	Users should be taken to the next screen where users can edit their question	Users can view their edited post on their profile	PASS	SUCCESS
TD_FTC_12	Users enter the site to comment on a post.	To check whether the comment is posted.	User clicks on title of the question to comment (answer or ask a query)	Users will be taken to the next page with an option to edit the (answer/query).	Answer/query is successfully edited.	PASS	SUCCESS
TD_FTC_13	User entering the site to poll on any post.	To test whether the poll result is updated in the database or not.	1. User clicks on the poll icon on a particular question or answer. 2. A new page opens, where the user has an option to upvote.	The vote is updated and the question or answer with maximum vote shows on top of the feed.	Poll update successfull.	PASS	SUCCESS

Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
TD_ NFT C_01	Load Test	Server overloads with users	Innumerable users join the application and crash server	Server should upgrade on its own and run seamlessly	Dynamic update on the firebase server	PASS	SUCCESS
TD_ NFT C_02	Network Test	Bad network causes application to run slow	User has a bad network and tries use the application	The application will run slowly and the performance will decrease PASS SUCCESS	Slow response from the application	PASS	SUCCESS
TD_ NFT C_03	UI/UX fluctuatio n	Frontend glitches	User browser and devices issues and front-end glitches	The frontend should not glitch	The frontend will not glitch	PASS	SUCCESS

Result:

Thus, the test case manual has been created for the T!ding.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	12
Title of Experiment	Manual Test Case Reporting and Architecture Design/Framework/Implementation
Name of the candidate	VAIBHAVI TANDON
Team Members	MUKUND MAHESHWARI KARANAM JAYA VARDHAN
Register Number	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	31-05-2022

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 and architectural design for the T!ding.

Team Members:

S No	Register No	Name	Role
1	**RA2011028010086**	MUKUND MAHESHWARI	**Rep**
2	**RA2011028010087**	VAIBHAVI TANDON	**Member**
3	**RA2011028010088**	KARANAM JAYA VARDHAN	**Member**

Summarize the current status of the Testing

The implementation of module 1 and module 2 which includes user verification, login and posting is in-progress. Module 3 is yet to be started.

Present obstacles to proceed further

The obstacles we are facing and obstacles we might face while implementing our functionalities are as follows: -

1. **Integration:** The challenging factors associated with this are inconsistency in the environment, infrastructure, interaction model used, performance and reliability issues etc. The Numerous Application Usage Paths, Intranet versus Internet based Applications used by end users will lead to the inconsistency issues.
2. **Interoperability:** Diverse information paths, smooth data retrieval and operating system compatibility are the most critical challenging factors associated with interoperability testing. The end users may use different types of browsers to access the application. Even on similar browsers, applications may be rendered differently based on the Screen resolution/Hardware/Software Configuration. These are some main interoperability issues.
3. **Performance:** Performance testing checks how fast a given input can be converted into an output. The main challenges faced in performance testing of web applications are in situations when large applications have to be tested with minimal hardware support, capability of the system to handle bulk data under various test bottleneck criterions.
4. **Usability:** Web-based applications present usability challenges that we don't often see in other types of designs. These challenges include scalability, interactivity, comprehension, issues that arise when frequent changes are made to the application etc.

5. **Security:** Security testing checks how well the system saves itself from security attacks and how the confidentiality of the data is maintained with the site. The main challenges are with the cross site scripting, executing the malicious file, insecure communications, injection flaws, use of different authentication procedures for a single application with a myriad of services etc.
6. **Expectations Vs. Reality:** Unit tests a critical component in the development cycle. Developers get information on code execution. They can also get insights on metrics on statement execution. Many developers place a lot of trust in the quality of the code. They may miss errors or testing requirements without even knowing it is happening.

7. **UI Testing Challenges:** User interface (UI) testing ensures effective website performance. Automation covers test executions resulting in better test averages. The teams ensure that the apps meet developmental and design specifications. The expectation is a website that is easy to use and responsive.

8. **Team Collaboration:** A typical team comprises developers, test automation engineers, and conventional testers. And, of course. We can't leave out the final consumer of the product. Managing communication, collaboration, and planning can be a significant challenge. Team leaders have an uphill task of bringing everyone together. Laying down proper procedures is one of the first things. Everyone must understand their roles within the development cycle. It is also crucial that everyone has a voice and is an active part of the process.

Seek help from stakeholders to remove obstacles/constraints:-

1. The overall process planning and timing should be organized so that no time and cost based issues appear.

2. A prior plan and methodology for test data generation should be at hand.

3. Maintenance of the SQL queries and their continuous updating is a significant part of the overall testing process which should be part of the overall test strategy.

4. Clear goals help testers create and execute result-oriented test cases and deliver products on time.

5. Complete documentation will serve as a baseline for QA teams throughout the project lifecycle. It will also help QAs understand expected product outcomes and build the most relevant tests.

6. Teams must plan and prioritize their test cases. One must also evaluate which tests require automation and which tests need to be executed manually.

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

Functional	Test Case Coverage (%)	Status
Login(TD_FTC_01)	100%	Completed
Posting(TD_FTC_02)	20%	In-Progress
Polling(TD_FTC_03)	10%	In-Progress
Searching(TD_FTC_04)	0%	Not yet Started

Result:

Thus, manual test cases were reported.

School of Computing

SRM IST, Kattankulathur – 603 203

Course Code: 18CSC206J

Course Name: Software Engineering and Project Management

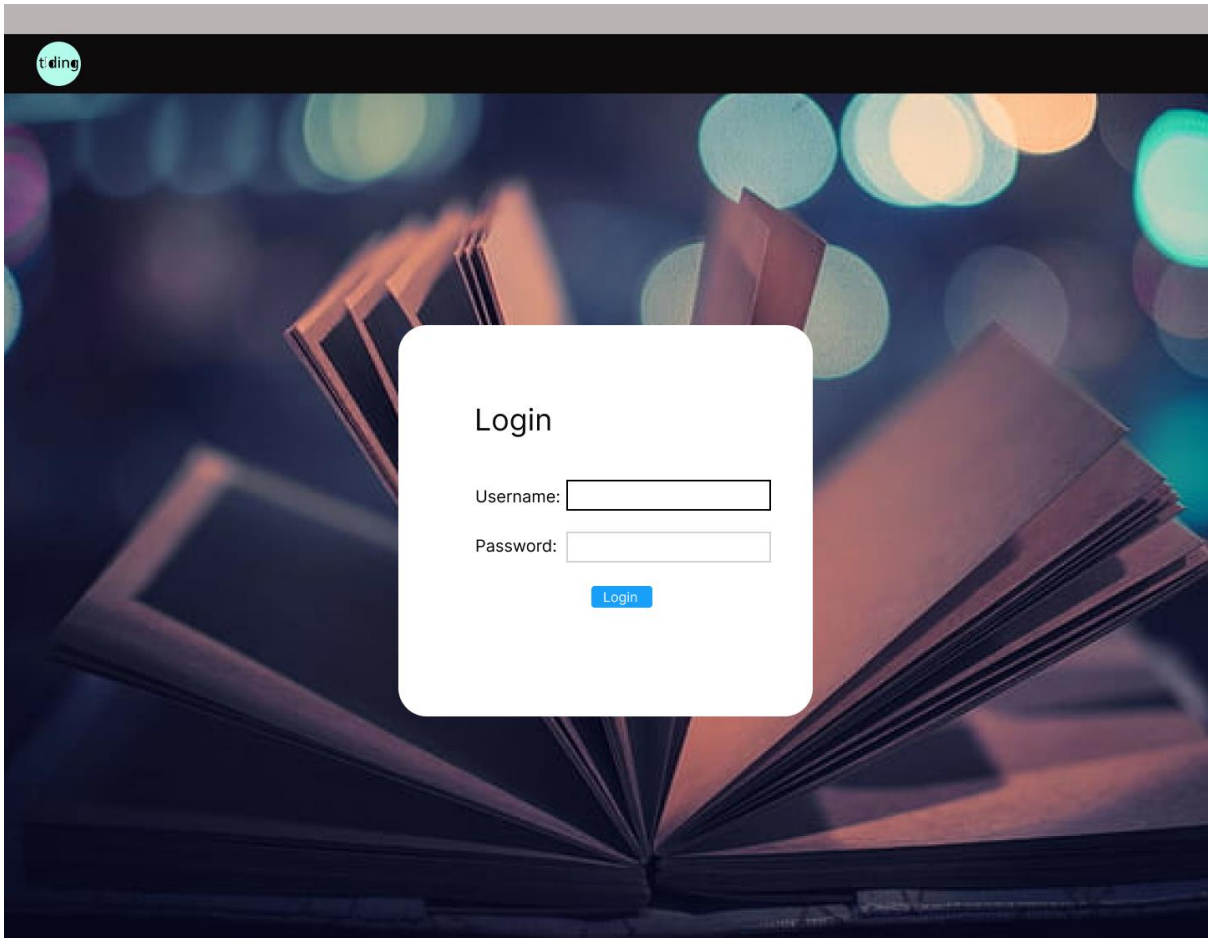
Experiment No	13
Title of Experiment	Provide the details of Architecture Design/Framework/Implementation
Name of the candidate	VAIBHAVI TANDON
Team Members	MUKUND MAHESHWARI KARANAM JAYA VARDHAN
Register Numbers	RA2011028010087 RA2011028010086 RA2011028010088
Date of Experiment	14-06-2022

Mark Split Up

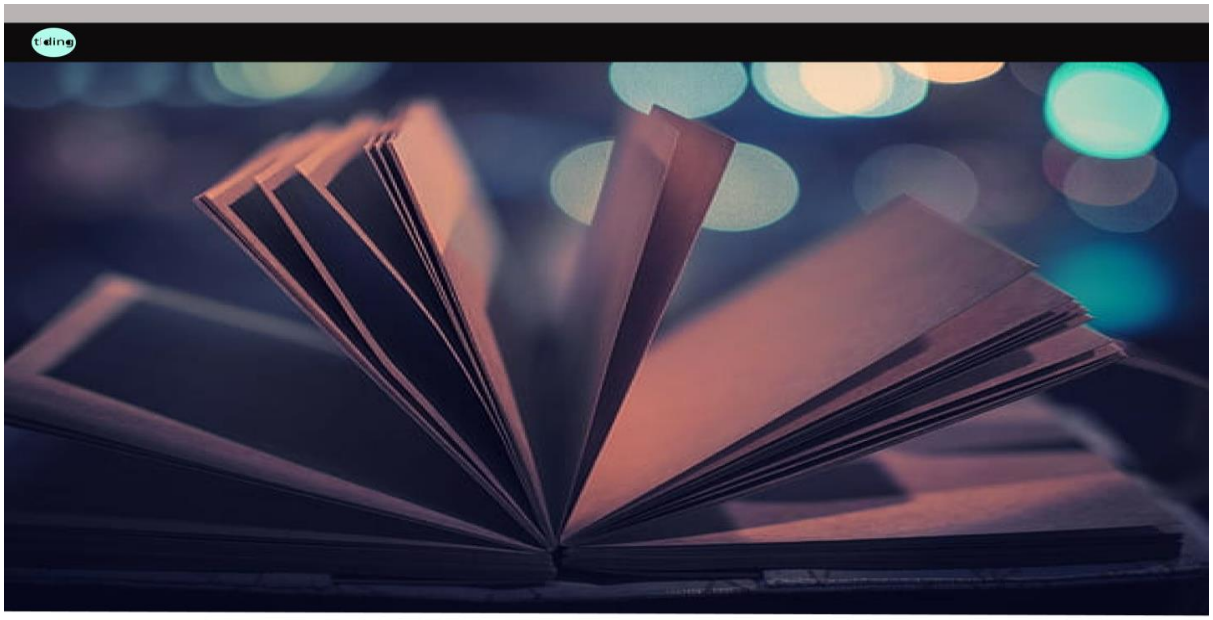
S. No	Description	Maximum Mark	Mark Obtained
1	Exercise	5	
2	Viva	5	
	Total	**10**	

Staff Signature with date

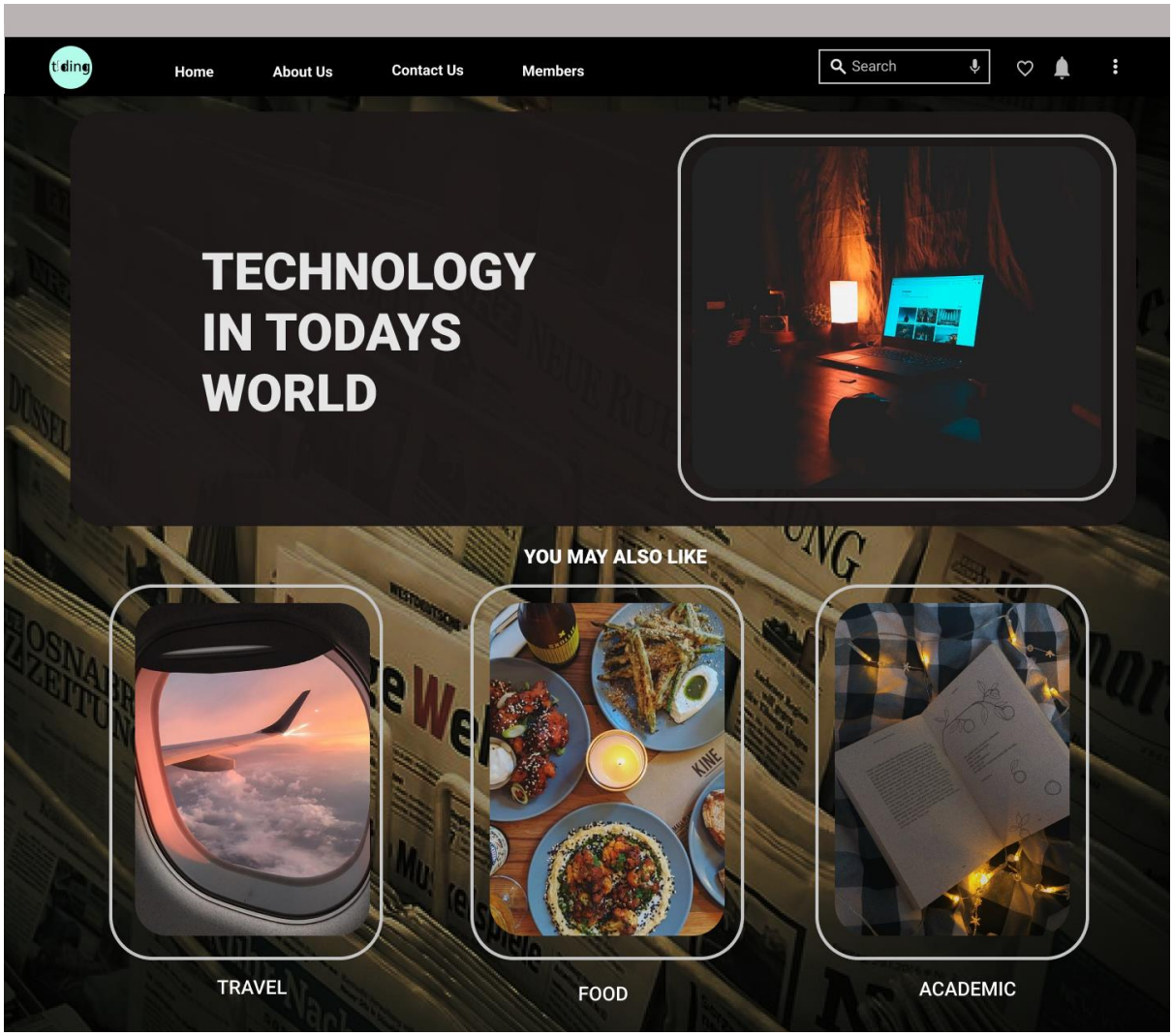
LOGIN PAGE:



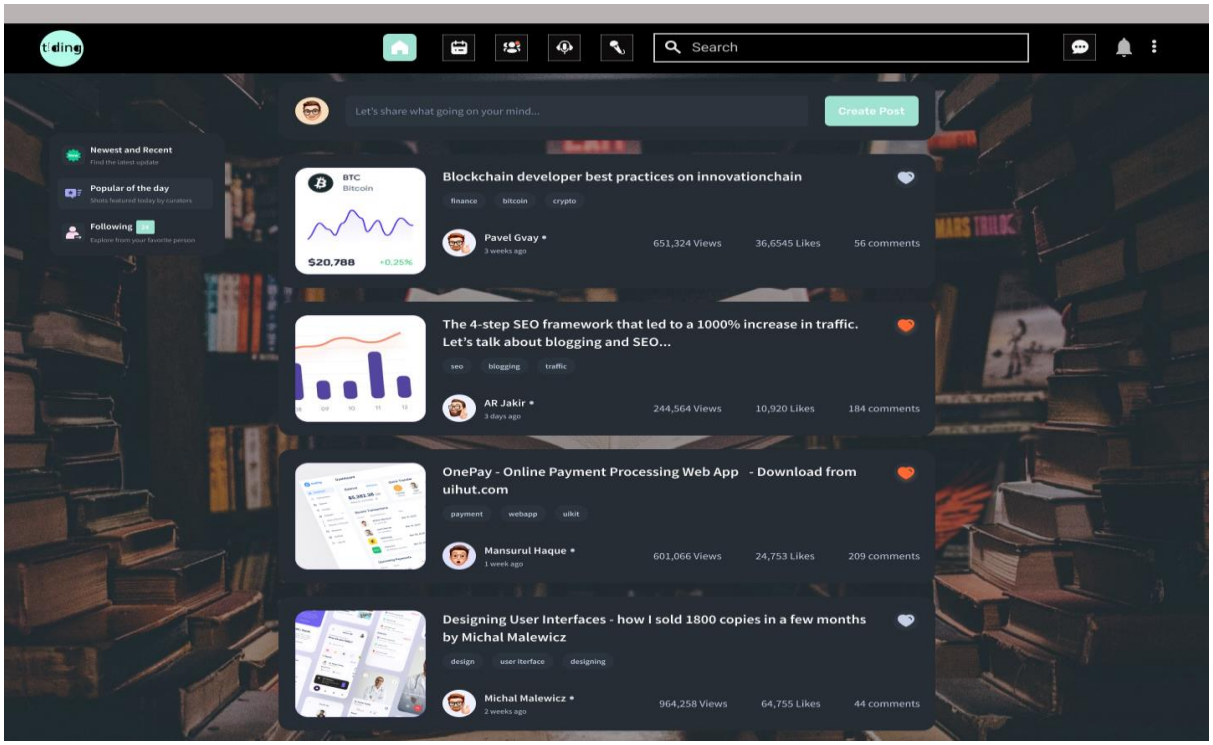
SIGN-UP PAGE:



HOME PAGE:



POST CREATION:



Result:

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

Conclusion

We are pleased to learn how to implement and document a software. Throughout the course we learnt about what diagrams and what are the things need to be done process by process to implement a software. Our documentation can give a layman basic idea on how the software development process follows.

References

1. https://www.pmi.org/
2. https://www.projectmanagement.com/default.cfm#_=_
3. https://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/ti-it/ervcpgpm-dsfvpmpt-eng.html

Appendix

```
/* Rectangle 1 */
position: absolute;
    width: 1728px;
    height: 71px;
    left: 0px;
    top: 36px;
    background: #0D0C0C;

/* Ellipse 1 */
position: absolute;
    width: 53px;
    height: 53px;
    left: 39px;
    top: 45px;
background: url(Tiding logo-modified (1).png);

/* Group 10 */
    position: absolute;
    width: 496px;
    height: 468px;
    left: 472px;
    top: 384px;

/* Rectangle 17 */
    position: absolute;
    width: 1441.13px;
    height: 36px;
    left: 0px;
    top: 0px;



    background: #B9B3B3;
    transform: matrix(1, 0, 0, 1, 0, 0);

    position: relative;
    width: 1441px;
    height: 1117px;
```

```
background: #FFFFFF;

/* Group 4 */
position: absolute;
    width: 622px;
height: 439px;

/* Rectangle 5 */
position: absolute;
    width: 1467.62px;
    height: 1027.98px;
    left: -28px;
    top: 113.65px;
transform: rotate(-0.1deg);

/* About Us */
position: absolute;
    width: 75px;
    height: 21px;
    left: 332px;
    top: 73px;
    font-family: 'Roboto';
    font-style: normal;
    font-weight: 700;
    font-size: 18px;
    line-height: 21px;

/* identical to box height */
color: #FFFFFF;

/* Contact Us */
position: absolute;
    width: 89px;
    height: 21px;
    left: 479px;
    top: 71px;
font-family: 'Roboto';
    font-style: normal;
```

```
    font-weight: 700;
    font-size: 18px;
    line-height: 21px;

/* identical to box height */
color: #FFFFFF;

/* Members */
position: absolute;
    width: 77px;
    height: 21px;
    left: 640px;
    top: 72px;
font-family: 'Roboto';
    font-style: normal;
    font-weight: 700;
    font-size: 18px;
    line-height: 21px;

/* identical to box height */
color: #FFFFFF;

/* image 1 */
position: absolute;
    width: 505px;
    height: 423px;
    left: 850px;
    top: 176px;
background: url(technology-art-design-tech.jpg);
    border-radius: 39px;

/* Home */
position: absolute;
    width: 49px;
    height: 21px;
    left: 211px;
    top: 73px;
font-family: 'Roboto';
```

```
    font-style: normal;
    font-weight: 700;
    font-size: 18px;
    line-height: 21px;

/* identical to box height */
color: #FFFFFF;

/* Rectangle 8 */
position: absolute;
    width: 534px;
    height: 445px;
    left: 836px;
    top: 165px;
border: 4px dashed #C4C4C4;
    border-radius: 42px;

/* Frame */
position: absolute;
    width: 24px;
    height: 26px;
    left: 1249px;
    top: 67px;

/* Vector */
position: absolute;
    left: 90.07%;
    right: 8.61%;
    top: 5.12%;
    bottom: 92.66%;
background: linear-gradient(0deg, rgba(0, 0, 0, 0.2), rgba(0, 0, 0, 0.2)), #E5E5E5;


/* Group 3 */
position: absolute;
    width: 212px;
    height: 43px;
    left: 1006px;
```

```
    top: 56px;

/* Group 1 */
position: absolute;
    width: 5px;
    height: 18.75px;
    left: 1370px;
    top: 68px;

/* Rectangle 9 */
position: absolute;
    width: 290px;
    height: 411px;
    left: 162px;
    top: 740px;
background: url(277ca3cd878df93d2d946604aa6b1f4a.jpg);
    border-radius: 40px;

/* Rectangle 10 */
position: absolute;
    width: 290px;
    height: 411px;
    left: 1026px;
    top: 740px;
    background: url(original.jpg);
    border-radius: 40px;

/* Rectangle 13 */
position: absolute;
    width: 330px;
    height: 456px;
    left: 580px;
    top: 721px;
border: 4px dashed #C4C4C4;
    border-radius: 50px;

/* Rectangle 11 */
position: absolute;
```

```
    width: 290px;
    height: 411px;
    left: 600px;
    top: 740px;
background: url(some-of-our-amazing-small.jpg);
    border-radius: 40px;

/* Rectangle 15 */
position: absolute;
    width: 330px;
    height: 456px;
    left: 134px;
    top: 721px;
border: 4px dashed #C4C4C4;
    border-radius: 50px;

/* Rectangle 14 */
position: absolute;
    width: 330px;
    height: 456px;
    left: 1006px;
    top: 721px;
border: 4px dashed #C4C4C4;
    border-radius: 50px;

/* YOU MAY ALSO LIKE */
position: absolute;
    width: 227px;
    height: 28px;
    left: 642px;
    top: 669px;
    font-family: 'Roboto';
    font-style: normal;
    font-weight: 900;
    font-size: 24px;
    line-height: 28px;
color: #FFFFFF;
```

```
/* TRAVEL */
position: absolute;
    width: 87px;
    height: 28px;
    left: 263px;
    top: 1201px;
font-family: 'Roboto';
    font-style: normal;
    font-weight: 500;
    font-size: 24px;
    line-height: 28px;
color: #FFFFFF;

/* ACADEMIC */
position: absolute;
    width: 121px;
    height: 28px;
    left: 1130px;
    top: 1203px;
font-family: 'Roboto';
    font-style: normal;
    font-weight: 500;
    font-size: 24px;
    line-height: 28px;
color: #FFFFFF;

/* FOOD */
position: absolute;
    width: 62px;
    height: 28px;
    left: 709px;
    top: 1209px;
font-family: 'Roboto';
    font-style: normal;
    font-weight: 500;
    font-size: 24px;
    line-height: 28px;
color: #FFFFFF;
```

```
/* TECHNOLOGY IN TODAYS WORLD */
    position: absolute;
    width: 413px;
    height: 225px;
    left: 244px;
    top: 294px;
font-family: 'Roboto';
    font-style: normal;
    font-weight: 900;
    font-size: 64px;
    line-height: 75px;
color: #E5E5E5;

/* Ellipse 1 */
position: absolute;
    width: 53px;
    height: 53px;
    left: 56px;
    top: 52px;
background: url(Tiding logo-modified (1).png);

position: absolute;
    width: 1776px;
    height: 1110px;
    left: -168px;
    top: -15px;
background: url(iZb0jc.jpg);

/* Rectangle 16 */
position: absolute;
    width: 1441.13px;
    height: 60px;
    left: -1px;
    top: -15px;
background: #B9B3B3;
    transform: matrix(1, 0, 0, 1, 0, 0);
```

```
/* Main */
/* Auto layout */
    display: flex;
    flex-direction: column;
    align-items: flex-start;
    padding: 0px;
    gap: 20px;
position: absolute;
    width: 785px;
    height: 950px;
    left: 328px;
    top: 115px;

/* Sidebar */
/* Auto layout */
    display: flex;
    flex-direction: column;
    align-items: flex-start;
    padding: 10px;
    gap: 10px;
position: absolute;
    width: 210px;
    height: 180px;
    left: 54px;
    top: 190px;

/* Dark 3 */
    background: #262D34;
    border-radius: 16px;

/* Ellipse 2 */
position: absolute;
    width: 52px;
    height: 53px;
    left: 43px;
    top: 40px;
background: url(Tiding logo-modified (1).png);
```

```
/* Main */
/* Auto layout */
    display: flex;
    flex-direction: row;
    align-items: flex-start;
    padding: 0px;
    gap: 17px;
position: absolute;
    width: 40px;
    height: 40px;
    left: 453px;
    top: 45px;

/* Group 5 */
position: absolute;
    width: 449px;
    height: 43px;
    left: 776px;
    top: 44px;

/* Vector */
position: absolute;
    left: 54.86%;
    right: 43.8%;
    top: 5.09%;
    bottom: 93.13%;
background: #E5E5E5;

/* Group 7 */
position: absolute;
    width: 39px;
    height: 39px;
    left: 650px;
    top: 46px;

/* Rectangle 57 */
box-sizing: border-box;
position: absolute;
```

```
    width: 39px;
    height: 39px;
    left: 713px;
    top: 46px;
background: #0D0C0C;
    border: 0.5px solid #C4C4C4;

/* home 2 */
position: absolute;
    width: 20px;
    height: 20px;
    left: 723px;
    top: 55px;

/* Rectangle 59 */
box-sizing: border-box;
position: absolute;
    width: 39px;
    height: 39px;
    left: 587px;
    top: 46px;
background: #0D0C0C;
    border: 0.5px solid #C4C4C4;

/* home 2 */
position: absolute;
    width: 20px;
    height: 20px;
    left: 597px;
    top: 55px;

/* Group 8 */
position: absolute;
    width: 39px;
    height: 39px;
    left: 524px;
    top: 46px;
```

```
/* Vector */
position: absolute;
    left: 92.29%;
    right: 6.39%;
    top: 4.72%;
    bottom: 92.66%;
background: linear-gradient(0deg, rgba(0, 0, 0, 0.2), rgba(0, 0, 0, 0.2)), #E5E5E5;

/* Rectangle 60 */
box-sizing: border-box;
position: absolute;
    width: 39px;
    height: 39px;
    left: 1266px;
    top: 45px;
background: #0D0C0C;
    border: 0.5px solid #C4C4C4;
    /* Message */
position: absolute;
    width: 20px;
    height: 20px;
    left: 1276px;
    top: 54px;
```