MINI PROJECT

On

COURSE NAVIGATOR

Submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor Of Technology

In

Computer Science and Engineering

By

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Under the Guidance of
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Department of Computer Science and engineering

RAJIV GANDHI UNIVERSITY OF KNOWLEDGE AND TECHNOLOGIES

(Established through Government of A.P Act of 18 of 2008)

ANDHRA PRADESH, INDIA

(Catering to the Educational Needs of Gifted Rural Youth of Andhra Pradesh)

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CERTIFICATE

This is to certify that the project entitled **"COURSE NAVIGATOR"** being submitted by **J.Chandrika** bearing Id number **O190019** and **B.Pushpa Sree** bearing Id number **O190867** and **K.T.Archana Devi** bearing Id number **O190101** and **V.Ramya Sri** bearing Id number **O191082** and **G.Chandra Babu** bearing Id number **O191100** in partial fulfillment of the requirements for the award of the degree of the Bachelor of Technology in Computer Science and Engineering in Rajiv Gandhi University of Knowledge and Technologies-Ongole is a record of bonafide work carried out by them under my guidance and supervision from January 2024 to July 2024.

The results presented in this project have been verified and found to be satisfactory. The results embodied in this project report have not been submitted to any other University for the award of any other degree or diploma.

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APPROVAL SHEET

This report entitled **Course Navigator** by J. Chandrika , B. Pushpa Sree , K.T.Archana Devi , V. Ramya Sri , G. Chandra Babu is **Ms. B Shireesha, Assistant Professor** approved for the degree of **Bachelor of Degree** in **Computer Science and Engineering.**

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Place :

ACKNOWLEDGEMENT

It is our privilege to express a profound sense of respect, gratitude and indebtedness to our guide **Ms. B.Shireesha, Assistant Professor,** Dept. of Computer Science and Engineering,Rajiv Gandhi Knowledge and Technologies-Ongole for her indefatigable inspiration, guidance, cogent discussion, constructive criticisms and encouragement throughout the dissertation work.

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With Sincere Regards,

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DECLARATION

We hereby declare that the project work entitles **"COURSE NAVIGATOR"** submitted to the **Rajiv Gandhi University Of Knowledge Technologies -Ongole** Campus in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology (B.Tech)** in Computer Science and Engineering is a record of an original work done by us under the guidance of **Ms. B.Shireesha, Assistant Professor, Dept. Of CSE** and this project work have not been submitted to any university for the award of any other degree or diploma.

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ABSTRACT

In today's fast-paced educational landscape, the abundance of available courses can overwhelm learners seeking to enhance their skills or acquire new knowledge. To address this challenge, a personalised course recommendation system is proposed. Leveraging advanced machine learning algorithms and user data, the system tailors recommendations to individual learners, taking into account their preferences and career goals. Through this approach, learners can discover courses aligned with their interests and objectives, facilitating continuous learning and professional development.

CONTENTS

1.INTRODUCTION

In today's world overflowing with online learning platforms and courses, choosing the right one can be overwhelming. This is where a course recommendation system comes in. It acts as your personalized learning guide, leveraging the power of machine learning to suggest courses that align perfectly with your unique requirements.

Imagine a system that understands your interests, learning goals, and prior knowledge. Based on this information, it can curate a list of courses that are not only relevant but also cater to your preferred learning style. This is the essence of a content-based course recommendation system.

By analyzing course descriptions, prerequisites, and user reviews, the system identifies patterns and connections between courses. It then uses this knowledge to build a profile of your learning needs and suggests courses that fit the bill. This approach ensures you spend your valuable time and effort on courses that offer the most value to your learning journey.

1.1 MOTIVATION

There are two main underlying reasons for developing such a personalized course recommendation system as the one described in the abstract. Firstly, learners often face information overload. Indeed, in the modern world, the offering of diverse courses that can help one acquire knowledge and develop skills is almost limitless. It is common for a learner to receive an overwhelming pool of possibilities instead of particular course recommendations. Secondly, the reality of targeted learning is unattainable without the development of the presented system. Therefore, the system that uses the data input by the users and computes the most likely preferences and career directions based on machine learning can help educators and learners make the process more efficient. Essentially, the system helps learners make educated decisions on the course relevant to their professional development and life-long learning.

1.2 PROBLEM DEFINITION

Thus, the problem definition for the context of the course recommendation system can be defined as: there is a huge number of different courses available to learners. As a result, a person may feel inundated by unlimited options and might have trouble finding a course that is most fitting to his or her needs and goals. In other words, a learner can not easily navigate an educational space to discover courses that have the most potential to improve their skills and knowledge. As a consequence, it becomes difficult for a person always to continue the learning process and the professional development. Therefore, in my perspective, the problem statement is primarily a matter of information mess because there are too many courses, and there is no personalized solution that could help a person to identify the most suitable one.

1.3 OBJECTIVE OF THE PROJECT

The objective of this project is to develop a course recommendation system that personalizes learning experiences for users. By leveraging user data, including academic background, interests, and career aspirations, the system will recommend courses that align with their individual needs and goals. This data-driven approach will optimize learning outcomes by focusing on relevant course content that fosters skill development and engagement. Ultimately, the project aims to empower users to make informed decisions about their educational journey by providing personalized recommendations that pave the way for achieving their academic and professional objectives.

2.LITERATURE SURVEY

Course recommendation systems have become increasingly important in educational settings due to the ever-growing number of course offerings. These systems leverage various techniques to suggest relevant courses to students, aiding them in navigating complex course catalogs and making informed decisions about their studies.

we have revised several papers and articles based on our project named **“ Course Navigator ”.**

1.I. Saifudin and T. Widiyaningtyas, “Systematic Literature Review on Recommender System: Approach, Problem, Evaluation Techniques, Datasets,” in IEEE Access, doi: 10.1109/ACCESS.2024.3359274.

2.S. Sahu, R. Kumar, M. S. Pathan, J. Shafi, Y. Kumar, and M. F. Ijaz, “Movie Popularity and Target Audience Prediction Using the Content-Based Recommender System,” IEEE Access, vol. 10, pp. 42030–42046, 2022, doi: 10.1109/ACCESS.2022.3168161.

3.T. Widiyaningtyas, M. I. Ardiansyah, and T. B. Adji, “Recommendation Algorithm Using SVD and Weight Point Rank (SVD-WPR),” Big Data and Cognitive Computing, vol. 6, no. 4, 2022, doi: 10.3390/bdcc6040121.

4.H. Tahmasebi, R. Ravanmehr, and R. Mohamadrezaei, “Social movie recommender system based on deep autoencoder network using Twitter data,” Neural Comput Appl, vol. 33, no. 5, pp. 1607–1623, 2021, doi: 10.1007/s00521–020–05085–1.

3.ANALYSIS

3.1 EXISTED SYSTEM

Course recommendation systems are designed to assist students in selecting courses that best match their interests, academic background, and career goals. These systems leverage various algorithms and data sources to provide personalized recommendations. Here's an overview of existing systems and their key components:

1. Collaborative Filtering:

Collaborative filtering is a popular approach that makes recommendations based on the preferences of similar users. There are two main types:

- **User-Based Collaborative Filtering:** Recommends courses that similar users have taken and liked.
- **Item-Based Collaborative Filtering:** Recommends courses that are similar to those a user has already taken and liked.

2. Content-Based Filtering:

This approach recommends courses based on the features of the courses and the user's past preferences. For example, if a student has shown interest in machine learning courses, the system will recommend other courses related to machine learning.

3. Hybrid Systems:

Hybrid recommendation systems combine collaborative filtering and content-based filtering to leverage the strengths of both methods. These systems aim to provide more accurate and diverse recommendations.

4. Knowledge-Based Systems:

Knowledge-based recommendation systems use domain knowledge about courses and students to make recommendations. These systems often include rules and constraints, such as prerequisite courses or the student's major.

5. Association Rule Learning:

This approach finds relationships between courses based on historical data. For example, if students who take Course A often also take Course B, the system might recommend Course B to a student enrolled in Course A.

Based on **Coursera** and **Udemy** platforms contains paid and free courses related to only these platforms. And the courses are not updated these platforms are existed so these contains only previous version courses.

3.2PROPOSED SYSTEM

In our proposed system course navigator we prepared the dataset of courses which will be helpful to the students to learn trending courses and in our system we included navigator. If the doesn't know what to learn it will show the path of learning .In our recommendation module it recommends courses based on the user preference in our application real time feedback also available .Based on that we will monitor our system pro's and con's.

1 **User Registration and Authentication**: Students will be able to create accounts on Course Navigator using their E-mail addresses, ensuring secure access to the platform. User authentication mechanisms will be implemented to safeguard user data and maintain the integrity of the system.

2 **Course Dataset:**

- The system will maintain a comprehensive dataset of courses.
- This dataset will include information about trending courses, potentially incorporating details like popularity, industry relevance, or student reviews.

3 **Learning Path Recommendation:**

- The system will feature a navigation module to assist users unsure of their learning goals.
- This module will leverage the course dataset to suggest potential learning paths based on factors like:
  - User interests (if provided)
  - Current skills
  - Career aspirations

4 **Recommendation Engine:**

- The system will utilize a recommendation engine to suggest courses personalized to user preferences.
- User preferences can be gathered through:
  - Explicit user input (e.g., interests, goals)
  - Implicit data collection (e.g., browsing history, course completion)

3.3SOFTWARE REQUIREMENT SPECIFICATION

Our **Course Navigator** contains both front-end and Back-end . In the process of creation of Interface and Sub-pages we use different programming languages in front end and store data for courses we use different programming languages for back-end.

SOFTWARE REQUIREMENTS:

FRONT-END PROGRAMMING LANGUAGES:

- HTML
- CSS
- Python

BACK-END PROGRAMMING LANGUAGES:

- Python
- SQLite

HARDWARE REQUIREMENTS:

RAM:1 GB

HardDisk:60GB(further increase that as per requirement)

Mouse:Any Normal Mouse

Keyboard:Any window supported keyboard

Display:1024*768

Ethernet Connection / Internet

By using the above mentioned Software and Hardware requirements we completed our project successfully.

3.3.1 PURPOSE

A course recommendation system is designed to assist students in selecting the most appropriate courses for their educational goals and interests. The primary purposes of such a system include:

1.Personalized Learning:

- **Customized Course Selection:** Tailors course recommendations to individual students based on their academic history, interests, and career goals.
- **Learning Path Optimization:** Suggests a sequence of courses that efficiently guides students towards their desired degree or certification.

2.Improved Student Retention and Success :

- **Early Intervention:** Identifies students who may be at risk of falling behind and recommends supportive courses or resources.
- **Motivation and Engagement:** Encourages students by recommending courses that match their interests, increasing their motivation and engagement with their studies.

3.3.2 SCOPE

Systems for recommending courses are developed by taking into account students' general information, backgrounds, and aptitudes to assist students in finding the right study fields. Different techniques have been put forth by researchers for course recommendations in higher education. Course navigator typically refers to the range or extent of the content and topics that will be covered in a course. It outlines the boundaries of what students will learn, including specific subjects, skills, and competencies that the course aims to address.

3.3.3OVERALL DESCRIPTION

Course Navigator is an online platform designed to facilitate the creation, delivery, and management of educational courses. It aims to provide a seamless learning experience for students and an efficient course management system for instructors and administrators.

More specifically, it provides recommendation of selective and optional courses with respect to students' skills, knowledge, interests and free time slots in their timetables.

4.DESIGN

4.1UML DIAGRAMS

UML is the short form of **Unified Modeling Language**. UML is a standardized general purpose modeling language in the field of object-oriented software engineering. The standard is managed, and was created by, the Object Management Group. The important goal for UML is to create a common modeling language for the sake of Object-Oriented Software engineering. In its current form UML consists of two major components: a Meta-model and a notation. In the future, some form of method or process may also be added to; or associated with, UML. The Unified Modeling Language is a standard language for specifying, Visualization Constructing and documenting the artifacts of software systems, as well as for business modeling and other non-software systems. The UML represents a collection of best engineering practices that have proven Successful in the modeling of large and complex systems. The UML is a very important part of developing object oriented software and the software development process. The UML uses mostly graphical notations to express the design of software projects.

GOALS

The Primary goals in the design of the UML are as follows:

1. Provide users a ready-to-use, expressive visual modeling Language so that they can develop and exchange meaningful models.
2. Provide extendibility and specialization mechanisms to extend the core concepts.
3. Be independent of particular programming languages and development processes.
4. Provide a formal basis for understanding the modeling language.
5. Encourage the growth of the Object-Oriented tools market.
6. Support higher level development concepts such as collaborations frameworks, patterns and components and Integrate best practices.
7. A UML Diagram is based on UML (Unified Modeling Language) with the purpose of visually representing a system along with its main actors, roles, actions, artifacts or classes, in order to better understand, alter, maintain, or document information about the system. The UML diagrams are divided into **Structural** and **Behavioral** UML Diagrams.

STRUCTURAL UML DIAGRAMS

Structural diagrams depict a static view of a structure of a system. It is widely used in the Documentation of software architecture. The Structural UML Diagrams involves 7 diagrams They are:

- Class Diagram
- Object Diagram
- Component Diagram
- Composite Structure Diagram
- Deployment Diagram
- Package Diagram
- Profile Diagram

BEHAVIOURAL UML DIAGRAMS

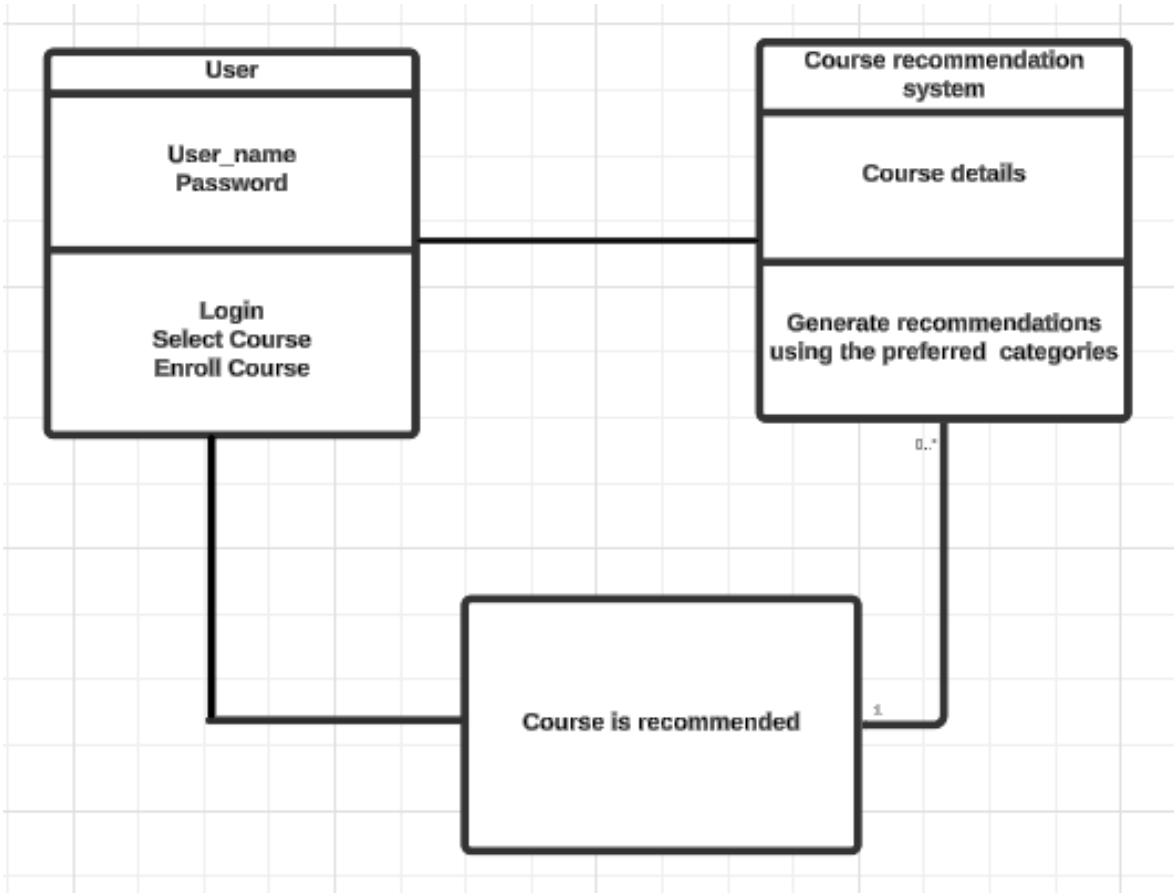
Behavioral diagrams portray a dynamic view of a system or the behavior of a system, which describes the functioning the system. It involves 7 diagrams They are:

- Use case Diagram
- Sequence Diagram
- Activity Diagram
- State Machine Diagram
- Interaction Overview Diagram
- Communication Diagram
- Timing Diagram

STRUCTURAL UML DIAGRAMS

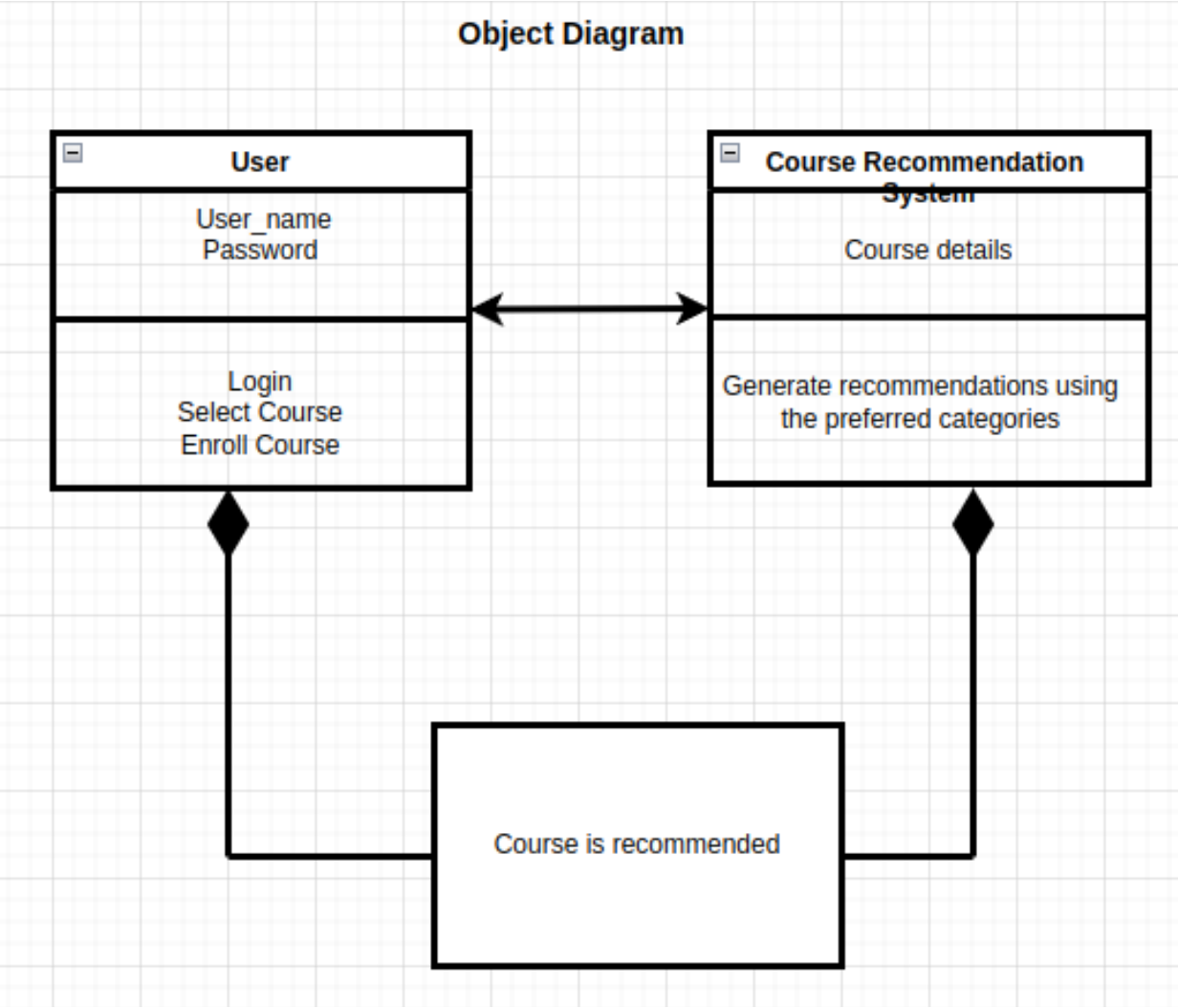
4.1.1 CLASS DIAGRAM

Class diagrams are one of the most widely used diagrams. It is the backbone of all the object oriented software systems. It depicts the static structure of the system. It displays the system's class, attributes, and methods. It is helpful in recognizing the relation between different object as well as classes.



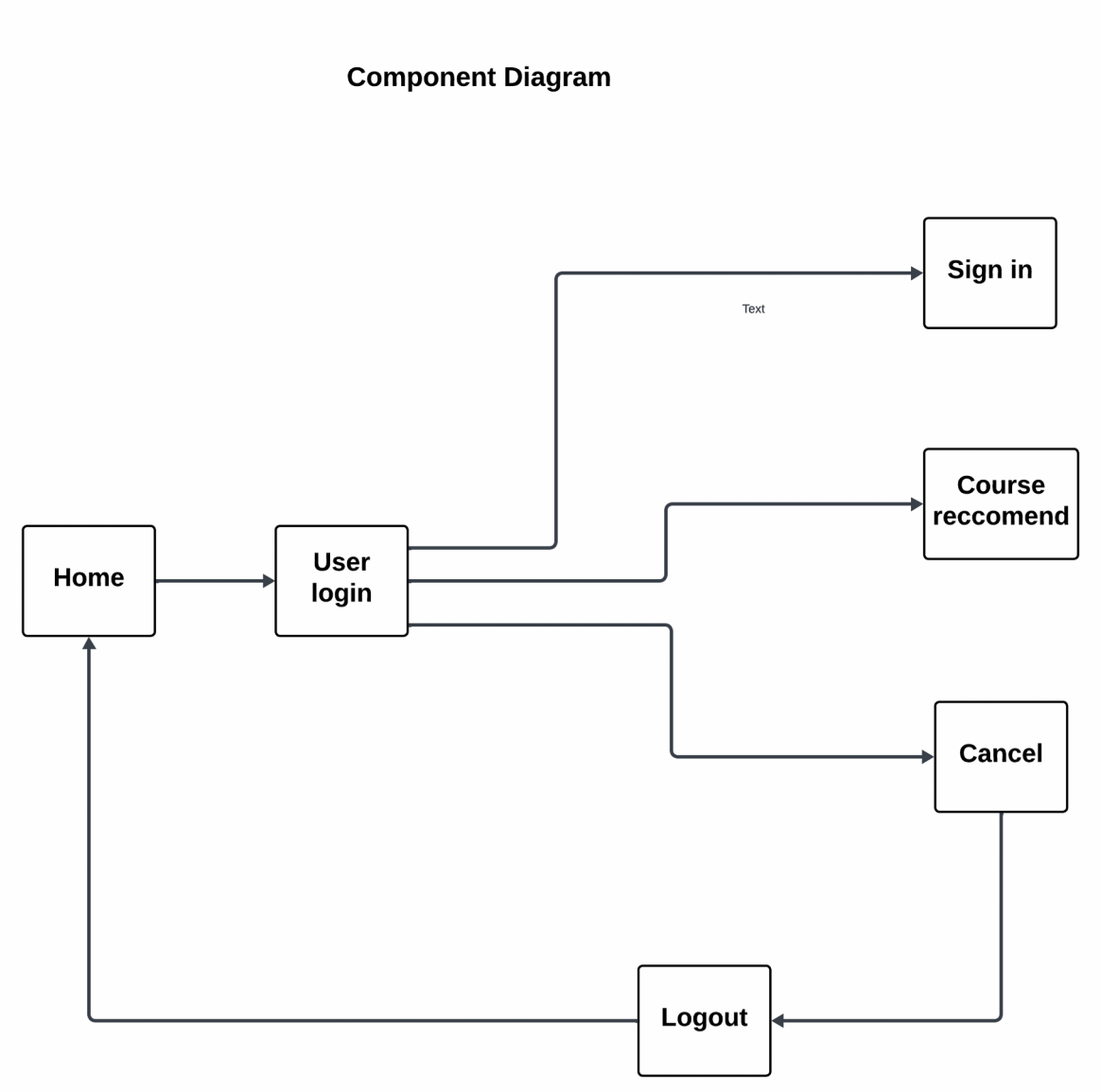
4.1.2 OBJECT DIAGRAM

Object Diagrams represents an instance of class diagrams. The basic concepts are similar for class diagram and Object diagram. It describes the static structure of a system at a particular point in time. It can be used to test the accuracy of class diagrams. It represents distinct instances of classes and the relationship between them at a time.



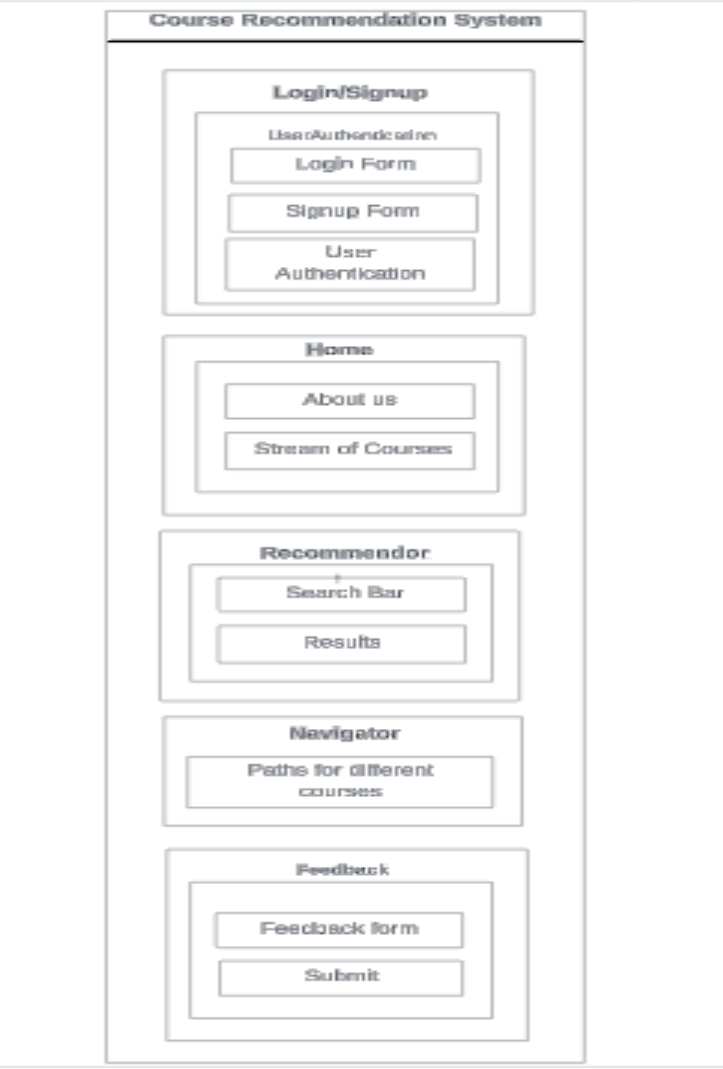
4.1.3 COMPONENT DIAGRAM

It portrays the organization of the physical components within the system. It is us for modeling execution details. It determines whether the desired functional requirements have been considered by the planned development or not, as it has structural relationships between the elements of a software system.



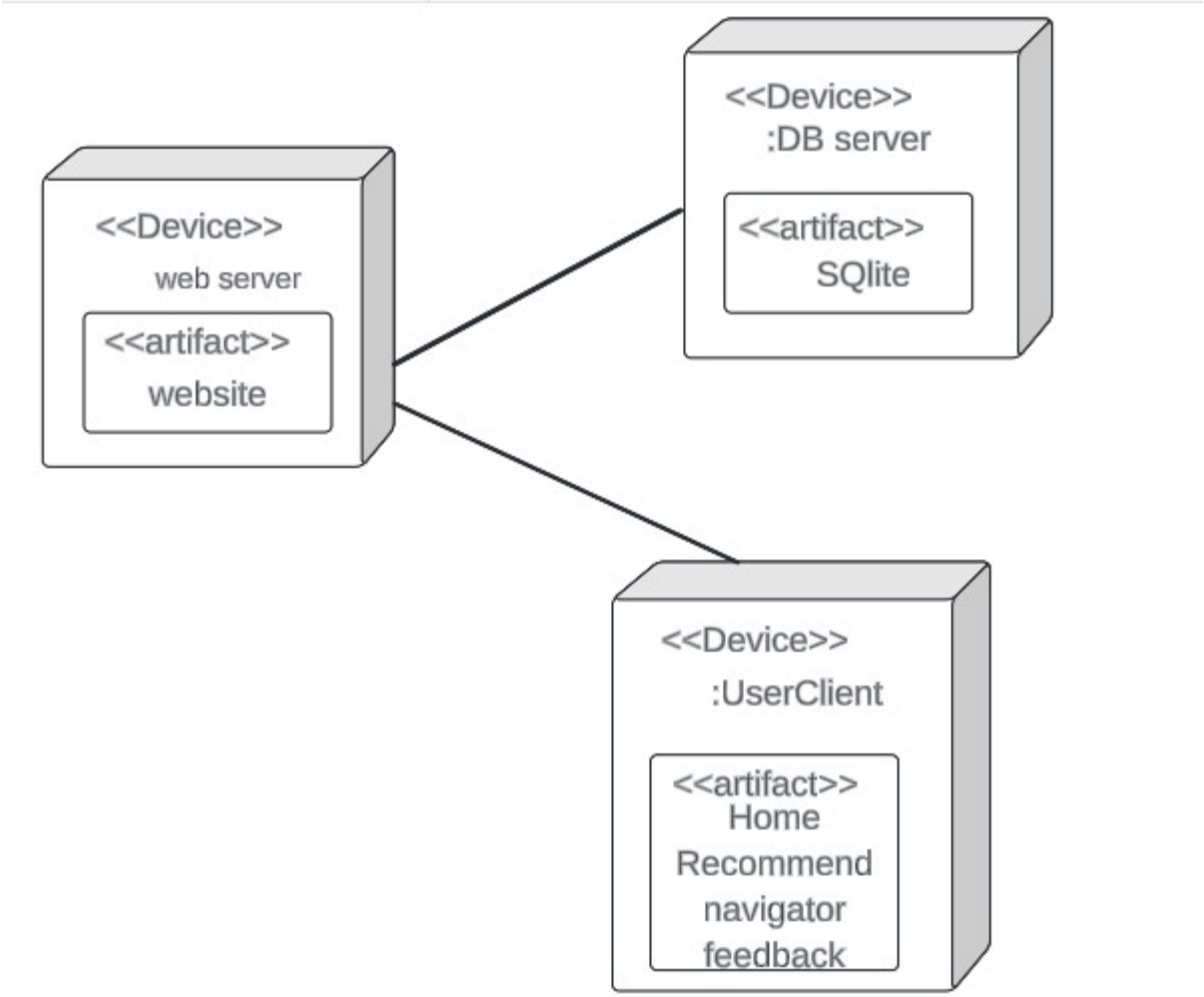
4.1.4 COMPOSITE DIAGRAM

The composite structure diagrams show parts within the class. It displays the relationship between the parts and their configuration that ascertain the behavior of the class. It makes full use of ports, parts, and connectors to portray the internal structure of a structured classifier. It is similar to class diagrams, just the fact it represents individual parts in a detailed manner when compared with class diagrams.



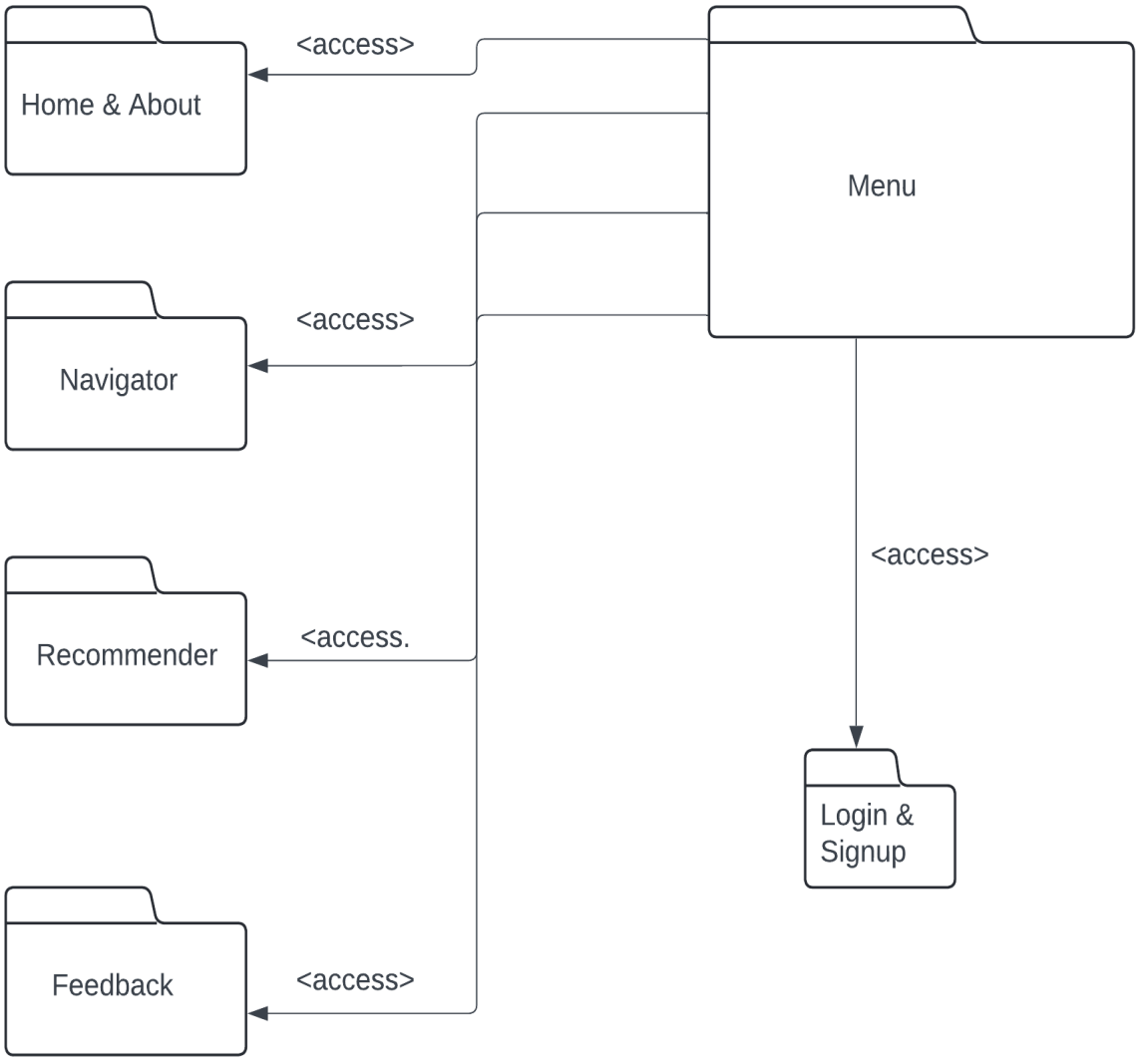
4.1.5 DEPLOYMENT DIAGRAM

It presents the system's software and its hardware by telling what the existing physical components are and what software components are running on them. It produces information about system software. It is incorporated whenever software is used, distributed, or deployed across multiple machines with dissimilar configurations.



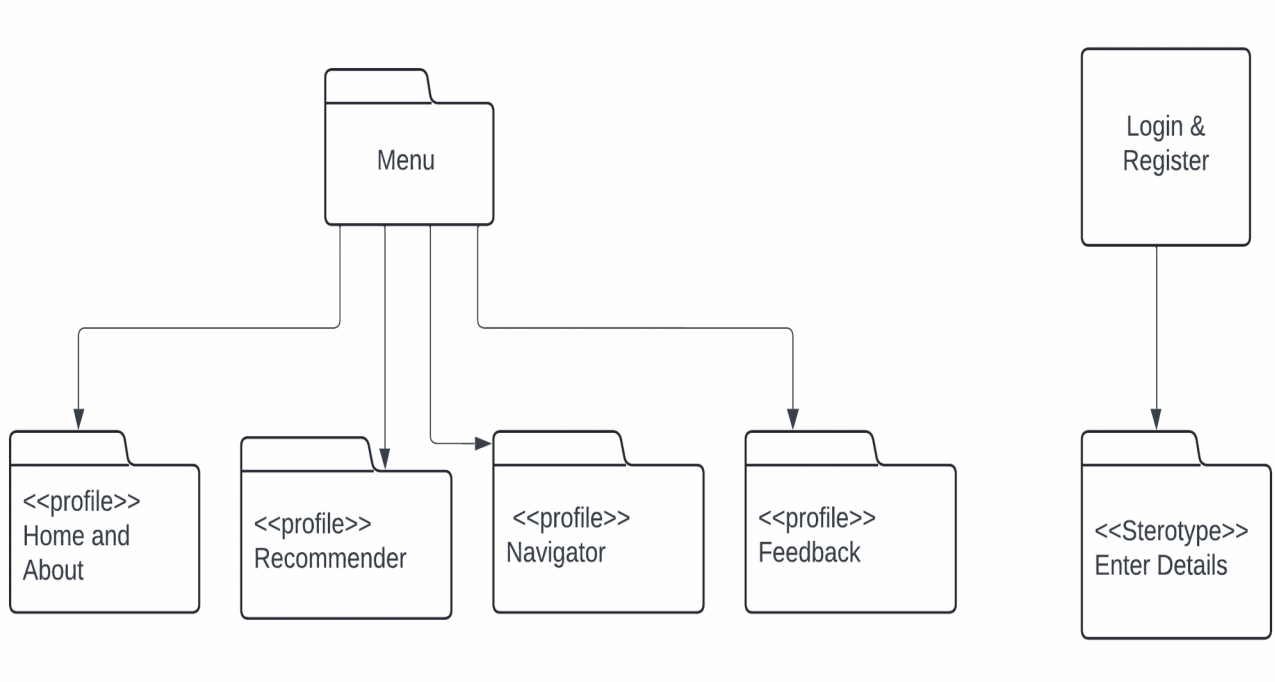
4.1.6 PACKAGE DIAGRAM

It is used to illustrate how the packages and their elements are organized. It shows the dependencies between distinct packages. It manages UML diagrams by making it easily understandable. It is used for organizing the class and use case diagrams.



4.1.7 PROFILE DIAGRAM

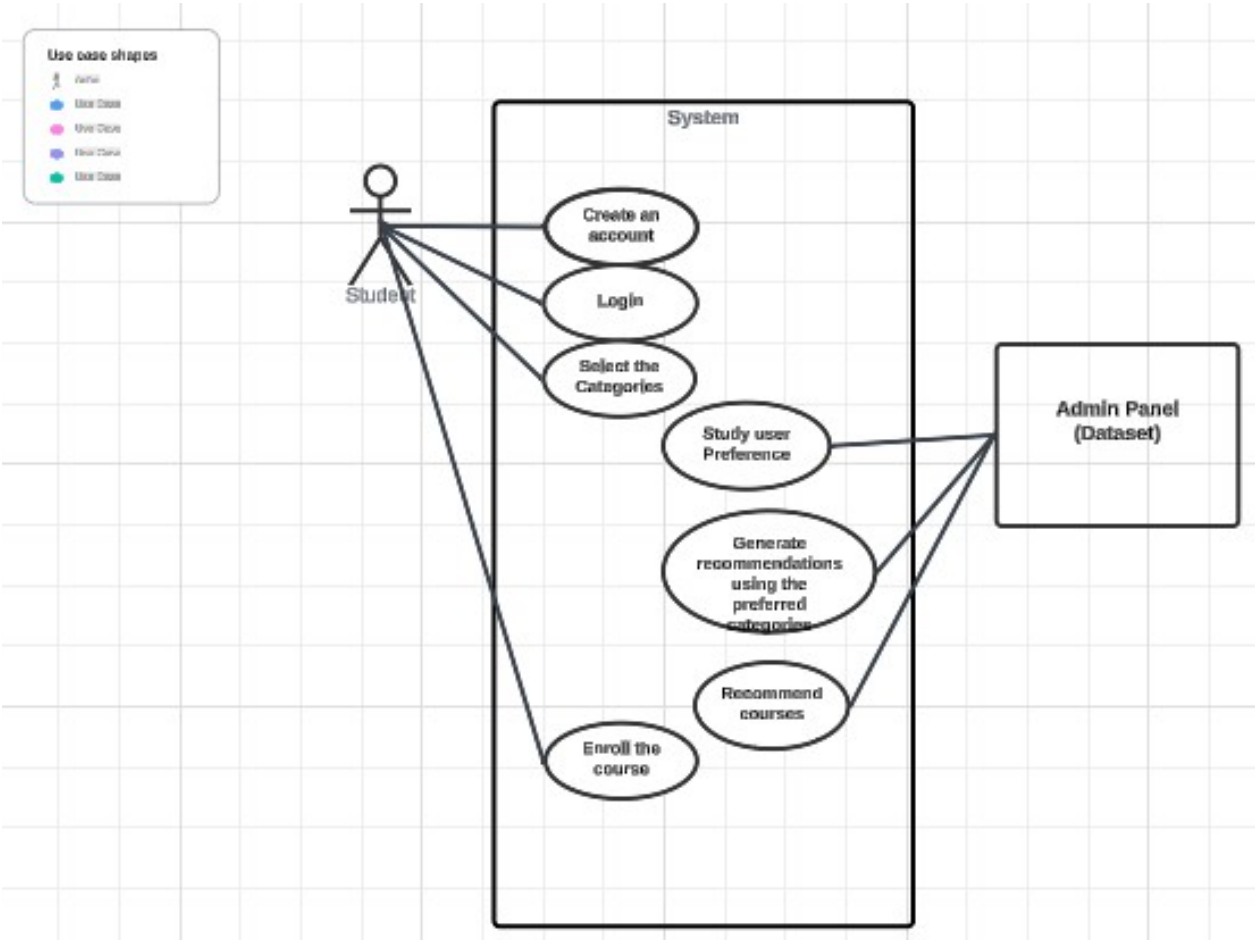
Profile diagram, a kind of structural diagram in the Unified Modeling Language (UML), provides a generic extension mechanism for customizing UML models for particular domains and platforms. Extension mechanisms allow refining standard semantics in strictly additive manner, preventing them from contradicting standard semantics. Profiles are defined using stereotypes, tagged value definitions, and constraints which are applied to specific model elements, like Classes, Attributes, Operations, and Activities.



BEHAVIOURAL UML DIAGRAMS

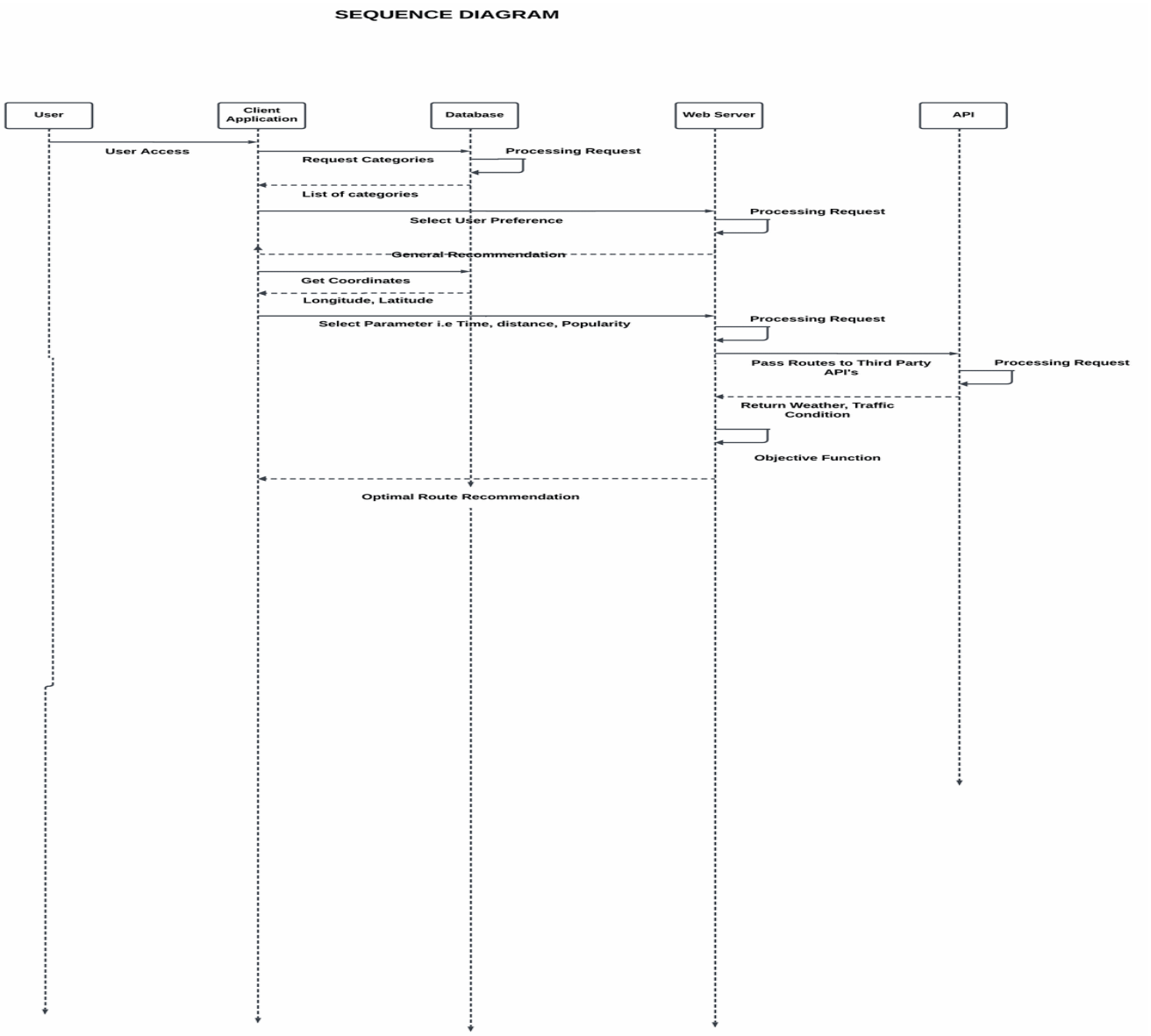
4.1.8 USECASE DIAGRAM

In UML, use-case diagrams model the behavior of a system and help to capture the requirements of the system. Use-case diagrams describe the high-level functions and scope of a system. These diagrams also identify the interactions between the system and its actors. The use cases and actors in use-case diagrams describe what the system does and how the actors use it, but not how the system operates internally.



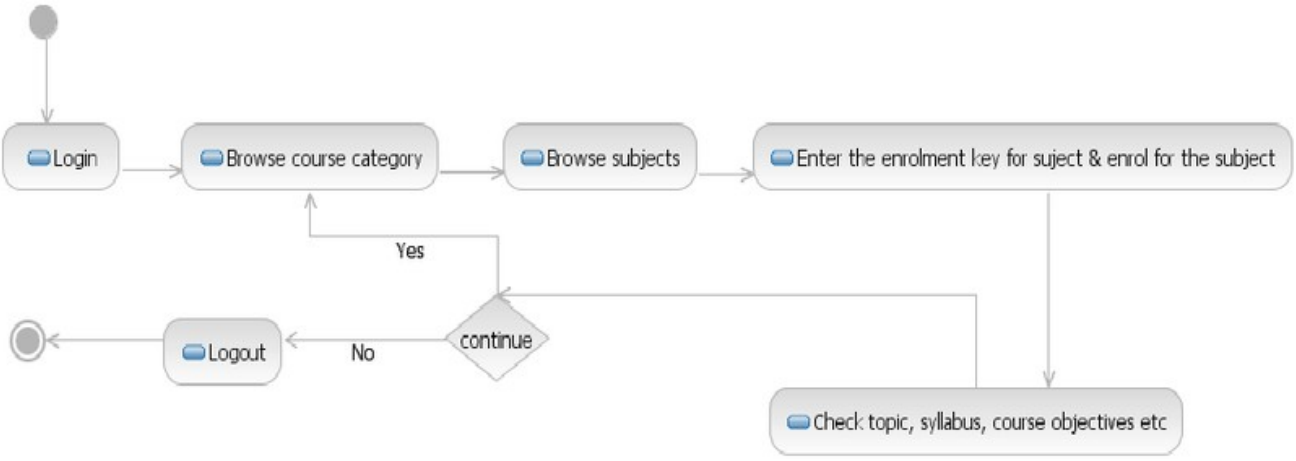
4.1.9 SEQUENCE DIAGRAM

The sequence diagram represents the flow of messages in the system and is also termed as an event diagram. It helps in envisioning several dynamic scenarios. It portrays the communication between any two lifelines as a time-ordered sequence of events, such that these lifelines took part at the run time. In UML, the lifeline is represented by a vertical bar, whereas the message flow is represented by a vertical dotted line that extends across the bottom of the page. It incorporates the iterations as well as branching.



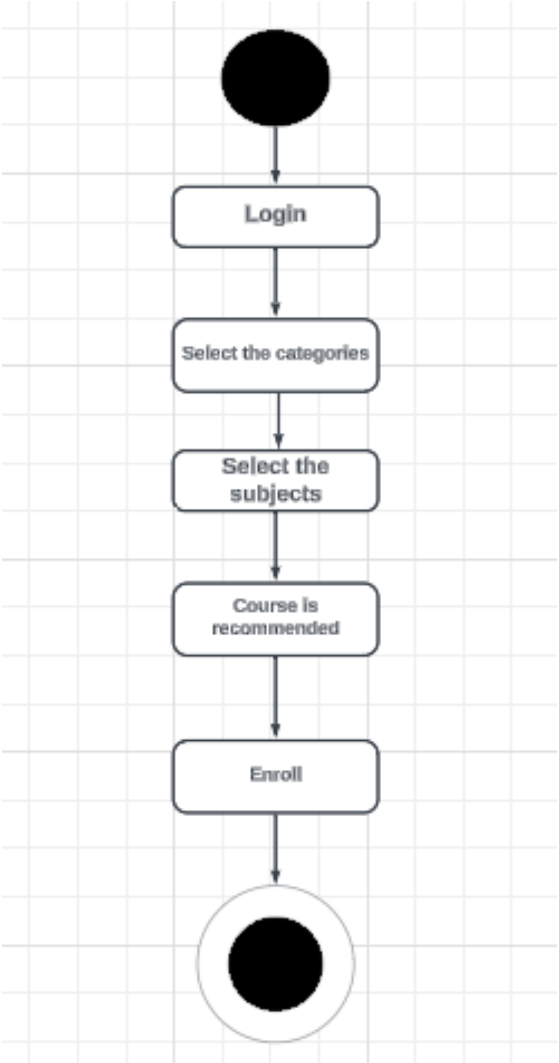
4.1.10 ACITIVITY DIAGRAM

In UML, the activity diagram is used to demonstrate the flow of control within the system rather than the implementation. It models the concurrent and sequential activities. The activity diagram helps in envisioning the workflow from one activity to another. It put emphasis on the condition of flow and the order in which it occurs. The flow can be sequential, branched, or concurrent, and to deal with such kinds of flows, the activity diagram has come up with a fork, join, etc. It is also termed as an object-oriented flowchart. It encompasses activities composed of a set of actions or operations that are applied to model the behavioral diagram.



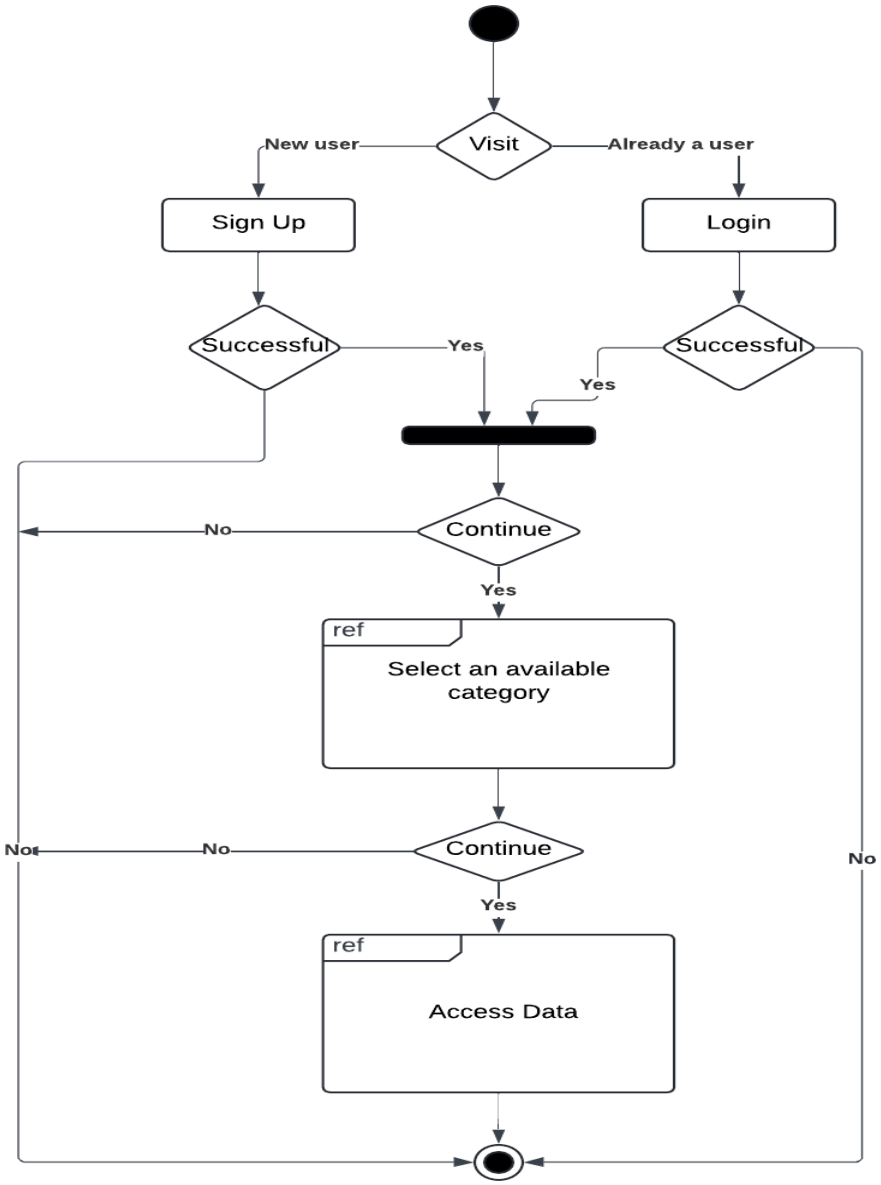
4.1.11 STATE MACHINE DIAGRAM

The state machine diagram is also called the State chart or State Transition diagram, which shows the order of states underwent by an object within the system. It captures the software system's behavior. It models the behavior of a class, a subsystem, a package, and a complete system. It tends out to be an efficient way of modeling the interactions and collaborations in the external entities and the system. It models event-based systems to handle the state of an object. It also defines several distinct states of a component within the system. Each object/component has a specific state.



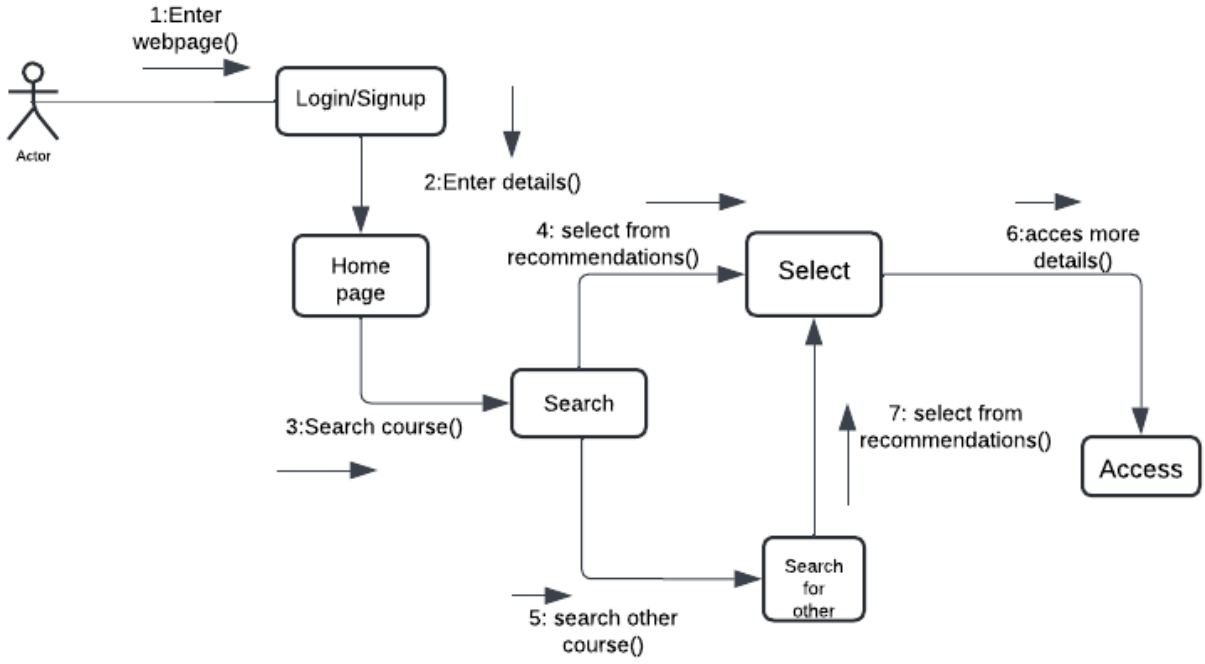
4.1.12 INTERACTION OVERVIEW DIAGRAM

An interaction overview diagram is a form of activity diagram in which the nodes represent interaction diagrams. Interaction diagrams can include sequence, communication, interaction overview and timing diagrams. Most of the notation for interaction overview diagrams is the same for activity diagrams. For example, initial, final, decision, merge, fork and join nodes are all the same. However, interaction overview diagrams introduce two new elements: interaction occurrences and interaction elements.



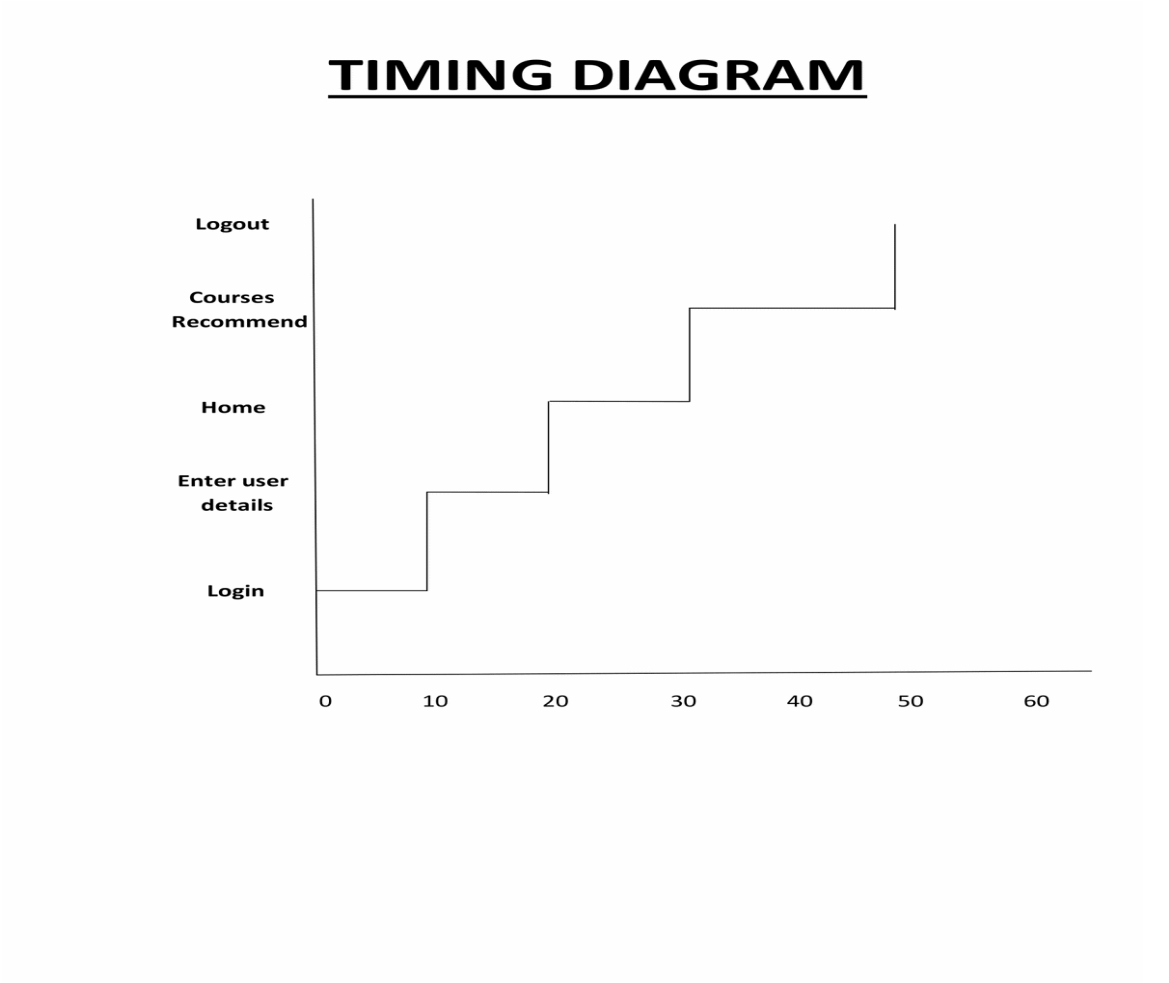
4.1.13 COMMUNICATION DIAGRAM

It shows the interchange of sequence messages between the objects. It focuses on objects and their relations. It describes the static and dynamic behavior of a system. A Communication diagram models the interactions between objects or parts in terms of sequenced messages. Communication diagrams represent a combination of information taken from class, Sequence and Use Case Diagrams describing both the static structure and dynamic behavior of a system.



4.1.14 TIMING DIAGRAM

In UML, the timing diagrams are a part of Interaction diagrams that do not incorporate similar notations as that of sequence and collaboration diagram. It consists of a graph or waveform that depicts the state of a lifeline at a specific point of time. It illustrates how conditions are altered both inside and between lifelines alongside linear time axis.



5. IMPLEMENTATION

5.1 MODULES

- LOGIN AND SIGNUP
- HOME PAGE
- RECOMMENDER
- NAVIGATOR
- FEEDBACK

5.2 MODULE DESCRIPTION:

LOGIN AND SIGNUP

The login and register pages of the “Course Navigator” website offer streamlined access and user- friendly functionality, ensuring a seamless experience for users. The login page presents a clean interface prompting users to enter their credentials, typically their email address and password, to access their personalized accounts.

HOME PAGE

Home page contains description on different domains in the field of engineering covering most of the popular technologies. It also tells about the aim of this project "Course Navigator" .User can explore the category they want and they can gain complete knowledge about the courses. This is the preview of home page.

RECOMMENDER

The In the recommender page user can search the domain they are looking to learn .The user will get recommended to number of courses they require. It includes both paid and unpaid courses, the user according to their requirement can choose anyone and start learning the course they want.

NAVIGATOR

The Navigator page contains roadmaps to each of the domain and technology in the fields of engineering. It gives a clear step by step route on any specific domain to the user .So that the user

will get acknowledged on how to start the course they are going to learn.

FEEDBACK

In the feedback, users are given the opportunity to share their views regarding the "course navigator". They can submit their feedback by adding their opinions along with their credentials.

5.3 INTRODUCTION OF TECHNOLOGIES USED:

Introduction to front-end Technologies

HTML and CSS: HTML and CSS are the backbone of the web, working in tandem to create visually appealing and structured web pages. HTML (Hypertext Markup Language) provides the structure and content of a web page, defining elements like headings, paragraphs, images, and links. CSS (Cascading Style Sheets), on the other hand, controls the presentation and layout, specifying how HTML elements should be displayed on the screen. With CSS, developers can customize the appearance of elements, such as colors, fonts, spacing, and positioning, to create stunning and responsive designs. Together, HTML and CSS form the foundation of web design, enabling developers to craft engaging and user-friendly experiences for visitors across all devices and platforms.

PYTHON:

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python's simple, easy to learn syntax emphasizes readability and therefore reduces the cost of program maintenance. Python supports modules and packages, which encourages program modularity and code reuse. The Python interpreter and the extensive standard library are available in source or binary form without charge for all major platforms, and can be freely distributed.

Introduction to back-end Technologies

PYTHON: Python is a well-known backend development language for creating online applications. It includes various tools and frameworks, such as Django and Flask, that make creating scalable and efficient web services simple. Relational and non-relational databases are critical components of Python backend development.

SQLITE: SQLite is one of the most popular and easy-to-use relational database systems. It possesses many features over other relational databases. Many big MNCs such as Adobe, use SQLite as the application file format for their Photoshop Lightroom product. Airbus, a European multinational aerospace corporation, uses SQLite in the flight software for the A350 XWB family of aircraft. You will learn various concepts and get hands-on practice in this SQLite tutorial.

5.4 SAMPLE CODE:

Front End Code For Login and Signup:

```
import streamlit as st
import sqlite3
from passlib.hash import pbkdf2_sha256
import subprocess

# Function to create a SQLite database and table for users
def create_user_table():
    conn = sqlite3.connect('users.db')
    c = conn.cursor()
    c.execute('"CREATE TABLE IF NOT EXISTS users
                (id INTEGER PRIMARY KEY AUTOINCREMENT, username TEXT, password TEXT)"')
    conn.commit()
    conn.close()

# Function to insert a new user into the database
def insert_user(username, password):
    hashed_password = pbkdf2_sha256.hash(password)
    conn = sqlite3.connect('users.db')
     c = conn.cursor()
```

```
        c.execute("INSERT INTO users (username, password) VALUES (?, ?)", (username,
hashed_password))
    conn.commit()
    conn.close()

# Function to authenticate user
def authenticate_user(username, password):
    conn = sqlite3.connect('users.db')
    c = conn.cursor()
    c.execute("SELECT password FROM users WHERE username=?", (username,))
    stored_password = c.fetchone()
    conn.close()
    if stored_password:
        return pbkdf2_sha256.verify(password, stored_password[0])
    return False

# Main function for login page
def login():
    st.title("Login")
    username = st.text_input("Username")
    password = st.text_input("Password", type="password")
    if st.button("Login"):
        if authenticate_user(username, password):
            st.success("Login successful!")
            # Redirect to another Streamlit app file
            subprocess.run(["streamlit", "run", "app.py"])
        else:
            st.error("Invalid username or password.")

# Main function for signup page
def signup():
    st.title("Signup")
    new_username = st.text_input("New Username")
    new_password = st.text_input("New Password", type="password")
    confirm_password = st.text_input("Confirm Password", type="password")
    if st.button("Signup"):
        if new_password == confirm_password:
            insert_user(new_username, new_password)
            st.success("Signup successful! You can now login.")
        else:
            st.error("Passwords do not match.")

if __name__ == "__main__":
    create_user_table()
    page = st.sidebar.selectbox("Choose a page", ["Signup", "Login"])
    if page == "Login":
```

```
        login()
    else:
        signup()
```

Navigator page

```
<!doctype html>
<html>
<head>
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>VLSI</title>
    <style>

            *{
    margin:0;
    padding:0;
    font-family:'poppins',sans-serif;
    box-sizing: border-box;
}
body{
    background: #2e364a;
}
.timeline{
    position:relative;
    max-width:1200px;
    margin:100px auto;
}
.container{
    padding:10px 50px;
    position:relative;
    width:50%;
    animation:movedown 1s linear forwards;
    opacity:0;

}
@keyframes movedown{
    0%{
        opacity:1;
        transform:translateY(-30px);
    }
    100%{
        opacity:1;
        transform:translateY(0px);
    }
}
```

```
.container:nth-child(2){
    animation-delay:1s;
}
.container:nth-child(3){
    animation-delay:2s;
}
.container:nth-child(4){
    animation-delay:3s;
}
.container:nth-child(5){
    animation-delay:4s;
}
.container:nth-child(6){
    animation-delay:5s;
}
.text-box{
    padding:20px 30px;
    background:#fff;
    position:relative;
    border-radius:6px;
    font-size:15px;
}
.left-container{
    left:0;
}
.right-container{
    left:50%;
}
.container img{
    position:absolute;
    width:40px;
    border-radius:50%;
    right:-20px;
    top:32px;
    z-index:10;
}
.right-container img{
    left:-20px;
}
.timeline::after{
    content:'';
    position:absolute;
    width:6px;
        height:100%;
    background:#fff;
    top:0;
```

```
        left:50%;
    margin-left:-3px;
    z-index:-1;
    animation:moveline 6s linear forwards;

}
@keyframes moveline{
    0%{
        height:0;
    }
    100%{
        height:100%;
    }
}
.text-box h2{
    font-weight:600;

}
. text-box small{
    display:inline-block;
    margin-bottom:15px;
}
.left-container-arrow{
    height:0;
    width:0;
    position:absolute;
    top:28px;
    z-index:1;
    border-top:15px solid transparent;
    border-bottom:15px solid transparent;
    border-left:15px solid #fff;
    right:-15px;
}
.right-container-arrow{
    height:0;
    width:0;
    position:absolute;
    top:28px;
    z-index:1;
    border-top:15px solid transparent;
    border-bottom:15px solid transparent;
    border-right:15px solid #fff;
    left:-15px;
}
@media screen and (max-width:600px){
    .timeline{
```

```
      margin:50px auto;
   }
   .timeline::after{
      left:31px;
   }
   .container{
      width:100%;
      padding-left:80px;
      padding-right:25px;
   }
   .text-box{
      font-size:13px;
   }
   .text-box small{
      margin-bottom:10px;
   }
   .right-container{
      left:0;
   }
   .left-container img,right-container img{
      left:10px;
   }
   .left-container-arrow,.right-container-arrow{
      border-right:15px solid #fff;
      border-left:0;
      left:-15px;
   }
}
h1{
color:#fff;
}
   </style>
</head>
<body>
<h1>VLSI</h1>
   <div class="timeline">
      <div class="container left-container">
         <div class="text-box">
            <small>STEP 1</small>
            <h2>SYSTEM SPECIFICATION</h2>
            <p>System specs are the initial phase in the VLSI Design Flow process. The system is
represented at a high level by the system specification. </p>
            <span class="left-container-arrow"></span>
         </div>
      </div>
      <div class="container right-container">
```

```
        <div class="text-box">
            <small>STEP 2</small>
            <h2>ARCHITECTURE DESIGN</h2>
            <p> VLSI architecture design is concerned with deciding on the necessary hardware resources for carrying out computations from data and/or signal processing and with organizing their interplay such as to meet target specifications defined by marketing.</p>
            <span class="right-container-arrow"></span>
        </div>
    </div>
    <div class="container left-container">
        <div class="text-box">
            <small>STEP 3</small>
            <h2>FUNCTIONAL DESIGN</h2>
            <p>During functional design, the CAD tools that help designers, are the tools for floor planning, and accurate timing and testability analyses.</p>
            <span class="left-container-arrow"></span>
        </div>
    </div>
    <div class="container right-container">
        <div class="text-box">
            <small>STEP 4</small>
            <h2>LOGIC DESIGN</h2>
            <p>Logic circuits are divided into two categories − (a) Combinational Circuits, and (b) Sequential Circuits. </p>
            <span class="right-container-arrow"></span>
        </div>
    </div>
    <div class="container left-container">
        <div class="text-box">
            <small>STEP 5</small>
            <h2>CIRCUIT DESIGN</h2>
            <p>Very-large-scale integration (VLSI) is the process of creating an integrated circuit (IC) by combining thousands of transistors into a single chip.</p>
            <span class="left-container-arrow"></span>
        </div>
    </div>
    <div class="container right-container">
        <div class="text-box">
            <small>STEP 6</small>
            <h2>PHYSICAL DESIGN</h2>
            <p>VLSI physical design flow is a cardinal process of converting synthesized netlist, design curtailment, and standard library to a layout as per the design rules.</p>
            <span class="right-container-arrow"></span>
        </div>
    </div>
     <div class="container left-container">
```

```
        <div class="text-box">
            <small>STEP 7</small>
            <h2>FABRICATION</h2>
            <p>In VLSI fabrication, this is a method to introduce impurity atoms (dopants) into silicon to change its resistivity. The rate at which dopants diffuse in silicon is a strong function of temperature.</p>
            <span class="left-container-arrow"></span>
        </div>
    </div>
     <div class="container right-container">
        <div class="text-box">
            <small>STEP 8</small>
            <h2>PACKAGING AND TESTING</h2>
            <p>MEMS packaging is usually approached by individual manufacturers on a specialized, application-specific basis in which problems are solved independently. </p>
            <span class="right-container-arrow"></span>
        </div>
    </div>
  </div>
</body>
</html>
```

Main page:

```
import streamlit as st
import streamlit.components.v1 as components
from streamlit.components.v1 import html
import sqlite3


# Load EDA

import pandas as pd
from sklearn.feature_extraction.text import CountVectorizer
from sklearn.metrics.pairwise import cosine_similarity, linear_kernel
```

```
# Load Our Dataset

def load_data(data):
    df = pd.read_csv(data)
    return df


# Fxn
# Vectorize + Cosine Similarity Matrix

def vectorize_text_to_cosine_mat(data):
    count_vect = CountVectorizer()
    cv_mat = count_vect.fit_transform(data)

    # Get the cosine

    cosine_sim_mat = cosine_similarity(cv_mat)
    return cosine_sim_mat


# Recommendation Sys

@st.cache
def get_recommendation(
    title,
    cosine_sim_mat,
    df,
    num_of_rec=10,
    ):
```

```
    # indices of the course

    course_indices = pd.Series(df.index, index=df['course_title'
                            ]).drop_duplicates()

    # Index of course

    idx = course_indices[title]

    # Look into the cosine matr for that index

    sim_scores = list(enumerate(cosine_sim_mat[idx]))
    sim_scores = sorted(sim_scores, key=lambda x: x[1], reverse=True)
    selected_course_indices = [i[0] for i in sim_scores[1:]]
    selected_course_scores = [i[0] for i in sim_scores[1:]]

    # Get the dataframe & title

    result_df = df.iloc[selected_course_indices]
    result_df['similarity_score'] = selected_course_scores
    final_recommended_courses = result_df[['course_title', 'url',
            'price', 'num_subscribers']]
    return final_recommended_courses.head(num_of_rec)


# Search For Course

@st.cache_data
def search_term_if_not_found(term, df):
    result_df = df[df['course_title'].str.contains(term)]
```

```
    return result_df


def main():
    col1,col2=st.columns([1,4])
    im_path="/home/rguktongole/logo.png"
    with col1:
      st.image(im_path,use_column_width=True)
    with col2:
      st.write("")
      st.markdown("<h1 style='color:#00008B;'>Course Navigator</h1>",unsafe_allow_html=True)


    menu = ['Home', 'Recommend', 'Navigator','Feedback']
    choice = st.sidebar.selectbox('Menu', menu)


    df = load_data('/home/rguktongole/project.csv')


    if choice == 'Home':
                                    st.write("""<div style="border:5px solid #CADCFC;border-radius:20px;padding:20px;background-color:#00246B;">
      <h3 style="color:#fff;font-size:40px;">About Us</h3>
        <p style="color:#CADCFC;font-family:"Times New Roman",Times,serif;>In today's fast-paced educational landscape, the abundance of available courses can overwhelm learners seeking to enhance their skills or acquire new knowledge. To address this challenge, a personalised course recommendation system is proposed. Leveraging advanced machine learning algorithms and user data, the system tailors recommendations to individual learners, taking into account their preferences and career goals.Through this approach, learners can discover courses aligned with their interests and objectives, facilitating continuous learning and professional development.</p>
        </div>""",unsafe_allow_html=True)
      st.write("")
      st.write("")
      image_path="/home/rguktongole/webd.jpg"
```

```
col1,col2=st.columns([1,4])

with col1:

  st.write("")

  st.write("")

  st.write("")

  st.image(image_path,use_column_width=True)

with col2:

                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">

    <p style="color:#00246B;font-family:"Times New Roman",Times,serif;>Web development, also known as website development, refers to the tasks associated with creating, building, and maintaining websites and web applications that run online on a browser. It may, however, also include web design, web programming, and database management.</p>

  </div>""",unsafe_allow_html=True)

  st.write("")

  image_path="/home/rguktongole/pythonprog.jpg"

col3,col4=st.columns([1,4])

with col3:

  st.write("")

  st.write("")

  st.image(image_path,use_column_width=True)

with col4:

                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">

    <p style="color:#00246B;">Python is a high-level, general-purpose programming language. Its design philosophy emphasizes code readability with the use of significant indentation. Python is dynamically typed and garbage-collected.</p>

  </div>""",unsafe_allow_html=True)

  st.write("")

  image_path="/home/rguktongole/javaprogram.jpg"

col5,col6=st.columns([1,4])
```

```
    with col5:
      st.write("")
      st.write("")
      st.image(image_path,use_column_width=True)
    with col6:
                                    st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
        <p style="color:#00246B;">Java is a programming language and computing platform first released by Sun Microsystems in 1995. It has evolved from humble beginnings to power a large share of today's digital world, by providing the reliable platform upon which many services and applications are built</p>
      </div>""",unsafe_allow_html=True)
      st.write("")
      image_path="/home/rguktongole/cprgm.jpg"
    col7,col8=st.columns([1,4])
    with col7:
      st.write("")
      st.write("")
      st.write("")
      st.image(image_path,use_column_width=True)
    with col8:
                                    st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
        <p style="color:#00246B;">C is an imperative procedural language, supporting structured programming, lexical variable scope, and recursion, with a static type system. It was designed to be compiled to provide low-level access to memory and language constructs that map efficiently to machine instructions, all with minimal runtime support.</p>
      </div>""",unsafe_allow_html=True)
      st.write("")
      image_path="/home/rguktongole/cpp.jpg"
    col9,col10=st.columns([1,4])
    with col9:
```

```
    st.write("")

    st.write("")

    st.write("")

    st.image(image_path,use_column_width=True)

  with col10:

                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">

      <p style="color:#00246B;">C++ is an object-oriented programming (OOP) language that is viewed by many as the best language for creating large-scale applications. C++ is a superset of the C language. A related programming language, Java, is based on C++ but optimized for the distribution of program objects in a network such as the internet.</p>

    </div>""",unsafe_allow_html=True)


    st.write("")

    image_path="/home/rguktongole/datascience.jpg"

  col11,col12=st.columns([1,4])

  with col11:

    st.write("")

    st.write("")

    st.write("")

    st.image(image_path,use_column_width=True)

  with col12:

                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">

      <p style="color:#00246B;">Data science is the study of data to extract meaningful insights for business. It is a multidisciplinary approach that combines principles and practices from the fields of mathematics, statistics, artificial intelligence, and computer engineering to analyze large amounts of data.</p>

    </div>""",unsafe_allow_html=True)


    st.write("")

    image_path="/home/rguktongole/dataanalytics.jpg"
```

```
col13,col14=st.columns([1,4])
with col13:
  st.write("")
  st.write("")
  st.write("")
  st.image(image_path,use_column_width=True)
with col14:
                                    st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Data analytics is the process of analyzing raw data to find trends and answer questions. It has a broad scope across the field. This process includes many different techniques and goals that can shift from industry to industry.</p>
  </div>""",unsafe_allow_html=True)


  st.write("")
  image_path="/home/rguktongole/cloud.jpg"
col15,col16=st.columns([1,4])
with col15:
  st.write("")
  st.write("")
  st.write("")
  st.image(image_path,use_column_width=True)
with col16:
                                    st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS).</p>
  </div>""",unsafe_allow_html=True)
```

```
    st.write("")
    image_path="/home/rguktongole/ethicalhack.jpg"
  col17,col18=st.columns([1,4])
  with col17:
    st.write("")
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col18:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Ethical hacking is a process of detecting vulnerabilities in an application, system, or organization's infrastructure that an attacker can use to exploit an individual or organization. They use this process to prevent cyberattacks and security breaches by lawfully hacking into the systems and looking for weak points.</p>
    </div>""",unsafe_allow_html=True)


    st.write("")
    image_path="/home/rguktongole/autocad.jpg"
  col19,col20=st.columns([1,4])
  with col19:
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col20:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">AutoCAD is a 2D and 3D computer-aided design (CAD) software application developed by Autodesk. It was first released in December 1982 for the CP/M and IBM PC platforms as a desktop app running on microcomputers with internal graphics controllers.</p>
    </div>""",unsafe_allow_html=True)
```

```
    st.write("")
    image_path="/home/rguktongole/3ds_max.jpg"
  col21,col22=st.columns([1,4])
  with col21:
    st.write("")
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col22:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Autodesk 3ds Max, formerly 3D Studio and 3D Studio Max, is a professional 3D computer graphics program for making 3D animations, models, games and images. It is developed and produced by Autodesk Media and Entertainment.</p>
    </div>""",unsafe_allow_html=True)


    st.write("")
    image_path="/home/rguktongole/analogelectronics.jpg"
  col23,col24=st.columns([1,4])
  with col23:
    st.write("")
    st.image(image_path,use_column_width=True)
  with col24:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Analog electronics use continuous signals to represent and process information. These systems are often used in applications where a continuous range of values is required, such as in radio and audio equipment, and in control systems.</p>
    </div>""",unsafe_allow_html=True)
```

```
    st.write("")
    image_path="/home/rguktongole/communicationsystem.jpg"
  col25,col26=st.columns([1,4])
  with col25:
    st.write("")
    st.image(image_path,use_column_width=True)
  with col26:
                                    st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
     <p style="color:#00246B;">Analog electronics use continuous signals to represent and process information. These systems are often used in applications where a continuous range of values is required, such as in radio and audio equipment, and in control systems.</p>
    </div>""",unsafe_allow_html=True)

    st.write("")
    image_path="/home/rguktongole/controlsystems.jpg"
  col27,col28=st.columns([1,4])
  with col27:
    st.write("")
    st.image(image_path,use_column_width=True)
  with col28:
                                    st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
     <p style="color:#00246B;">In a control system, a controller is used to manipulate a variable in order to keep the process functioning at the set point value. The difference between the set point value and the current value of the process variable is called the error, which is used to generate an output signal.</p>
    </div>""",unsafe_allow_html=True)

    st.write("")
    image_path="/home/rguktongole/digitalelectronics.jpg"
```

```
col29,col30=st.columns([1,4])
with col29:
  st.write("")
  st.write("")
  st.image(image_path,use_column_width=True)
with col30:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
    <p style="color:#00246B;">Digital electronics is the foundation of all modern electronic devices such as cellular phones, MP3 players, laptop computers, digital cameras, high definition televisions, etc. Students learn the digital circuit design process to create circuits and present solutions that can improve people's lives.</p>
    </div>""",unsafe_allow_html=True)

  st.write("")
  image_path="/home/rguktongole/embededsystems.jpg"
col31,col32=st.columns([1,4])
with col31:
  st.write("")
  st.write("")
  st.image(image_path,use_column_width=True)
with col32:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
    <p style="color:#00246B;">An embedded system is a combination of computer hardware and software designed for a specific function. Embedded systems may also function within a larger system. The systems can be programmable or have a fixed functionality.</p>
    </div>""",unsafe_allow_html=True)

  st.write("")
  image_path="/home/rguktongole/etabs.jpg"
```

```
col33,col34=st.columns([1,4])
with col33:
  st.write("")
  st.write("")
  st.image(image_path,use_column_width=True)
with col34:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
    <p style="color:#00246B;">ETABS is an engineering software product that caters to multi-story building analysis and design. Modeling tools and templates, code-based load prescriptions, analysis methods and solution techniques, all coordinate with the grid-like geometry unique to this class of structure.</p>
    </div>""",unsafe_allow_html=True)

  st.write("")
  image_path="/home/rguktongole/iot.jpg"
col35,col36=st.columns([1,4])
with col35:
  st.write("")
  st.write("")
  st.write("")
  st.image(image_path,use_column_width=True)
with col36:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
    <p style="color:#00246B;">The Internet of Things (IoT) describes the network of physical objects—“things”—that are embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet.</p>
    </div>""",unsafe_allow_html=True)

  st.write("")
```

```
    image_path="/home/rguktongole/networking.jpg"
  col37,col38=st.columns([1,4])
  with col37:
    st.write("")
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col38:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Networking is the process of making connections and building relationships. These connections can provide you with advice and contacts, which can help you make informed career decisions. Networking can even help you find unadvertised jobs/internships. Networking can take place in a group or one-on-one setting.</p>
    </div>""",unsafe_allow_html=True)


    st.write("")
    image_path="/home/rguktongole/primaverap6.jpg"
  col39,col40=st.columns([1,4])
  with col39:
    st.write("")
    st.image(image_path,use_column_width=True)
  with col40:
                                st.write("""<div style="border:5px solid #00246B;border-radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Oracle Primavera P6 is a project management software used to plan, schedule, and manage complex projects. This software is widely used in industries such as construction, engineering, and infrastructure, to name a few.</p>
    </div>""",unsafe_allow_html=True)


    st.write("")
```

```
    image_path="/home/rguktongole/robotics.jpg"
  col40,col41=st.columns([1,4])
  with col40:
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col41:
                                st.write("""<div style="border:5px solid #00246B;border-
radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">Robotics is a branch of engineering and computer science that
involves the conception, design, manufacture and operation of robots. The objective of the robotics
field is to create intelligent machines that can assist humans in a variety of ways. Robotics can take on
a number of forms.</p>
    </div>""",unsafe_allow_html=True)


    st.write("")
    image_path="/home/rguktongole/vlsi.jpg"
  col42,col43=st.columns([1,4])
  with col42:
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col43:
                                st.write("""<div style="border:5px solid #00246B;border-
radius:20px;padding:20px;background-color:#CADCFC;">
      <p style="color:#00246B;">VLSI (Very Large-Scale Integration) design is a process of
designing integrated circuits (ICs) by integrating thousands, millions or even billions of transistors on
a single chip. These ICs are used in a variety of electronic devices ranging from simple handheld
devices to complex supercomputers.</p>
    </div>""",unsafe_allow_html=True)


    st.write("")
```

```
    image_path="/home/rguktongole/staadpro.jpg"
  col44,col45=st.columns([1,4])
  with col44:
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col45:
                                st.write("""<div style="border:5px solid #00246B;border-
radius:20px;padding:20px;background-color:#CADCFC;">
     <p style="color:#00246B;">STAAD's full form is Structural Analysis and Design. STAAD Pro
is one of the popular software that is used for analyzing & designing structures like – buildings,
towers, bridges, industrial, transportation, and utility structures.</p>
    </div>""",unsafe_allow_html=True)


    st.write("")
    image_path="/home/rguktongole/rivitarchitecture.jpg"
  col46,col47=st.columns([1,4])
  with col46:
    st.write("")
    st.write("")
    st.image(image_path,use_column_width=True)
  with col47:
                                st.write("""<div style="border:5px solid #00246B;border-
radius:20px;padding:20px;background-color:#CADCFC;">
     <p style="color:#00246B;">From the outset, Revit was intended to allow architects and other
building professionals to design and document a building by creating a parametric three-dimensional
model that included both the geometry and non-geometric design and construction information, which
is also known as building information modeling or BIM </p>
    </div>""",unsafe_allow_html=True)
```

```
    elif choice == 'Recommend':


        st.subheader('Recommend Courses')
        cosine_sim_mat = vectorize_text_to_cosine_mat(df['course_title'
                ])
        search_term = st.text_input('Search')
        search_term_up = search_term.upper()
        if st.button('Recommend'):
            if search_term_up == '':
                results = 'Enter any Course name'
                st.warning(results)
            else:
                st.info('Suggested Options include')
                result_df = search_term_if_not_found(search_term_up, df)
                st.dataframe(result_df)
    elif choice=='Navigator':
        st.header('Navigator')
        im_path="/home/rguktongole/webd.jpg"
        width=500
        st.image(im_path,width=width)
        st.write("")
        html_url = "http://localhost:8000/WT_nav.html"
          st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-
size:20px;color:#00246B;background-color:#CADCFC;">Web Development</a></button>',
unsafe_allow_html=True)


        im_path="/home/rguktongole/pythonprog.jpg"
        width=500
```

```
    st.image(im_path,width=width)

    st.write("")

    html_url = "http://localhost:8000/python.html"

      st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-size:20px;color:#00246B;background-color:#CADCFC;">Python Programming</a></button>', unsafe_allow_html=True)


    im_path="/home/rguktongole/javaprogram.jpg"

    width=500

    st.image(im_path,width=width)

    st.write("")

    html_url = "http://localhost:8000/java.html"

      st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-size:20px;color:#00246B;background-color:#CADCFC;">Java Programming</a></button>', unsafe_allow_html=True)


    im_path="/home/rguktongole/datascience.jpg"

    width=500

    st.image(im_path,width=width)

    st.write("")

    html_url = "http://localhost:8000/dscience.html"

      st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-size:20px;color:#00246B;background-color:#CADCFC;">Data Science</a></button>', unsafe_allow_html=True)


    im_path="/home/rguktongole/ml.jpg"

    width=500

    st.image(im_path,width=width)

    st.write("")

    html_url = "http://localhost:8000/ml_nav.html"

      st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-
```

size:20px;color:#00246B;background-color:#CADCFC;">Machine Learning</button>', unsafe_allow_html=True)

```
    im_path="/home/rguktongole/ethicalhack.jpg"
    width=500
    st.image(im_path,width=width)
    st.write("")
    html_url = "http://localhost:8000/ethicalhack_nav.html"
      st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-
```

size:20px;color:#00246B;background-color:#CADCFC;">Ethical Hacking</button>', unsafe_allow_html=True)

```
    im_path="/home/rguktongole/cloud.jpg"
    width=500
    st.image(im_path,width=width)
    st.write("")
    html_url = "http://localhost:8000/cloud_nav.html"
      st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-
```

size:20px;color:#00246B;background-color:#CADCFC;">Cloud Computing</button>', unsafe_allow_html=True)

```
    im_path="/home/rguktongole/vlsinew.jpg"
    width=500
    st.image(im_path,width=width)
    st.write("")
    html_url = "http://localhost:8000/vlsi.html"
      st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-
```

size:20px;color:#00246B;background-color:#CADCFC;">VLSI</button>', unsafe_allow_html=True)

```
    im_path="/home/rguktongole/embededsystems.jpg"
```

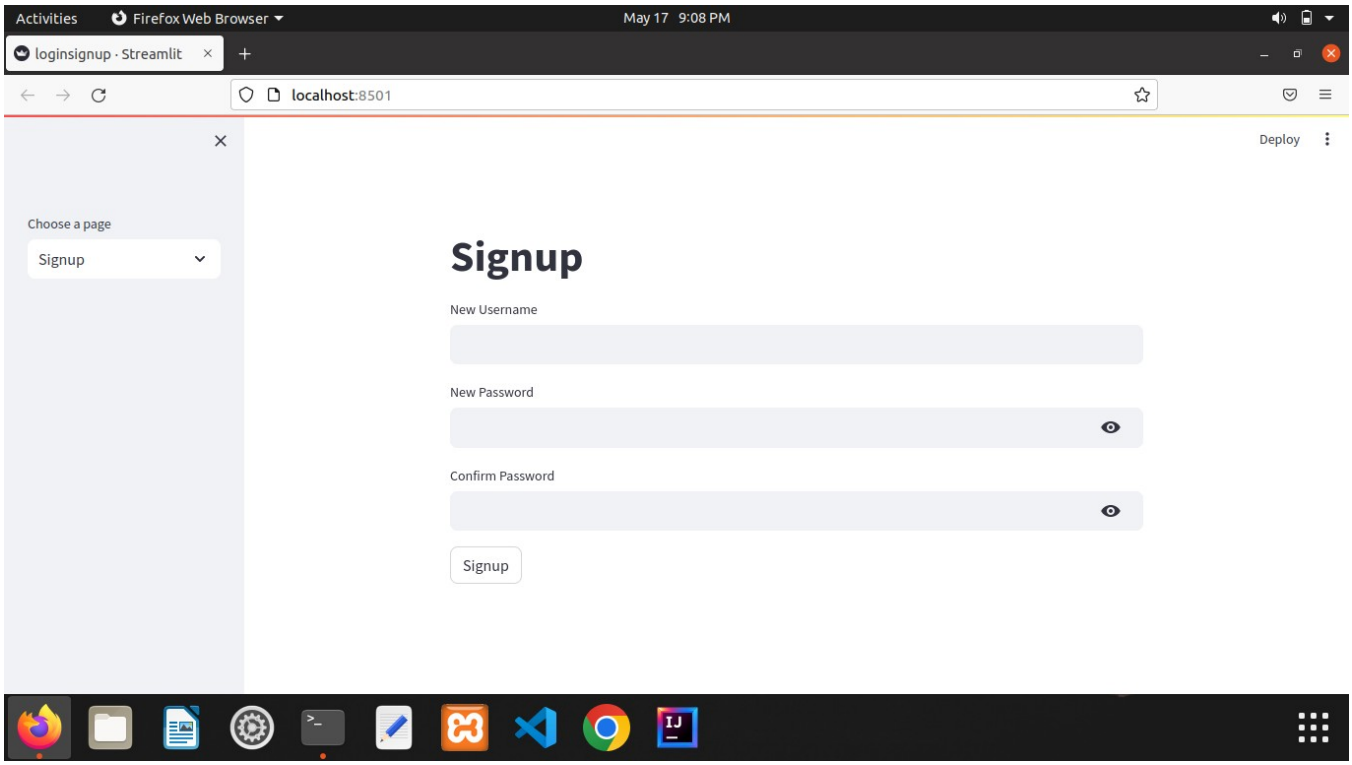
```
        width=500
        st.image(im_path,width=width)
        st.write("")
        html_url = "http://localhost:8000/esystems.html"
          st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-size:20px;color:#00246B;background-color:#CADCFC;">Embedded Systems</a></button>', unsafe_allow_html=True)


        im_path="/home/rguktongole/robotics.jpg"
        width=500
        st.image(im_path,width=width)
        st.write("")
        html_url = "http://localhost:8000/robotics_nav.html"
          st.markdown(f'<button><a href="{html_url}" target="_blank" style="text-decoration:none;font-size:20px;color:#00246B;background-color:#CADCFC;">Robotics</a></button>', unsafe_allow_html=True)


    else:
        def create_table():
          conn = sqlite3.connect('feedback.db')
          c = conn.cursor()
          c.execute('''CREATE TABLE IF NOT EXISTS feedback
                (id INTEGER PRIMARY KEY AUTOINCREMENT, name TEXT, email TEXT, feedback TEXT)''')
          conn.commit()
          conn.close()

# Function to insert feedback into the database
        def insert_feedback(name, email, feedback):
          conn = sqlite3.connect('feedback.db')
          c = conn.cursor()
```

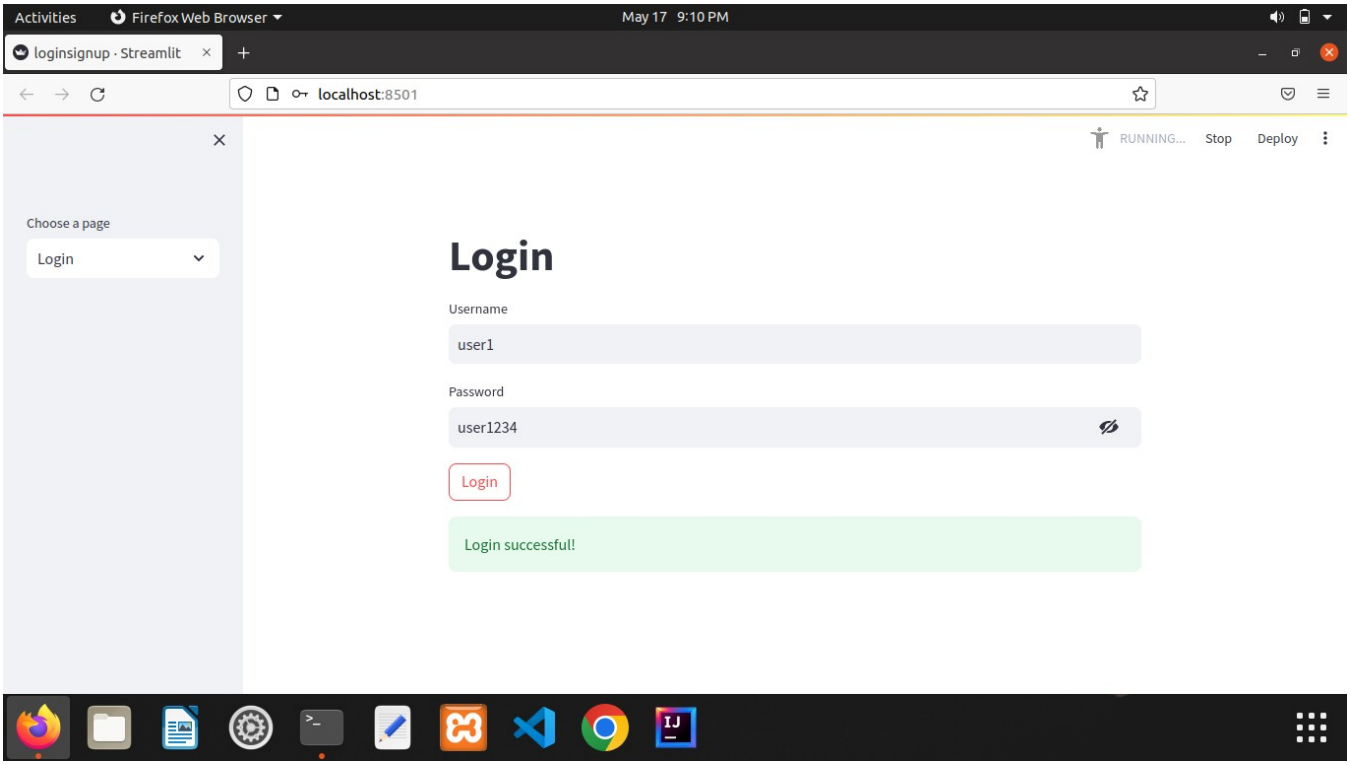
```
        c.execute("INSERT INTO feedback (name, email, feedback) VALUES (?, ?, ?)", (name, email, feedback))
        conn.commit()
        conn.close()

# Main function
    def fun():
        st.title("Feedback Form")

    # Create database table if it doesn't exist
        create_table()

    # Input fields for feedback
        name = st.text_input("Name")
        email = st.text_input("Email")
        feedback = st.text_area("Feedback")

    # Submit button
        if st.button("Submit"):
          if name and email and feedback:
            insert_feedback(name, email, feedback)
            st.success("Feedback submitted successfully!")
          else:
            st.error("Please fill in all fields.")

    if __name__ == "__main__":
            fun()
```

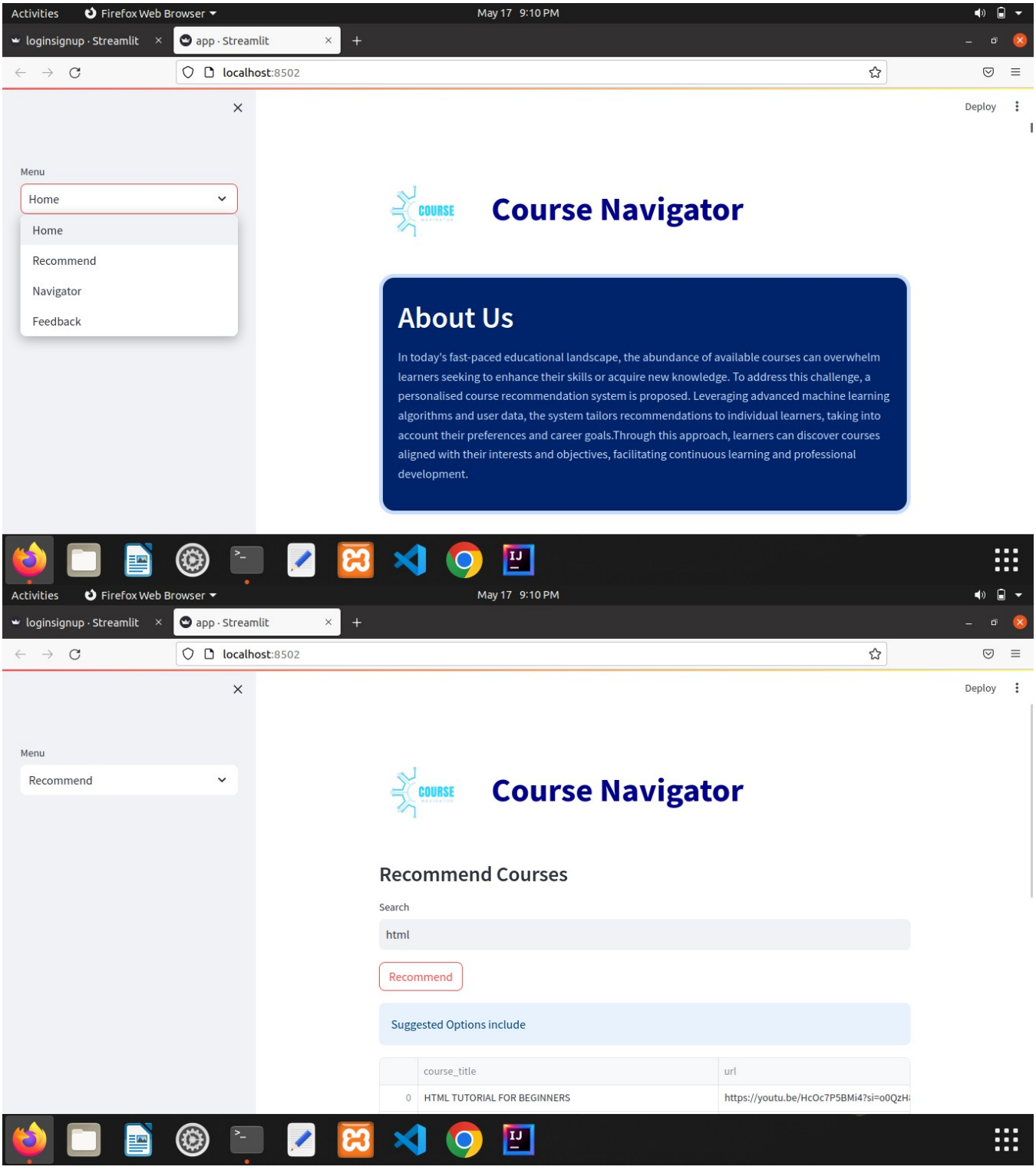
```
if __name__ == '__main__':
    main()
```

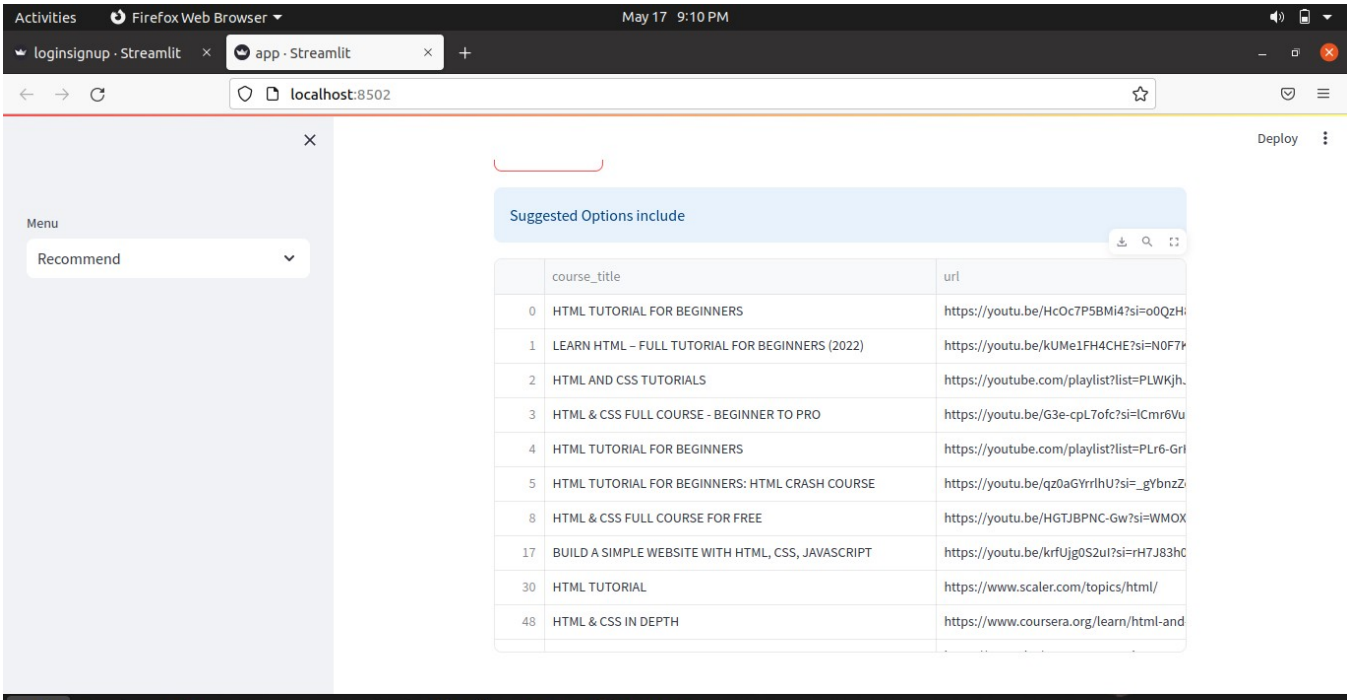
****

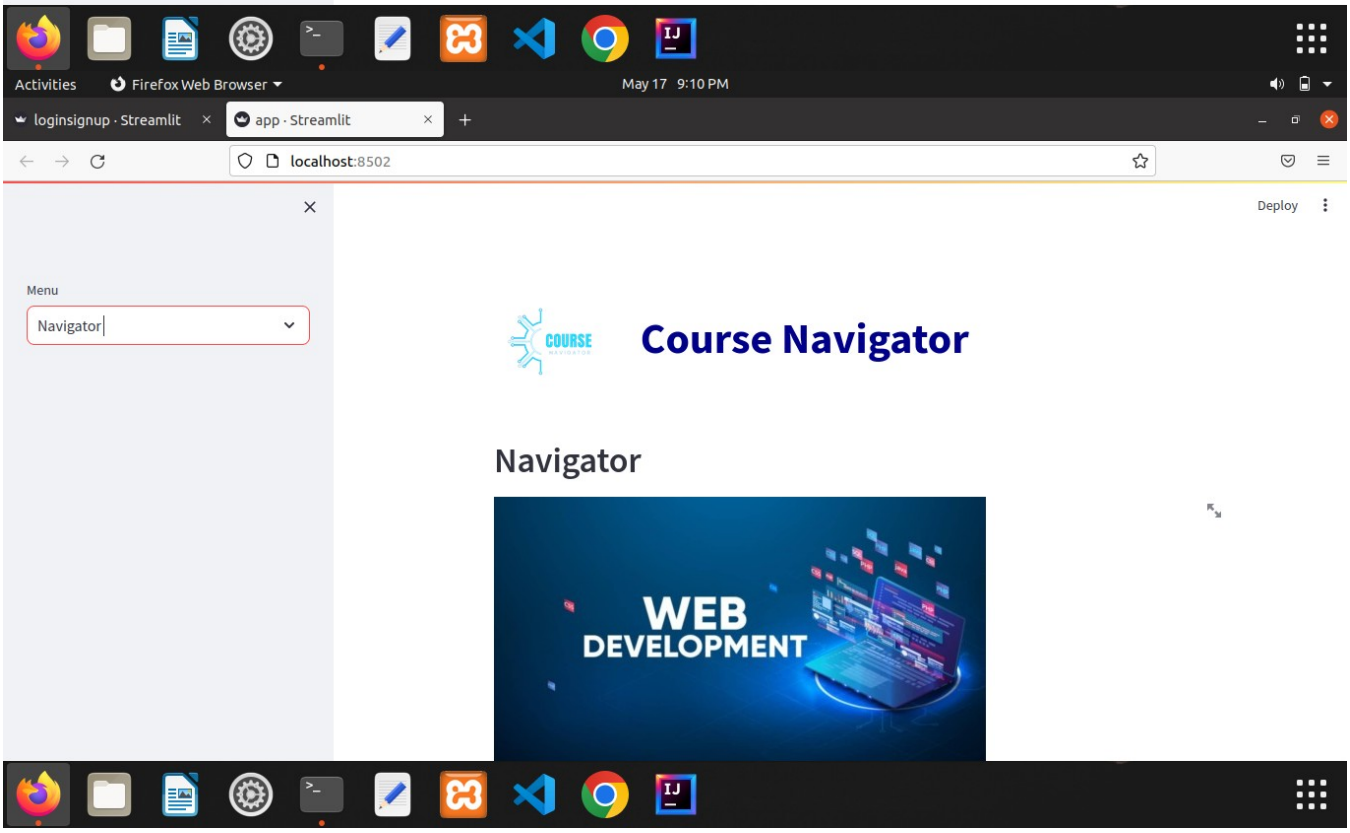
5.5 SAMPLE OUPUTS

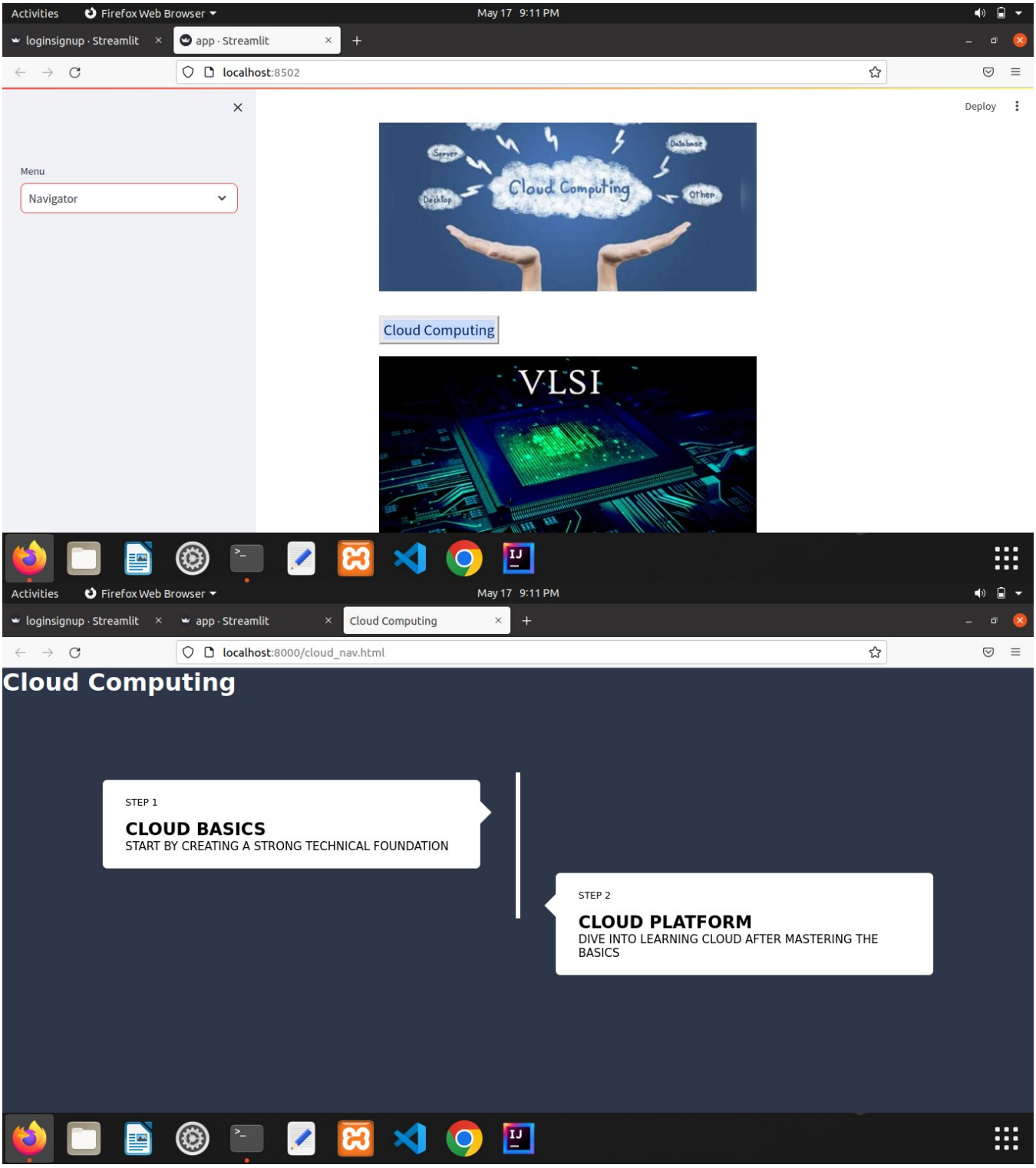


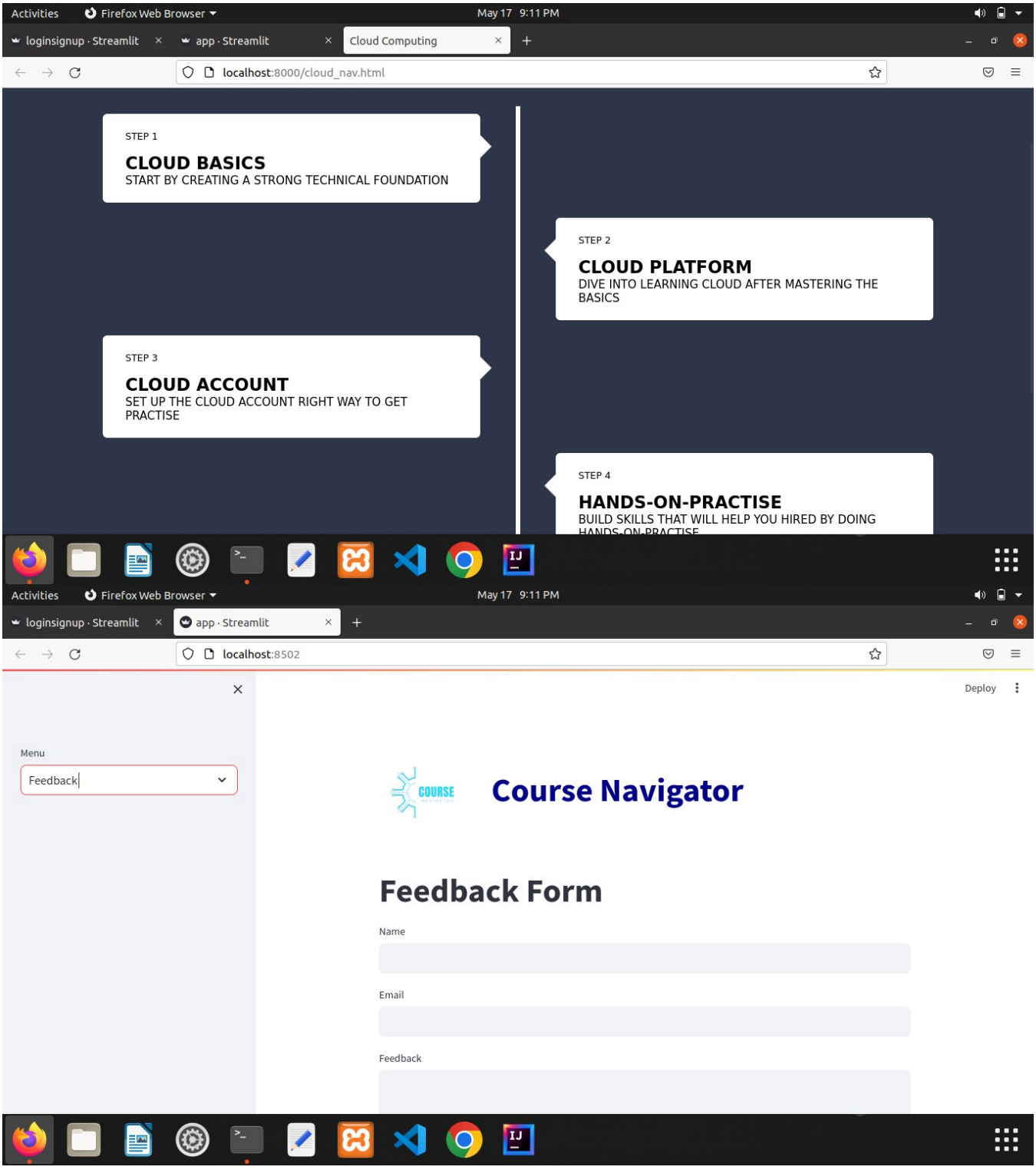

Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
localhost:8501
RUNNING...
Stop
Deploy
Choose a page
Login
Login
Username
user1
Password
user1234
Login
Login successful!

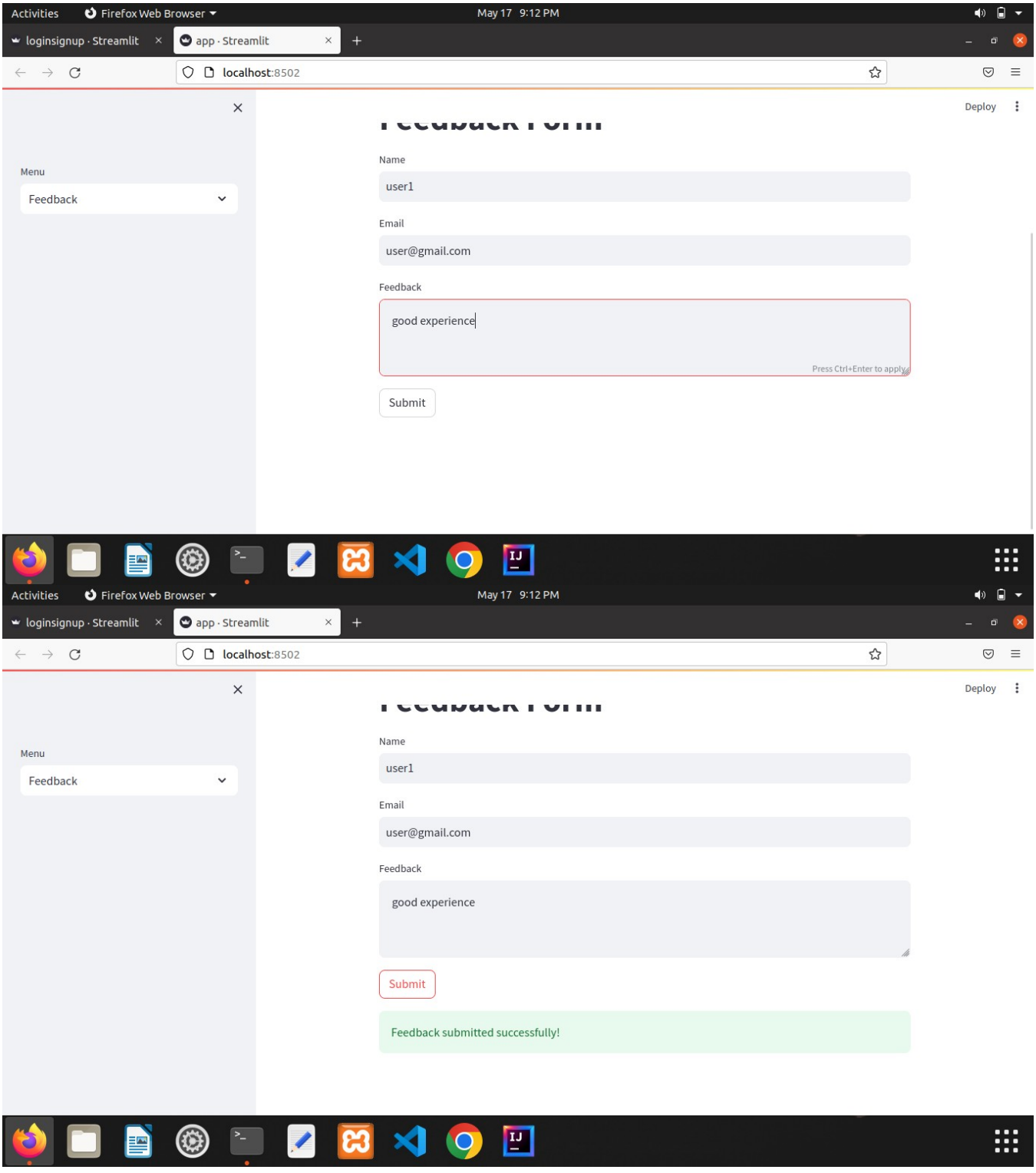

Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Home
Home
Recommend
Navigator
Feedback
Course Navigator
About Us
In today's fast-paced educational landscape, the abundance of available courses can overwhelm learners seeking to enhance their skills or acquire new knowledge. To address this challenge, a personalised course recommendation system is proposed. Leveraging advanced machine learning algorithms and user data, the system tailors recommendations to individual learners, taking into account their preferences and career goals.Through this approach, learners can discover courses aligned with their interests and objectives, facilitating continuous learning and professional development.
Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Recommend
Course Navigator
Recommend Courses
Search
html
Recommend
Suggested Options include
course_title
url
0
HTML TUTORIAL FOR BEGINNERS
https://youtu.be/HcOc7P5BMi4?si=o0QzH


Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Recommend
Suggested Options include
course_title
url
0 HTML TUTORIAL FOR BEGINNERS
1 LEARN HTML – FULL TUTORIAL FOR BEGINNERS (2022)
2 HTML AND CSS TUTORIALS
3 HTML & CSS FULL COURSE - BEGINNER TO PRO
4 HTML TUTORIAL FOR BEGINNERS
5 HTML TUTORIAL FOR BEGINNERS: HTML CRASH COURSE
8 HTML & CSS FULL COURSE FOR FREE
17 BUILD A SIMPLE WEBSITE WITH HTML, CSS, JAVASCRIPT
30 HTML TUTORIAL
48 HTML & CSS IN DEPTH


Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Navigator
COURSE
Course Navigator
Navigator
WEB
DEVELOPMENT


Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Navigator
Server
Database
Desktop
Other
Cloud Computing
Cloud Computing
VLSI
Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
Cloud Computing
localhost:8000/cloud_nav.html
Cloud Computing
STEP 1
CLOUD BASICS
START BY CREATING A STRONG TECHNICAL FOUNDATION
STEP 2
CLOUD PLATFORM
DIVE INTO LEARNING CLOUD AFTER MASTERING THE BASICS

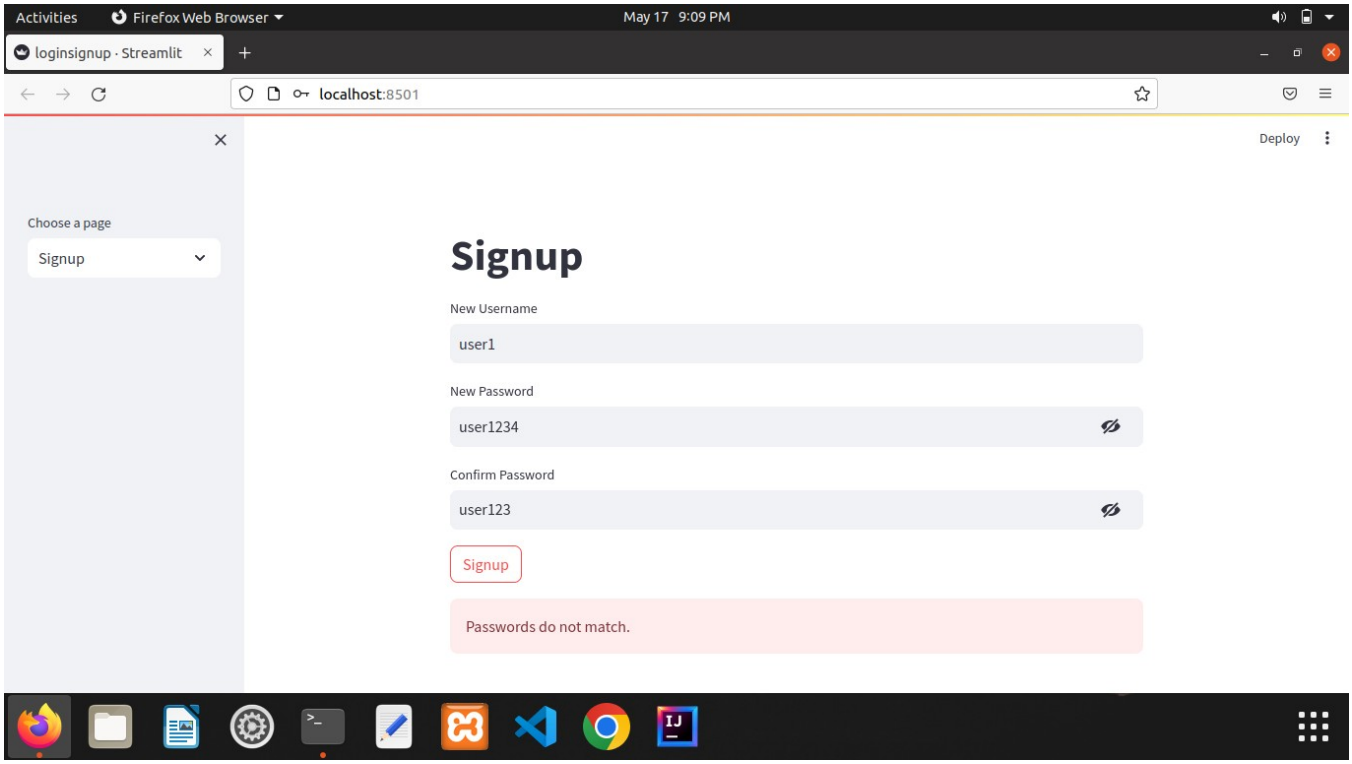

Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
Cloud Computing
localhost:8000/cloud_nav.html
STEP 1
CLOUD BASICS
START BY CREATING A STRONG TECHNICAL FOUNDATION
STEP 2
CLOUD PLATFORM
DIVE INTO LEARNING CLOUD AFTER MASTERING THE BASICS
STEP 3
CLOUD ACCOUNT
SET UP THE CLOUD ACCOUNT RIGHT WAY TO GET PRACTISE
STEP 4
HANDS-ON-PRACTISE
BUILD SKILLS THAT WILL HELP YOU HIRED BY DOING
Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Feedback
Course Navigator
Feedback Form
Name
Email
Feedback

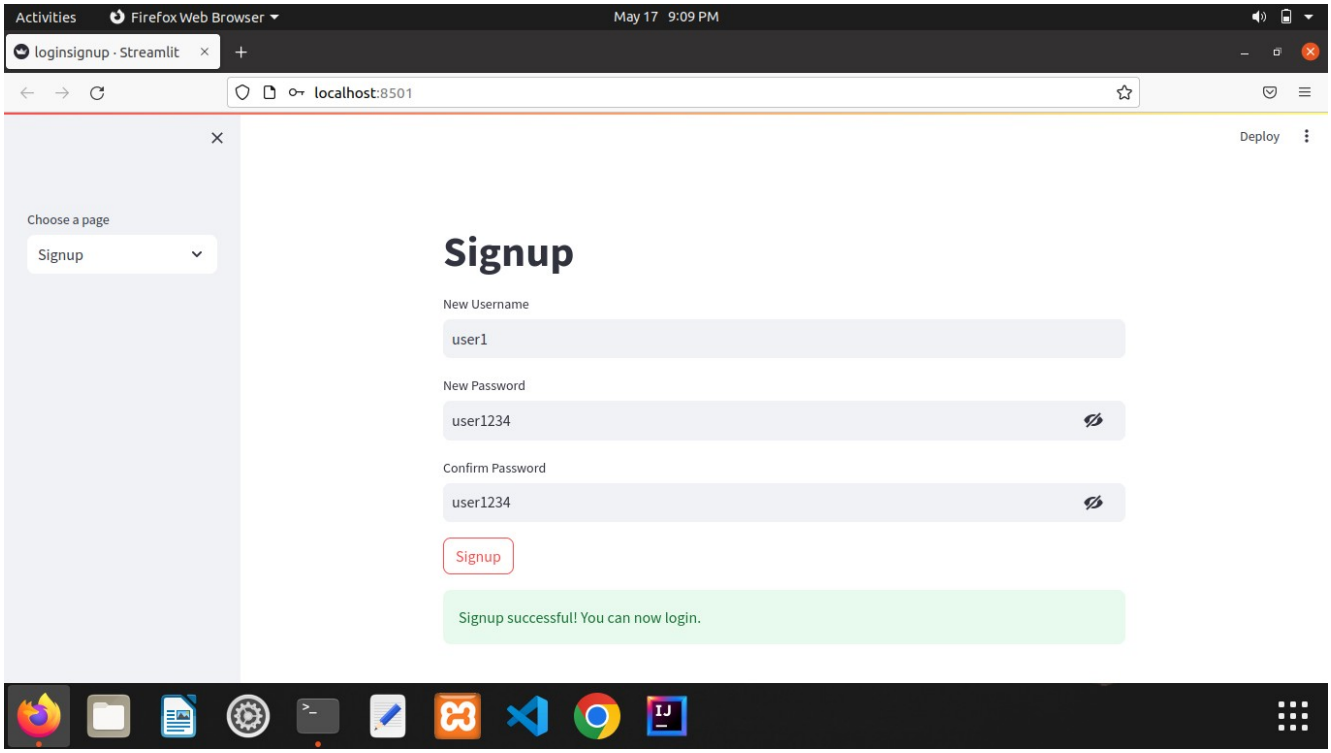

Activities
Firefox Web Browser
May 17 9:12 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Feedback
Name
user1
Email
user@gmail.com
Feedback
good experience
Press Ctrl+Enter to apply
Submit
Activities
Firefox Web Browser
May 17 9:12 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Feedback
Name
user1
Email
user@gmail.com
Feedback
good experience
Submit
Feedback submitted successfully!

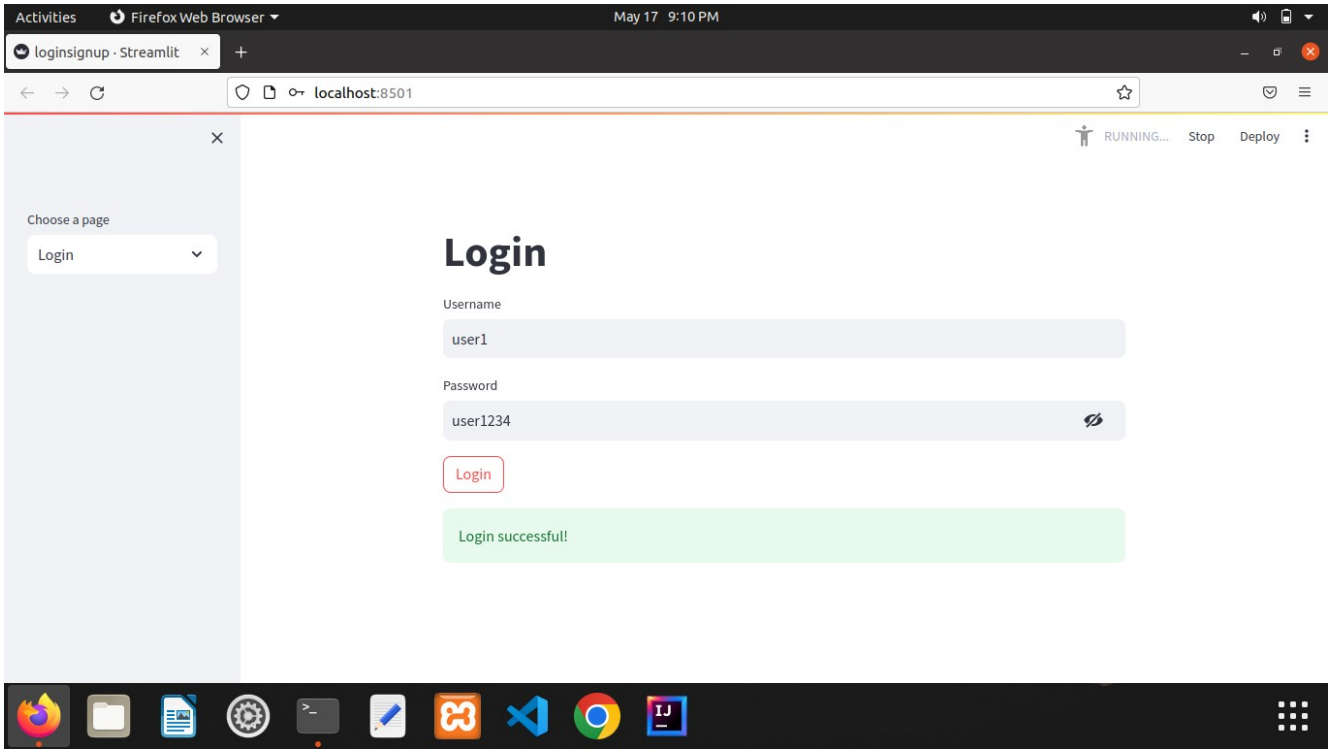
6.TESTING

6.1 BLACK BOX TESTING

Black box testing involves testing a system with no prior knowledge of its internal workings. A tester provides an input, and observes the output generated by the system under test. This makes it possible to identify how the system responds to expected and unexpected user actions, its response time, usability issues and reliability issues. Black box testing is a powerful testing technique because it exercises a system end-to-end. Just like end-users “don’t care” how a system is coded or architected, and expect to receive an appropriate response to their requests, a tester can simulate user activity and see if the system delivers on its promises. Along the way, a black box test evaluates all relevant subsystems, including UI/UX, web server or application server, database, dependencies, and integrated systems.




Activities
Firefox Web Browser
May 17 9:09 PM
loginsignup · Streamlit
localhost:8501
Deploy
Choose a page
Signup
Signup
New Username
user1
New Password
user1234
Confirm Password
user1234
Signup
Signup successful! You can now login.


Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
localhost:8501
RUNNING...
Stop
Deploy
Choose a page
Login
Login
Username
user1
Password
user1234
Login
Login successful!

6.2WHITE BOX TESTING

White box testing is an approach that allows testers to inspect and verify the inner workings of a software system its code, infrastructure, and integrations with external systems. White box testing is an essential part of automated build processes in a modern Continuous Integration/Continuous Delivery (CI/CD) development pipeline. White box testing is often referenced in the context of Static Application Security Testing (SAST), an approach that checks source code or binaries automatically and provides feedback on bugs and possible vulnerabilities.

Code testing:

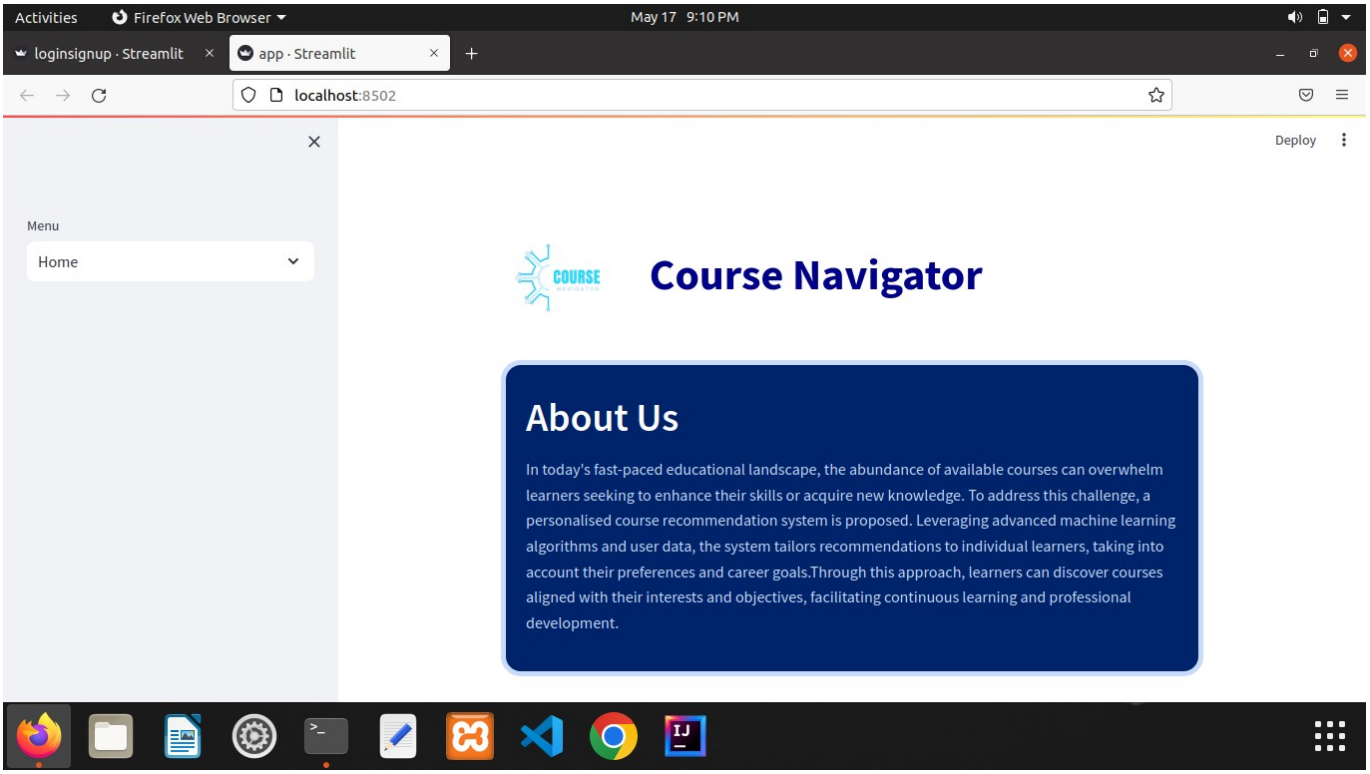
LOGIN & SIGNUP FORM;

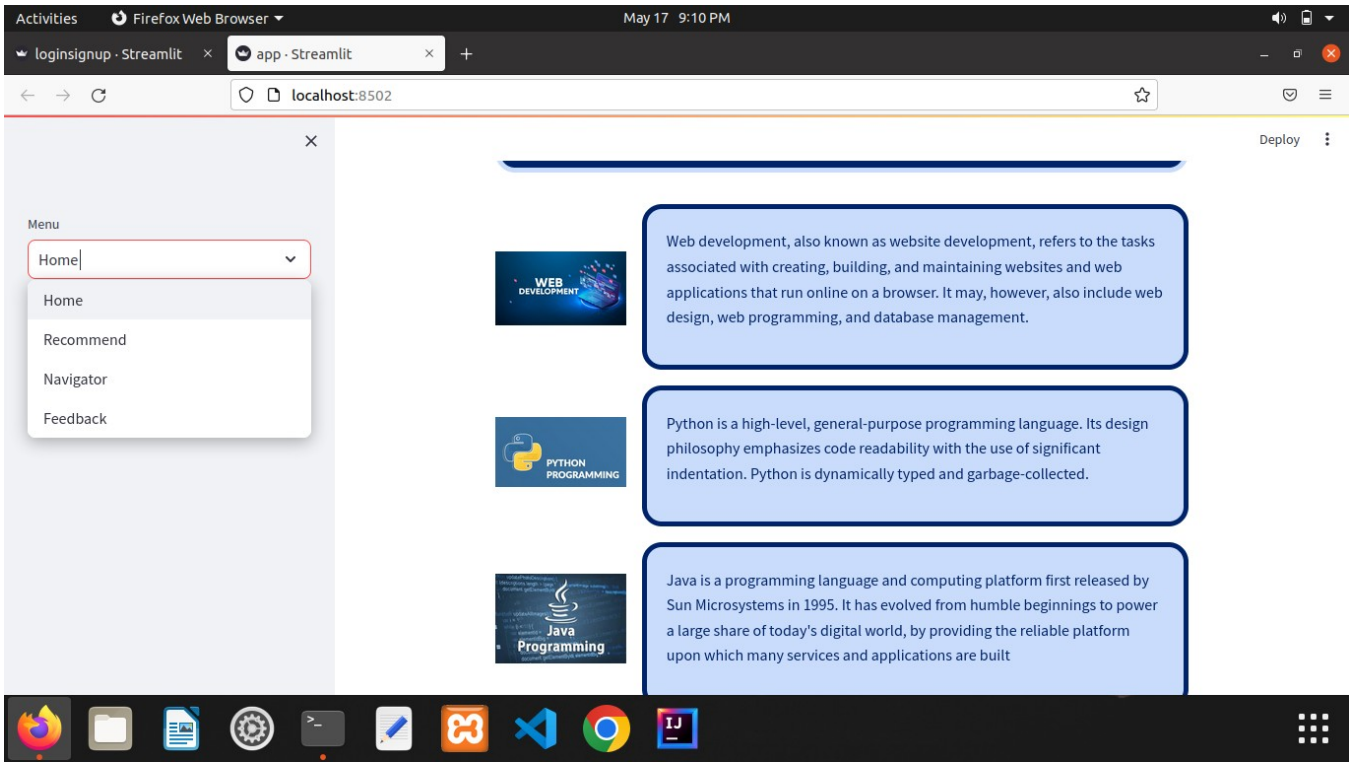
```
import streamlit as st
import sqlite3
from passlib.hash import pbkdf2_sha256
import subprocess

# Function to create a SQLite database and table for users
def create_user_table():
    conn = sqlite3.connect('users.db')
    c = conn.cursor()
    c.execute('''CREATE TABLE IF NOT EXISTS users
                 (id INTEGER PRIMARY KEY AUTOINCREMENT, username TEXT, password TEXT)''')
    conn.commit()
    conn.close()

# Function to insert a new user into the database
def insert_user(username, password):
    hashed_password = pbkdf2_sha256.hash(password)
    conn = sqlite3.connect('users.db')
```

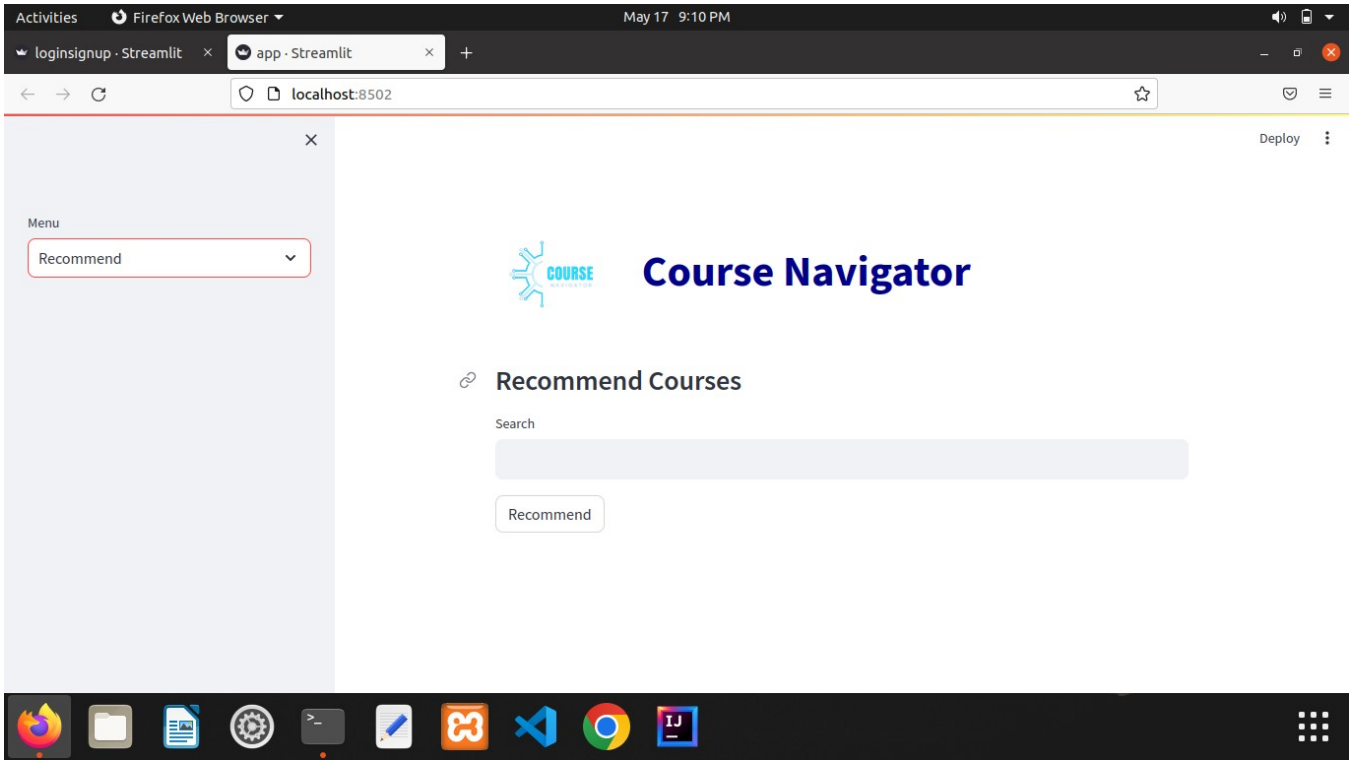
```
    c = conn.cursor()
    c.execute("INSERT INTO users (username, password) VALUES (?, ?)", (username,
hashed_password))
    conn.commit()
    conn.close()

# Function to authenticate user
def authenticate_user(username, password):
    conn = sqlite3.connect('users.db')
    c = conn.cursor()
    c.execute("SELECT password FROM users WHERE username=?", (username,))
    stored_password = c.fetchone()
    conn.close()
    if stored_password:
        return pbkdf2_sha256.verify(password, stored_password[0])
    return False

# Main function for login page
def login():
    st.title("Login")
    username = st.text_input("Username")
    password = st.text_input("Password", type="password")
    if st.button("Login"):
        if authenticate_user(username, password):
            st.success("Login successful!")
            # Redirect to another Streamlit app file
            subprocess.run(["streamlit", "run", "app.py"])
        else:
            st.error("Invalid username or password.")
```

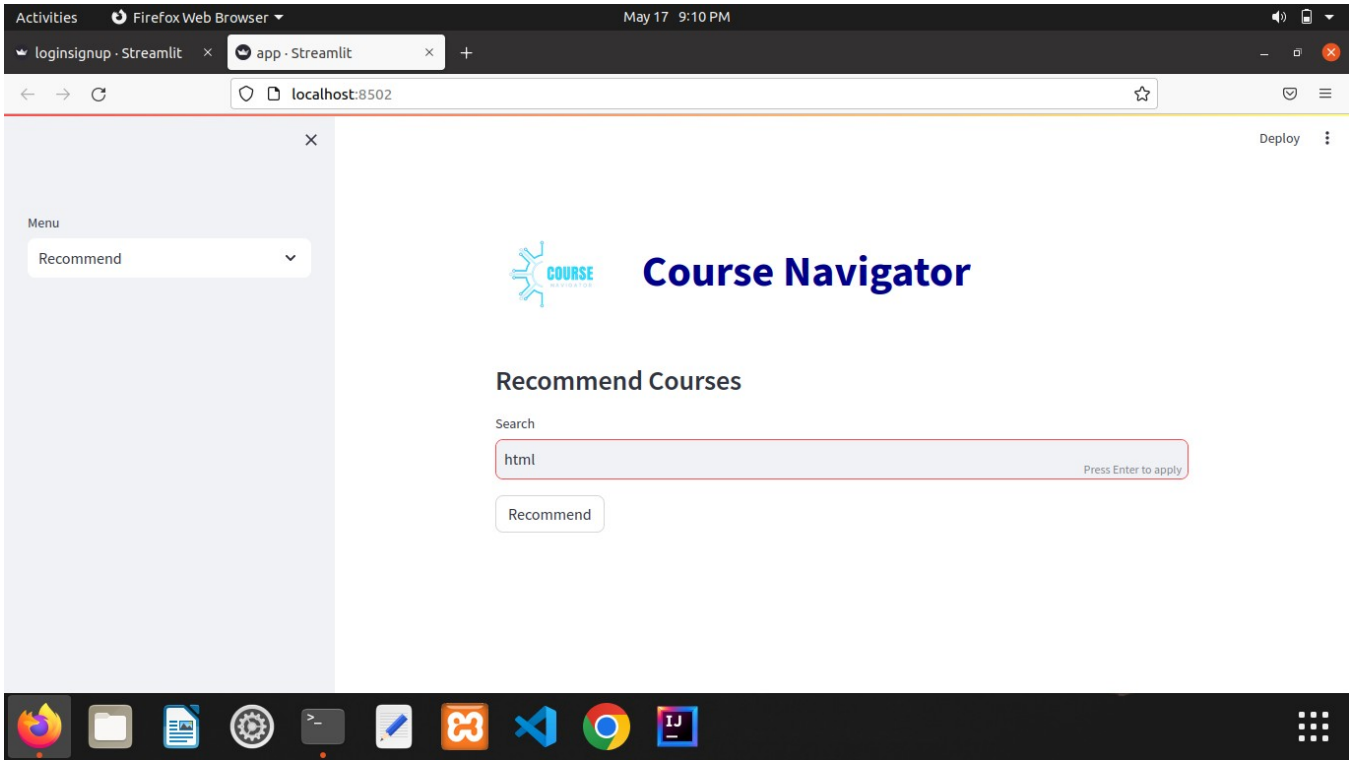
```
# Main function for signup page
def signup():
    st.title("Signup")
    new_username = st.text_input("New Username")
    new_password = st.text_input("New Password", type="password")
    confirm_password = st.text_input("Confirm Password", type="password")
    if st.button("Signup"):
        if new_password == confirm_password:
            insert_user(new_username, new_password)
            st.success("Signup successful! You can now login.")
        else:
            st.error("Passwords do not match.")

if __name__ == "__main__":
    create_user_table()
    page = st.sidebar.selectbox("Choose a page", ["Signup", "Login"])
    if page == "Login":
        login()
    else:
        signup()
```

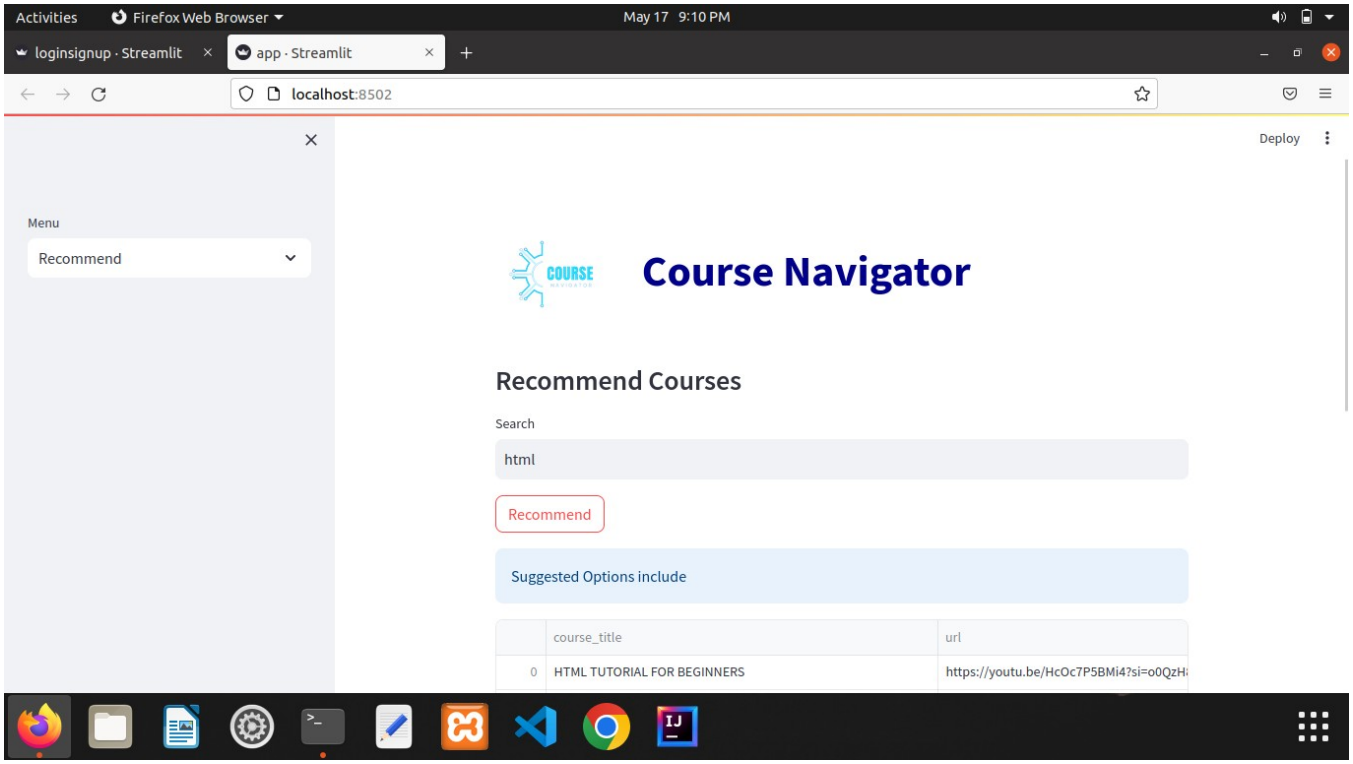
7.SCREENSHOTS

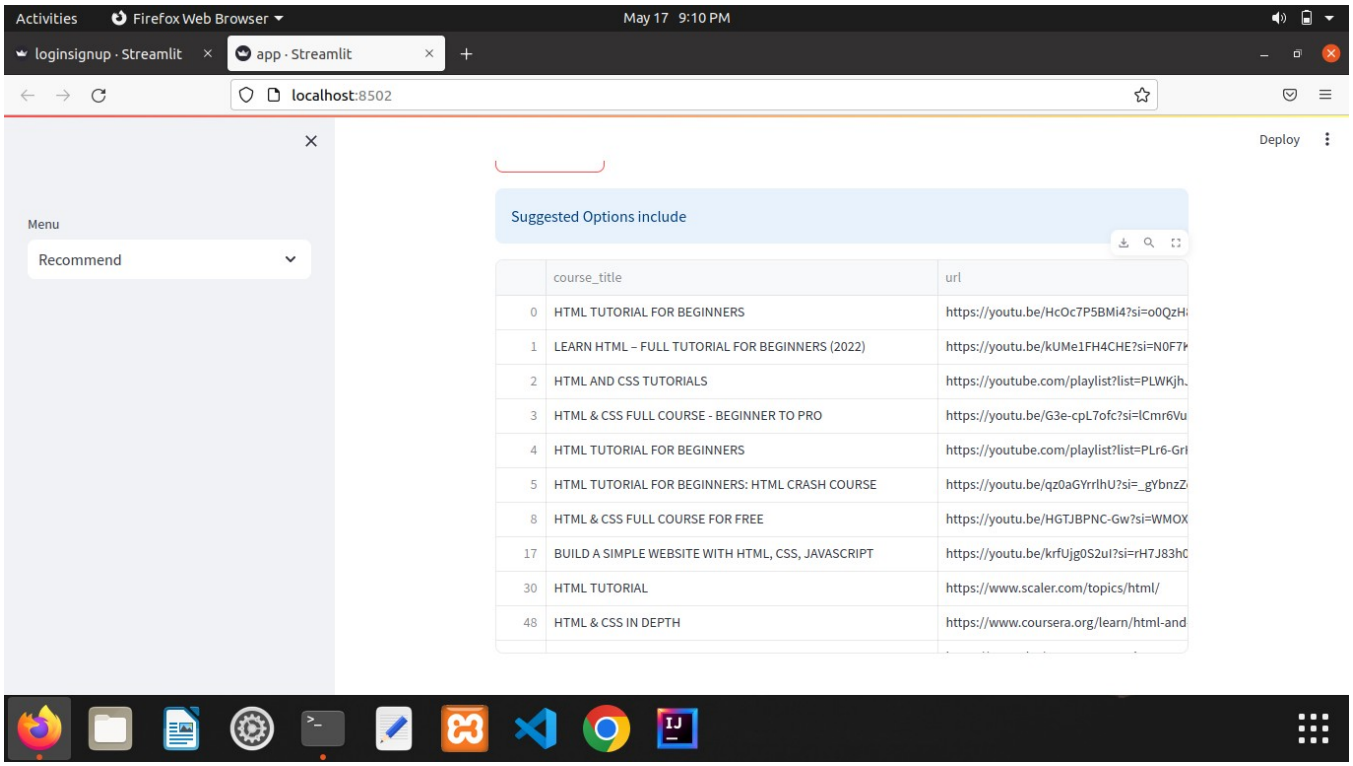


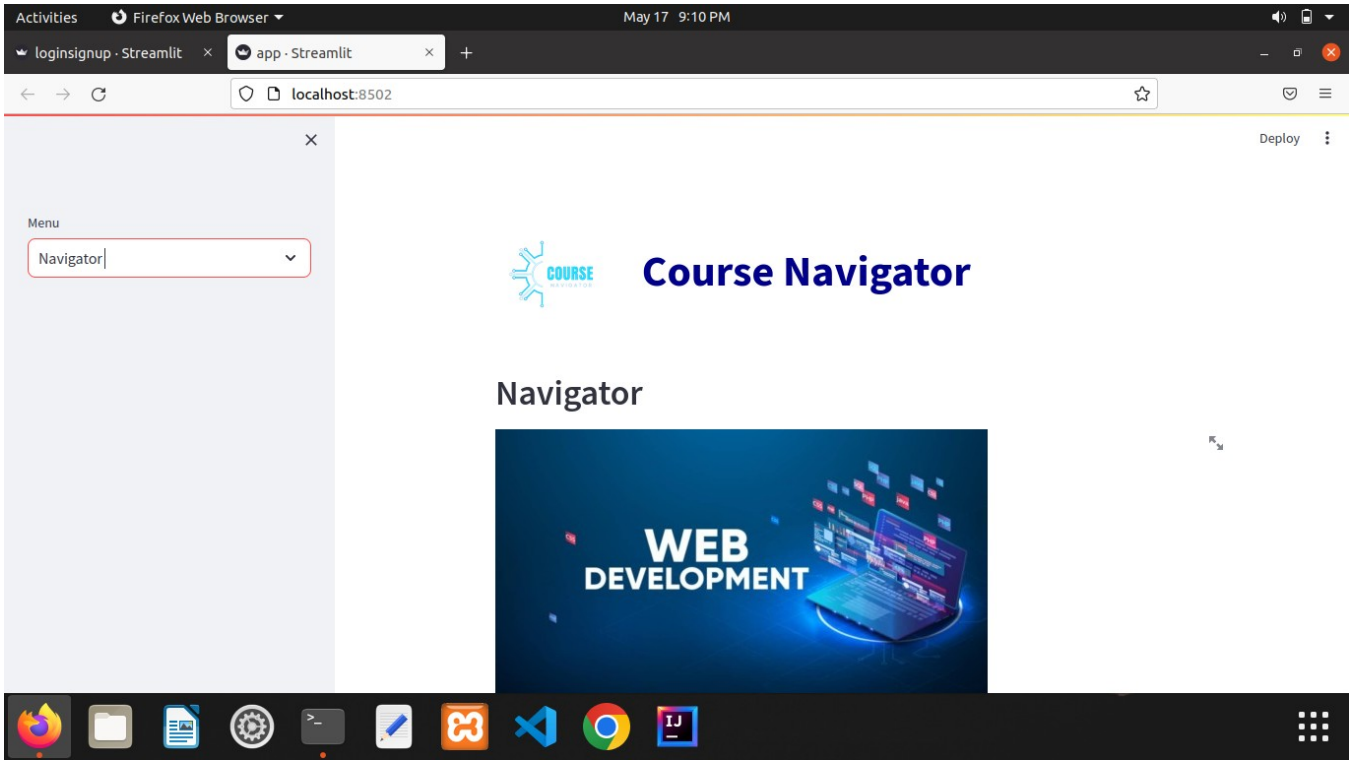


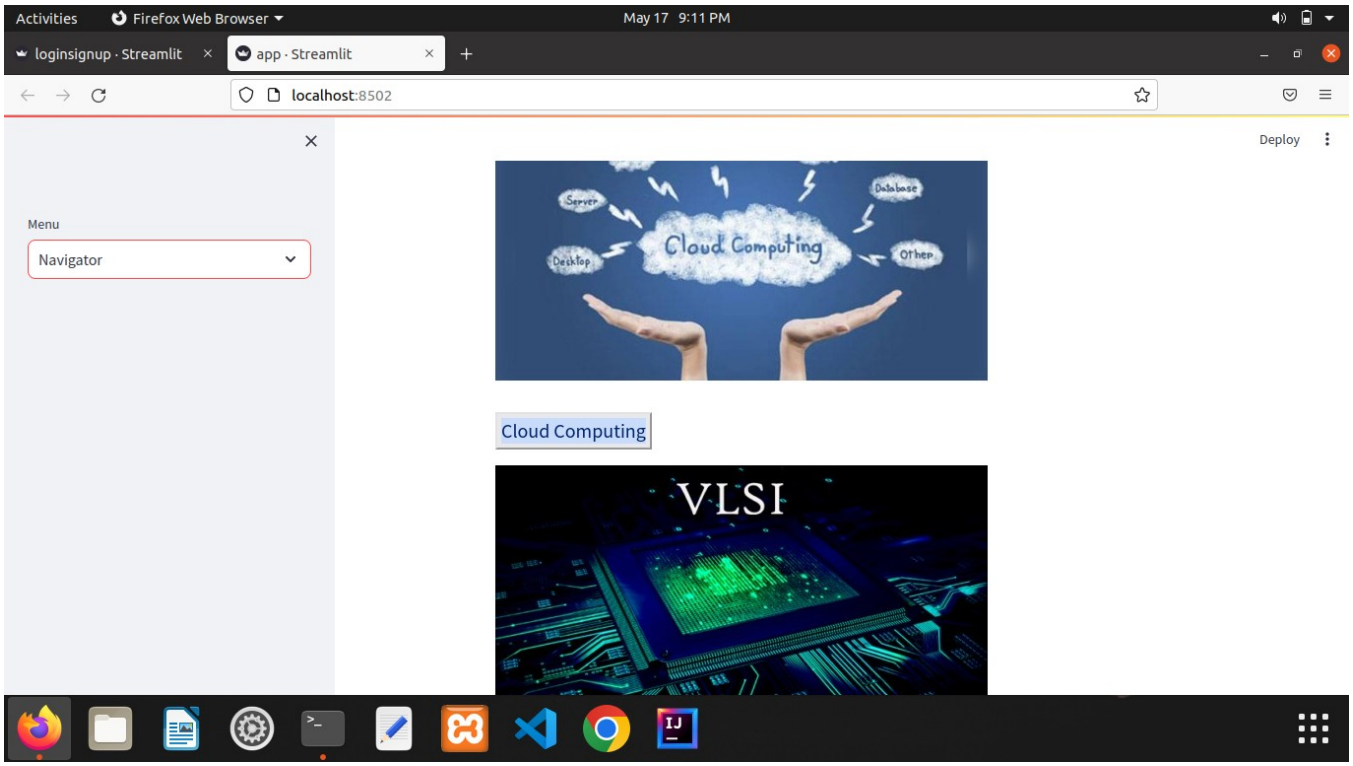

Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Recommend
Course Navigator
Recommend Courses
Search
Recommend

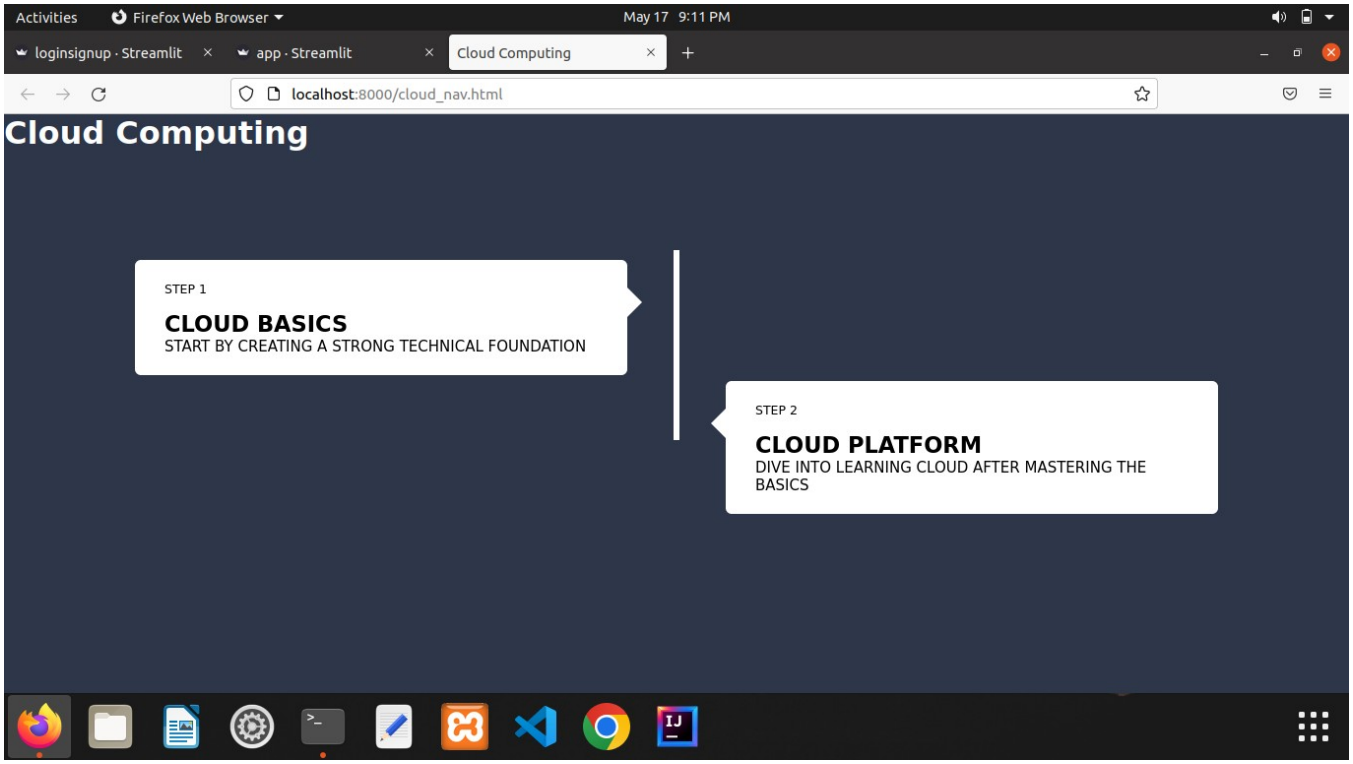

Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Recommend
Course Navigator
Recommend Courses
Search
html
Press Enter to apply
Recommend

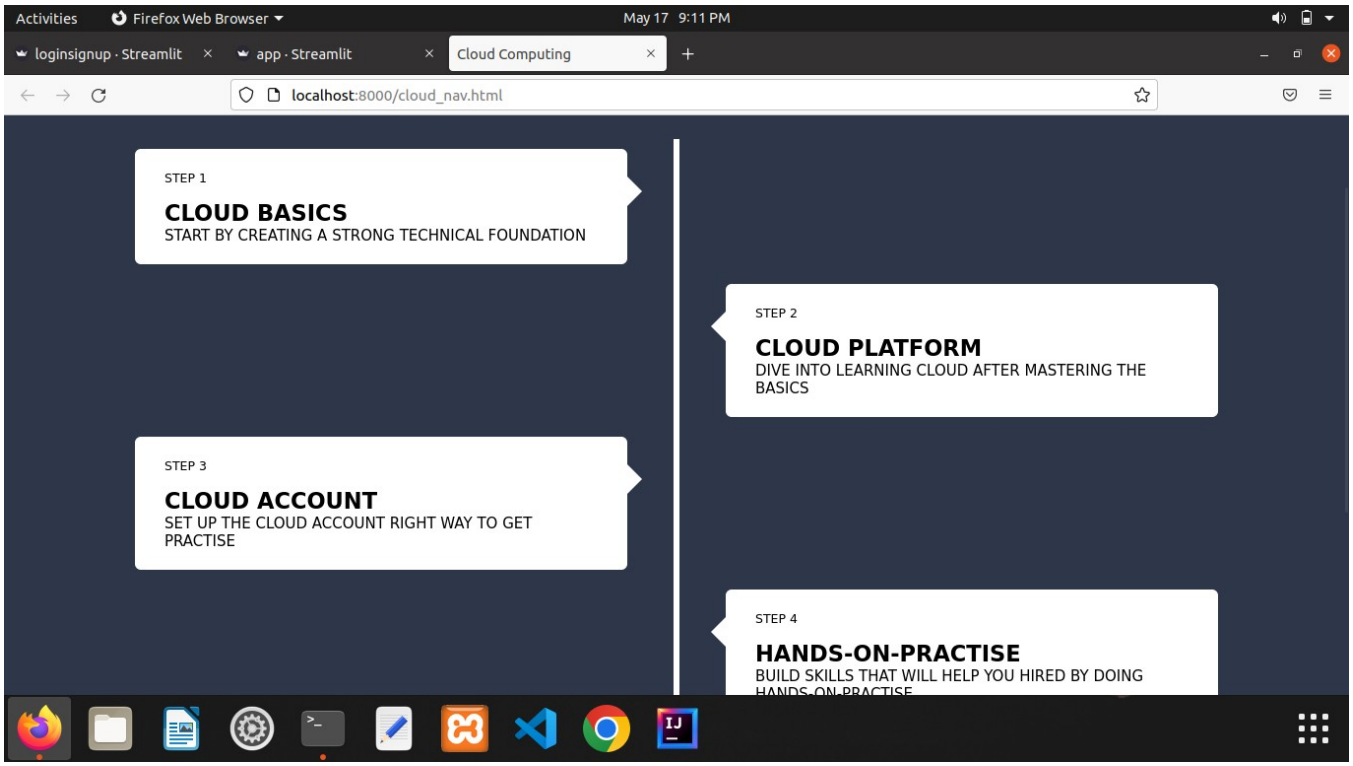

Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Recommend
Course Navigator
Recommend Courses
Search
html
Recommend
Suggested Options include
course_title
url
0
HTML TUTORIAL FOR BEGINNERS

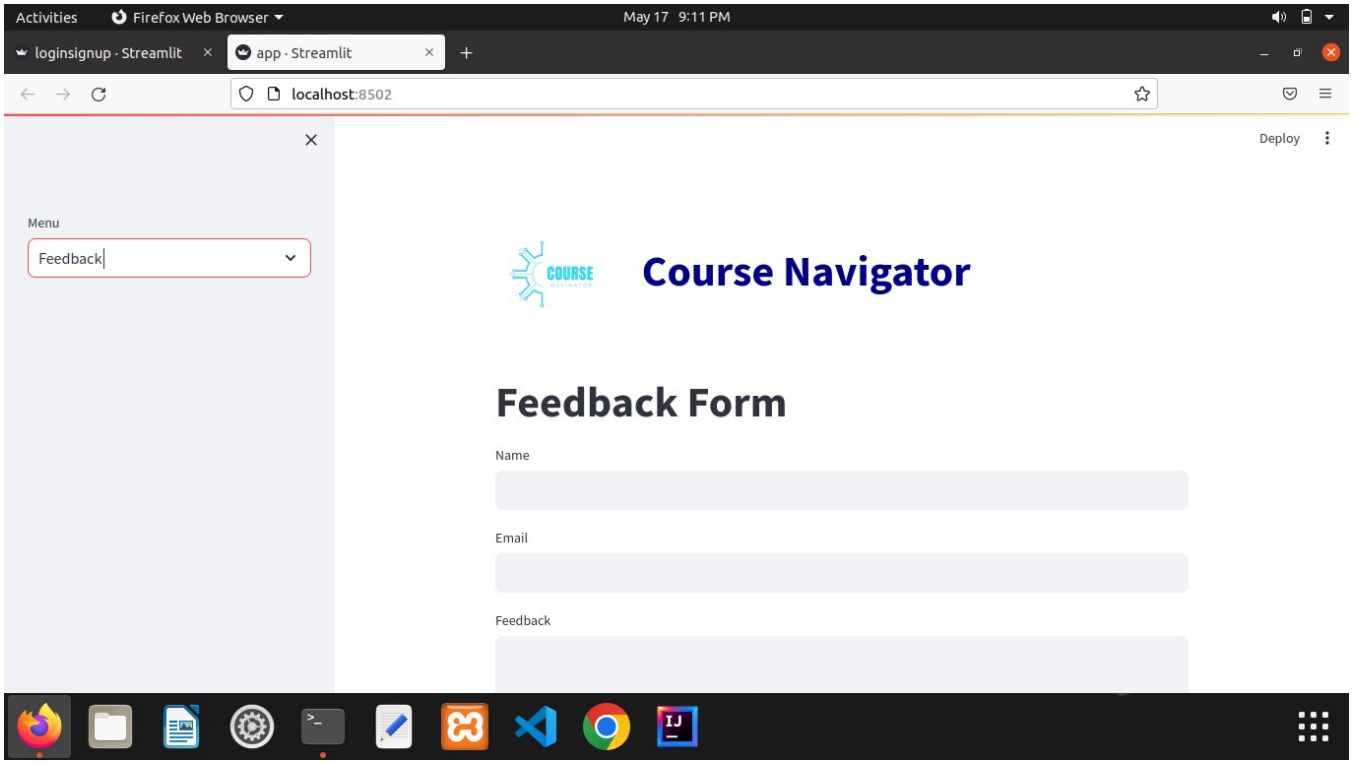

Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Recommend
Suggested Options include
course_title
url
0
HTML TUTORIAL FOR BEGINNERS
1
LEARN HTML – FULL TUTORIAL FOR BEGINNERS (2022)
2
HTML AND CSS TUTORIALS
3
HTML & CSS FULL COURSE - BEGINNER TO PRO
4
HTML TUTORIAL FOR BEGINNERS
5
HTML TUTORIAL FOR BEGINNERS: HTML CRASH COURSE
8
HTML & CSS FULL COURSE FOR FREE
17
BUILD A SIMPLE WEBSITE WITH HTML, CSS, JAVASCRIPT
30
HTML TUTORIAL
https://www.scaler.com/topics/html/
48
HTML & CSS IN DEPTH
https://www.coursera.org/learn/html-and

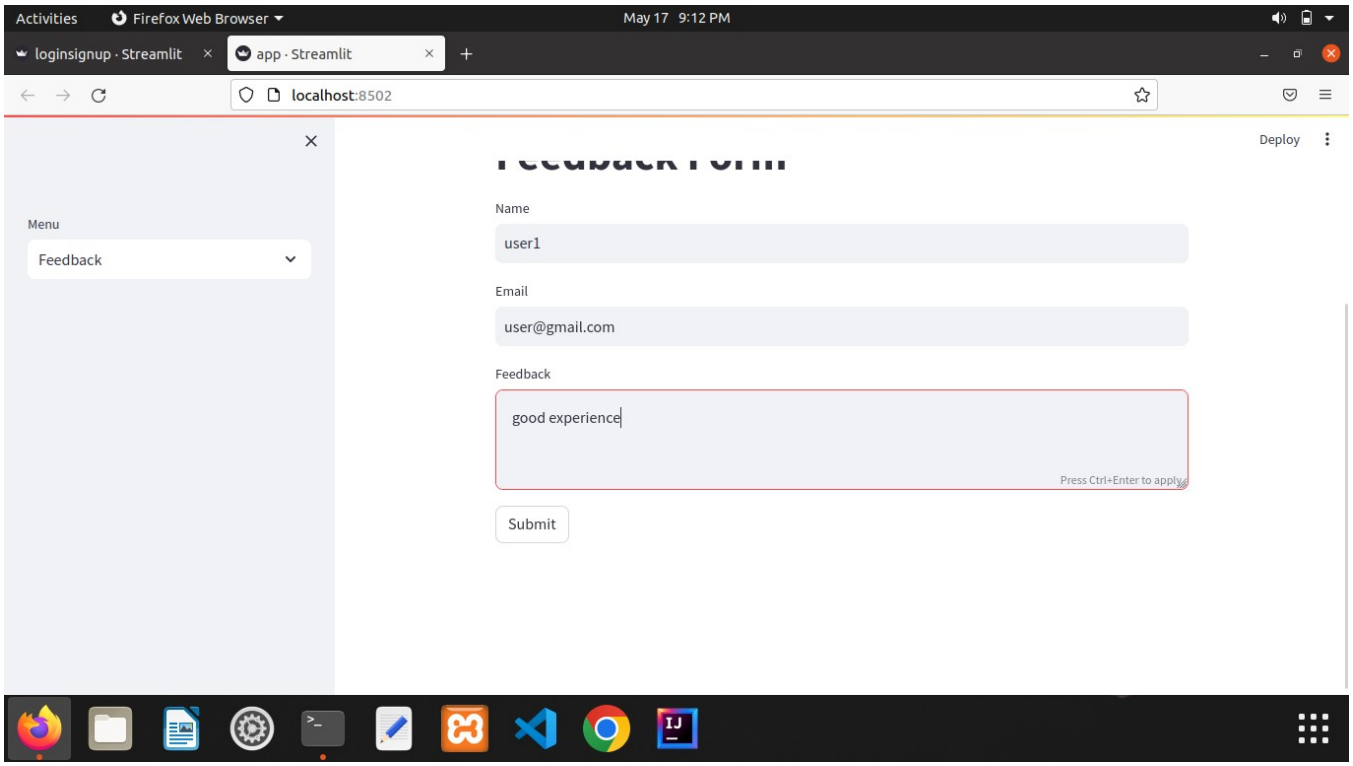

Activities
Firefox Web Browser
May 17 9:10 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Navigator
Course Navigator
Navigator
WEB
DEVELOPMENT

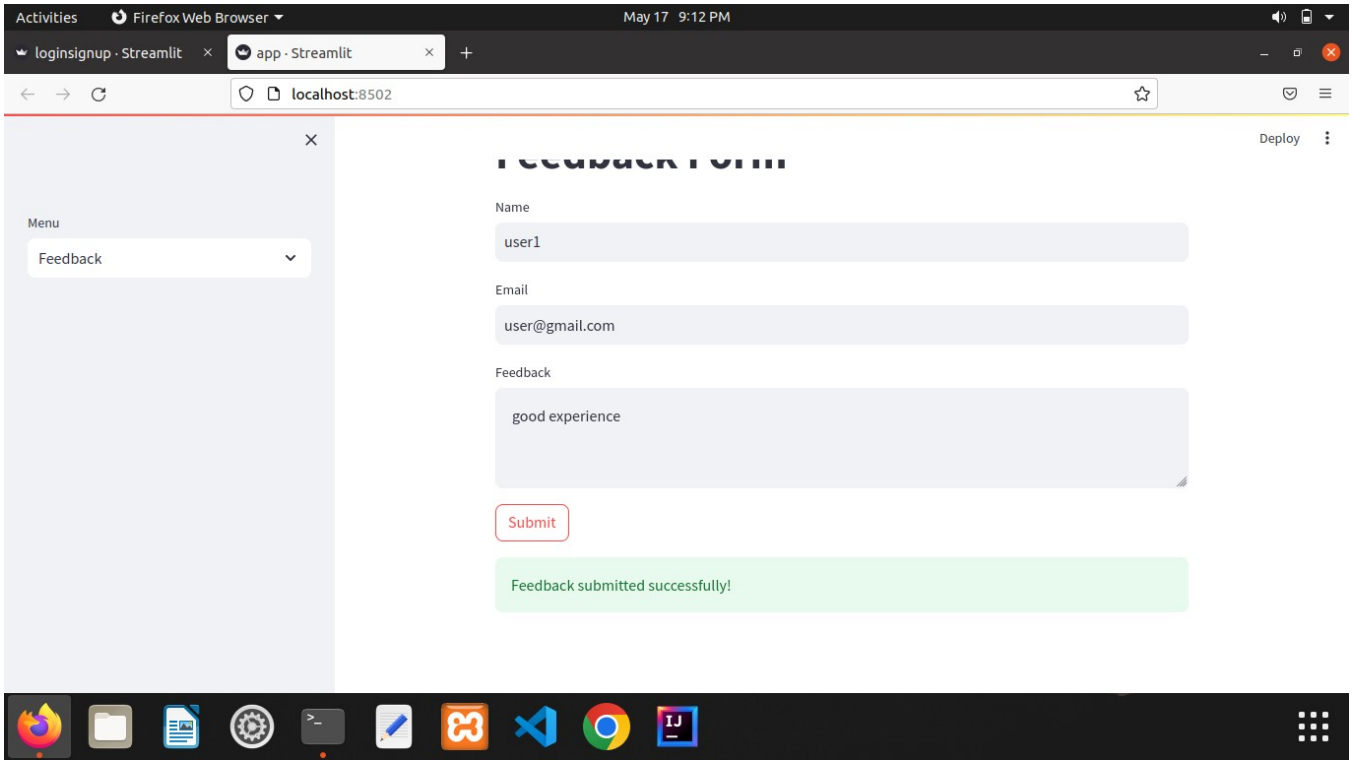

Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Navigator
Server
Database
Cloud Computing
Desktop
Other
Cloud Computing
VLSI


Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
Cloud Computing
localhost:8000/cloud_nav.html
Cloud Computing
STEP 1
CLOUD BASICS
START BY CREATING A STRONG TECHNICAL FOUNDATION
STEP 2
CLOUD PLATFORM
DIVE INTO LEARNING CLOUD AFTER MASTERING THE BASICS


Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
Cloud Computing
localhost:8000/cloud_nav.html
STEP 1
CLOUD BASICS
START BY CREATING A STRONG TECHNICAL FOUNDATION
STEP 2
CLOUD PLATFORM
DIVE INTO LEARNING CLOUD AFTER MASTERING THE BASICS
STEP 3
CLOUD ACCOUNT
SET UP THE CLOUD ACCOUNT RIGHT WAY TO GET PRACTISE
STEP 4
HANDS-ON-PRACTISE
BUILD SKILLS THAT WILL HELP YOU HIRED BY DOING


Activities
Firefox Web Browser
May 17 9:11 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Feedback
Course Navigator
Feedback Form
Name
Email
Feedback


Activities
Firefox Web Browser
May 17 9:12 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Feedback
Name
user1
Email
user@gmail.com
Feedback
good experience
Press Ctrl+Enter to apply
Submit


Activities
Firefox Web Browser
May 17 9:12 PM
loginsignup · Streamlit
app · Streamlit
localhost:8502
Deploy
Menu
Feedback
Name
user1
Email
user@gmail.com
Feedback
good experience
Submit
Feedback submitted successfully!

8.CONCLUSION

In conclusion, This project "Course Navigator" most certainely focuses on information providence through text and images. The information provided is accurate, reliable and is potential to provide basic information and knowledge about a pirticular course to its users.

One of the primary strengths of "Course Navigator" is it's main focus on delivering information on various domains of engineering which include computer science, Electronics and Communication,Civil engineering, mechanical engineering and many. All the information provided is carefully selected and presented in an effective manner.

The project also stands highlighted for it's additional feature of "Course Navigator" which provides the description and navigators(road maps of each course) of each domain that have been provided. The project doesn't posses any kinds of sensitive information and is very much trustable.
Through this users can stay upto date with the course they are intrested in.

In conclusion, the project "Course Navigator" can provide accurate information on various domains and technologies. The developed project has the potential in providing the user with basic knowledge about the course they are intrested in. Also it provides quality information on different domains that users need.

9.FUTURE ENHANCEMENT

1. Advanced Search Functionality: Implementing a more sophisticated search feature to allow users to filter and discover resources based on criteria such as relevance, popularity, or user ratings,past interactions and trending courses.

2. Interactive Learning Modules: Introducing interactive learning modules or tutorials within the platform to provide additional support and guidance.

3. Gamification Elements: Incorporating gamification elements such as badges, achievements, or leaderboards to incentivize user engagement and promote a sense of accomplishment among students.

4.Virtual Collaboration Spaces: Introducing virtual collaboration spaces or study rooms where students can collaborate in real-time, share ideas, and work on projects together, enhancing the sense of community within the platform.

5.Machine Learning Algorithms: Leveraging machine learning algorithms to provide personalized recommendations for resources based on user preferences, past interactions, and learning patterns.

6.Mobile Application: Developing a dedicated mobile application for Course navigator to enable users to access resources, collaborate with peers, and receive notifications on-the-go, enhancing accessibility and convenience.

7. Utilization of Comprehensive Data Set:

Expanded User Profile Data: Include more detailed user profile information, such as learning goals, preferred learning styles, and skill levels.

Diverse Data Sources: Integrate data from various sources, including social media, professional networks, and learning management systems, to provide a holistic view of user interests and needs

8. Data collection&Processing:

Develop APIs to collect and integrate data from various sources.Implement data preprocessing pipelines to clean and standardize the data.

In conclusion,The proposed enhancements aim to make the course recommendation system more intelligent, adaptive, and user-centric. By leveraging advanced machine learning techniques and comprehensive data integration, the system can provide highly personalized and relevant course recommendations, ultimately improving user engagement and learning outcomes.

10.BIBILOGRAPHY

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