PROJECT REPORT

Submitted by

Dushyant Rao [RA2011028010106]

Under the Guidance of

Dr. Deepa Thilak K
Assistant Professor, Department of Networking and Communication

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 **Home4U** is the bonafide work done by Dushyant Rao (RA2011028010106) who carried out the lab project 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. Deepa Thilak K
SEPM – Course Faculty
Assistant Professor
Department of Networking and
Communication

SIGNATURE
Head of Department

ABSTRACT

A lot of people resort into broker dependant rental housing as means of housing in India. People are expected to pay huge amount of brokerage fee and security deposit. Tenants who are college students/bachelors also face the issue of hiring maids and cooks in a new town altogether. Thus, we found a solution with Home4U. It is an application that allows users to view free listings of properties from various websites at one common place. We intend to minimize the tenant's effort by eliminating security deposit, brokerage fee and the hassle of finding a cook or a maid. The integration of rental housing, maid services and food services make payment easier and trackable. Therefore, this system tends to help tenants manage their rental housing with the aim of minimizing security deposit and also helping them with services.

TABLE OF CONTENTS

CHAPTER NO	TITLE	PAGE NO
	ABSTRACT	
	LIST OF FIGURES	
	LIST OF ABBREVIATIONS	
1	PROBLEM STATEMENT	1
2	STAKEHOLDERS & PROCESS MODELS	5
3	IDENTIFYING REQUIREMENTS	9
4	PROJECT PLAN & EFFORT	14
5	WORK BREAKDOWN STRUCTURE & RISK ANALYSIS	19
6	SYSTEM ARCHITECTURE, USE CASE & CLASS DIAGRAM	24
7	ENTITY RELATIONSHIP DIAGRAM	29
8	DATA FLOW DIAGRAM	36
9	SEQUENCE & COLLABORATION DIAGRAM	39
10	DEVELOPMENT OF TESTING FRAMEWORK/USER INTERFACE	43
11	TEST CASES	48
12	MANUAL TEST CASE REPORTING	53
13	ARCHITECTURE/DESIGN/FRAMEWORK/IMPLE-MENTATION	56
	CONCLUSION	
	REFERENCES	
	APPENDIX (CODE)	

LIST OF FIGURES

FIGURE NO	TITLE	PAGE NO
1.1	Home4U Logo	3
2.1	Selection of methodology	6
5.1	Work Breakdown Structure	20
5.2	Timeline-Gantt chart	21
5.3	SWOT Analysis	22
6.1	System Architecture	26
6.2	Use Case Diagram	27
6.3	Class Diagram	27
7.1	ER Diagram	30
7.2	Sample ER Diagram	33
8.1	DFD Level 0	37
8.2	DFD Level 1	37
9.1	Sequence Diagram	40
9.2	Collaboration Diagram	41
13.1	Module: Web Scraping	58
13.2	Module: Payment Portal	59
13.3	Module: Profile Updation	62

LIST OF ABBREVIATIONS

- **GB: Giga Bytes**
- **AWS: Amazon Web Services**
- **RDS: Relational Database Service**
- **F&B: Food and Beverage**
- **HR: Human Resources**
- **ERAT: Effort Requirement Activity Task**
- **UI: User Interface**
- **P/R: Public Relations**
- **Q/A: Quality Assurance**
- **IDE: Integrated Development Environment**
- **API: Application Programming Interface**
- **DB: Data Base**
- **BA: Business Administrator**
- **WBS: Work Breakdown Structure**
- **XML: Extensible Mark-up Language**
- **UML: Unifies Modelling Language**
- **DFD: Data Flow Diagram**
- **ER: Entity Relationship**
- **NFR: Non-Functional Requirement**
- **DL: Driving Licence**
- **UPI: Universal Payment Interface**

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	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	15.03.22

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 <title of the project>

Team Members:

S. No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	**Lead/Rep**
2	RA2011028010101	Avipsha Panigrahi	**Member**
3	RA2011028010093	Shubhra Kumari	**Member**

Project Title: Tenant Application – HOME4U

Project Description:

The application focuses on providing one single portal for finding houses/room on rent or lease with or without furniture. The portal allows users to pay rent and manage their lease. The application will also include an integration for meal options.

Business Case

Our strategy is to provide one single portal for all the rent related issues where students/bachelors can easily login and find a property as per their need without having the trouble of furnishing, finding maids, cooking meals for the rented property.

We are trying to help, skip all the hassle a tenant faces while shifting and settling in his/her new house.

Projects similar to ours already exist but none of them provide a unified interface with all the amenities including furnishing, meal options, payment, and finding maids.

HISTORY:

Earlier if one had to move into a rented apartment, the person had to spend days n days to furnish it, find maids, and even cook for themselves. We with our tenant application, plan to ease out this process.

Right now, the project looks very straight forward but there are still some unknown surrounding implementations. Which we will find out as we progress in making the project a success.

Result

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

BUSINESS CASE TEMPLATE

DATE	16.03.2022
SUBMITTED BY	Dushyant Rao
TITLE / ROLE	Tenant Application- HOME4U

THE PROJECT

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

- To provide one single portal for tenants.
- The application will help to find properties, maids, and furniture.
- Integrated payment portal in the application for convenience.

THE HISTORY

In bullet points, describe the current situation.

- Currently tenants have to find properties themselves.
- They spend days to furnish it and find maids.
- On top of rent tenants are expected to pay brokerage .
- The hassle of cooking also comes on top of the tenants .

LIMITATIONS

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

Before actually implementing the project, the employees will require special training and 24X7 helpdesk for our customers. Right now, the project looks very straight forward but there are still some unknown surrounding implementations. Which we will find out as we progress in making the project a success.

APPROACH

List what is needed to complete the project.

To complete the project we need a proper database for the properties that will be on rent. We will also need to plan out the special training we will have to provide for our employees. On top of this a commercial kitchen will also be needed for setting up meal options for the tenants.

BENEFITS

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

- Group collaboration from various departments.
- Multiple sources of income from providing furniture, meals, and properties
- Organized information with vast database

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	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	22.03.22

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	RA2011028010106	Dushyant Rao	**Rep/Member**
2	RA2011028010093	Shubhra Kumari	**Member**
3	RA2011028010101	Avipsha Panigrahi	**Member**

Project Title: Home4U

Selection of Methodology

For our project we have selected agile methodology rather than the traditional waterfall, Agile practice is a people-focused approach to software development that respects our rapidly changing world.
It's centered around adaptive planning, self-organization, and short delivery times. It's flexible, fast, and aims for continuous improvements in quality, to put in simple terms, Agile helps teams in delivering value to customers quickly and effortlessly. Thus, developing such a software management project, Agile methodology brings out the most effective growth out of it.

Stakeholder Name	Activity/ Area /Phase	Interest	Influence	Priority (High/ Medium/ Low)
Project Manager	To manage the team and help out with the communication between the team and the owner.	High	High	High
Technical Lead	To help with the process (technical) in making the website for “One Mile at a Time”.	High	High	High
Tester	To check the website for bugs and fixes, while going through the UI.	High	High	High
External stakeholders				
Shareholders	People who buy stocks from the company and help invest in it	High	Low	Medium
Customers	Responsibility of the customer is to provide accurate feedback so that the team can improve from their mistakes	High	Medium	Medium
Government	Collect taxes from the company as well as from all the people it employs.	Low	Low	Low
Creditors	Lend money to the company, and may or may not have a secured interest in the company's assets, under which they can be paid back from the sale of those assets.	Medium	Medium	Medium

Stakeholder	Interests	Estimated Project Impact	Estimated Priority
Owner	Achieve targets, Increase sales margin	High	1
Sponsor	Provides new market to expand ventures Negotiate funding for project Reviews changes to project environments.	Med	3
Team members	Demand incentives Retain and upgrade skills New product excitement	High	2
Project Manager	Lead the team in every aspect. Accountable for entire project scope, team, success & failure	High	2
Investors	Promoter of the investment, Provides necessary financial resources	Low	5
Resource Manager	Resource planning and allocation. Ensuring adequate resource according to project needs and budget.	Med	4
Suppliers	Ensuring feasible and realistic in every aspect Managing divergence from budgeted cost.	Med	6
End Users	Provides feedback	Low	7

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	Dushyant Rao
Team Members	Dushyant Rao,Shubhra Kumari,Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	08.004.2022

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	**RA2011028010106**	**Dushyant Rao**	**Rep/Member**
2	**RA2011028010101**	**Avipsha Panigrahi**	**Member**
3	**RA2011028010093**	**Shubhra Kumari**	**Member**

Project Title: Home4U

System Requirements

Requirement	Specification	Department
1	Deployment Machine with 4GB Ram and quad core: To make practical business decisions on data.	Technical Team and Funds Team
2	Code Repository: For an archive of the code itself that is being worked on (Github)	
3	Cloud Storage:(AWS)	
4	Amazon RDS: For storing databases of clients, properties, and listings	

Functional Requirements

Requirement	Specification	Department
1	The application's first page should allow users to login or create a new login.	Deployment
2	The application should display the user to select a city and choose the required property.	
3	The application will allow the user to customize and modify their meal options.	Deployment and F&B team
4	A list of services (maids, housekeeper, cooks) should be displayed in the application, where the user can choose them.	Deployment and HR
5.	The application should have a feedback or report system so that our users can give feedback on the application, services and meal options.	Deployment

6.	The application is expected to contain a payment portal where the users can pay their rent.	Tech team and Funds department
7.	The application should contain a user profile section where the users can upload their details and photo ID proof.	Tech team
8.	The application should contain a separate page as a help desk where theres is 24*7 service.	Deployment and HR

Non-Functional Requirements

Requirement	Category	Requirement Specifications
1.	Performance	The application should be fast.
2.	Usability	The application should have simple UI with contrasting colours easy navigation, good graphics and crisp font.
3.	Availability	The application should be available 24*7.
4.	Performance	The application's response time should be as low as possible (less than 4 seconds).
5.	Security	As our database contains sensitive information such as photo ID's and transaction details, the application should keep the personal data safe.
6.	Scalability	Service should scale to serve upto a 1000 users at a time.

Result

Thus the requirements were identified and accordingly described.

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	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
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 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	RA2011028010106	Dushyant Rao	Lead
2	RA2011028010093	Shubhra Kumari	Member
3	RA2011028010101	Avipsha Panigrahi	Member

1. Project Management Plan

Focus Area	Details
Integration Management	**Governance Framework :** All the decisions in the project shall be taken after a consideration of all the pros and cons and in case of any conflict, a vote shall be taken and the result shall stand **Change Management:**If an instance arises where change of management is required, frontend and resources shall be provided by all the team members to expedite the process. **Project Closure :**The last phase shall comprise Testing and checking if the end product full fills all the requirements.
Stakeholder	Our Stakeholders would Include: **Project Manager:**To manage the team and help out with the communication between the team and owner. **Technical Lead:**To help with the process (technical) in making the application. **Tester:**To check the website for bugs and fixes, while going through the UI. **Shareholders:** People who buy stocks from the company and help invest in it. **Customers:** Responsibility of the customer is to provide accurate feedback so that the team can improve from their mistakes **Creditors:** Lend money to the company, and may or may not have a secured interest in the company's assets, under which they can be paid back from the sale of those assets.
Communication Management	All the important details and information shall be sent to the official group of the team with a label informing the urgency of the message. All the deadlines shall be informed and communicated well in advance.
Procurement Management	In a strategic approach to optimizing organizational spend the team will invoice sourcing, requisitioning, ordering, inspection, and reconciliation. For this the budgeting team will have to work hand in hand with the Q/A team as well as the P/R team.

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)	Confirm the user requirements (acceptance criteria)	3	15000
	E1R1A1T2	Integrating the backend functionality of the screen components.	5	25000
Identify Data Source for displaying units of Energy Consumption	E1R1A1T1	Go through Interface contract (Application Data Exchange) documents	5	35000
	E1R1A1T2	Document	3	15000

Effort (hr)	Cost (INR)
1	500

2.2 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	6,000,000
License	Operating System Database Middleware IDE	10	10000	100,000
Infrastructures	Server, Storage and Network	20	20000	400,000

3. Project Team Formation

3.1. Identification Team members

Name	Role	Responsibilities
Dushyant Rao	Key Business User (Product Owner)	Provide clear business and user requirements
Dushyant Rao	Project Manager	Manage the project
Avipsha Panigrahi	Business Analyst	Discuss and Document Requirements

Shubhra Kumari	Technical Lead	Design the end-to-end architecture
Dushyant Rao	UX Designer	Design the user experience
Shubhra Kumari	Frontend Developer	Develop user interface
Shubhra Kumari	Backend Developer	Design, Develop and Unit Test Services/API/DB
Avipsha Panigrahi	Cloud Architect	Design the cost effective, highly available and scalable architecture
Avipsha Panigrahi	Cloud Operations	Provision required Services
Dushyant Rao	Tester	Define Test Cases and Perform Testing

3.2. Responsibility Assignment Matrix

RACI Matrix	**Team Members**			
Activity	**Avipsha Panigrahi (BA)**	**Shubhra Kumari(Developer)**	**Dushyant Rao (Project Manager)**	**Dushyant Rao (Key Business User)**
User Requirement Documentation	A	C/I	I	R
Front End	C	R	I	I
Back End	C/I	R	C	A
Testing	R	A	C	I

A	Accountable
R	Responsible
C	Consult
I	Inform

Result:

Thus, the Project Plan was documented successfully.

SRM INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

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	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
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

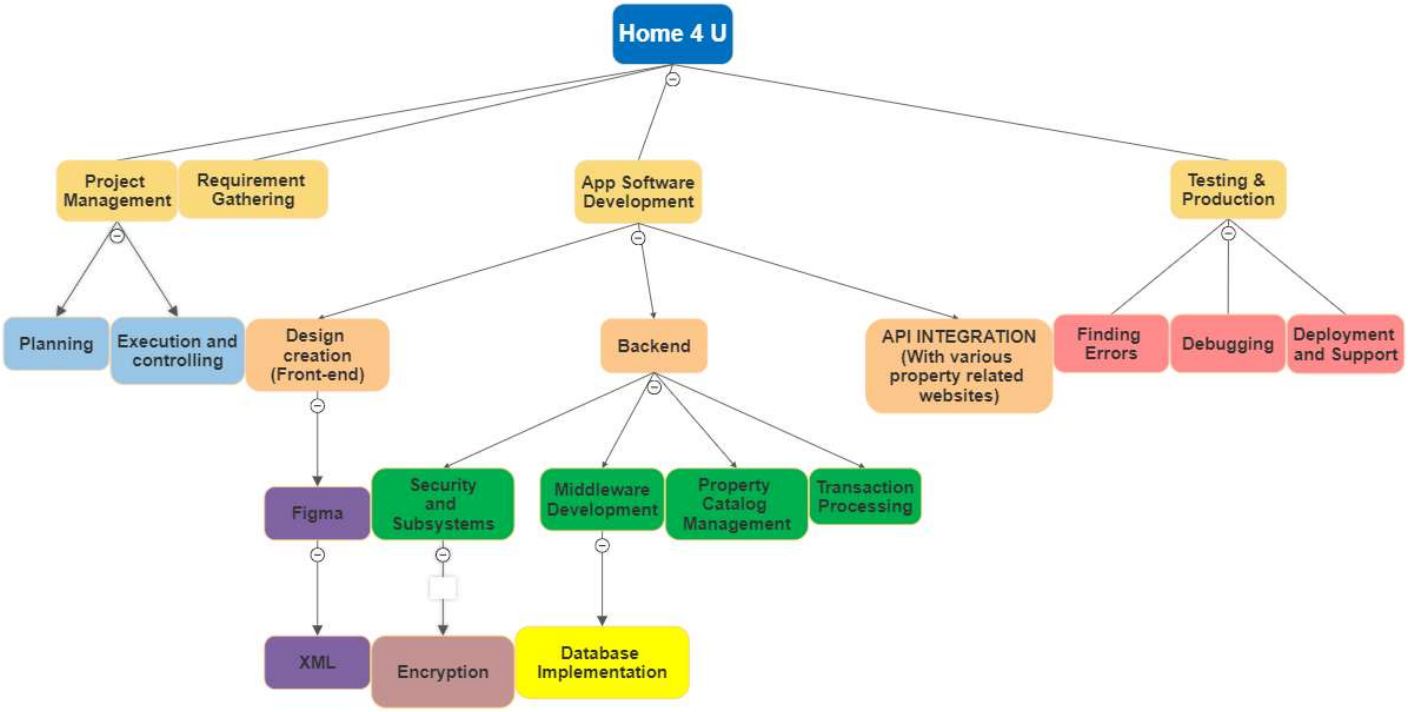
Aim

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

Team Members:

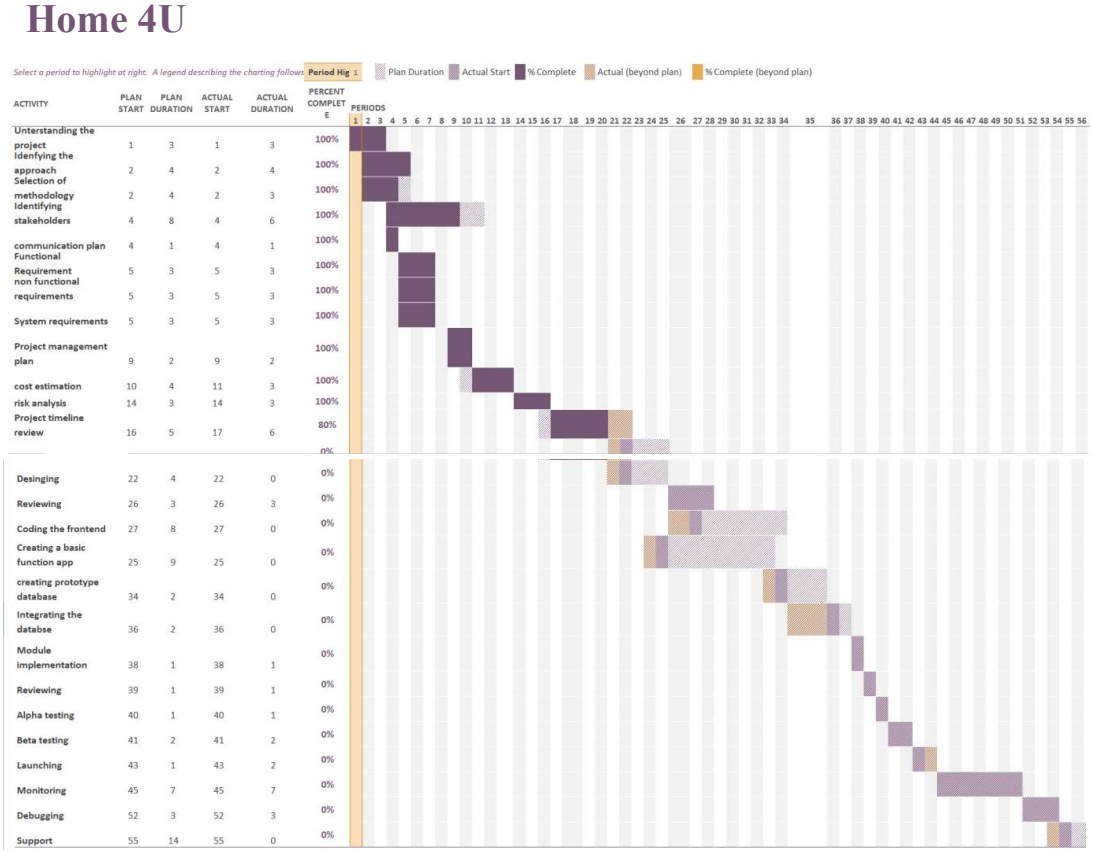
Sl No	Register No	Name	Role
1	106	Dushyant Ro	**Rep**
2	101	Avipsha Panigrahi	**Member**
3	93	Shubhra Kumari	**Member**

WBS (Work Breakdown Structure):

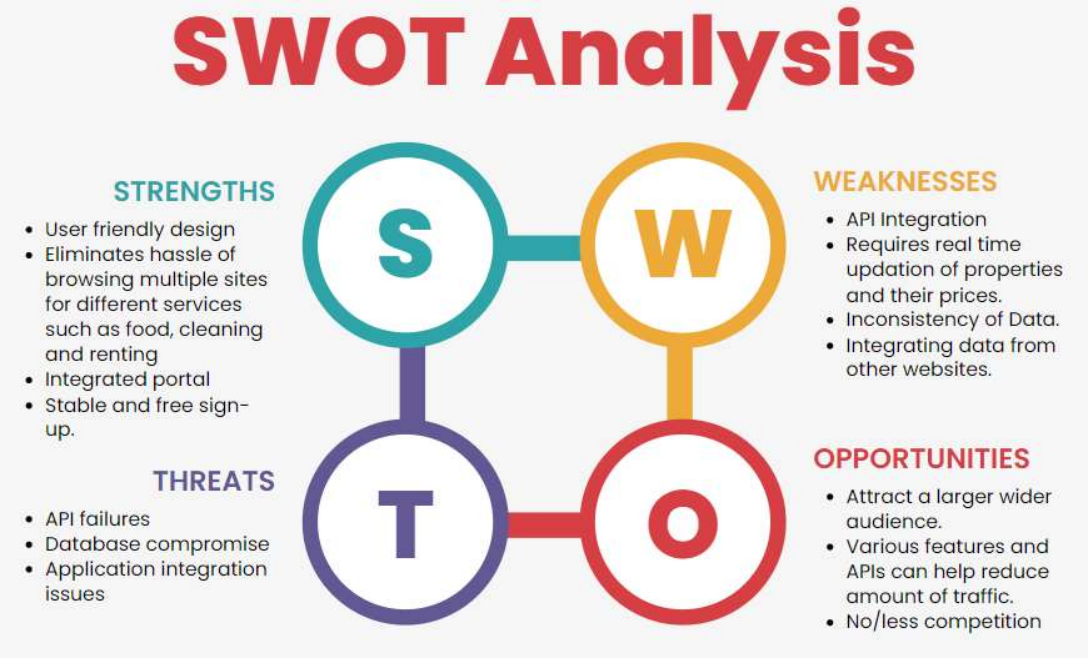


- 0.0 Home 4 U
- 1.0 Project Management
    - 1.1Planning
    - 1.2 Execution and controlling
- 2.0 Requirements Gathering
- 3.0 App Software Development
    - 3.1Design Creation
        - 3.1.1Figma
        - 3.1.2XML
    - 3.2 Backend
        - 3.2 .1Security and Subsystems
            - 3.2.1.1 Encryption
        - 3.2 .2Middleware Development
            - 3.2.2.1 Database Implementation
        - 3.2.3Property Catalog Management
        - 3.2.4Transaction Processing
    - 3.3 API Integration
- 4.0 Testing and Production
    - 4.1 Finding Errors
    - 4.2 Debugging
    - 4.3 Deployment and support

TIMELINE – GANTT CHART



SWOT ANALYSIS & RMMM:



RISKS	CATEGORY	PROBABILITY	IMPACT	STRATEGY
Project size may be significantly large and complex.	PS	60%	2	Risk Mitigation
End users might resist system.	BU	30%	2	Risk Avoidance
Tight delivery deadline.	BU	70%	3	Risk Mitigation
Funding risks	BU	70%	1	Risk Transfer
Changing customer requirements.	PS	80%	2	Risk acceptance

Response	Strategy	Example
Avoid	● Avoid extending deadlines. ● Avoid losing functionality and smoothness. ● Avoid writing codes that low-level systems can not handle.	● Reviewing the schedule. ● Check industry standards at every step. ● Test the app 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 user data breach, delete data.
Accept	● Shortage of server space and cloud storage.	● Buying servers in advance for un- forecasted events is not feasible for small-scale
		projects.

Result:

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

Department of Networking and Communications

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	Dushyant Rao
Team Members	Dushyant Rao,Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	05.05.2022

Mark Split Up

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

Staff Signature with date

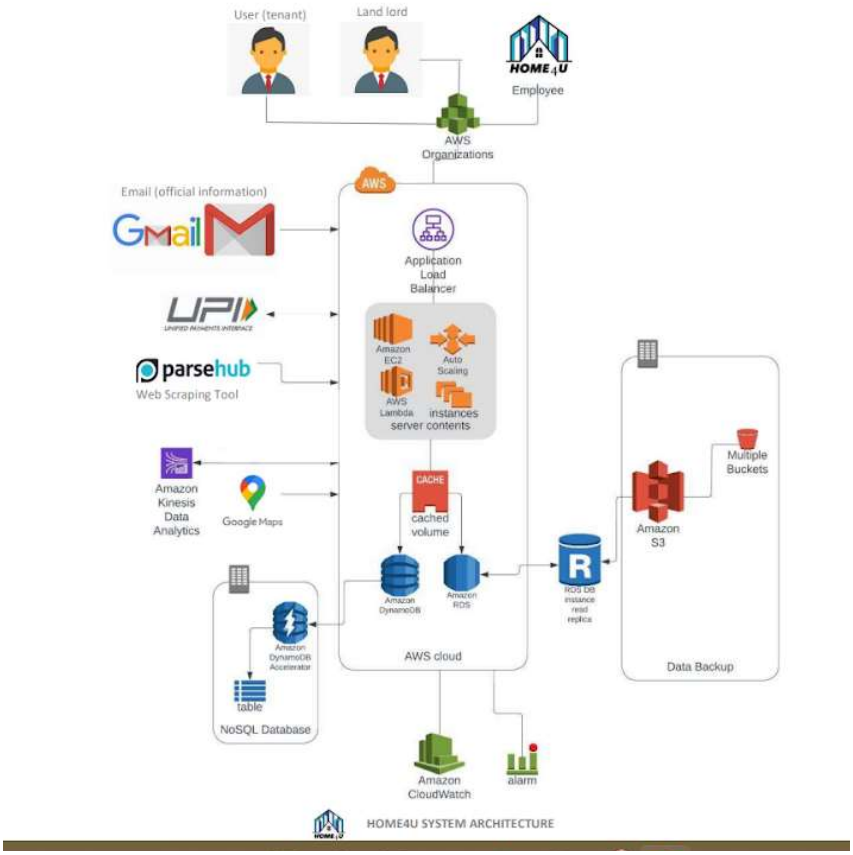
Aim

To Design a System Architecture, Use case and Class Diagram

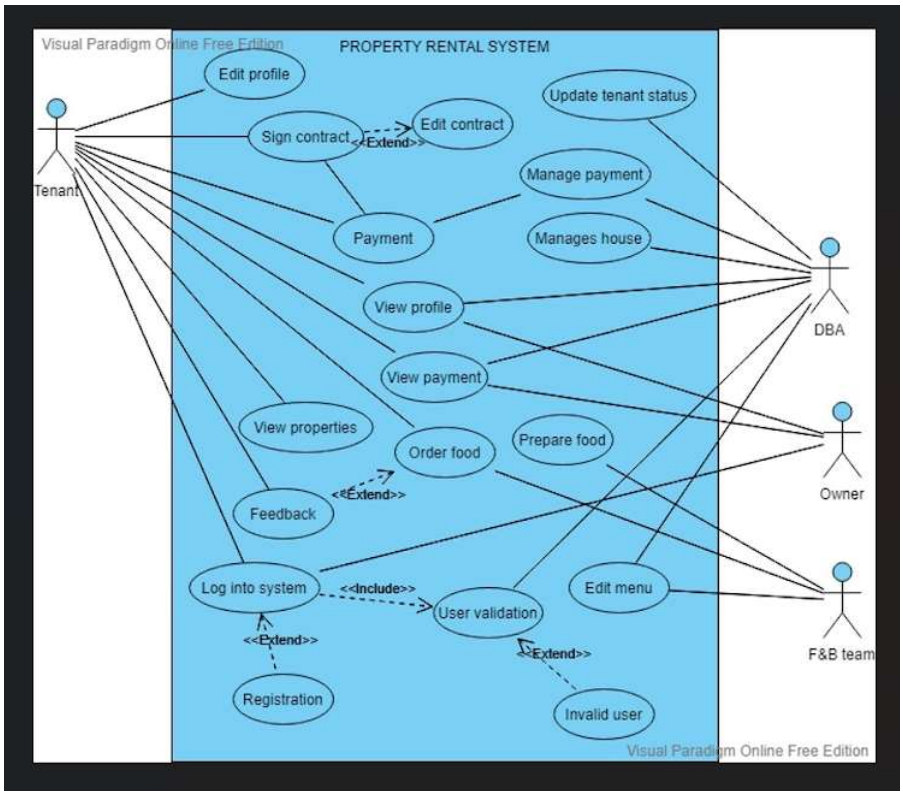
Team Members:

Sl No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	Rep
2	RA2011028010101	Avipsha Panigrahi	Member
3	RA2011028010106	Shubhra Kumari	Member

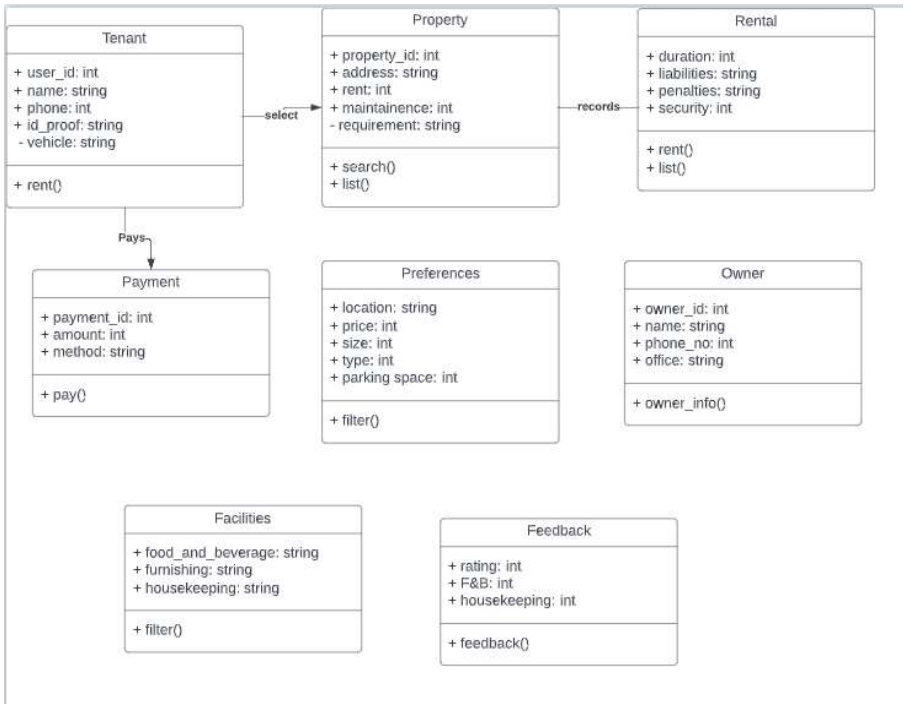
SYSTEM ARCHITECTURE



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: 18CSC206J

Course Name: Software Engineering and Project Management

Experiment No	7
Title of Experiment	Design a Entity relationship diagram
Name of the candidate	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	10.05.2022

Mark Split Up

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

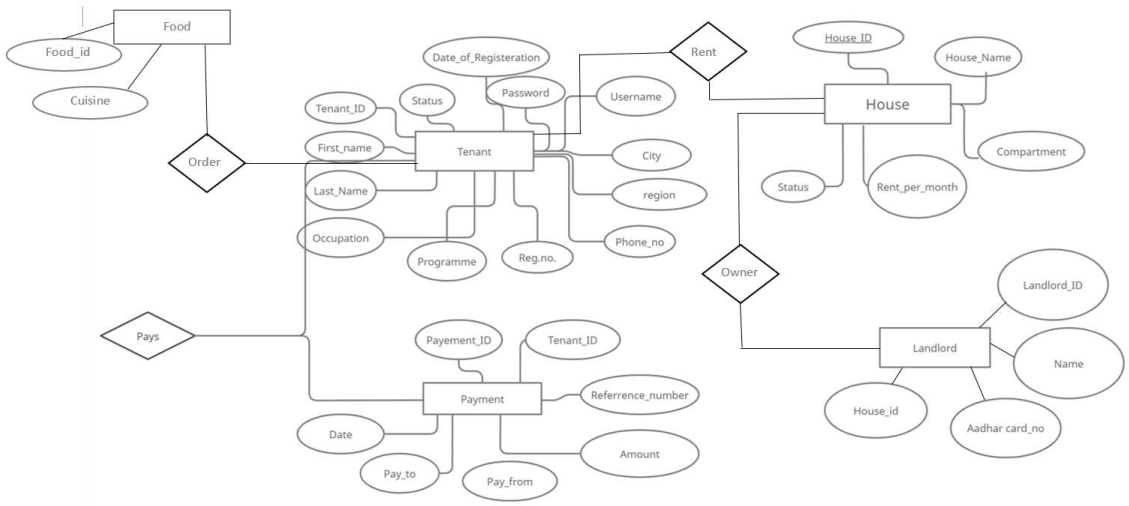
Staff Signature with date

Aim

To create the Entity Relationship Diagram

Team Members:

S No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	Rep
2	RA2011028010101	Avipsha Panigrahi	Member
3	RA2011028010093	Shubhra Kumari	Member



Result:

Thus, the entity relationship diagram was created successfully.

***/ ER Diagram, Notation and Example**

What is ER Diagram?

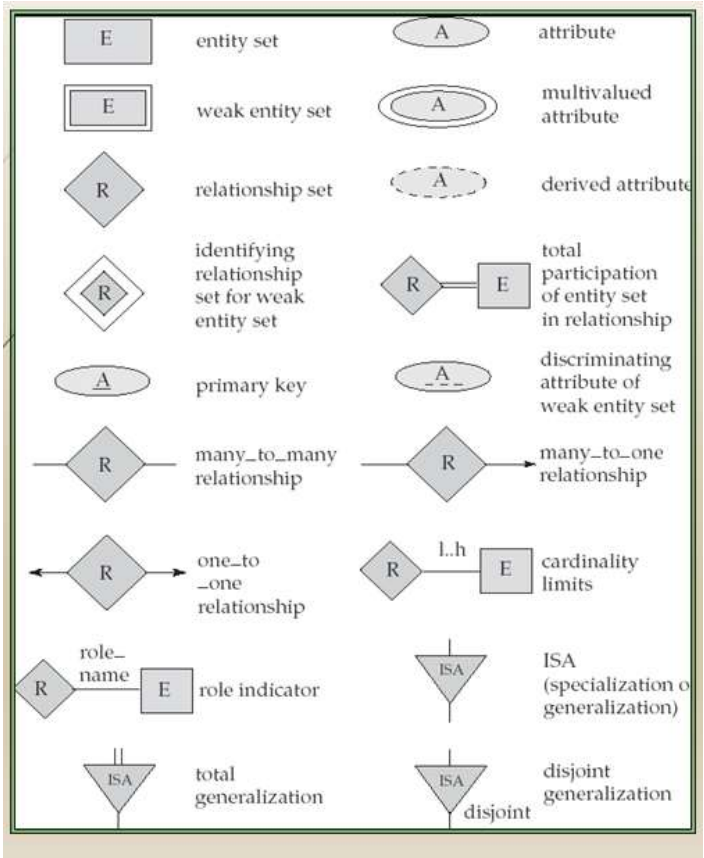
- ER Diagram stands for Entity Relationship Diagram, also known as ERD is a diagram that displays the relationship of entity sets stored in a database. In other words, ER diagrams help to explain the logical structure of databases. ER diagrams are created based on three basic concepts: entities, attributes and relationships.
- ER Diagrams contain different symbols that use rectangles to represent entities, ovals to define attributes and diamond shapes to represent relationships.
- At first look, an ER diagram looks very similar to the flowchart. However, ER Diagram includes many specialized symbols, and its meanings make this model unique. The purpose of ER Diagram is to represent the entity framework infrastructure.

What is ER Model?
- ER Model stands for Entity Relationship Model is a high-level conceptual data model diagram. ER model helps to systematically analyze data requirements to produce a well-designed database.
- ER Model represents real-world entities and the relationships between them. Creating an ER Model in DBMS is considered as a best practice before implementing your database.
- ER Modeling helps you to analyze data requirements systematically to produce a well-designed database. So, it is considered a best practice to complete ER modeling before implementing your database.

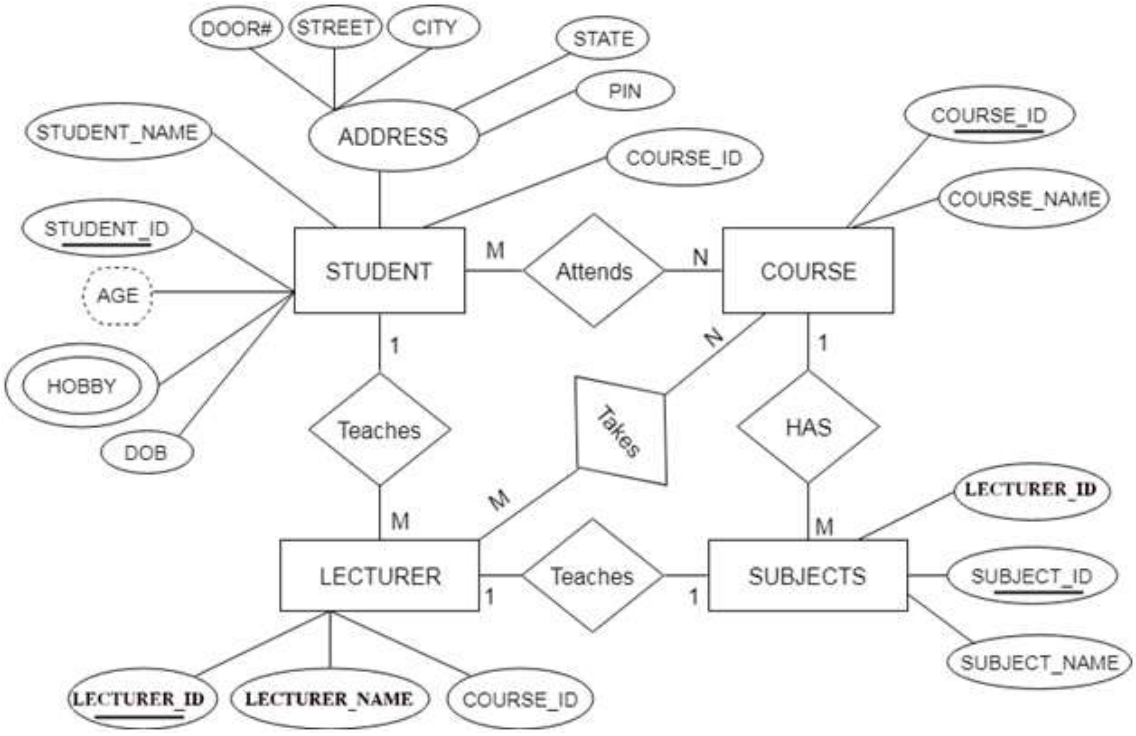
Why use ER Diagrams?
Here, are prime reasons for using the ER Diagram
- Helps you to define terms related to entity relationship modeling
- Provide a preview of how all your tables should connect, what fields are going to be on each table
- Helps to describe entities, attributes, relationships
- ER diagrams are translatable into relational tables which allows you to build databases quickly
- ER diagrams can be used by database designers as a blueprint for implementing data in specific software applications
- The database designer gains a better understanding of the information to be contained in the database with the help of ERP diagram
- ERD Diagram allows you to communicate with the logical structure of the database to users

Components of the ER Diagram
This model is based on three basic concepts: Entities, Attributes, Relationships

ER Diagram – Notations
- Rectangles represent entity sets.
- Diamonds represent relationship sets.
- Lines link attributes to entity sets and entity sets to relationship sets.
- Ellipses represent attributes
- Double ellipses represent multivalued attributes.
- Dashed ellipses denote derived attributes.
- Underline indicates primary key attributes



ER Diagram of University Database



ADDITIONAL NOTES

- A database can be modeled as a collection of entities, relationship among entities.
- An entity is an object that exists and is distinguishable from other objects.
Example: specific person, company, event, plant
- Entities have attributes.
Example: people have names and addresses
- An entity set is a set of entities of the same type that share the same properties.
Example: set of all persons, companies, trees, holidays

- Express the number of entities to which another entity can be associated via a relationship set.
- Most useful in describing binary relationship sets.
- We express cardinality constraints by drawing either a directed line (->), signifying "one," or an undirected line (—), signifying "many," between the relationship set and the entity set.

- An entity is represented by a set of attributes, that is descriptive properties possessed by all members of an entity set.
Example: customer = (customer-id, customer-name, customer-street, customer-city)
loan = (loan-number, amount)
- Domain – the set of permitted values for each attribute
- Attribute types:
1. Simple and composite attributes.
2. Single-valued and multi-valued attributes
E.g. multivalued attribute: phone-numbers
3. Derived attributes-Can be computed from other attributes

E.g. age, given date of birth

Cardinality

- For a binary relationship set the mapping cardinality must be one of the following types:

1. One to one

A customer is associated with at most one loan via the relationship borrower. A loan is associated with at most one customer via borrower

2. One to many

A loan is associated with at most one customer via borrower, a customer is associated with several (including 0) loans via borrower

3. Many to one

A loan is associated with several (including 0) customers via borrower, a customer is associated with at most one loan via borrower

4. Many to many

A loan is associated with several (including 0) customers via borrower, a customer is associated with several loans (including 0) via borrower

Weak Entity Set

- An entity set that does not have a primary key is referred to as a weak entity set and represented by double outlined box in E-R diagram.

Example : Consider the entity set payment which got three attributes : payment_number, payment_date and payment_amount. Payment numbers are sequential starting from 1 generally separately for each loan. Although each payment entity is distinct, payments for different loans may share the same payment number. Thus this entity set does not have a primary key.

Discriminator

- The discriminator (or partial key) of a weak entity set is the set of attributes that distinguishes among all the entities of a weak entity set

Example: discriminator of weak entity set payment is the attribute payment_number since for each loan a payment number uniquely identifies one single payment for that loan.

Specialization-Generalization-ISA

- E-R model provides means of representing these distinctive entity groupings
- Process of designating subgroupings within an entity set is called specialization depicted by triangle component labelled ISA (“is a”)
- Bottom up design process in which multiple entity sets are synthesized into higher level entity set - Generalization
- ISA relationship may also be referred to as superclass-subclass relationship
- Higher and lower level entity sets are designated by the terms superclass and subclass.
- Specialization and generalization are simple inversions of each other; they are represented in an E-R diagram in the same way.

Total & Partial Participation

- Total participation (indicated by double line): every entity in the entity set participates in at least one relationship in the relationship set

E.g. participation of loan in borrower is total, every loan must have a customer associated to it via borrower

- Partial participation: some entities may not participate in any relationship in the relationship set

Example: participation of customer in borrower is partial

Cardinality limits
- Cardinality limits can also express participation constraints
- Minimum and maximum cardinality is expressed as l..h where l is the minimum and h is the maximum cardinality
- Minimum value of 1 indicates total participation of entity set in relationship set
- Maximum value of 1 indicates entity participates in atmost one relationship set.
- Maximum value of * indicates no limit

Role indicator
- Entity sets of a relationship need not be distinct
- The labels “manager” and “worker” are called roles; they specify how employee entities interact via the works-for relationship set.
- Roles are indicated in E-R diagrams by labeling the lines that connect diamonds to rectangles.
- Role labels are optional, and are used to clarify semantics of the relationship

Disjoint Generalization
- Disjointness constraint requires that an entity belong to more than one lower level entity set.
Example: account entity can satisfy only one condition for account_type attribute ; entity can either be savings or chequing account but not both.

SRM INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

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	Dushyant Rao
Team Members	Duahyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	13.05.2022

Mark Split Up

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

Staff Signature with date

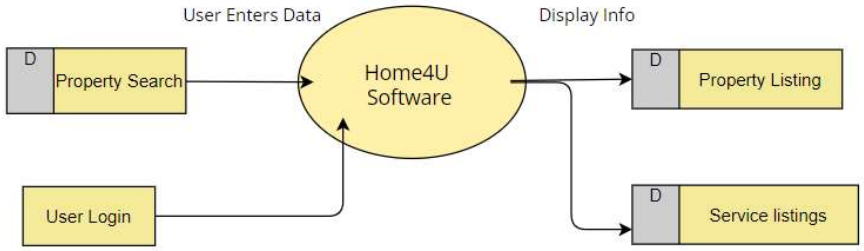
Aim

To develop the data flow diagram up to level 1 for the <project name>

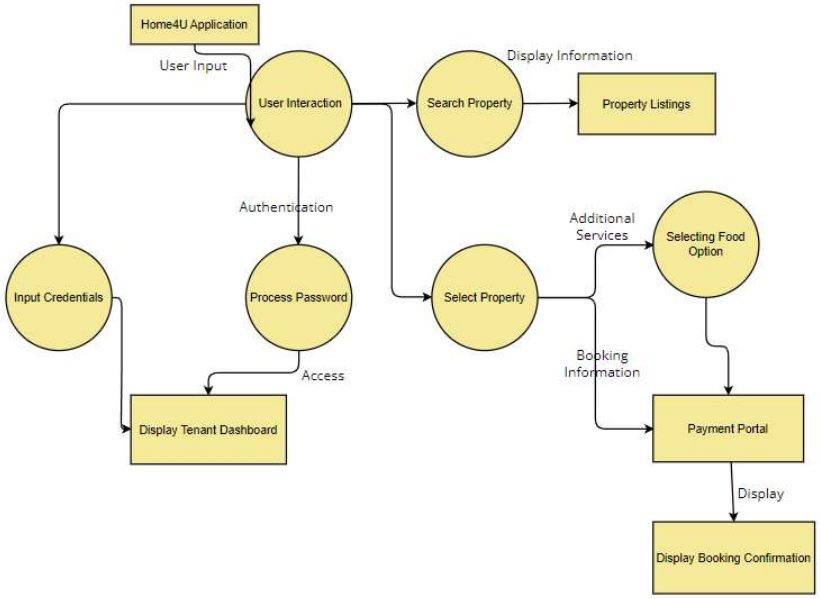
Team Members:

S No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	Rep
2	RA2011028010101	Avipsha Panigrahi	Member
3	RA2011028010093	Shubhra Kumari	Member

DFD Level 0



DFD Level 1



Result:

Thus, the data flow diagrams have been created for the <project name>.

Data Flow Diagram

The DFD takes an input-process-output view of a system. That is, data objects flow into the software, are transformed by processing elements, and resultant data objects flow out of the software. Data objects are represented by labeled arrows, and transformations are represented by circles (also called bubbles). The DFD is presented in a hierarchical fashion. That is, the first data flow model (sometimes called a level 0 DFD or context diagram) represents the system as a whole. Subsequent data flow diagrams refine the context diagram, providing increasing detail with each subsequent level.

The data flow diagram enables you to develop models of the information domain and functional domain. As the DFD is refined into greater levels of detail, you perform an implicit functional decomposition of the system. At the same time, the DFD refinement results in a corresponding refinement of data as it moves through the processes that embody the application.
A few simple guidelines can aid immeasurably during the derivation of a data flow diagram:
(1) Level 0 data flow diagram should depict the software/system as a
single bubble;
(2) Primary input and output should be carefully noted;
(3) Refinement should begin by isolating candidate processes, data objects, and data stores to be represented at the next level;
(4) All arrows and bubbles should be labeled with meaningful names;
(5) Information flow continuity must be maintained from level to level and
(6) One bubble at a time should be refined. There is a natural tendency to overcomplicate the data flow diagram. This occurs when you attempt to show too much detail too early or represent procedural aspects of the software in lieu of information flow.

SRM INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

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	Dushyant Rao
Team Members	Dushyant Rao, Avipsha Panigrahi, Shubhra Kumari
Register Number	RA2011028010106
Date of Experiment	07.06.2022

Mark Split Up

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

Staff Signature with date

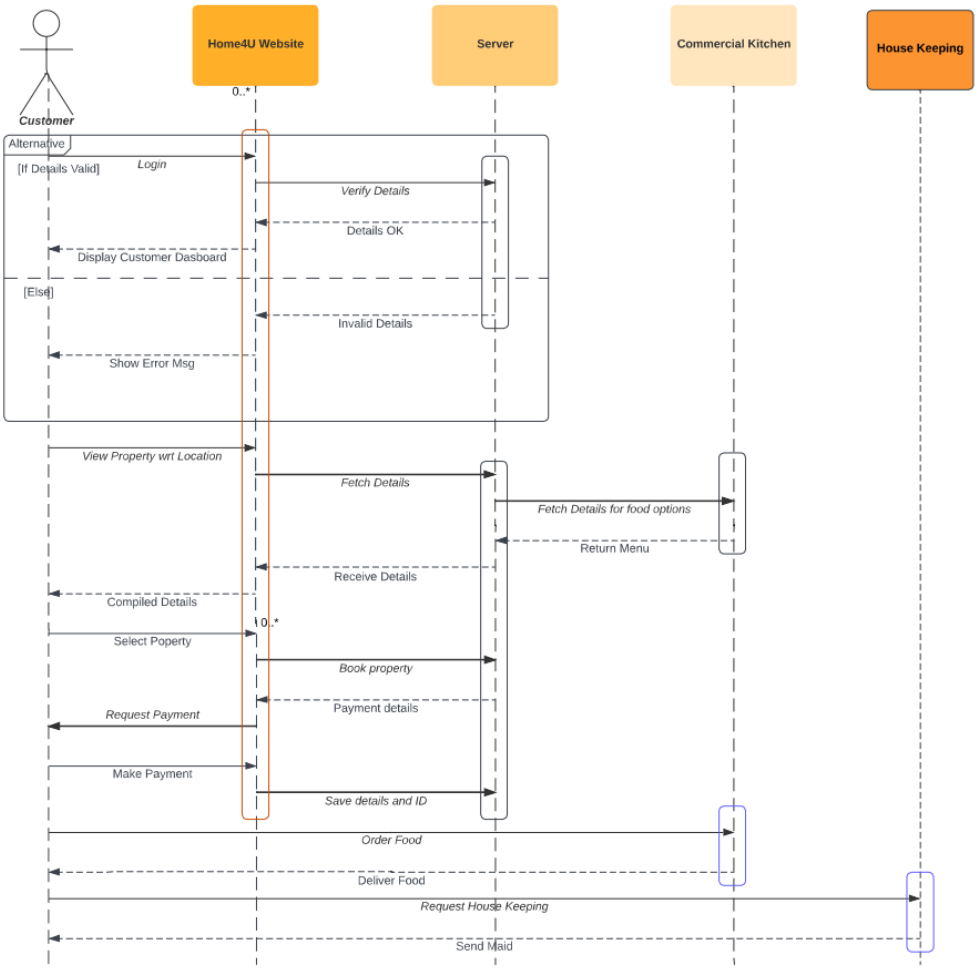
Aim

To create the sequence and collaboration diagram for the <project name>

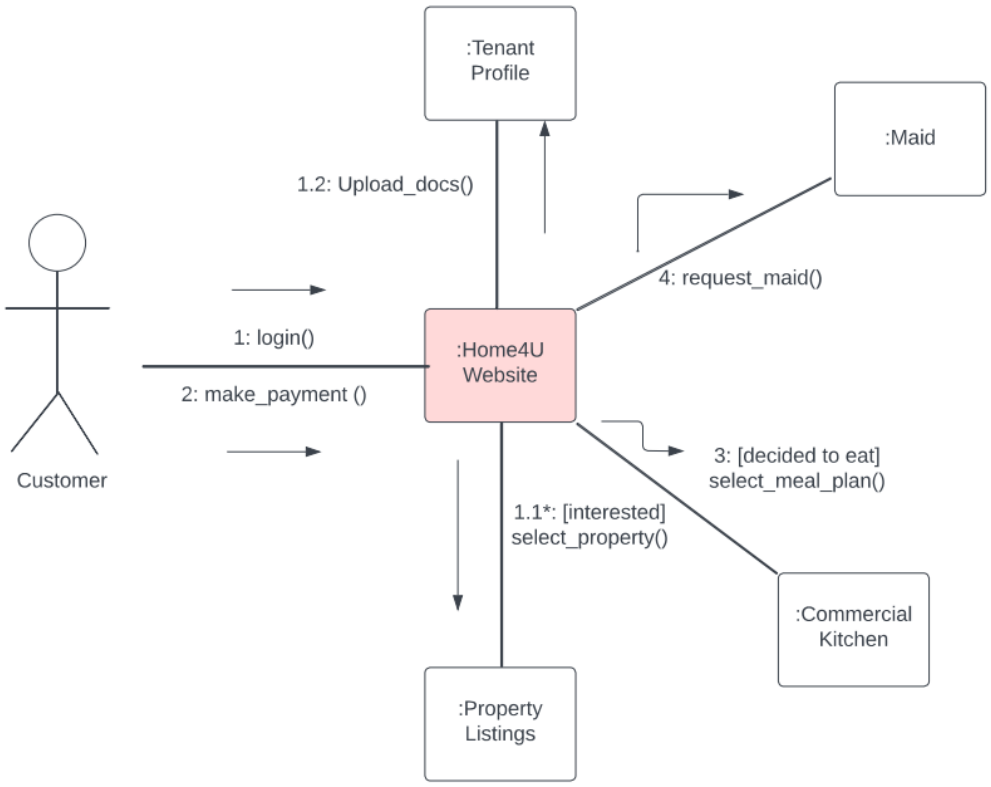
Team Members:

S No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	Rep/Member
2	RA2011028010093	Shubhra Kumari	Member
3	RA2011028010101	Avipsha Panigrahi	Member

Sequence Diagram



Collaboration Diagram:



Result:

Thus, the sequence and collaboration diagrams were created for the <project name>.

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	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	10.06.2022

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 <project name>

Team Members:

S No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	Rep/Member
2	RA2011028010101	Avipsha Panigrahi	Member
3	RA2011028010093	Shubhra Kumari	Member

Executive Summary:

• The scope of testing of our Home4U application includes Testing API integration with consistent data with Computer-Generated Tests, making test-cases for different modules to check if the code can withstand boundary cases that can arise if an exception arises. Eg: Test for payment portal, or selecting meal options.

• The objective of this testing includes testing of all the modules and to check if any exception exists in any of the modules.

• Regression (Re-running tests after a change) testing would be an important part of our software testing practice that would ensure our application still functions as expected after any code changes, updates, or improvements.

• Lastly critical path testing would be aimed at exploring the functionality used by typical users in typical daily activities.

Test Plan:

We as a team have decided that the testing will follow a top-down approach, as it will go well with Agile method of software development.With this method the testing can begin at the start of the project with continuous integration between development and testing. Agile Testing methodology will be continuous and help us finish our projects before deadlines. 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

The scope of testing of Home4U includes Testing API integration with consistent data along with Computer-Generated Tests, making a test-cases for different modules to check if the code can withstand boundary cases that can arise if an exception arises.

Functional Testing:

Home 4U testing is done on these 4 stages-

• **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. Eg: testing of login page, profile updation.

• **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. The integration of the various modules are tested in this phase.

• **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. If not, user feedback is taken and the following changes are made.

Modules and The Aspects they will be tested :

1. **User interface testing-** The testing of this particular module code will consist of checking if the application displays all the required buttons and check if the settings panel is in with the main screen.The layout and search bar should be placed in a user friendly manner. The border line case of this module would be to check how the UI responds when the keyboard or the touch screen does not work or the user provides or gives too many stimuli to the software.

2. **API Integration-** The testing of the code of this module would deal with the connectivity and processing of different applications. We will check that how much traffic can the website handle, in short, the number of applications running simultaneously to provide data such as a scraping tool. Eg: our website will be using data from other websites such as magicbricks, properties24 and if the data is not consistent and integrated, exchange of data will not take place.

3. Payment- The need of this module is to ensure the security, reliability and performance of a payment gateway by encrypting and securing the payment details between user and merchant while providing a smooth payment experience.

4. Cloud/Backup- In this module we will be checking if the backup is being made and is being retrieved as and when the user wants to.

Non-Functional:

• **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	• Acceptance Testing. • White Box Testing. • Black Box Testing. • Unit Testing. • System Testing. • Integration Testing.
Non-functional requirements	• Manual • User/crowd validation	• Performance Testing • Security Testing • Usability Testing • Compatibility Testing

Result:

Thus, the testing framework/user interface framework has been created for the Home4U.

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	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
Date of Experiment	11.06.2022

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 Home4U application.

Team Members:

S No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	Rep
2	RA2011028010101	Avipsha Panigrahi	Member
3	RA2011028010093	Shubhra Kumari	Member

Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1.1	Verify User / Registration	Accept Valid Mobile Number or email id on the Page#1	1. User clicks on User Registration link 2. Enter the mobile Number or email id on the text box 3. Click Sign-Up button	User should be taken to the next page for entering more user details	User taken to next page	Pass	Login successful
1.2	Verify User	If user does not match display invalid user msg on the Page#1	1.User clicks on login. 2. User denied access	User is denied access and asked to fill details again.	Prompt to refill details.	Pass	Success
2.1	Adding profile details	To add sensitive information such as DL, Aadhar Card,	1.User clicks on update dashboard. 2. User uploads scanned docs. 3. Save	User profile and payment method is updated.	User profile strengthened.	Pass	Success

		Credit Card details etc.					
2.2	User profile validation.	To verify if documents are legit and payment method(Account no./card no.) is valid	1.User clicks on update dashboard. 2. Documents are verified with database. 3. Invalid details msg is displayed.	User is denied access and asked to fill details again	Prompt to refill details.	Pass	Success
3.1	Browsing / selecting property.	Selecting a property from the catalog.	1.List of rooms/houses/flats are displayed to the user. 2.user clicks on property after browsing through details. 3.Click on select property.	Property agreement is shared, with success msg.	Property is finalized.	Pass	Success
3.2	Selecting property services(Food/Maid/Laundry)	Selecting a service from the catalog.	1. User chooses the service. 2. Details are shared in the dashboard. 3.Using the application interface, user communicates with the staff.	User should be delivered with respective service with feedback.	Service is provided	Pass	Success
3.3	Making payment	Accepting valid card no./UPI ID/ account no. saved in dashboard.	1.User chooses payment method. 2. User enters payment details. 3.User enters OTP. 4. OTP is verified.	Payment successful msg should be displayed with order id.	Payment Successful	Pass	Success
4	User Feedback/Customer care.	24x7 customer care should be available with hotline and email.	1.User chooses method to contact(call/message/email) 2.User clicks on contact.	Home4u professionals have been contacted msg should be displayed.	Feedback /query should be visible to backend team.	Pass	Success

Non-Functional Test Cases

Test ID (#)	Test Scenario	Test Case	Execution Steps	Expected Outcome	Actual Outcome	Status	Remarks
1.1	Login.	Check if user can enter a greater number of chars in the input box or invalid	In the test case try giving a constraint on the number of digits that a field and then check if a greater number of characters are allowed or not.	More number of chars should not be allowed in either of the field.	The constraint was met when character over 12 were not allowed to be entered.	Pass	Success
2.1	Single user multiple property relation.	Check if the user can have 2 rented properties in one profile or else invalid.	Send multiple request from user database to property database to tally records.	More than 1 property should not be assigned to a user.	User allowed to rent 1 property at a time.	Pass	Success
3.1	Redundancy in Data after scraping	Check if the same property is listed for rent on 2(more that 2 also) different websites and selecting 1 single record at a time	Grouping properties from 1 region together and finding the best price to list.	Same property should not appear more than once while browsing Home4U website.	Property is listed once.	Pass	Success

Result:

Thus, the test case manual has been created for the Home4U application

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
Name of the candidate	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Number	RA2011028010106
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

Aim

To prepare the manual test case report for Home4U Application.

Team Members:

S No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	Rep/Member
2	RA2011028010101	Avipsha Panigrahi	Member
3	RA2011028010093	Shubhra Kumari	Member

Summary of current stage of testing-

We are done with the testing of module 1.1, 1.2, 2.1 and 2.2 (which includes user verification and adding profile details pls refer table) and 3.1, 3.2 and 4 are in progress and, 3.3 has not been started yet. Non functional testing is in progress as well.

Obstacles faced-

One of the major obstacles we faced while testing was with scraping information from other websites. While scraping data redundancy was observed of the same properties from different websites(eg; 99acres, magicbricks). And while the user was browsing through the property listings redundant and inconsistent data was observed.

How the obstacle was overcome-

A database was created with dynamoDB to keep track of URLs already scraped and indexing was done. Grouping of properties was done, and the same property with the best price was listed

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

Module ID	Functional	Test Case	Test Case Coverage (%)	Status
1.1 and 1.2	User verification	To check if login credentials are valid	100%	Completed
2.1 and 2.2	Adding profile details	To add user details and verify them	100%	Completed
3.1	Selecting property	To enable user to choose a property	45%	In-Progress
3.2	selecting property services	To enable user to choose a service	50%	In-Progress
3.3	Making Payment	To check payment method validity and allow user to pay	0%	Not-Started
4	User feedback	To check if user is able to contact technical team for support	20%	In-Progress

Result:

Thus, the test case report has been created for Home4U Application.

SRM INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

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	Dushyant Rao
Team Members	Dushyant Rao, Shubhra Kumari, Avipsha Panigrahi
Register Numbers	RA2011028010106, RA2011028010093, RA2011028010101
Date of Experiment	01.07.2022

Mark Split Up

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

Staff Signature with date

Aim

To provide the details of architectural design/framework/implementation

Team Members:

S No	Register No	Name	Role
1	RA2011028010106	Dushyant Rao	**Rep/Member**
2	RA2011028010101	Avipsha Panigrahi	**Member**
3	RA2011028010093	Shubhra Kumari	**Member**

MODULE 1: WEB SCRAPING

Checking Status of Website:

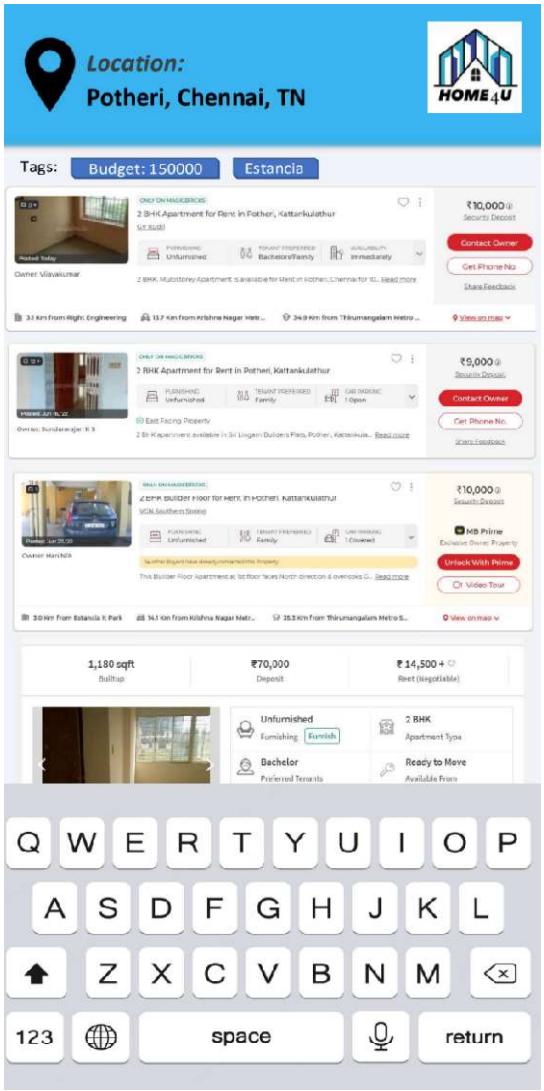
```
import requests

res = requests.get('https://www.magicbricks.com')

print(res.text)
print(res.status_code)
print(txt, status)
# print the result
```

Passing the Requirement and Linking:

```
soup = Magicbrick_home4U(page.content, 'html.parser')
from bs4 import

page = requests.get("https://www.magicbricks.com/")
soup = Magicbrick_home4U(page.content, 'html.parser')
soup = (page.content, 'html.parser')
title = soup.title.text
from bs4

import Magicbrick_home4U


page = requests.get(
    "https://www.magicbricks.com/")
soup = Magicbrick_home4U(page.content, 'html.parser')

# Extract title of page
page_title = soup.title.text

# print the result
print(page_title)import requests
```

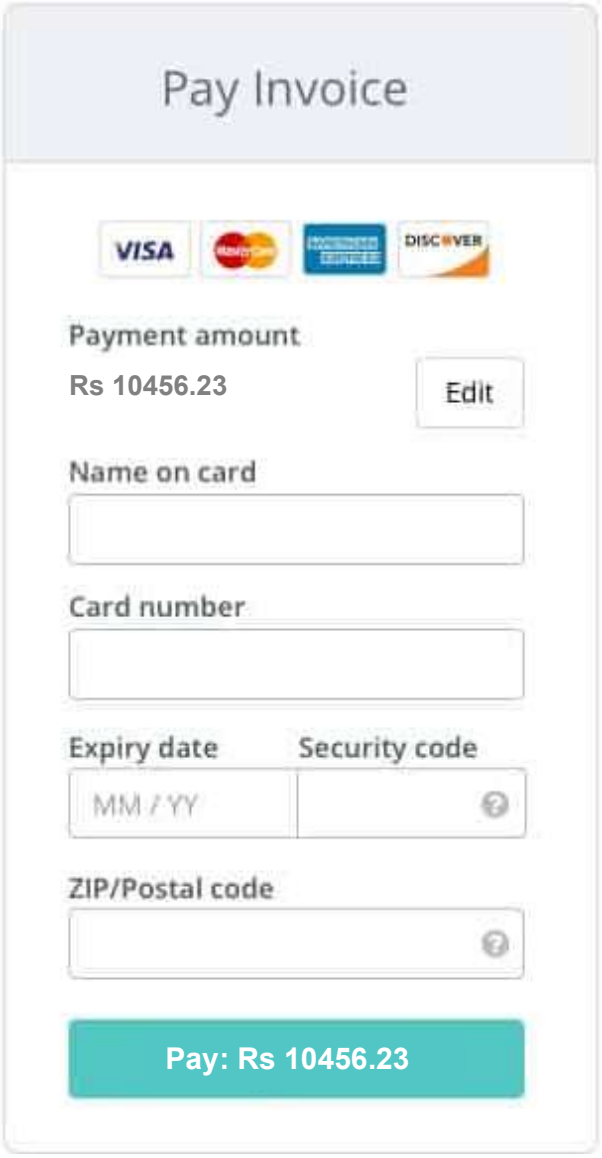
```
from bs4 import Magicbrick_home4U

page = requests.get(
    "https://www.magicbricks.com/")
soup = Magicbrick_home4U(page.content, 'html.parser')

# Extract title of page
page_title = soup.title.text

# print the result
print(page_title
```

IMPLEMENTATION OF MODULE 1



MODULE 2: PAYMENT PORTAL

IMPLEMENTATION OF MODULE 2



Entering Card details and Exceptions:

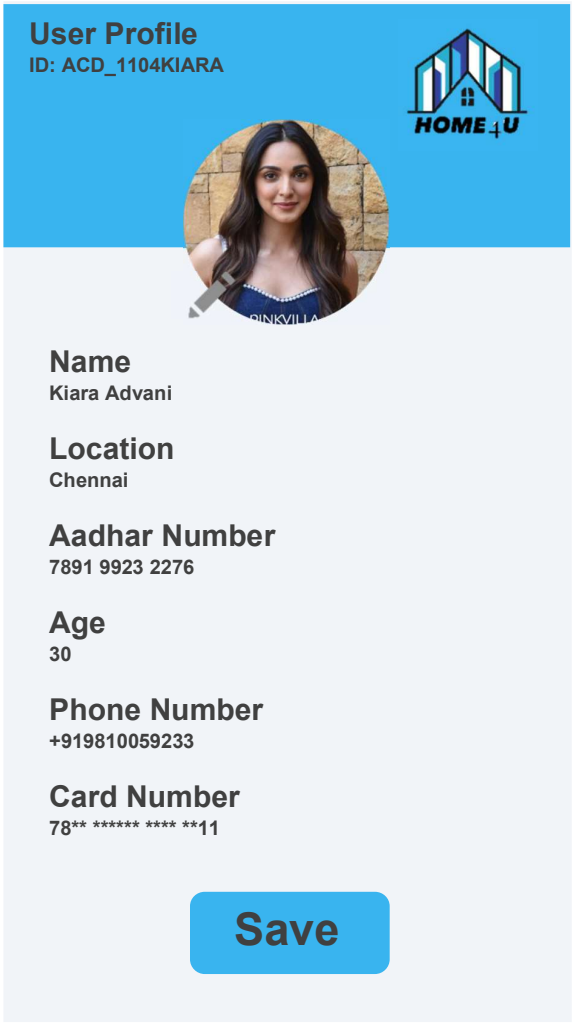
```
import payment_processor
from payment_processor.exceptions import *

# the authorize.net gateway requires valid authorize.net 'login' and
'trans_key' variables
gateway = payment_processor.Gateway( 'authorize.net', login='XXX',
trans_key='XXX' )
```

```
t = payment_processor.Transaction( payment=payment, method=card,
gateway=gateway )

try:
    t.process()
except TransactionDeclined:
    # The transaction requested was declined for such reasons as insufficient
funds or flagged for fraud.
    raise
except InvalidCardNumber:
    # The credit card number provided was invalid.
    raise
except InvalidCardExpirationDate:
    # The credit card expiration date provided was invalid.
    raise
except InvalidCardCode:
    # The credit card code provided was invalid.
    raise
except InvalidRoutingNumber:
    # The routing number provided was invalid (only applicable to Check
methods).
    raise
except InvalidAccountNumber:
    # The account number provided was invalid (only applicable to Check
methods).
    raise
except InvalidBillingAddress:
    # The billing address provided was invalid.
    raise
except InvalidBillingZipcode:
    # The billing zipcode provided was invalid.
    raise
except TransactionAmountLimitExceeded:
    # The per-transaction limit was exceeded.
    raise
except TransactionFailed:
    # The transaction failed for other reasons usually relating using python-
payment in ways unsupported by the gateway.
    raise
```

MODULE 3: PROFILE UPDATION:

```
# import the module
import tweepy

# assign the values accordingly
consumer_key = ""
consumer_secret = ""
access_token = ""
access_token_secret = ""

# authorization of consumer key and consumer secret
auth = tweepy.OAuthHandler(consumer_key, consumer_secret)

# set access to user's access key and access secret
auth.set_access_token(access_token, access_token_secret)

api = tweepy.API(auth)

name = "Kiara Advani"
api.update_profile(name)
location = "Chennai"
api.update_profile(location = location)
aadhar = "7891 9923 2276"
api.update_profile(aadhar = aadhar)
age = "30"
api.update_profile(age = age)
phone = "+919810059233"
api.update_profile(phone = phone)
card_num = "7891 33456 2290 1111"
api.update_profile(card_num = card_num)
```

IMPLEMENTATION OF MODULE 3



Framework of Modules:

1. User interface testing- The testing of this particular module code will consist of checking if the application displays all the required buttons and check if the settings panel is in with the main screen. The layout and search bar should be placed in a user friendly manner. The border line case of this module would be to check how the UI responds when the keyboard or the touch screen does not work or the user provides or gives too many stimuli to the software.

2. API Integration- The testing of the code of this module would deal with the connectivity and processing of different applications. We will check that how much traffic can the website handle, in short, the number of applications running simultaneously to provide data such as a scraping tool. Eg: our website will be using

data from other websites such as magicbricks, properties24 and if the data is not consistent and integrated, exchange of data will not take place.

Result:

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

CONCLUSION

The main objective of this project was to make the tenant housing experience convenient. the existing property services and to provide a solution to the problems encountered numerous challenges such as brokerage fee, high security deposit, no maintenance and services. Home4U was able to address most of the issues stated in the project.

This objective has been achieved successfully with the best practices in designing and building of a web based application for home rental and related services.

The web based application for home rental and relocation service system has been designed using Python server pages as programming language, apache server, AmazonRDS and Flutterflow.

REFERNCES

- https://flutterflow.io/
- https://github.com/login/
- https://www.geeksforgeeks.org/
- https://www.lucidchart.com/
- https://creately.com/
- https://www.indeed.com/
- https://www.proprofsproject.com/
- https://www.wikipedia.org/
- https://www.visual-paradigm.com/

APPENDIX(CODE)

Checking Status of Website:

```
import requests

res = requests.get('https://www.magicbricks.com')

print(res.text)
print(res.status_code)
print(txt, status)
# print the result
```

Passing the Requirement and Linking:

```
soup = Magicbrick_home4U(page.content, 'html.parser')
from bs4 import

page = requests.get("https://www.magicbricks.com/")
soup = Magicbrick_home4U(page.content, 'html.parser')
soup = (page.content, 'html.parser')
title = soup.title.text
from bs4

import Magicbrick_home4U


page = requests.get(
    "https://www.magicbricks.com/")
soup = Magicbrick_home4U(page.content, 'html.parser')

# Extract title of page
page_title = soup.title.text

# print the result
print(page_title)import requests
from bs4 import Magicbrick_home4U

page = requests.get(
    "https://www.magicbricks.com/")
soup = Magicbrick_home4U(page.content, 'html.parser')

# Extract title of page
page_title = soup.title.text

# print the result
print(page_title
```

Entering Card details and Exceptions:

```
import payment_processor
from payment_processor.exceptions import *

# the authorize.net gateway requires valid authorize.net 'login' and
'trans_key' variables
gateway = payment_processor.Gateway( 'authorize.net', login='XXX',
trans_key='XXX' )

t = payment_processor.Transaction( payment=payment, method=card,
gateway=gateway )

try:
    t.process()
except TransactionDeclined:
    # The transaction requested was declined for such reasons as insufficient
funds or flagged for fraud.
    raise
except InvalidCardNumber:
    # The credit card number provided was invalid.
    raise
except InvalidCardExpirationDate:
    # The credit card expiration date provided was invalid.
    raise
except InvalidCardCode:
    # The credit card code provided was invalid.
    raise
except InvalidRoutingNumber:
    # The routing number provided was invalid (only applicable to Check
methods).
    raise
except InvalidAccountNumber:
    # The account number provided was invalid (only applicable to Check
methods).
    raise
except InvalidBillingAddress:
    # The billing address provided was invalid.
    raise
except InvalidBillingZipcode:
    # The billing zipcode provided was invalid.
    raise
except TransactionAmountLimitExceeded:
    # The per-transaction limit was exceeded.
    raise
except TransactionFailed:
    # The transaction failed for other reasons usually relating using python-
payment in ways unsupported by the gateway.
    raise
```

Updating/Adding User Profile

```
# import the module
import tweepy

# assign the values accordingly
consumer_key = ""
consumer_secret = ""
access_token = ""
access_token_secret = ""

# authorization of consumer key and consumer secret
auth = tweepy.OAuthHandler(consumer_key, consumer_secret)

# set access to user's access key and access secret
auth.set_access_token(access_token, access_token_secret)

api = tweepy.API(auth)

name = "Kiara Advani"
api.update_profile(name)
location = "Chennai"
api.update_profile(location = location)
aadhar = "7891 9923 2276"
api.update_profile(aadhar = aadhar)
age = "30"
api.update_profile(age = age)
phone = "+919810059233"
api.update_profile(phone = phone)
card_num = "7891 33456 2290 1111"
api.update_profile(card_num = card_num)
```