Course name : Project Management of Complex system (EM 612-A)

Project Name – Univ All in one

Group members :-

Annie Renita

Basel Ghaly

Amey Naik

Akhilesh Wagh

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Introduction

Univ AI1 is a community-driven and community-oriented web portal that enables its users to view universities and get an overall analysis of them based on various features. Also, it enables its users to review, comment and rate the schools and help to improve all the students and parents. Designing an application that helps people of different ages get all the information needed about various universities I the United States of America at one place. The app design caters an efficient way to find your dream university. Our web portal design will use GIS technology for implementation of the maps feature. Geographical Information Systems (GIS) are used today to provide advanced analysis tools and complete data packages for analyzing services distribution and demographic information. These tools can help planners in taking important decision such as choosing schools locations, and identifying best schools new locations.The aim of this paper is to use GIS functions (overlay analysis, and buffer) in evaluating spatial distribution of schools. The study area in this study is the United States of America. A geo-database is designed that includes land use and schools located in the United States of America. The results are utilized in evaluating spatial distribution of schools which can help planner in managing the distribution of the future schools in the United States of America.

Executive Summary

Getting a degree has become a customary thing in-order to get a decent salary in today's world but finding a university to get the best opportunities for you to enhance your skills and get placed at your dream university with all the facilities, coursework and other demographics of your choice. Many students and parents find it difficult to find information about different universities and their pros and cons. It is a hassle to juggle around between different university sites to find information that is relevant to your requirements to find your perfect university.

Finding a university that will benefit your career is of great priority for many individuals and helping you find all the information and resources to achieve that is the main goal. There are a lot of factors that students and parents look for while choosing to apply to various universities. Some of them are a s follows courses available at the university, course curriculum , university's world ranking, university's state ranking, faculty, public or private university, fee structure, types of degrees provided at the university, job placements, internship opportunities, crime rates near the university, census of the area (whether it's too crowded or not), etc. Our application is a one stop portal where users can find all the information about the universities and other factors that will help them to decide which universities they can apply to.

University AI1 which means "University all in 1" is a community-driven and community-oriented application that enables its users to view universities and get an overall analysis of them based on various features. Also, it enables its users to review, comment and rate the schools and help to improve all the students and parents. It is easy to use and user friendly. The application can be used by people of any age ; students applying for undergraduate, graduate or phd, parents, etc.

Problem Statement

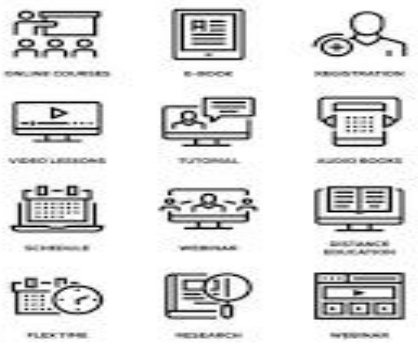
- Finding a university to get the best opportunities for you to enhance your skills and get placed at your dream university with all the facilities, coursework and other demographics of your choice. Many students and parents find it difficult to find information about different universities and their pros and cons. It is a hassle to juggle around between different university sites to find information that is relevant to your requirements to find your perfect university.
- Need for a source verified review system about the universities, will be helpful for students and parents all around the world. Data integrity is an important factor that is prioritized in the design of the application.

Ranking

is important for students to choose universities beneficial for their future

Resources and Reviews

are necessary in-order to decide on best university fit for you.



Time consuming

as we have to collect information from different sites.

Background and Justification:

University all in one is a project dedicated to help students and parents all over the world to find the perfect university of their choice. It is a design for an application which will be helpful for students to access all university related information at one place.

Project Objective:

- To make use of the agile software development model.
- To develop design for an application to access all university related information on a single application.
- To help in comparison between universities.
- To add university related information like ranking and reviews of the university, undergraduate and graduate programs offered, geographical location, crime rate of locality for each university.
- To design easy to use applications which should be suitable for all age groups.

Project Deliverables:

1. State diagram
2. Use case diagram
3. Choreography diagram
4. Use Case description

5. Data dictionary
6. Class diagram (Without method)
7. Sequence diagram
8. Interface design
9. Database design
10. Complete class diagram (with methods)
11. Software design

Project Scope:

- Design for an application for students to access all university related information at one place.
- Review and rating system which will help the students choose the university based on reviews from students studying in the university.
- GUI mockups for the web application.
- Map displaying all universities in the United States of America.

Future Scope: Actual development of the application

Project Success Criteria:

University all in one is a project dedicated to help students and parents all over the world to find the perfect university of their choice. It is a design for an application which will be helpful for students to access all university related information at one place. To make use of the agile software development model.

The project will be considered successful if students and parents of all age groups from all over the world will start using the application for comparing and selecting universities.

Budget and Resourcing:

The table below summarizes the various resources required to develop a mobile application. If the team wants to keep working on the app, they'll need to employ people who have worked on web applications before. It's also critical that the team incorporates significant features like user profiles, GIS technology, among others. The team would need to present the idea to investors in order to get funds to develop the app. In exchange for their initial investment and continuous support, investors would be able to become stakeholders and profit from the firm in the long term. The group might potentially make use of services designed to assist

entrepreneurs. These platforms allow users to give to various companies in exchange for a reward from the firm.

Resource	Budget
Business Analysis	$1,200 - $11,000
Design	$2,500 - $10,000
App Architecture	$2,000 - $60,000
Project Management	$1,200 - $12,000
Push Notifications	$1,500 - $2,500
User Profile Feature	$2,400+
Chat Feature	$2,400 - $12,000
App Analytics	$2,000+
Location Based Service	$2,600+
Payment Gateway	$2,600+

Project Sponsor

Stevens Institute of Technology

Project Stakeholders

1. Dr. Feng Liu - Advisor
2. Annie Renita - Project Manager / App designer
3. Basel Ghaly - App designer
4. Amey Naik - App designer
5. Akhilesh Wagh - App designer

Work Breakdown Structure

1) Phase 1 : (Milestone 1)
    1.1 Initiation
        1.1.1 Defining scope and project deliverables
        1.1.2 Scope analysis
        1.1.3 Identifying stakeholders
        1.1.4 Project charter
    1.2 Project management
        1.2.1 Requirement gathering
        1.2.2 Requirement analysis
        1.2.3 Project estimate
        1.2.4 Planning
            1.2.4.1 Scheduling
            1.2.4.2 Resource planning
2) Phase 2 : (Milestone 2)
    2.1 Design - I
        2.1.1 Context Design
        2.1.2 Use case diagram
        2.1.3 Choreography diagram
        2.1.4 Use case description
3) Phase 3 : (Milestone 3)
    3.1 Design -II
        3.1.1 Data dictionary
        3.1.2 Class diagram (without methods)

3.1.3 Sequence diagram

3.1.4 Interface diagram

3.1.5 Database diagram

4) Phase 4 : (Milestone 4)

4.1 Design - III

4.1.1 Complete class diagram (with methods)

4,1.2 Software design

4.2 Review

4.2.1 Adaptation of any scope changes

4.2.2 Analyze the impact on modules

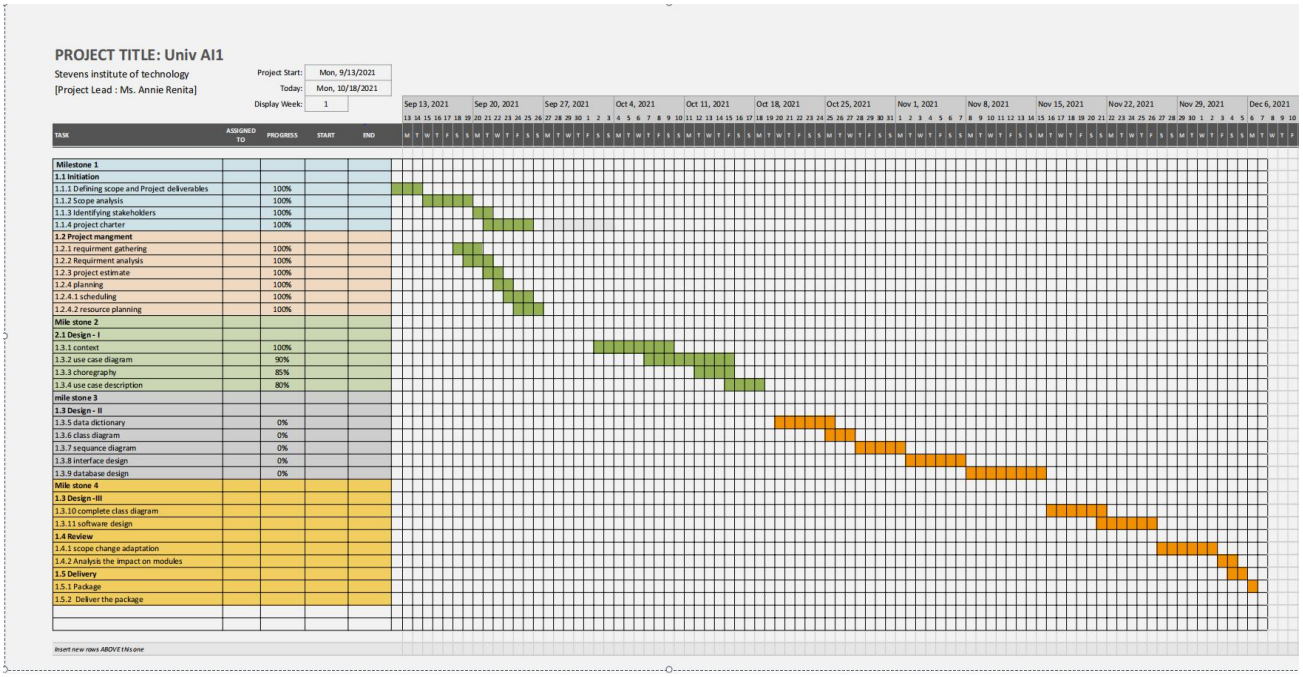
4.2.3 Review the project

4.2 Delivery

4.3.1 Package creation

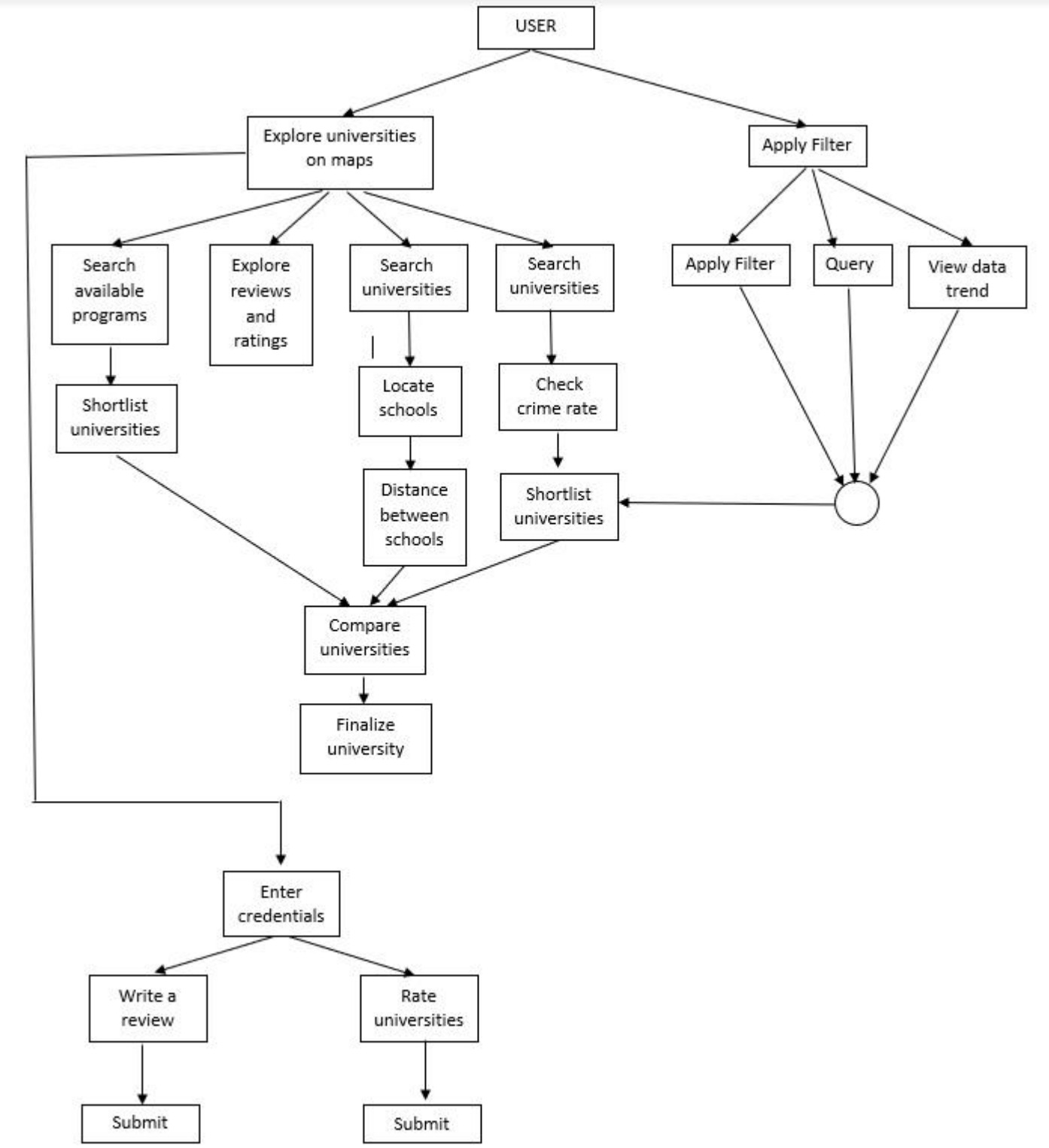
4.3.2 Deliver the package (report)

Gannt Chart


PROJECT TITLE: Univ AI1
Stevens institute of technology
[Project Lead : Ms. Annie Renita]
Project Start: Mon, 9/13/2021
Today: Mon, 10/18/2021
Display Week: 1
TASK
ASSIGNED TO
PROGRESS
START
END
Milestone 1
1.1 Initiation
1.1.1 Defining scope and Project deliverables 100%
1.1.2 Scope analysis 100%
1.1.3 Identifying stakeholders 100%
1.1.4 project charter 100%
1.2 Project mangment
1.2.1 requirment gathering 100%
1.2.2 Requirment analysis 100%
1.2.3 project estimate 100%
1.2.4 planning 100%
1.2.4.1 scheduling 100%
1.2.4.2 resource planning 100%
Mile stone 2
2.1 Design - I
1.3.1 context 100%
1.3.2 use case diagram 90%
1.3.3 choreography 85%
1.3.4 use case description 80%
mile stone 3
1.3 Design - II
1.3.5 data dictionary 0%
1.3.6 class diagram 0%
1.3.7 sequance diagram 0%
1.3.8 interface design 0%
1.3.9 database design 0%
Mile stone 4
1.3 Design -III
1.3.10 complete class diagram
1.3.11 software design
1.4 Review
1.4.1 scope change adaptation
1.4.2 Analysis the impact on modules
1.5 Delivery
1.5.1 Package
1.5.2 Deliver the package
Insert new rows ABOVE this one
Sep 13, 2021
Sep 20, 2021
Sep 27, 2021
Oct 4, 2021
Oct 11, 2021
Oct 18, 2021
Oct 25, 2021
Nov 1, 2021
Nov 8, 2021
Nov 15, 2021
Nov 22, 2021
Nov 29, 2021
Dec 6, 2021

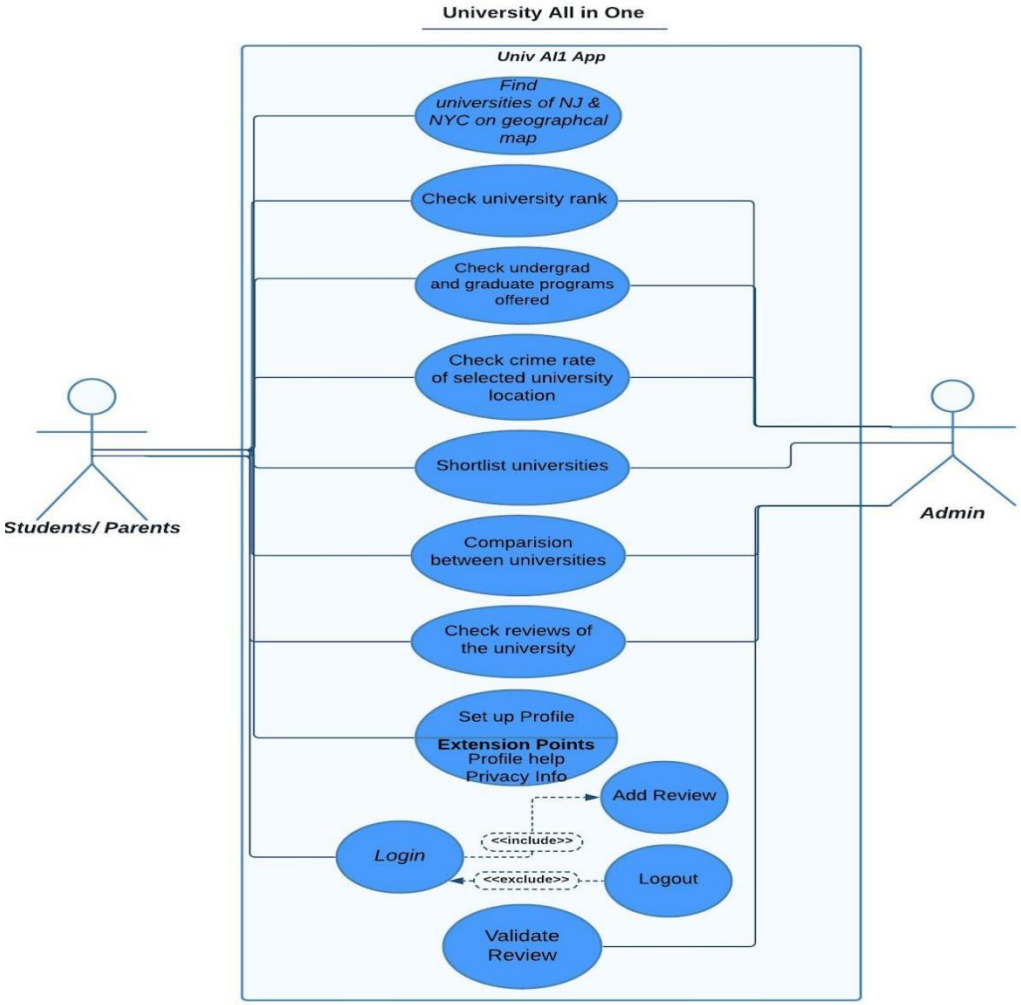
Design Implementation

State diagram:-



Use Case diagram and description:-

In Unified Modelling Language diagrams, use case diagrams are a means to capture the system's functionality and needs. It depicts a live system's dynamic activity. A use case diagram consists of a use case and an actor. For the project “University all in one”, the users that will be using our application are Students, Professors and Parents which act as the actors in the use case diagram, on the other hand, admin will be the actor who will be responsible to control the application and give appropriate outputs. The Use case diagram is being displayed below:

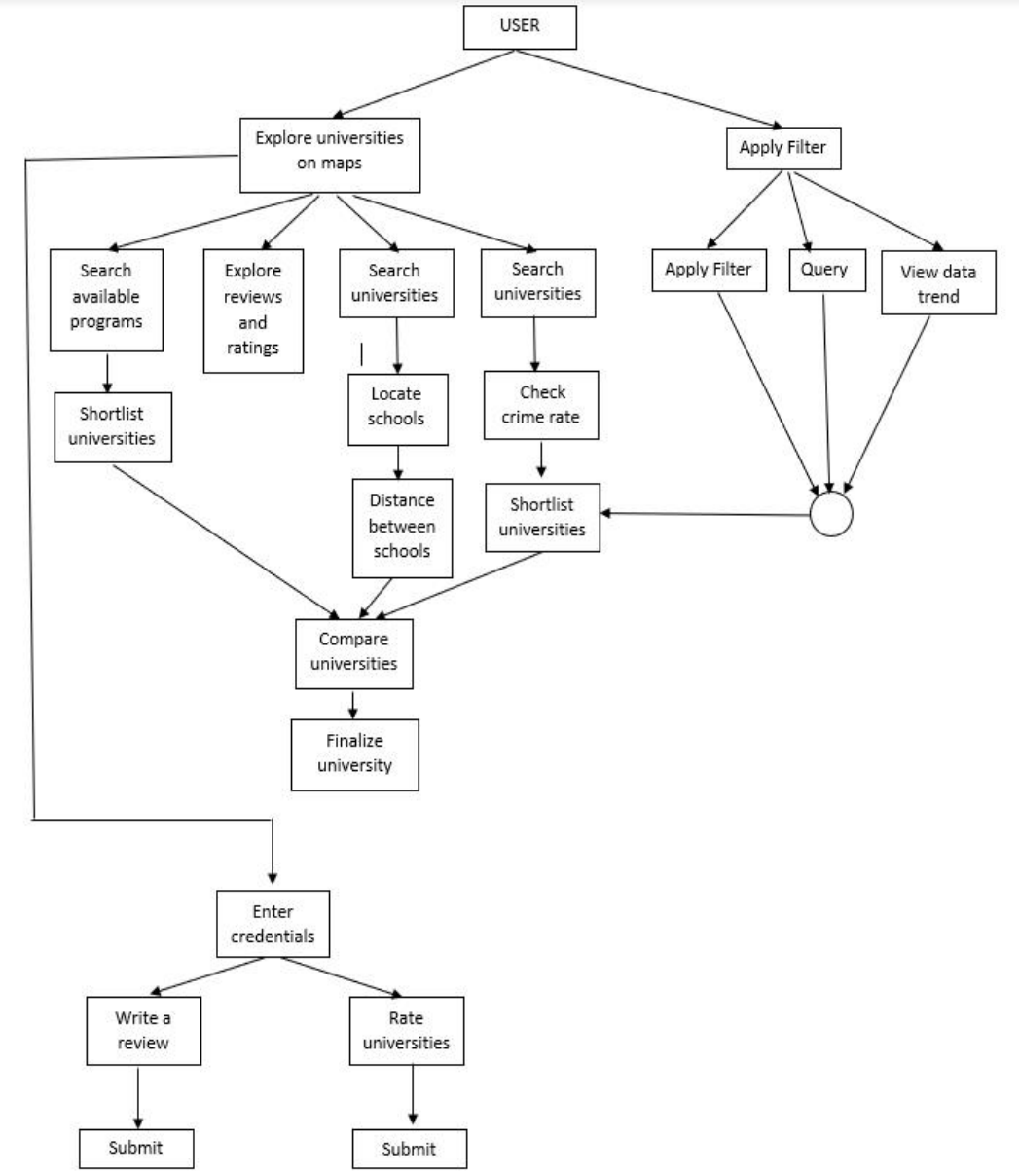


- The Primary actors are Students, Parents and Professors, while the secondary actors is Admin.
- The application or the system that we offer displays universities on a geographical map of New Jersey and NYC.
- The Rank of the university, programs offered by the university, crime rate of the locality can be found by the user.
- All these parameters will be updated by the user on regular times.

- The application can also be used to shortlist the universities that the user has liked and compare it with other universities.
- The Reviews of all the university can also be found.
- The reviews of the university can be posted by the user only if he or she is a student at the university which will be validated by the admin before posting it publicly.

State diagram:-

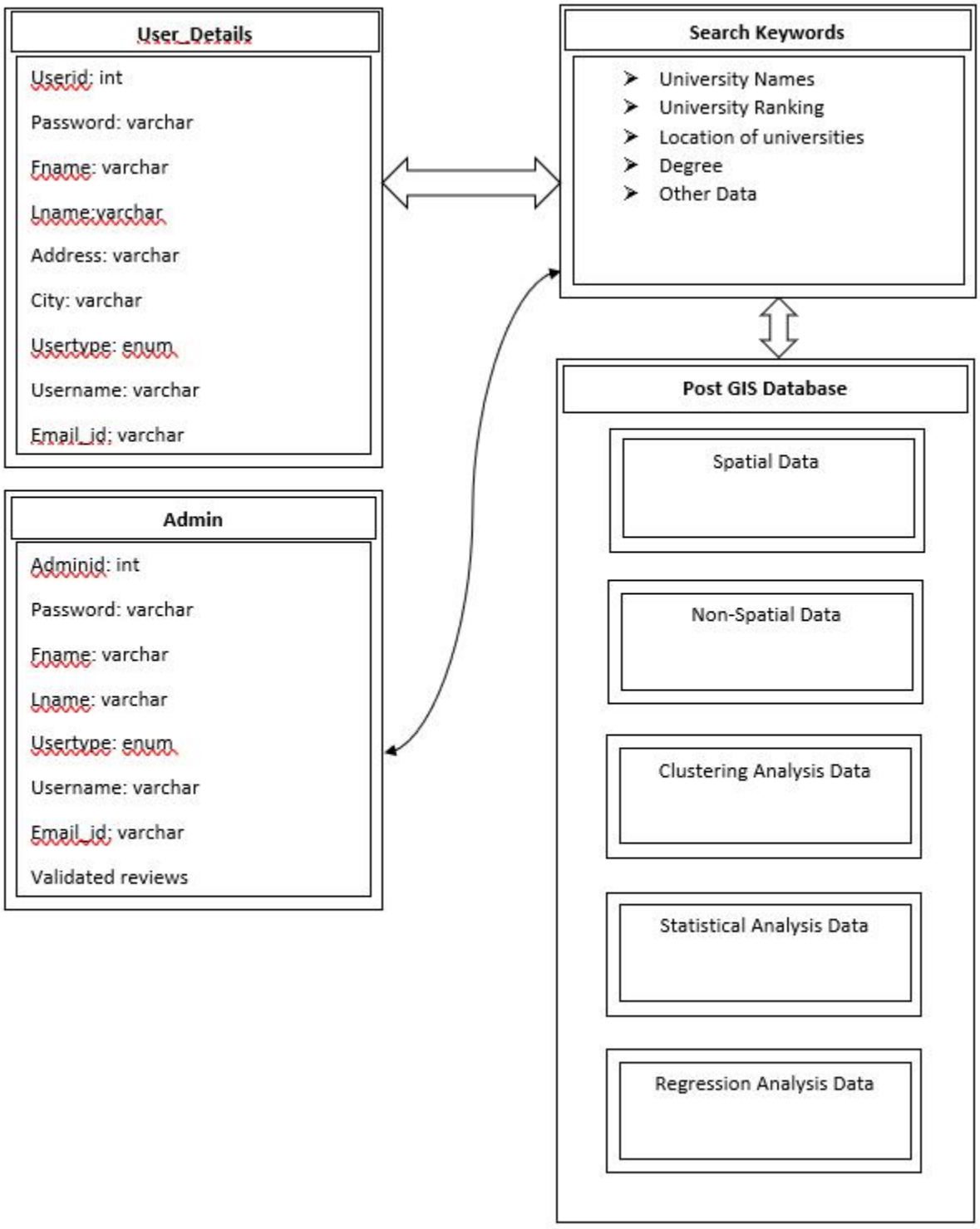
A state diagram is used to design the dynamic aspect of the system. It specifies the status of the components, as well as changes in state caused by an event. Events are internal and external factors influencing the system. Following is the state diagram for our project:



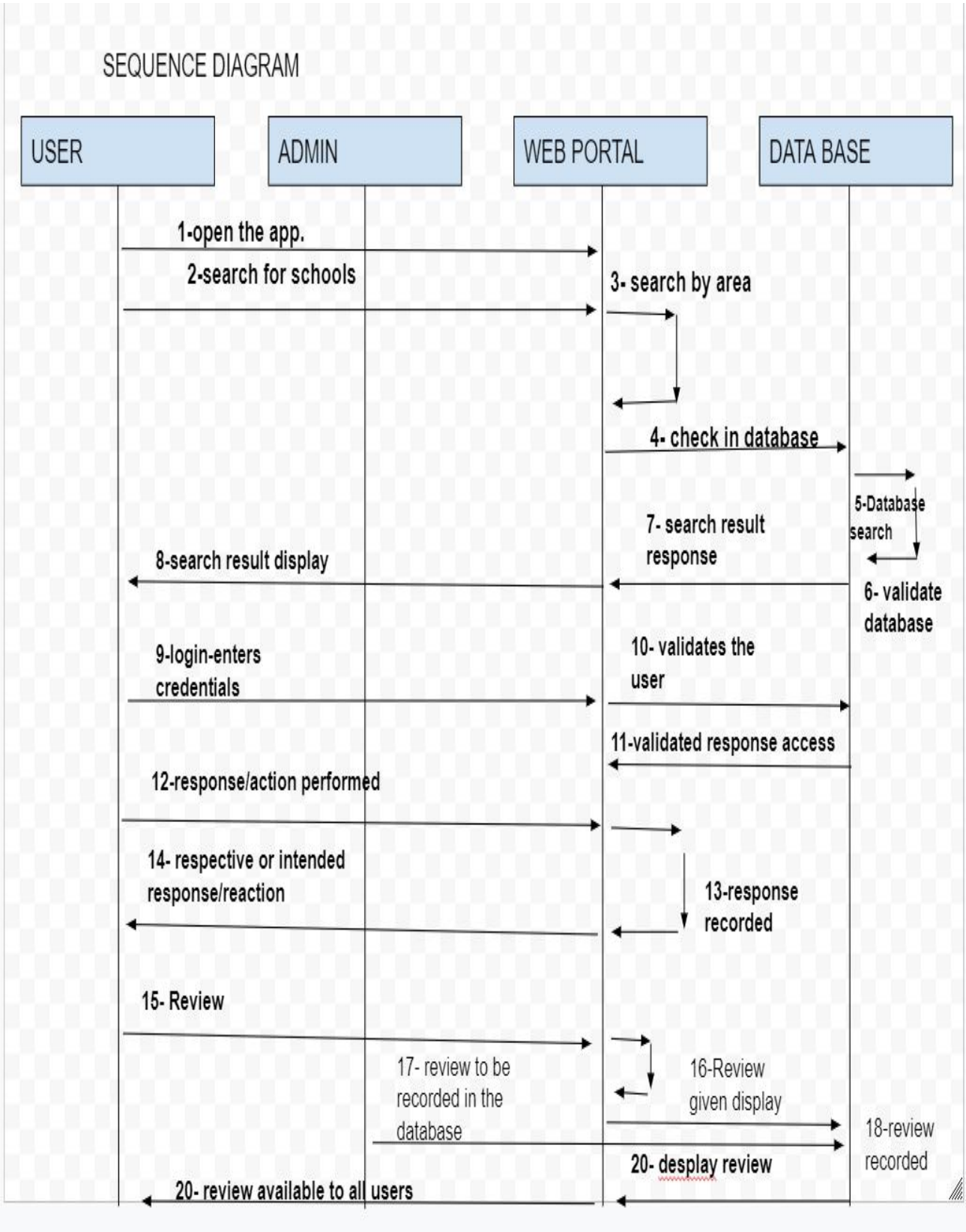
Data dictionary:-

Element or value	Data Type	Character Length	Acceptable Values
Userid	int	10	Y
Password	varchar	20	Y
Fname	varchar	50	Y
Lname	varchar	50	Y
Address	varchar	200	Y
City	varchar	50	Y
Usertype	enum	50	Y
Username	varchar	50	Y
Email_id	Varchar	50	Y
Reviews	varchar	500	Y

Class diagram (without methods) and database design:-



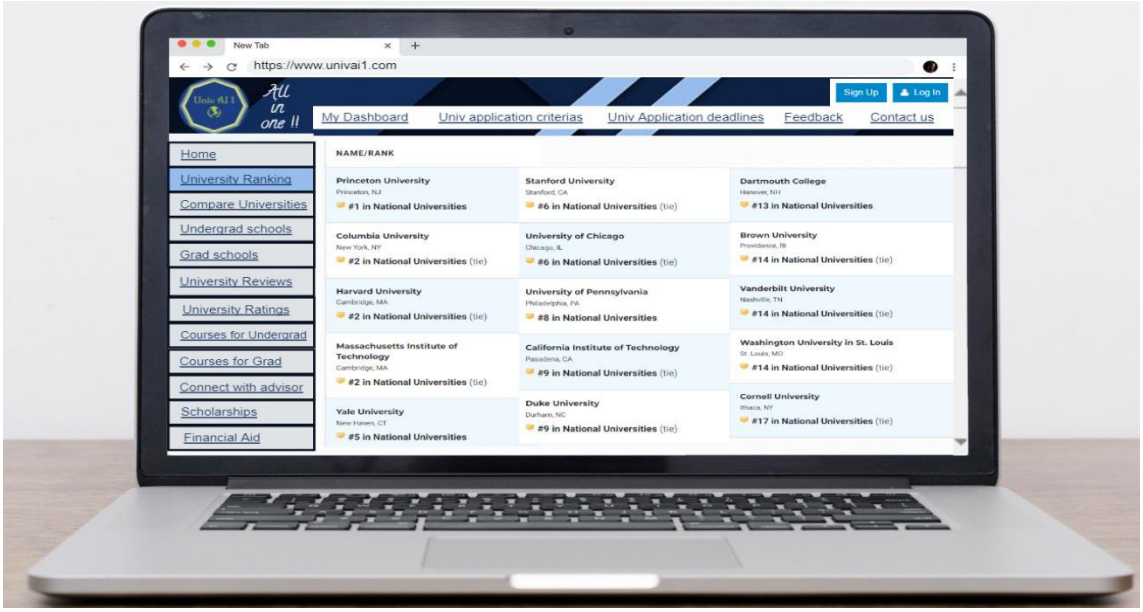
Sequence diagram:-



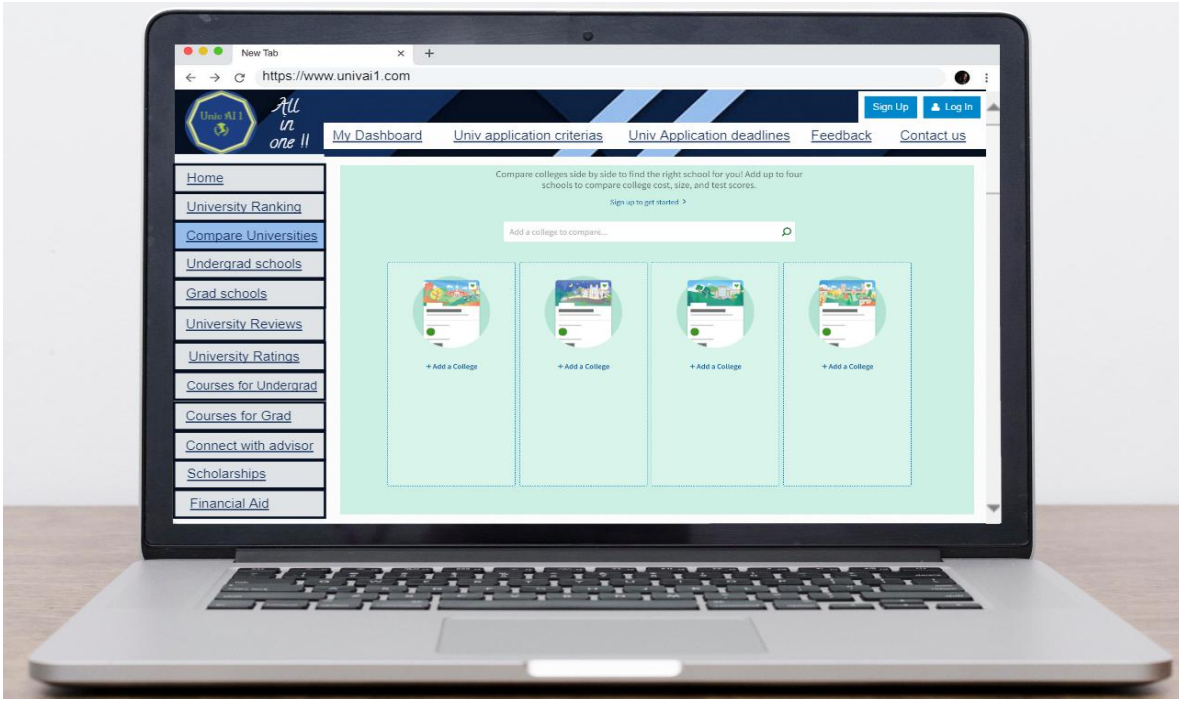
Interface diagram:-

1) Home page:

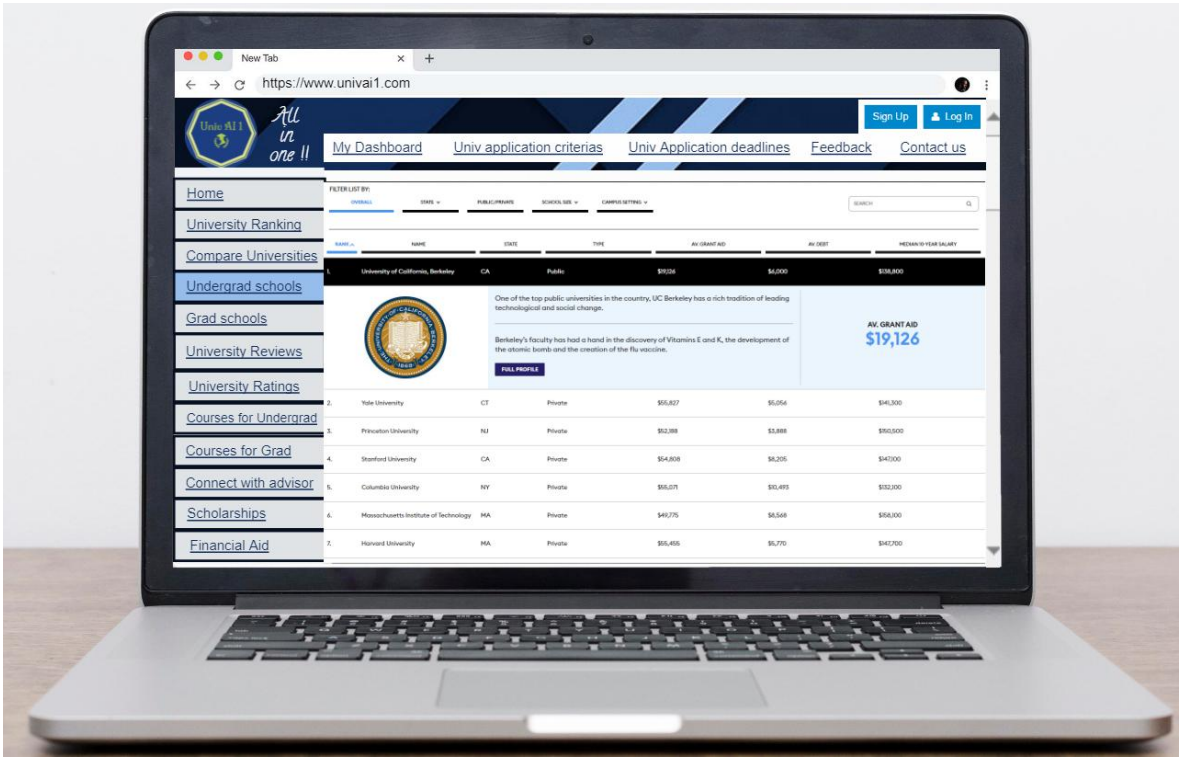
2) University Ranking page:



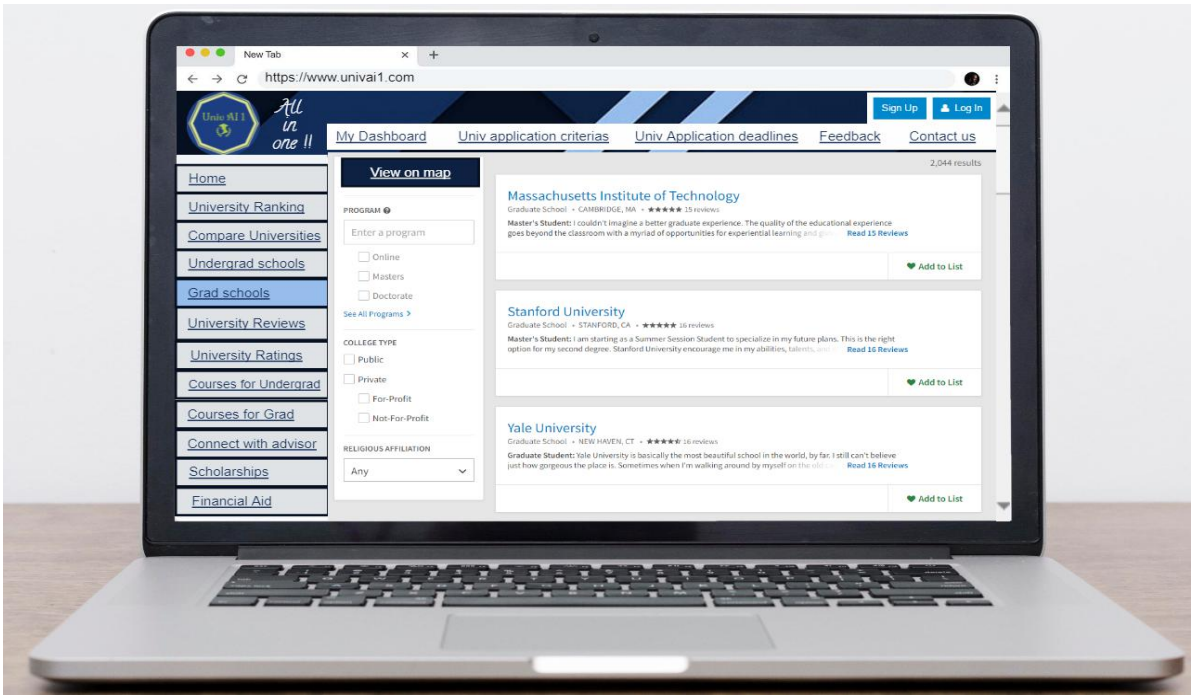
3) Compare Universities page:



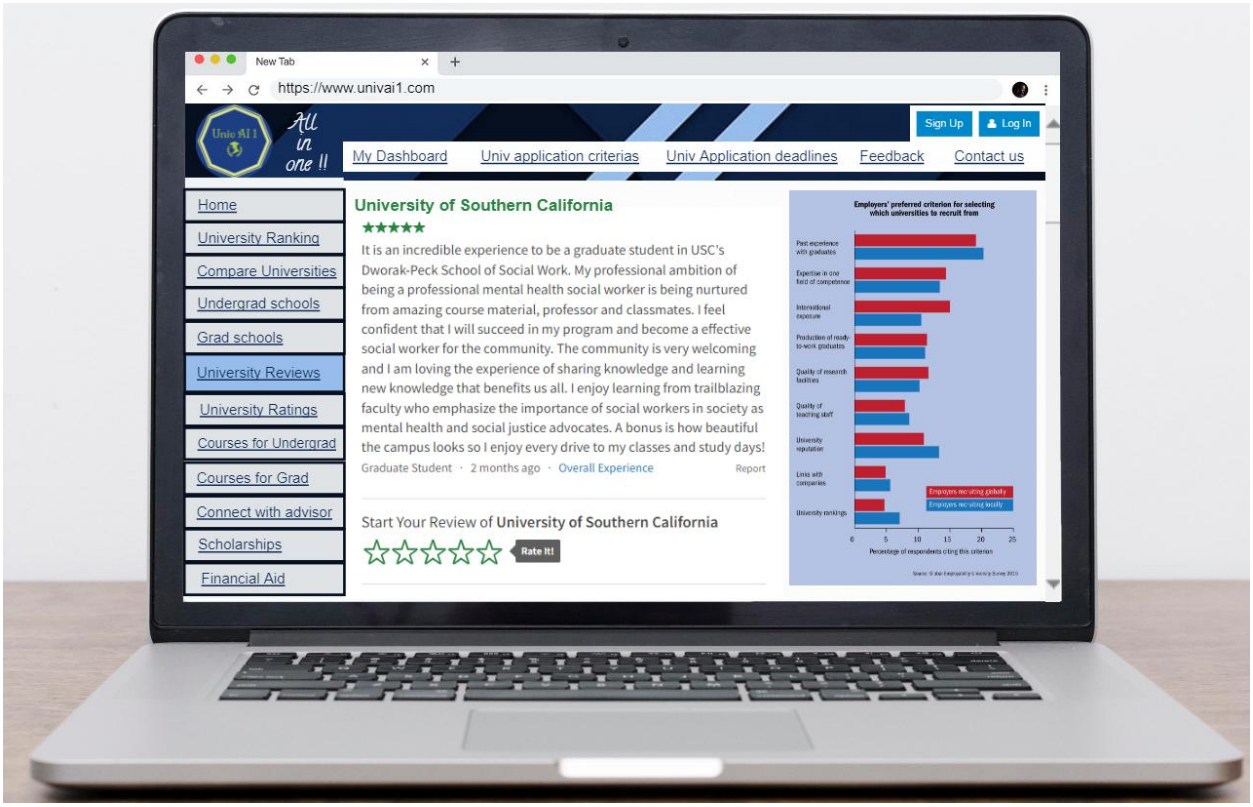
4) Undergrad school page:



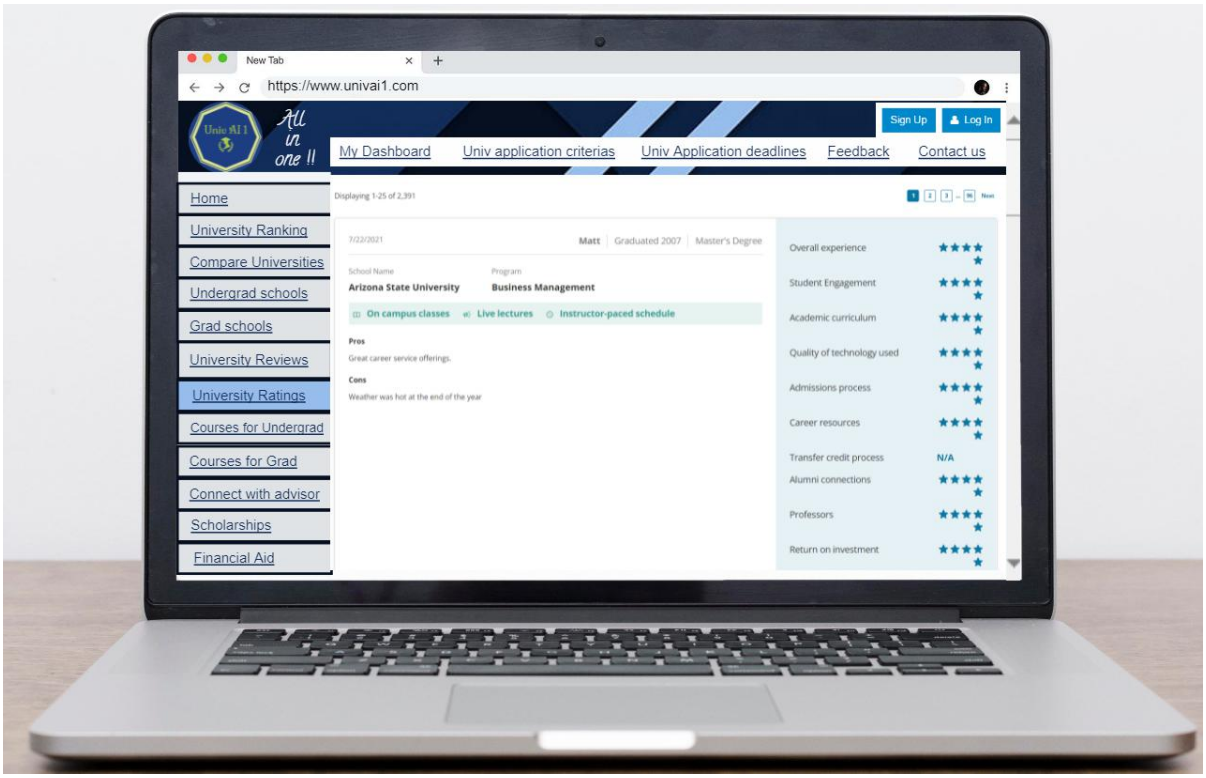
5) Graduate schools page:



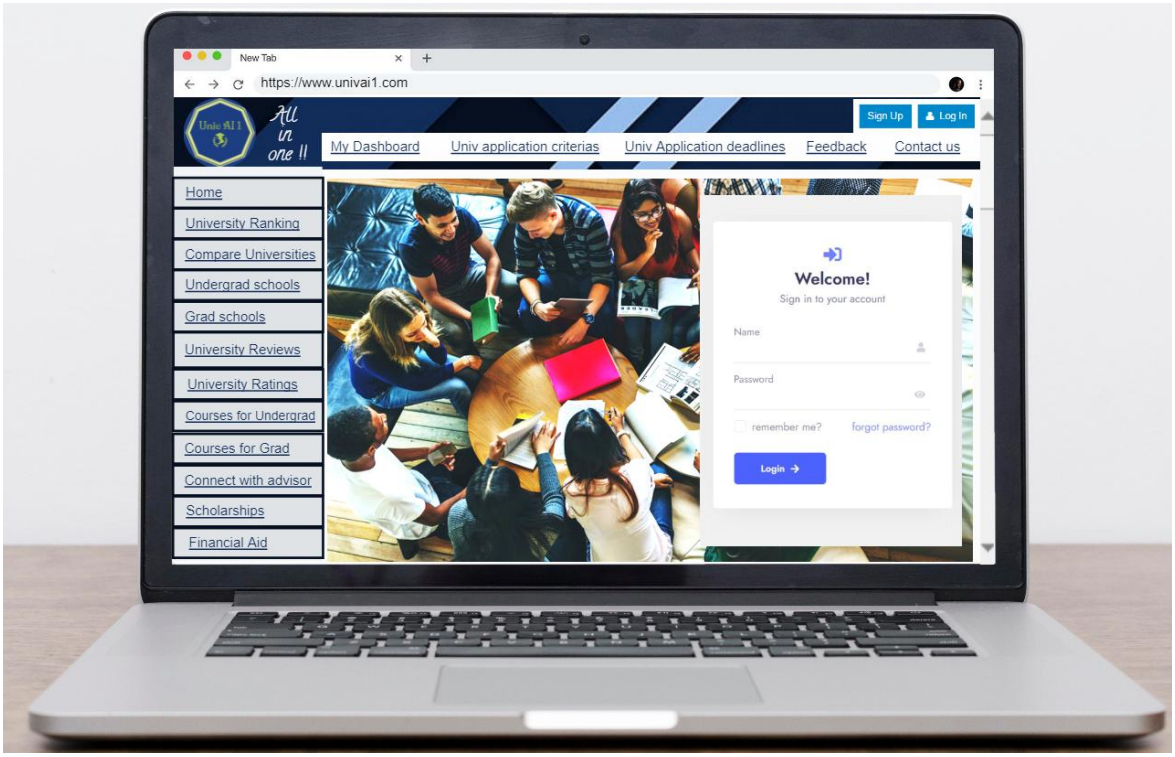
6) University Reviews page:



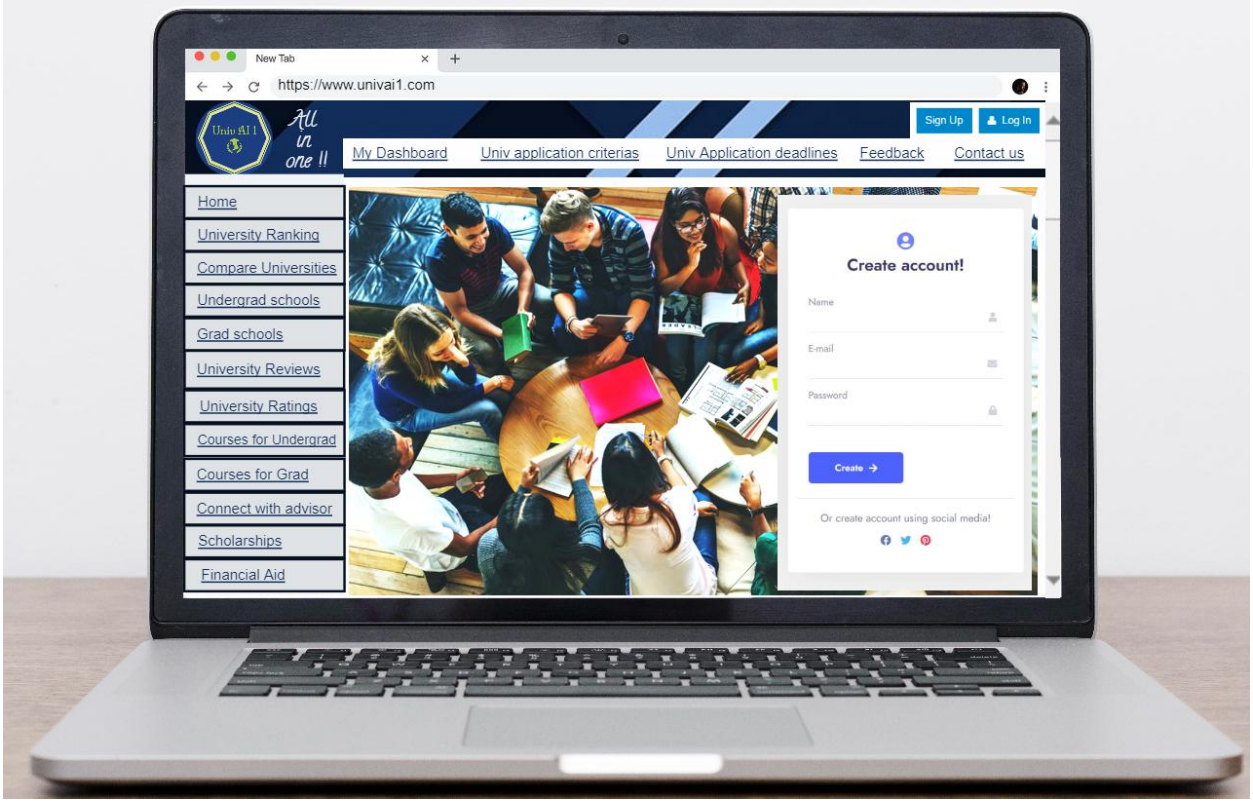
7) University Ratings page:



8) Login page:



9) Sign up page:



Software design:-

1.

Method:	Find Universities
Clients:	Students, Parents, Teachers, Professors
Associated Use cases:	To find universities of NJ & NYC on geographical map, university list or search bar
Responsibilities description:	To display universities as per applied filters
Arguments Received:	Choice of the universities by clients
Type of Value Returned:	Universities of the specific location

Logic

When the client or user clicks to find universities:
Geographical map of NYC and New Jersey is displayed showing all the universities
Clicking on the specific university:
All the details of the university are visible.
Else find university by clicking on 'University list'.
Else find university directly on search bar.

2.

Method:	Check university rank
Clients:	Students, Parents, Teachers, Professors
Associated Use cases:	To find the rank of the university
Responsibilities description:	To display the World rank, Country rank of the university
Arguments Received:	Name of the university/Select university on map
Type of Value Returned:	Rank of the university based on selected category

Logic

When a user clicks on the ranking of the universities:
User can search the name of the university
Else the names of universities are displayed rank-wise.
Then both the country and world rank are displayed.

3.

Method:	To find the programs offered by the university

Clients:	Students, Parents, Teachers, Professors
Associated Use cases:	To find all the undergraduate and graduate programs offered by the university
Responsibilities description:	1) To display the list of programs offered in the university 2) To shortlist the university based on selected program
Arguments Received:	Name of the university and interested program of the client
Type of Value Returned:	University-wise list of undergraduate and graduate program

Logic

When the user clicks on the “Academic courses”:
Then the user needs to select between undergraduate or graduate programs
After selecting the course, the list of universities which offer the course are displayed.
The user can then shortlist the university.
The shortlisted university can be compared with any other shortlisted university by clicking on “compare universities”.

4.

Method:	Reviews of the university
Clients:	Students, Parents, Teachers, Professors
Associated Use cases:	To check the reviews of the university
Responsibilities description:	To display the reviews of the university that are given by the students studying in that university
Arguments Received:	Name of the university/Select university on map
Type of Value	The validated reviews of the students

Returned:	

Logic

When a user clicks on the reviews of the universities:
The list of the universities is displayed
Select the university for which you want to see the reviews.
The user can then rate the reviews of the students.

5.

Method:	Create account request and review university
Clients:	Students studying in university
Associated Use cases:	1) Create new user account 2) Rate and write reviews of the university
Responsibilities description:	To get the ratings and reviews from the students studying in the university
Arguments Received:	Username, User Email, Phone Number, Email, Address, Name of the university and program, Student ID card
Type of Value Returned:	The validated reviews of the students

Logic

User needs to create an account to give ratings and reviews of the university.
User is prompted with a form to fill; the following details need to be provided by the student: "Name, Email Id, Phone number, Address, Name of the university, Program of Study, upload Student ID"
Create Username and password:
Login and select the university of the user.
Give ratings and write a review of the university and the program.
This review will be validated before posting.

Project Management Software

1)Jira - (4 Sprints for covering 4 milestones)
I had created tasks according to the work break down structure for each sprint.

2)Google Meet:
To conduct meetings and discuss about the project and communicate.

3) Group Me:

To co-ordinate and communicate with teammates about the project and presentations, etc.

Domain knowledge

1) Academic system in the US of various universities depending whether they are public or private universities. Bachelor degrees, Graduate degrees, Doctoral program/ degree, professional degree (specialized degrees), pros and cons of being in public/ private universities.

2)Geographic Information System:
A Geographic Information System (GIS) is a computer system that analyzes and displays geographically referenced information. It uses data that is attached to a unique location. ... These are just a few examples of the many uses of GIS in earth sciences, biology, resource management, and many other fields.

3)Unified Modeling Language:
The Unified Modeling Language is a general-purpose, developmental, modeling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.

Risk Analysis

We need to follow a continuous risk management strategy to safeguard a project against unexpected risk. This will aid in discovering, understanding, and responding to threats and opportunities. The following steps will be guided by this plan:

Identify the hazards that may have an influence on the project.

Assign each identified risk to a team member who will be responsible for managing the danger or opportunity.

Risks will be assigned to a cross-functional team depending on their domain.

Analyze each risk to fully comprehend the driving forces and potential consequences, taking into account the breadth and depth of each danger at this stage in order to assess the severity of each risk in the context of the entire project.

Prioritize risks based on their immediacy and the severity of the potential consequences.

Lessons Learnt

1) Usability comes first. Always!! Innovation is great but usability is much more important.

2) Scheduling meeting and communicating with teammates having different schedules.

3) Sticking to the timeline.

4) Coding was difficult within the timeline so adapted the changes in scope (from coding to designing the website).

5) Zoom Meetings for communication and coordination.

Meeting Minutes

Meeting 1	
Meeting Topic	Initial meetup.
Meeting Time	September 18th 2021
Attendees	Annie, Akhilesh, Amey
Meeting Content	Brainstorming the final topic of our project from the given options. We decided to look for more options apart from the ones provided by the professor.
Meeting Conclusion	We combinedly decided to work on an interesting project where we could help a large number of students in their registration of masters process.
Person Responsible	

Meeting 2	
Meeting Topic	Brainstorming & Discussion
Meeting Time	September 25th 2021
Attendees	Annie, Akhilesh, Amey, Basel
Meeting Content	After the initial meeting, we collected data about the project we wanted to work on, put it all together and decided to have a word with the professor to discuss the scope of our project.
Meeting Conclusion	Professor suggested a few changes depending on the available time and feasibility of things. We finalized the topic accordingly and started working on creating an outline.
Person Responsible	

Meeting 3	
Meeting Topic	Plan of action.
Meeting Time	October 2nd 2021

Attendees	Annie, Akhilesh, Amey, Basel
Meeting Content	After the last meeting, we had a better idea about the duties we needed to execute, and we distributed tasks accordingly. We worked on the use case diagram, context diagram, case description, and approach that we would be using.
Meeting Conclusion	Categorized the duties according to the people in the group and their expertise. Finalized all the diagrams, so we could proceed to methodology.
Person Responsible	

Meeting 4	
Meeting Topic	Choreography Diagram
Meeting Time	October 9th 2021
Attendees	Annie, Akhilesh, Amey, Basel.

Meeting Content	We discussed the milestone 1 report where we had to submit the entire layout of the project. We created a power-point presentation to elaborate all the parameters we would be including in our project. We displayed our stakeholders and sponsors.
Meeting Conclusion	All the diagrams were complete, and the milestone 1 project report was completed successfully.
Person Responsible	

Meeting 5	
Meeting Topic	
Meeting Time	October 17th 2021
Attendees	Annie, Amey, Basel
Meeting Content	Reviewing the work done,
Meeting Conclusion	Milestone 2 report was completed successfully.
Person Responsible	

Meeting 6	
Meeting Topic	Milestone 3 topics
Meeting Time	7th November 2021
Attendees	Annie, Amey, Basel, Akhilesh
Meeting Content	Milestone 3 tasks
Meeting Conclusion	Milestone 3 tasks
Person Responsible	

Meeting 7	
Meeting Topic	Milestone 3 topics
Meeting Time	14th November 2021
Attendees	Annie, Amey, Basel, Akhilesh
Meeting Content	Milestone 3 tasks
Meeting Conclusion	Milestone 3 tasks completion

Person Responsible	

Individual contribution:-

1) Annie Renita

- In depth Research and analysis of scope
- Timeline estimation
- Designing of the application
- Interface mock up
- Project management
- Communication with the team
- Tracking of tasks of all sprints
- Reviewing of the designs, ppts and reports
- Work breakdown structure
- Domain knowledge
- Risk analysis

2) Amey Naik

- Use case diagram
- Software design
- use case description
- Analysis of scope and project limitations
- Software design’s logic
- State diagram

3) Akhilesh Wagh

- Analysis of scope and project limitations
- Project background
- Project deliverables

- Project success criteria

- Project objective

4) Basel Ghaly

- Problem statement

- Analysis of scope and project limitations

- Lessons learnt

- Work breakdown structure