

SHIV.NADAR
—UNIVERSITY—
CHENNAI

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SCHOOL OF ENGINEERING**

LABORATORY RECORD

**B.TECH
(YEAR : 20&1 - 20&5)**

NAME : R. Anjana.....
REG. NO. : 21011101091.....
DEPT. : B.Tech.CSE SEM. : I CLASS & SEC : A/Ds - B

INDEX

Name : R. Angana
Sem : V

Reg. No. 81011101091

Class & Sec : A1 - DS - B

SHIV NADAR
—UNIVERSITY—
CHENNAI

BONAFIDE CERTIFICATE

Certified that this is the bonafide record of the practical work done in the

.....Web Technology..... Laboratory by

NameR.Anjana.....

Register NumberQ1D11101091.....

SemesterV..... Class & Sec.A1-DS-B....

BranchBTech CSE.....

SHIV NADAR UNIVERSITY Chennai

During the Academic year2023.....

Sel
11/123
Faculty

Head of the Department

Submitted for the.....Web Technology..... Practical Examination held at
SNU CHENNAI on.....21/10/23..

Internal Examiner

External Examiner

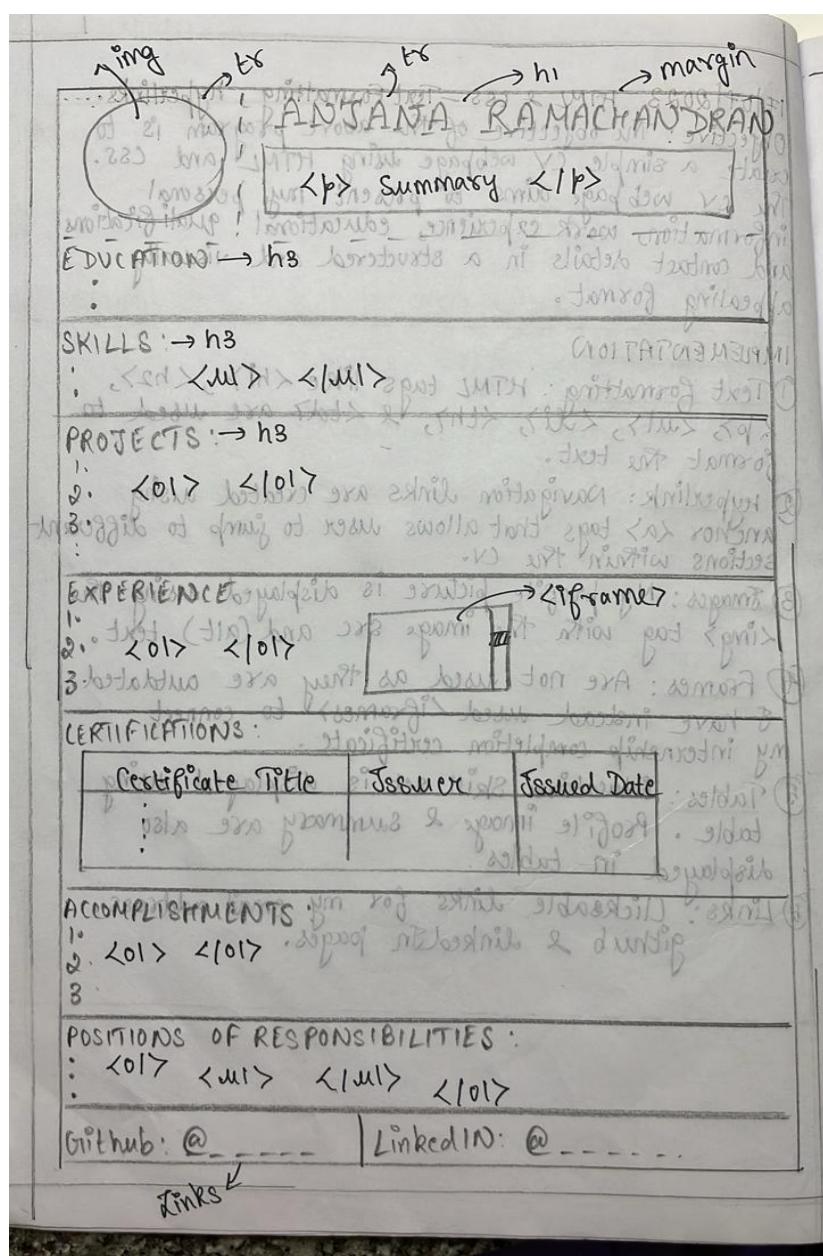
Ex. No: 1

Date: 17/7/23

HTML and CSS - Text Formatting, Hyperlink, Images, Frames, Tables, Links

Aim: To design a rough layout of a CV as a webpage and to implement it using HTML and CSS including Text formatting, Hyperlink, Images, Frames, Tables and Links.

Design:



Algorithm/Implementation:

- IMPLEMENTATION
- ① Text formatting: HTML tags like `<h1>`, `<h2>`, `<p>`, ``, ``, `<th>`, & `<td>` are used to format the text.
 - ② Hyperlink: Navigation links are created using anchor `<a>` tags that allows user to jump to different sections within the CV.
 - ③ Images: My profile picture is displayed using the `` tag with the image `src` and `alt` text.
 - ④ Frames: Are not used as they are outdated & have instead used `<iframe>` to connect my internship completion certificate.
 - ⑤ Tables: Educational skill set is displayed using table. Profile image & summary are also displayed in tables.
 - ⑥ Links: Clickable links for my email address, github & linkedIn pages.

Program :

HTML:

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <title>Anjana's Resume</title>
    <link rel="stylesheet" href="styles.css">
    <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
    <link href="https://fonts.googleapis.com/css2?family=Angkor&family=Kalam&family=Lora:wght@500&display=swap" rel="stylesheet">
    <style> body { border: solid 3px; } </style>
  </head>

  <body>
    <table cellspacing="10">
      <tr>
        <td> 
    </td>
    <td><h1>Anjana Ramachandran</h1>
        <p><strong>Student at Shiv Nadar University | Aspiring AI Engineer |<br/>Avid Learner</strong></p>
        <div class="summary">
            This is Anjana Ramachandran.
        </div>
    <td>An aspiring AI Engineer.<br/>I have always been amazed by diverse domains pertaining in the field of computer Science and amused by the ever growing technological developments. As a blossoming developer, I want to explore most of the domains and chose the one which quite fascinates me. As of now I am quite engrossed in Artificial Intelligence and Machine learning (my major)<br/>I am quite an extrovert and a very active and engaging person.<br/>My interests include reading books, getting to know the current affairs<br/>My extra-curricular activities are dance, music and badminton. I was in the school badminton team. I have participated in many oratorical competitions starting from inter-school to even international levels and won many awards. I involve myself in writing poetry every now and then.<br/>I am driven by the passion of developing products that can create a meaningful change in the society and which can bring out the best of performance and efficiency, for which I am open to learning always.
    </td>
</tr>
</table>
<div class="Education">
    <h3>EDUCATION:</h3>
    <p><strong><ul>
        <li>Shiv Nadar University, Chennai:</li></strong>
        BTech in Artificial Intelligence and Data Science</li>
        <br>2021-2025<br>
        CGPA upto 4th sem: 8.99
        <strong><li>DAV SR Secondary School, Mogappair:</li></strong>
        AISSCE (Class XII), 2021
        <br> Bio-Math-Percentage: 94.6%
        <br> AISSCE (Class X), 2019
        <br> Percentage: 96.2%</ul></p>
        <hr size="2" shade>
</div>

<div class="Skills">
    <h3>SKILLS:</h3>
    <p><strong><ul>
        <li>Programming</li></strong>

```

```
<ul>
    <li>EXPERIENCED</li>
        C | Java | Python | HTML5 | CSS3 | JavaScript | Python Data
Science Libraries | Artificial Neural Networks
    <li>INTERMEDIATE</li>
        C++ | Computer Vision | Natural Language Processing | ReactJS
    <li> FAMILIAR</li>
        Flutter | MYSQL | AWS Cloud </ul>

    <strong><li>Soft Skills</li></strong>
        Problem-Solving | Leadership | Good Communication |
Adaptability | Creative Thinkng | Organisational</ul>
    <hr size="2" shade>
</div>

<div class="Projects">
    <h3>PROJECTS:</h3>
    <p><strong><ol>
        <li>Adaptive Traffic Signal Timer | Major Project </li></strong>
        (June 2023- July 2023)
        <ul>
            <li>Simulated a crossroad environment using Pygame. </li>
            <li>The program is carried out in such a way that the signals
get operated in a cyclic manner, to keep the waiting time of the vehicles
minimal.</li>
            <li>A vehicle detection program was built using the yolov2
model. </li>
            <li>Whenever, the active signal is about to turn red, the
detection model works to find the density of the next lane.</li>
            <li>The count of the vehicles in the subsequent lane is
calculated, and using it, the optimal green signal timer is calculated, by
taking into account the average speed of the vehicles as well.</li>
            <li>This optimal time is set for the next signal.</li>
        </ul>
        <br>
        <strong><li>Silent Speech Recognition System | IBM
Hackathon</li></strong>
        (July 2023-Ongoing)
        <ul>
            <li>Building an automatic Lip reading Model using 3d CNN and
GRU</li>
            <li>Approach involves, leveraging the spatio-temporal
characterstics of lip motion using 3D CNNs</li>
        </ul>
    </ol></strong>
</p>
</div>
```

The GRU component is employed to learn long- term dependencies and capture temporal dynamics in the lip movement sequences.

Fund Trail Analysis System | KAVACH Hackathon

(March 2023- April 2023)

Qualified the first round of Kavach Hackathon conducted by the Indian Government.

Attempted to build a fund trail analysis tool embedding concepts of autoencoders and transformers.

Brainstormed ideas to handle the security concerns related to this problem statement.

Depression Analysis and Clustering | Mini Project (Grp)

(Aug 2022- Nov 2022)

Intended to build a model to classify people based on their mental states

Coded on the PEBL framework, mainly manipulated using C++

Generated mental health analysis using test batteries and eventually building a working web application.

Project Link:Depression Analysis And Clustering

Churn Modelling | Artificial Neural Network

(Oct 2022- Oct 2022)

Blackbox neural network

Demographic Segmentation Model

Achieved an accuracy of 86.4%

Project Link:Churn Modelling


```
<strong><li>Mixgame Website Development</li></strong>
(Sep 2022- Oct 2022)
<ul>
    <li>Frontend Website pertaining 6 logical games</li>
    <li>HTML-44.4% | CSS-23.3% | JS-32.3%</li>
    <li>Explored various intricacies of the frontend languages</li>
    <li>Project Link:<a href="https://github.com/anjana2123/MixGameWebsite">Web Dev</a></li>
</ul>
<br>

</ol></p>
<hr size="2" shade>
</div>

<div class="Experience">
<h3>EXPERIENCE:</h3>
<p><strong><ol>
    <li>Summer Intern Trainee | SDE integrated with AI</li></strong>
    (May 2023- July 2023)
<ul>
    <li>Intern Trainee at CAP Digisoft Solutions, Coimbatore</li>
    <li>Primarily learnt all the intricate processes involved in software development.</li>
    <li>Built a sentiment analyser using VADER following all the lifecycle processes of Software Dev</li>
    <li>Learnt the foundations of AWS cloud and Microsoft Azure.</li>
</ul>
<br>
<iframe src="Anjana_Internship Completion Letter.pdf" width="400" height="200"></iframe>
<br>
</ol></strong>
</p>
<strong><li>Research Trainee at the Cognition Lab, SNU Chennai</li></strong>
(July 2023- Ongoing)
<ul>
    <li>Started my position as a research trainee under, Dr Santhi Natarajan, Snu Chennai</li>
    <li>Domain intersecting cse and neuro-sciences and biomedical applications will be explored.</li>
</ul>
<br>
```

```
<strong><li>Text to Speech System (Mini Project)</li></strong>
(Dec 2022- Ongoing)
<ul>
    <li>Mini Project under Dr Nagarajan, HOD, CSE Dept, SNU
Chennai</li>
    <li>Building a TTS system using Hidden Markov Model, which has
multi-lingual support extensions.</li>
</ul>
<br>

    <strong><li>Machine Learning and Data Analysis
Internship</li></strong>
(Dec 2021- Feb 2021)
<ul>
    <li>Assigned with the responsibility to manipulate real-time
data extracted from the Govt of India Website related to health.</li>
    <li>Working on various models pertaining to both supervised and
unsupervised learning mechanisms, with a tinge of Deep Learning.</li>
</ul>
<br>

    <strong><li>Web Content Writer (Internship) |</li></strong>
Internshaala</li></strong>
(Jan 2022- Feb 2022)
<ul>
    <li>Good language proficiency and reliable content was
delivered to the topics assigned.</li>
    <li>Certificate of Completion received.</li>
</ul>
<br>
</ol>
<hr size="2" shade>
</div>

<div class="Certifications">
<h3>CERTIFICATIONS:</h3>
<table class="beta">
<tr>
    <th>Certificate Title</th>
    <th>Issuer</th>
    <th>Issued Date</th>
</tr>
<tr>
```

```

<td>Python for Data Science and Machine Learning</td>
<td>Udemy</td>
<td>Dec 2022</td>
</tr>
<tr>
    <td>Fundamentals of Java Programming and OOPS Concepts</td>
    <td>Udemy</td>
    <td>Aug 2022</td>
</tr>
<tr>
    <td>Fundamentals of Digital Marketting</td>
    <td>Google</td>
    <td>Jun 2022</td>
</tr>
<tr>
    <td>Problem Solving (Basic)</td>
    <td>HackerRank</td>
    <td>Jun 2022</td>
</tr>
<tr>
    <td>Python Certificate (Basic)</td>
    <td>HackerRank</td>
    <td>Jun 2022</td>
</tr>
<tr>
    <td>Github for Data Scientists</td>
    <td>LinkedIn</td>
    <td>Dec 2022</td>
</tr>
</table>
<hr size="2" shade>
</div>

<div class="Accomplishments">
<h3>ACCOMPLISHMENTS:</h3>
<p><strong><ol>
<li>Second Runner Up | International Tamil Oratorical Competition | 2016</li></strong>
<ul>
    <li>Was the 2nd runner up in Anaithulaga Maanavar Muzhakkam conducted by Vaanavil TV, Malaysia</li>
        <li>One amongst the 5 representatives of India. Almost 15 counties participated</li>
        <li>Won a cash award of Rs 20,000</li>
</ul>
</ol></strong>
</p>
</div>

```

```
</ul>
<br>
<strong><li>District Level Badminton Player</li></strong>
<ul>
    <li>I was part of my school's badminton team.</li>
    <li>Have participated and won many medals and certificates in
numerous interzonal matches.</li>
        <li>Play generally in doubles and mixed-doubles categories.</li>
</ul>
<br>
<strong><li>Published a Poetry Book | 2018</li></strong>
<ul>
    <li>I indulge in creative writing, mainly poetry and
stories.</li>
        <li>Have published a book of poetry in tamil and english
languages.</li>
            <li>The book mainly, covers the scenic beauty and aesthetics of
our environment, and my everyday experiences portrayed in a poetic and
enjoyable way.</li>
</ul>
<br>
</ol>
<hr size="2" shade>
</div>

<div class="POR">
<h3>POSITIONS OF RESPONSIBILITIES:</h3>
<p><strong><ol>
    <li>Director of India Operations | DigitalLiteracyForSeniors, USA |
NGO</li></strong>
        (May 2023-Ongoing)
        <ul>
            <li>DLS is a non-profit organisation which focuses of teaching
the basic technologies much needed for everyday survival to the senior
citizens.</li>
            <li>I am one of founder of this organisation, along with few of
my friends abroad.</li>
                <li> Have already conducted 2 sessions in India and 12 sessions
in various stations at the United States.</li>
                    <li>Website Link: <a href="https://www.dlsglobal.org/">Click
Me</a></li>
            </ul>
            <br>
```

```
        <strong><li>Club Head | Rhythm, SNUC Western Dance Club</li></strong>
        (Sep 2021-Ongoing)
        <ul>
            <li>Organising innovative events regularly for the club</li>
            <li>Manage club budgets and protocols</li>
            <li>Team leadership portrayed.</li>
            <li>Fully handled all the events related to western dance for the Instincts 2023 completely, which included performances, sponsorships, venue allotments, participants management etc.</li>
        </ul>
        <br>
        <strong><li>Core Committee Member | SNUC Coding Club</li></strong>
        (Sep 2022-Ongoing)
        <ul>
            <li>Core Committee member of the AI &ML domain of the club.</li>
        </ul>
        <br>
        <strong><li>Placement Coordinator, SNU | Placecomm</li></strong>
        (March 2023-Ongoing)
        <ul>
            <li>Placecomm is the official placement and internship cell of both SSN and SNUC together.</li>
            <li>Closely working with the recruiters, placement managers and the students to make the internship, training and the placements process much smoother and efficient.</li>
        </ul>
        <br>
        </ol>
        <hr size="2" shade>
    </div>

    <div class="footer">
        <p>Github: <a href="https://github.com/anjana2123">https://github.com/anjana2123</a> | LinkedIn: <a href="https://www.linkedin.com/in/anjanaram03/">https://www.linkedin.com/in/anjanaram03/</a> | Outlook (Mail): <a href="mailto:anjana2110251@snuchennai.edu.in">Send mail</a> </p>
    </div>
</body>
</html>
```

CSS:

```
h1{
    font-family: 'Angkor', cursive;
}
.summary{
    font-family: 'Kalam', cursive;
}
body{
background-color: #F9F5F6;
}
.Education{
    background-color: #F8E8EE;
}
.Skills{
    background-color: #f8e8f6;
}
.Projects{
    background-color: #ECF2FF;
}
.Experience{
    background-color: #D3CEDF;
}
.Certifications{
    background-color: #F7E9D7;
}
.Accomplishments{
    background-color: #FFFFFFD;
}
.POR{
    background-color: #FBFFE2;
}
.footer{
    background-color: #FED2AA;
}
h3{
    font-family: 'Lora', serif;
    color: #000000;
    margin-left: 10px;
    text-decoration: underline;
}
html{
    border: solid;
}

.beta, .beta th, .beta td {
    border: 1px solid black;
```

```
margin-left: 10px;  
border-style:solid;  
}  
}
```

Output:



Anjana Ramachandran

Student at Shiv Nadar University | Aspiring AI Engineer | Avid Learner

This is Anjana Ramachandran. An aspiring AI Engineer. I have always been amazed by diverse domains pertaining in the field of computer Science and amused by the ever growing technological developments. As a blossoming developer, I want to explore most of the domains and chose the one which quite fascinates me. As of now I am quite engrossed in Artificial Intelligence and Machine learning (My major) I am quite an extrovert and a very active and engaging person. My interests include reading books, getting to know the current affairs My extra-curricular activities are dance, music and badminton. I was in the school badminton team. I have participated in many oratorical competitions starting from inter-school to even international levels and won many awards. I involve myself in writing poetry every now and then. I am driven by the passion of developing products that can create a meaningful change in the society and which can bring out the best of performance and efficiency, for which I am open to learning always.

EDUCATION:

- **Shiv Nadar University, Chennai:**
BTech in Artificial Intelligence and Data Science
2021-2025
CGPA upto 4th sem: 8.99
- **DAV SR Secondary School, Mogappair:**
AISSE (Class XII), 2021
Bio-Math-Percentage: 94.6%
AISSE (Class X), 2019
Percentage: 96.2%

SKILLS:

- **Programming**
 - EXPERIENCED
C | Java | Python | HTML5 | CSS3 | JavaScript | Python Data Science Libraries | Artificial Neural Networks
 - INTERMEDIATE
C++ | Computer Vision | Natural Language Processing | ReactJS
 - FAMILIAR
Flutter | MYSQL | AWS Cloud
- **Soft Skills**
Problem-Solving | Leadership | Good Communication | Adaptability | Creative Thinking | Organisational

PROJECTS:

1. **Adaptive Traffic Signal Timer | Major Project**
(June 2023- July 2023)
 - Simulated a crossroad environment using Pygame.
 - The program is carried out in such a way that the signals get operated in a cyclic manner, to keep the waiting time of the vehicles minimal.
 - A vehicle detection program was built using the yolov2 model.
 - Whenever, the active signal is about to turn red, the detection model works to find the density of the next lane.
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 - Building an automatic Lip reading Model using 3d CNN and GRU
 - Approach involves, leveraging the spatio-temporal characteristics of lip motion using 3D CNNs
 - The GRU component is employed to learn long-term dependencies and capture temporal dynamics in the lip movement sequences.
3. **End-to-End Trail Analysis System | KAVACH Hackathon**

3. Fund Trail Analysis System | KAVACH Hackathon

(March 2023- April 2023)

- Qualified the first round of Kavach Hackathon conducted by the Indian Government.
- Attempted to build a fund trail analysis tool embedding concepts of autoencoders and transformers.
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(Aug 2022- Nov 2022)

- Intended to build a model to classify people based on their mental states
- Coded on the PEBL framework, mainly manipulated using C++
- Generated mental health analysis using test batteries and eventually building a working web application.
- Project Link: [Depression Analysis And Clustering](#)

5. Churn Modeling | Artificial Neural Network

(Oct 2022- Oct 2022)

- Blackbox neural network
- Demographic Segmentation Model
- Achieved an accuracy of 86.4%
- Project Link: [Churn Modelling](#)

6. Mixgame Website Development

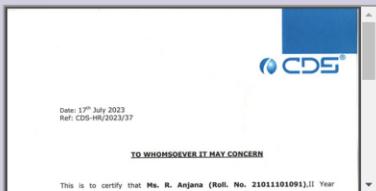
(Sep 2022- Oct 2022)

- Frontend Website pertaining 6 logical games
- HTML-44.4% | CSS-23.3% | JS-32.3%
- Explored various intricacies of the frontend languages
- Project Link: [Web Dev](#)

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- Primarily learnt all the intricate processes involved in software development.
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5. Web Content Writer (Internship) | Internshaala**5. Web Content Writer (Internship) | Internshaala**

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Github for Data Scientists	LinkedIn	Dec 2022

ACCOMPLISHMENTS:**1. Second Runner Up | International Tamil Oratorical Competition | 2016**

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2. District Level Badminton Player

- I was part of my school's badminton team.
- Have participated and won many medals and certificates in numerous interzonal matches.
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- 3. Published a Poetry Book | 2018**
- I indulge in creative writing, mainly poetry and stories.
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 - The book mainly, covers the scenic beauty and aesthetics of our environment, and my everyday experiences portrayed in a poetic and enjoyable way.

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(May 2023-Ongoing)

- DLS is a non-profit organisation which focuses of teaching the basic technologies much needed for everyday survival to the senior citizens.
- I am one of founder of this organisation, along with few of my friends abroad.
- Have already conducted 2 sessions in India and 12 sessions in various stations at the United States.
- Website Link: [Click Me](#)

2. Club Head | Rhythm, SNUC Western Dance Club

(Sep 2021-Ongoing)

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(Sep 2022-Ongoing)

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(March 2023-Ongoing)

- Placecomm is the official placement and internship cell of both SSN and SNUC together.
- Closely working with the recruiters, placement managers and the students to make the internship, training and the placements process much smoother and efficient.

Github: <https://github.com/anjana2123> | LinkedIn: <https://www.linkedin.com/in/anjanaram03/> | Outlook (Mail): [Send mail](#)

Result: The CV has been implemented as a webpage.

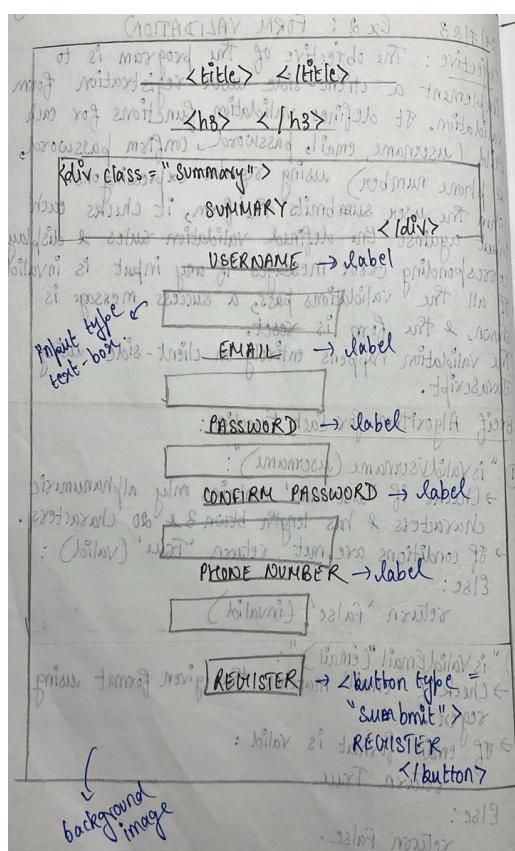
Ex. No: 2	
Date: 24/7/23	

Form Validation

Aim: To design and implement a client-side form validation script for a user registration form on a website containing the following fields: Username, Email, Password, Phone Number, Confirm Password.

1. Username: Should contain only alphanumeric characters (letters and numbers) and be between 3 and 20 characters long.
2. Email: Should be a valid email address format (e.g., name@example.com).
3. Password: Should be at least 8 characters long, containing at least one uppercase letter, one lowercase letter, one number, and one special character (e.g., @, #, \$)
4. Phone Number: Should be a valid phone number in the format +91 1234567890.
5. Confirm Password: Should match the password field exact

Design:



Algorithm:

Brief Algorithm for Each Function:

① "isValidUsername(username)":

→ Checks if 'username' contains only alphanumeric characters & has length b/w 3 & 20 characters.

→ If conditions are met, return 'True' (valid) :

Else:

return 'False' (invalid)

② "isValidEmail(email)":

→ Check if 'email' matches the given format using regex.

→ If email format is valid :

return True

Else:

return False

③ "isValidPassword(password)":

→ Check if 'password' is atleast 8 characters long, contains at least one uppercase, one lowercase, one

number & one special character (eg, @, #, \$) using regex.

→ If password meets condition:
Else: return True,
return False.

④ "isMatching Password (password, confirmPassword)"
→ Check if "password" & "confirmPassword" are identical
→ If they match, return "true" (matching)
Else:
return "false" (invalid).

⑤ "isValid Phone (phone)":
→ Check if 'phone' follows the format "+91" followed by 10 digits using regex.
→ If phone follows the format:
return True
Else:
return False.

FLOW OF THE PROGRAM :-

- index.html : Contains fields for username, email, password, confirmPassword & phone number.
- When page loads, the "DOMContentLoaded" event listener is triggered & it attaches the event listeners to the form's submit button event.
- When the user submits the form by clicking the "Register" button, the event listener function is executed.
- Inside it, it first prevents the default form submission behaviour (submitted to the server) using "event.preventDefault()".
- The function retrieves the values of username, email, password & phone number input fields from the form.

Program :

HTML:

```
<!DOCTYPE html>
<html>
<head>
    <title>Zombie Apocalypse Survival Club Registration</title>
    <link rel="stylesheet" href="styles.css">
    <link rel="preconnect" href="https://fonts.googleapis.com">
    <link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
</head>
<body>
    <h3>THE APOCALYPSE AVENGERS</h3>
    <div class="summary">
        <p><strong>Zombie Apocalypse Preparedness Registration Form</strong>
        <br>

        Welcome to the Zombie Apocalypse Preparedness Registration! We
        understand the importance of being prepared for the unexpected, and in the
        spirit of safeguarding humanity, we invite you to join our community of
        vigilant survivors.

        Please complete this form with utmost accuracy to ensure we can
        effectively coordinate resources and strategies in the event of a zombie
        apocalypse.</p>
    </div>
    <form id="registrationForm">
        <label for="username"><h3>USERNAME:</h3></label>
        <div class="help">Should contain only alphanumeric characters
        (letters and numbers) and be between 3 and 20 characters long.</div>
        <input type="text" id="username" name="username" required>
        <br>
        <br>

        <label for="email"><h3>EMAIL:</h3></label>
        <div class="help">Should be a valid email address format (e.g.,
        name@example.com).</div>
        <input type="email" id="email" name="email" required>
        <br>
        <br>

        <label for="password"><h3>PASSWORD:</h3></label>
        <div class="help">Should be at least 8 characters long, containing at
        least one uppercase letter, one lowercase letter, one number, and one special
        character (e.g., @, #, $)</div>
        <input type="password" id="password" name="password" required>
    </form>
</body>
```

```

<br>
<br>

<label for="confirmPassword"><h3>CONFIRM PASSWORD:</h3></label>
<div class="help">Please re-enter password for confirmation.</div>
<input type="password" id="confirmPassword" name="confirmPassword"
required>
<br>
<br>

<label for="phone"><h3>PHONE NUMBER:</h3></label>
<div class="help">Should be a valid phone number in the format +91
1234567890.</div>
<input type="text" id="phone" name="phone" required>
<br>
<br>

<button type="submit">REGISTER</button>
<br>
</form>

<script src="formValidation.js"></script>
</body>
</html>

```

CSS:

```

body {
    border: solid 3px;
    border-color: white;
    text-align: center;
}
html{
    background-image: url("img3.jpeg");
    background-repeat: no-repeat;
    background-size: cover;
}
h3{
    font-family: 'Josefin Sans', sans-serif;
    color: white;
    padding:0;
    margin:0;
}
.summary{

```

```

    font-family: 'Montserrat', sans-serif;
    color: #D8D9DA;
}
.help{
    color:white;
}
.username{
    color:#D4E2D4;
}

```

JavaScript:

```

// Function to check valid username
function isValidUsername(username) {
    const regex = /^[a-zA-Z0-9]{3,20}$/;
    return regex.test(username);
}

// Function to check valid email
function isValidEmail(email) {
    const regex = /^[^\s@]+@[^\s@]+\.[^\s@]+$/;
    return regex.test(email);
}

// Function to check valid password
function isValidPassword(password) {
    const regex = /^(?=.*[a-z])(?=.*[A-Z])(?=.*\d)(?=.*[@#$])[A-Za-zA\d@#$]{8,})$/;
    return regex.test(password);
}

// Function to check matching of password
function isMatchingPasswords(password, confirmPassword) {
    return password === confirmPassword;
}

// Function to check valid phone number
function isValidPhone(phone) {
    const regex = /^+91\s\d{10}$/;
    return regex.test(phone);
}

document.addEventListener('DOMContentLoaded', function() {
    const form = document.getElementById('registrationForm');

    form.addEventListener('submit', function (event) {
        event.preventDefault();

        const username = form.username.value;
        const email = form.email.value;
    });
});

```

```
const password = form.password.value;
const confirmPassword = form.confirmPassword.value;
const phone = form.phone.value;

if (!isValidUsername(username)) {
    alert('Username must contain only alphanumeric characters
(letters and numbers) and be between 3 and 20 characters long.');
    return;
}

if (!isValidEmail(email)) {
    alert('Please enter a valid email address.');
    return;
}

if (!isValidPassword(password)) {
    alert('Password should be at least 8 characters long, containing
at least one uppercase letter, one lowercase letter, one number, and one
special character.');
    return;
}

if (!isMatchingPasswords(password, confirmPassword)) {
    alert('Passwords do not match.');
    return;
}

if (!isValidPhone(phone)) {
    alert('Please enter a valid phone number in the format +91
1234567890.');
    return;
}

// Form is valid, submit the data to the server here (or handle as
needed).
// You can use AJAX to send the data to the server without refreshing
the page.
alert('Registration successful!');
form.reset();
});
```

Output:

THE APOCALYPSE AVENGERS

Zombie Apocalypse Preparedness Registration Form

Welcome to the Zombie Apocalypse Preparedness Registration! We understand the importance of being prepared for the unexpected, and in the spirit of safeguarding humanity, we invite you to join our community of vigilant survivors. Please complete this form with utmost accuracy to ensure we can effectively coordinate resources and strategies in the event of a zombie apocalypse.

USERNAME:
Should contain only alphanumeric characters (letters and numbers) and be between 3 and 20 characters long.

EMAIL:
Should be a valid email address format (e.g., name@example.com).

PASSWORD:
Should be at least 8 characters long, containing at least one uppercase letter, one lowercase letter, one number, and one special character (e.g., @, #, \$)

CONFIRM PASSWORD:
Please re-enter password for confirmation.

PHONE NUMBER:
Should be a valid phone number in the format +91 1234567890.

Result: A form validation script for a user registration form on a website has been implemented.

Ex. No: 3

31/7/23

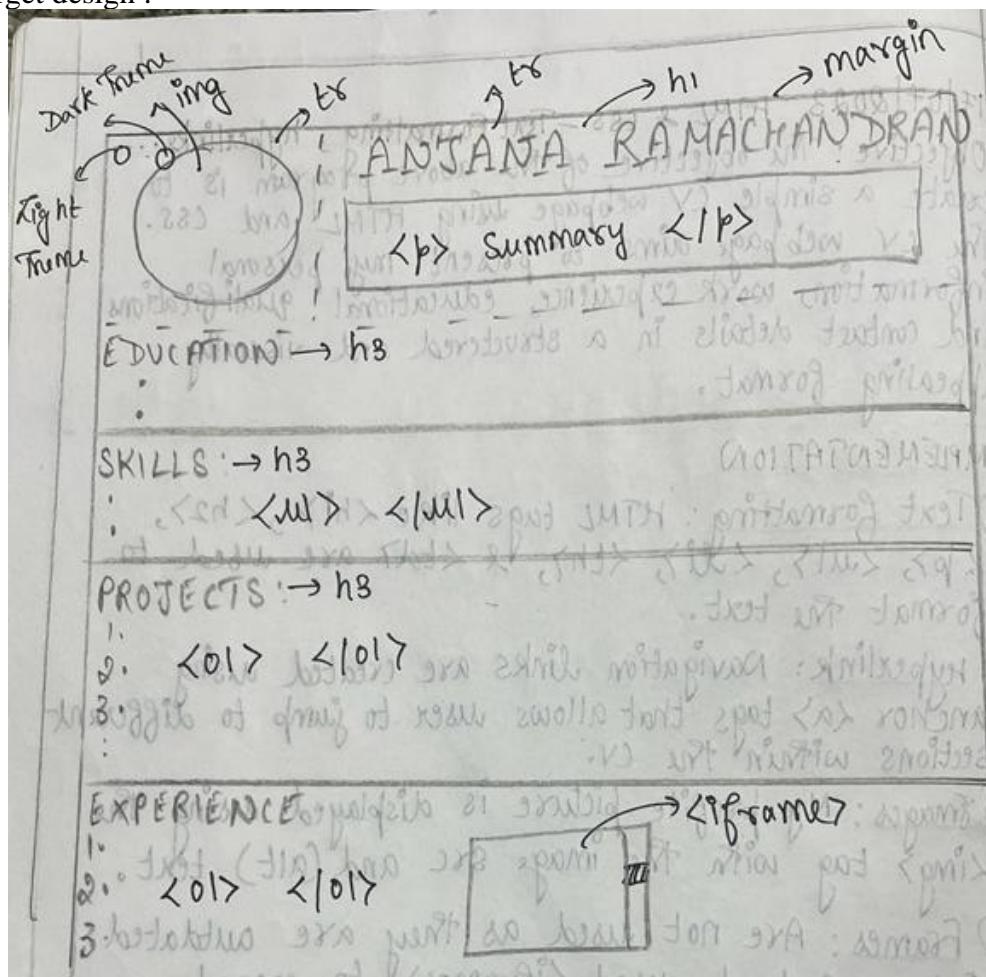
Toggling Light Theme & Dark Theme

Aim:

Design and implement a CSS with dark and light theme using Javascript(The default CSS shall be in light mode)

Design:

Target design :



Algorithm:

Brief Algorithm for Program :-

1. Define CSS variables for the light theme (default) with appropriate background and text colors.
2. Define CSS styles for the dark theme, overriding the CSS variables with dark colors.
3. Define CSS styles for the personal theme, allowing customization of the background and text colors through CSS variables.
4. Add a toggle button in the HTML to enable theme switching.
5. Add a Javascript event listener to the toggle button.
6. When the toggle button is clicked:
 - a) If the button is checked (on), add the class "dark-theme" to the <body> element to apply the dark theme.
 - b) If the button is unchecked (off), add the class 'personal-theme' to the <body> element to apply the personal theme.
7. CSS rules for 'dark-theme' and 'personal-theme' classes will be appearance of the website accordingly.
8. The user can switch between light, dark, and personal themes by toggling the button.

Program :

index.html

```
<!DOCTYPE html>
<html lang="en" dir="ltr">
  <head>
    <meta charset="utf-8">
    <title>Anjana's Resume</title>
```

```
<link id="theme-link" rel="stylesheet" href="personalized.css">
<link rel="preconnect" href="https://fonts.googleapis.com">
<link rel="preconnect" href="https://fonts.gstatic.com" crossorigin>
<link href="https://fonts.googleapis.com/css2?family=Angkor&family=Kalam&family=Lora:wght@500&display=swap" rel="stylesheet">
<style> body { border: solid 3px; } </style>
</head>

<body>
<table cellspacing="10">
<tr>
<td> 
</td>

<div class="theme-options">
<input type="radio" id="lightTheme" name="theme" value="light">
<label for="lightTheme">Light Theme</label>

<input type="radio" id="darkTheme" name="theme" value="dark">
<label for="darkTheme">Dark Theme</label>

<input type="radio" id="personalTheme" name="theme" value="personal" checked>
<label for="personalTheme">Personalized Theme</label>
</div>

<td><h1>Anjana Ramachandran</h1>
<p><strong>Student at Shiv Nadar University | Aspiring AI Engineer | Avid Learner</strong></p>
<div class="summary">
This is Anjana Ramachandran.
An aspiring AI Engineer.

I have always been amazed by diverse domains pertaining in the field of computer Science and amused by the ever growing technological developments. As a blossoming developer, I want to explore most of the domains and chose the one which quite fascinates me. As of now I am quite engrossed in Artificial Intelligence and Machine learning (my major). I am quite an extrovert and a very active and engaging person. My interests include reading books, getting to know the current affairs. My extra-curricular activities are dance, music and badminton. I was in the school badminton team. I have participated in many oratorical competitions starting from inter-school to even international levels and won many awards.
```

I involve myself in writing poetry every now and then.
I am driven by the passion of developing products that can create a meaningful change in the society and which can bring out the best of performance and efficiency, for which I am open to learning always.

```
</div>
</td>
</tr>
</table>
<div class="Education">
    <h3>EDUCATION:</h3>
    <p><strong><ul>
        <li>Shiv Nadar University, Chennai:</li></strong>
        BTech in Artificial Intelligence and Data Science</li>
        <br>2021-2025<br>
        CGPA upto 4th sem: 8.99
        <strong><li>DAV SR Secondary School, Mogappair:</li></strong>
        AISSCE (Class XII), 2021
        <br> Bio-Math-Percentage: 94.6%
        <br> AISSCE (Class X), 2019
        <br> Percentage: 96.2%<ul></p>
        <hr size="2" shade>
    </div>

    <div class="Skills">
        <h3>SKILLS:</h3>
        <p><strong><ul>
            <li>Programming</li></strong>
            <ul>
                <li>EXPERIENCED</li>
                C | Java | Python | HTML5 | CSS3 | JavaScript | Python Data Science Libraries | Artificial Neural Networks
                <li>INTERMEDIATE</li>
                C++ | Computer Vision | Natural Language Processing | ReactJS
                <li> FAMILIAR</li>
                Flutter | MYSQL | AWS Cloud </ul>
            <strong><li>Soft Skills</li></strong>
            Problem-Solving | Leadership | Good Communication |
            Adaptability | Creative Thinkng | Organisational</ul>
            <hr size="2" shade>
    </div>

    <div class="Projects">
        <h3>PROJECTS:</h3>
        <p><strong><ol>
```

Adaptive Traffic Signal Timer | Major Project
(June 2023- July 2023)

 Simulated a crossroad environment using Pygame.
 The program is carried out in such a way that the signals get operated in a cyclic manner, to keep the waiting time of the vehicles minimal.
 A vehicle detection program was built using the yolov2 model.
 Whenever, the active signal is about to turn red, the detection model works to find the density of the next lane.
 The count of the vehicles in the subsequent lane is calculated, and using it, the optimal green signal timer is calculated, by taking into account the average speed of the vehicles as well.
 This optimal time is set for the next signal.

 Silent Speech Recognition System | IBM Hackathon
 (July 2023-Ongoing)

 Building an automatic Lip reading Model using 3d CNN and GRU
 Approach involves, leveraging the spatio-temporal characterstics of lip motion using 3D CNNs
 The GRU component is employed to learn long- term dependencies and capture temporal dynamics in the lip movement sequences.

 Fund Trail Analysis System | KAVACH Hackathon
 (March 2023- April 2023)

 Qualified the first round of Kavach Hackathon conducted by the Indian Governement.
 Attempted to build a fund trail analysis tool embedding concepts of autoencoders and transformers.
 Brainstormed ideas to handle the security concerns realted to this problem statement.

 Depression Analysis and Clustering | Mini Project (Grp)
 (Aug 2022- Nov 2022)

```

        <ul>
            <li>Intended to build a model to classify people based on their
mental states</li>
            <li>Coded on the PEBL framework, mainly manipulated using
C++</li>
            <li>Generale mental health analysis using test batteries and
eventually building a working web application.</li>
            <li>Project Link:<a
href=" https://github.com/anjana2123/DepressionAnalysisAndClustering.git">De
pression Analysis And Clustering</a></li>
        </ul>
        <br>
        <strong><li>Churn Modelling | Artificial Neural
Network</li></strong>
        (Oct 2022- Oct 2022)
        <ul>
            <li>Blackbox neural network</li>
            <li>Demographic Segmentation Model</li>
            <li>Achieved an accuracy of 86.4%</li>
            <li>Project Link:<a
href="https://github.com/anjana2123/Artificial-Neural-Networks">Churn
Modelling</a></li>
        </ul>
        <br>

        <strong><li>Mixgame Website Development</li></strong>
        (Sep 2022- Oct 2022)
        <ul>
            <li>Frontend Website pertaining 6 logical games</li>
            <li>HTML-44.4% | CSS-23.3% | JS-32.3%</li>
            <li>Explored various intricates of the frontend languages</li>
            <li>Project Link:<a
href="https://github.com/anjana2123/MixGameWebsite">Web Dev</a></li>
        </ul>
        <br>

    </ol></p>
    <hr size="2" shade>
</div>

<div class="Experience">
    <h3>EXPERIENCE:</h3>
    <p><strong><ol>
        <li>Summer Intern Trainee | SDE integrated with AI</li></strong>

```

(May 2023- July 2023)

- Intern Trainee at CAP Digisoft Solutions, Coimbatore
- Primarily learnt all the intricate processes involved in software development.
- Built a sentiment analyser using VADER following all the lifecycle processes of Software Dev
- Learnt the foundations of AWS cloud and Microsoft Azure.

<iframe src="Anjana_Internship Completion Letter.pdf" width="400" height="200"></iframe>

Research Trainee at the Cognition Lab, SNU Chennai

(July 2023- Ongoing)

- Started my position as a research trainee under, Dr Santhi Natarajan, Snu Chennai
- Domain intersecting cse and neuro-sciences and biomedical applications will be explored.

Text to Speech System (Mini Project)

(Dec 2022- Ongoing)

- Mini Project under Dr Nagarajan, HOD, CSE Dept, SNU Chennai
- Building a TTS system using Hiden Markov Model, which has multi-lingual support extensions.

Machine Learning and Data Analysis Internship

(Dec 2021- Feb 2021)

- Assigned with the responsibility to manipulate real-time data extracted from the Govt of India Website related to health.
- Working on various models pertaining to both supervised and unsupervised learning mechanisms, with a tinge of Deep Learning.


```
<br>

<strong><li>Web Content Writer (Internship) |  
Internshaala</li></strong>  
(Jan 2022- Feb 2022)  
<ul>  
<li>Good language proficiency and reliable content was  
delivered to the topics assigned.</li>  
<li>Certificate of Completion received.</li>  
</ul>  
<br>  
</ol>  
<hr size="2" shade>  
</div>

<div class="Certifications">  
<h3>CERTIFICATIONS:</h3>  
<table class="beta">  
<tr>  
<th>Certificate Title</th>  
<th>Issuer</th>  
<th>Issued Date</th>  
</tr>  
<tr>  
<td>Python for Data Science and Machine Learning</td>  
<td>Udemy</td>  
<td>Dec 2022</td>  
</tr>  
<tr>  
<td>Fundamentals of Java Programming and OOPS Concepts</td>  
<td>Udemy</td>  
<td>Aug 2022</td>  
</tr>  
<tr>  
<td>Fundamentals of Digital Marketting</td>  
<td>Google</td>  
<td>Jun 2022</td>  
</tr>  
<tr>  
<td>Problem Solving (Basic)</td>  
<td>HackerRank</td>  
<td>Jun 2022</td>  
</tr>  
<tr>
```

```

<td>Python Certificate (Basic)</td>
<td>HackerRank</td>
<td>Jun 2022</td>
</tr>
<tr>
    <td>Github for Data Scientists</td>
    <td>LinkedIn</td>
    <td>Dec 2022</td>
</tr>
</table>
<hr size="2" shade>
</div>

<div class="Accomplishments">
<h3>ACCOMPLISHMENTS:</h3>
<p><strong><ol>
<li>Second Runner Up | International Tamil Oratorical Competition | 2016</li></strong>
<ul>
    <li>Was the 2nd runner up in Anaithulaga Maanavar Muzhakkam conducted by Vaanavil TV, Malaysia</li>
    <li>One amongst the 5 representatives of India. Almost 15 counties participated</li>
    <li>Won a cash award of Rs 20,000</li>
</ul>
<br>
<strong><li>District Level Badminton Player</li></strong>
<ul>
    <li>I was part of my school's badminton team.</li>
    <li>Have participated and won many medals and certificates in numerous interzonal matches.</li>
    <li>Play generally in doubles and mixed-doubles categories.</li>
</ul>
<br>
<strong><li>Published a Poetry Book | 2018</li></strong>
<ul>
    <li>I indulge in creative writing, mainly poetry and stories.</li>
    <li>Have published a book of poetry in tamil and english languages.</li>
    <li>The book mainly, covers the scenic beauty and aesthetics of our environment, and my everyday experiences portrayed in a poetic and enjoyable way.</li>
</ul>
</div>
```

```
<br>
</ol>
<hr size="2" shade>
</div>

<div class="POR">
<h3>POSITIONS OF RESPONSIBILITIES:</h3>
<p><strong><ol>
<li>Director of India Operations | DigitalLiteracyForSeniors, USA | NGO</li></strong>
    (May 2023-Ongoing)
    <ul>
        <li>DLS is a non-profit organisation which focuses of teaching the basic technologies much needed for everyday survival to the senior citizens.</li>
        <li>I am one of founder of this organisation, along with few of my friends abroad.</li>
        <li> Have already conducted 2 sessions in India and 12 sessions in various stations at the United States.</li>
        <li>Website Link: <a href="https://www.dlsglobal.org/">Click Me</a></li>
    </ul>
    <br>
    <strong><li>Club Head | Rhythm, SNUC Western Dance Club</li></strong>
    (Sep 2021-Ongoing)
    <ul>
        <li>Organising innovative events regularly for the club</li>
        <li>Manage club budgets and protocols</li>
        <li>Team leadership potrayed.</li>
        <li>Fully handled all the events related to western dance for the Instincts 2023 completely, which included performances, sponsorships, venue allotments, participants management etc.</li>
    </ul>
    <br>
    <strong><li>Core Committee Member | SNUC Coding Club</li></strong>
    (Sep 2022-Ongoing)
    <ul>
        <li>Core Committee member of the AI &ML domain of the club.</li>
    </ul>
    <br>
    <strong><li>Placement Coordinator, SNU | Placecomm</li></strong>
    (March 2023-Ongoing)
    <ul>
```

```

        <li>Placecomm is the official placement and internship cell of both SSN and SNUC together.</li>
        <li>Closely working with the recruiters, placement managers and the students to make the internship, training and the placements process much smoother and efficient.</li>
    </ul>
    <br>
</ol>
<hr size="2" shade>
</div>

<div class="footer">
    <p>Github: <a href="https://github.com/anjana2123">https://github.com/anjana2123</a> | LinkedIn: <a href="https://www.linkedin.com/in/anjanaram03/">https://www.linkedin.com/in/anjanaram03</a> | Outlook (Mail): <a href="mailto:anjana21110251@snuchennai.edu.in">Send mail</a> </p>
</div>
<script src="script.js"></script>
</body>
</html>

```

style.css

Light Theme:

```

h1{
    font-family: 'Angkor', cursive;
}
.summary{
    font-family: 'Kalam', cursive;
}
body{
background-color: #FFE3A9;
}
.Education{
    background-color: #E0D8B0;
}
.Skills{
    background-color: #F68989;
}
.Projects{
    background-color: #C1A3A3;
}
.Experience{

```

```
        background-color: #FFCCD2;
    }
.Certifications{
    background-color: #DFD3C3;
}
.Accomplishments{
    background-color: #EED6C4;
}
.POR{
    background-color: #FCD2D1;
}
.footer{
    background-color: #9E7777;
}
h3{
    font-family: 'Lora', serif;
    color: #000000;
    margin-left: 10px;
    text-decoration: underline;
}
html{
    border: solid;
}

.beta, .beta th, .beta td {
    border: 1px solid black;
    margin-left: 10px;
    border-style:solid;
}
```

Dark Theme:

```
h1{
    font-family: 'Angkor', cursive;
}
.summary{
    font-family: 'Kalam', cursive;
}
body{
background-color: #635985;
}
.Education{
    background-color: #144272;
}
.Skills{
    background-color: #443C68;
```

```

}

.Projects{
    background-color: #00005C;
}

.Experience{
    background-color:#474E68;
}

.Certifications{
    background-color: #9F73AB;
}

.Accomplishments{
    background-color: #2C3639;
}

.POR{
    background-color: #4C3A51;
}

.footer{
    background-color: #570A57;
}

h3{
    font-family: 'Lora', serif;
    color: #000000;
    margin-left: 10px;
    text-decoration: underline;
}

html{
    border: solid;
}

.beta, .beta th, .beta td {
    border: 1px solid black;
    margin-left: 10px;
    border-style:solid;
}

```

src.js

```

const lightThemeRadio = document.getElementById('lightTheme');
const darkThemeRadio = document.getElementById('darkTheme');
const personalThemeRadio = document.getElementById('personalTheme');
const themeLink = document.getElementById('theme-link');

lightThemeRadio.addEventListener('change', () => {
    if (lightThemeRadio.checked) {

```

```

        themeLink.setAttribute('href', 'light-theme.css');
    }
});

darkThemeRadio.addEventListener('change', () => {
    if (darkThemeRadio.checked) {
        themeLink.setAttribute('href', 'dark-theme.css');
    }
});

personalThemeRadio.addEventListener('change', () => {
    if (personalThemeRadio.checked) {
        themeLink.setAttribute('href', 'personalized-theme.css');
    }
});

```

Output:

Light Theme:

Light Theme
 Dark Theme
 Personalized Theme



Anjana Ramachandran

Student at Shiv Nadar University | Aspiring AI Engineer | Avid Learner

This is Anjana Ramachandran. An aspiring AI Engineer. I have always been amazed by diverse domains pertaining in the field of computer Science and amused by the ever growing technological developments. As a blossoming developer, I want to explore most of the domains and chose the one which quite fascinates me. As of now I am quite engrossed in Artificial Intelligence and Machine learning (my major) I am quite an extrovert and a very active and engaging person. My interests include reading books, getting to know the current affairs My extra-curricular activities are dance, music and badminton. I was in the school badminton team. I have participated in many oratorical competitions starting from inter-school to even international levels and won many awards. I involve myself in writing poetry every now and then. I am driven by the passion of developing products that can create a meaningful change in the society and which can bring out the best of performance and efficiency, for which I am open to learning always.

EDUCATION:

- **Shiv Nadar University, Chennai:**
BTech in Artificial Intelligence and Data Science
2021-2025
CGPA upto 4th sem: 8.99
- **DAV SR Secondary School, Mogappair:**
AISSE (Class XII), 2021
Bio-Math-Percentage: 94.6%
AISSE (Class X), 2019



Dark theme:

- Light Theme
- Dark Theme
- Personalized Theme



Anjana Ramachandran

Student at Shiv Nadar University | Aspiring AI Engineer | Avid Learner

This is Anjana Ramachandran, An aspiring AI Engineer. I have always been amazed by diverse domains pertaining in the field of computer Science and amused by the ever growing technological developments. As a blossoming developer, I want to explore most of the domains and chose the one which quite fascinates me. As of now I am quite engrossed in Artificial Intelligence and Machine learning (my major) I am quite an extrovert and a very active and engaging person. My interests include reading books, getting to know the current affairs My extra-curricular activities are dance, music and badminton. I was in the school badminton team. I have participated in many oratorical competitions starting from inter-school to even international levels and won many awards. I involve myself in writing poetry every now and then. I am driven by the passion of developing products that can create a meaningful change in the society and which can bring out the best of performance and efficiency, for which I am open to learning always.

EDUCATION:

- Shiv Nadar University, Chennai:

B.Tech in Artificial Intelligence and Data Science

2021-2025

CGPA upto 4th sem: 8.99

- DAV SR Secondary School, Mogappair:

AISSE (Class XII), 2021

Bio-Math-Percentage: 94.6%

AISSE (Class X), 2019

Percentage: 96.2%

SKILLS:

- Programming

- EXPERIENCED
 - C | Java | Python | HTML5 | CSS3 | JavaScript | Python Data Science Libraries | Artificial Neural Networks
- INTERMEDIATE
 - C++ | Computer Vision | Natural Language Processing | ReactJS
- FAMILIAR
 - Flutter | MySQL | AWS Cloud

- Soft Skills

Problem-Solving | Leadership | Good Communication | Adaptability | Creative Thinking | Organisational

PROJECTS:

- 1. Adaptive Traffic Signal Timer: Major Project

Code: [View](#) Date: [2022](#)

- Summarized a previous assignment using Python.
- The project is concerned to make it easy for the drivers to prevent traffic jams, to keep the timing rule of the vehicles smooth.
- A road detection program was built using the camera sensor.
- If there is no active signal to start or not, the detection model checks to find the density of the next bus.
- The colour of the vehicle in the subsequent lane is identified and using it, the system gives almost 99% classification, by taking into account the average speed of the vehicles as well.
- The optimal time is set for the next signal.

- 2. Music Speaker Recognition System : IBM Hackathon

Date: [2022](#) Images: [View](#)

- Created an automatic live tracking model using 3D CNNs and VGG.
- Augmented dataset, increasing the static-temporal characteristics of the dataset using 3D CNNs.
- With CNN layers, we can extract features from frames and then extract features from frames to extract features from frames.
- The CNN component is implemented to learn long-term dependencies and capture emergent dynamics in the 3D environment sequences.

- 3. Credit Risk Analysis System : KAVACO Hackathon

Date: [2022](#) April 2022

- Qualified the first round of Research Hackathon conducted by the India Environment.
- Arranged to write a research article and explaining concepts of environment and conditions.
- Discussed ideas to build the society concern related to the pollution situation.

- 4. Depression Analysis and Clustering : Minor Project (GIPS)

Date: [2022](#) Date: [2022](#)

- Created to build a model to classify people based on their mental status.
- Used the PERL framework, mainly management using LSTM.
- Used the neural network analysis using cell phones and emotionally switching a healthy well application.
- Presented in [Depression Analysis And Clustering](#)

- 5. Image Modelling: Artificial Neural Network

Date: [2022](#) Date: [2022](#)

- Used the neural network to classify images.
- Used the PyTorch framework.
- Used the PyTorch framework Model.
- Achieved accuracy of 98.4%.
- Presented in [Image Modelling](#)

- 6. Migraine Website Development

Date: [2022](#) Date: [2022](#)

- Created Migraine suffering Website using:
- HTML5, CSS3, JavaScript, CSS3 Grid, Bootstrap 5.0.
- Segmented various sections of the human brain.
- Present Link: [Web Dev](#)

EXPERIENCE:

Result:

Successfully implemented a CSS with light theme and dark theme toggle button using javascript

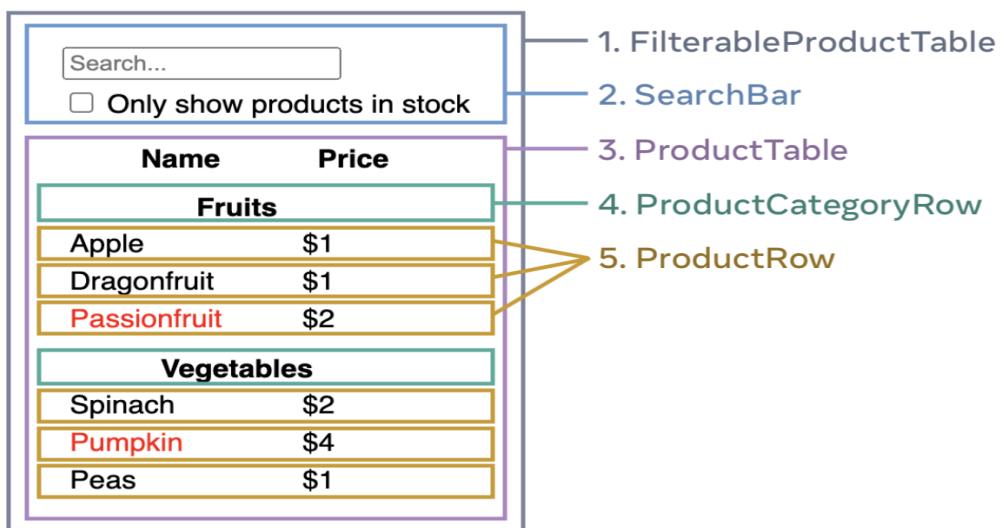
Ex. No: 4

7/8/23

Search and Filter using React

Aim: Implement the search and filter application using react.

Mockup:



Program :

Components:

1. filterTableProduct.js:

```
import React, { useState } from 'react';
import SearchBar from './SearchBar';
import ProductTable from './ProductTable';

function FilterableProductTable({ products }) {
  const [filterText, setFilterText] = useState('');
  const [inStockOnly, setInStockOnly] = useState(false);

  return (
    <div>
      <SearchBar
        filterText={filterText}
        inStockOnly={inStockOnly}
        onFilterTextChange={setFilterText}
        onInStockOnlyChange={setInStockOnly} />
      <ProductTable
```

```

        products={products}
        filterText={filterText}
        inStockOnly={inStockOnly} />
      </div>
    );
}

export default FilterableProductTable;

```

2. ProductCategoryRow.js

```

import React from 'react';
function ProductCategoryRow({ category }) {
  return (
    <tr>
      <th colSpan="2">
        {category}
      </th>
    </tr>
  );
}
export default ProductCategoryRow;

```

3. ProductRow.js

```

import React from 'react';
function ProductRow({ product }) {
  const name = product.stocked ? product.name :
    <span style={{ color: 'red' }}>
      {product.name}
    </span>;
  return (
    <tr>
      <td>{name}</td>
      <td>{product.price}</td>
    </tr>
  );
}
export default ProductRow;

```

4. ProductTable.js

```

import React from 'react';
import ProductCategoryRow from './ProductCategoryRow';
import ProductRow from './ProductRow';

function ProductTable({ products, filterText, inStockOnly }) {
  const rows = [];
  let lastCategory = null;

```

```

products.forEach((product) => {
  if (
    product.name.toLowerCase().indexOf(
      filterText.toLowerCase()
    ) === -1
  ) {
    return;
  }
  if (inStockOnly && !product.stocked) {
    return;
  }
  if (product.category !== lastCategory) {
    rows.push(
      <ProductCategoryRow
        category={product.category}
        key={product.category} />
    );
  }
  rows.push(
    <ProductRow
      product={product}
      key={product.name} />
  );
  lastCategory = product.category;
});

return (
  <table>
    <thead>
      <tr>
        <th>Name</th>
        <th>Price</th>
      </tr>
    </thead>
    <tbody>{rows}</tbody>
  </table>
);
}

export default ProductTable;

```

5. SearchBar.js

```

import React from 'react';
import '../styles.css';

function SearchBar({
  filterText,
  inStockOnly,
  onFilterTextChange,

```

```

        onInStockOnlyChange
    }) {
return (
    <div>
    <form>
    <input
        type="text"
        value={filterText} placeholder="Search..." 
        onChange={(e) => onFilterTextChange(e.target.value)} />
    <label>
    <input
        type="checkbox"
        checked={inStockOnly}
        onChange={(e) => onInStockOnlyChange(e.target.checked)} />
    {' '}
    Only show products in stock
    </label>
    </form>
    </div>
);
}
export default SearchBar;

```

app.js

```

import React from 'react';
import FilterableProductTable from './components/FilterableProductTable';

const PRODUCTS = [
    {category: "Fruits", price: "$1", stocked: true, name: "Apple"}, 
    {category: "Fruits", price: "$1", stocked: true, name: "Dragonfruit"}, 
    {category: "Fruits", price: "$2", stocked: false, name: "Passionfruit"}, 
    {category: "Vegetables", price: "$2", stocked: true, name: "Spinach"}, 
    {category: "Vegetables", price: "$4", stocked: false, name: "Pumpkin"}, 
    {category: "Vegetables", price: "$1", stocked: true, name: "Peas"}];
];

function App() {
    return <FilterableProductTable products={PRODUCTS} />;
}
export default App;

```

index.js

```

import React from 'react';
import ReactDOM from 'react-dom/client';
import App from './App';
import reportWebVitals from './reportWebVitals';

```

```
const root = ReactDOM.createRoot(document.getElementById('root'));
root.render(
  <React.StrictMode>
    <App />
  </React.StrictMode>
);
reportWebVitals();
```

reportWebVitals.js

```
const reportWebVitals = onPerfEntry => {
  if (onPerfEntry && onPerfEntry instanceof Function) {
    import('web-vitals').then(({ getCLS, getFID, getFCP, getLCP,
    getTTFB }) => {
      getCLS(onPerfEntry);
      getFID(onPerfEntry);
      getFCP(onPerfEntry);
      getLCP(onPerfEntry);
      getTTFB(onPerfEntry);
    });
  }
};
export default reportWebVitals;
```

style.css

```
.form-container {
  margin-bottom: 400px;
  border-bottom: 10px solid black;
}

/* ProductTable component styles */
table {
  width: 100%;
  border-collapse: collapse;
  background-color: antiquewhite;
}

th, td {
  padding: 8px;
  text-align: left;
  border-bottom: 1px solid #1e1919;
}

th {
  background-color: #f2f2f2;
```

```

/* ProductRow component styles */
.red-text {
    color: red;
}
input {
    border-radius: 5px;
    align-self: start;
}
tbody tr:nth-child(odd) {
    background: #1b61a9;
}
tbody tr:nth-child(even) {
    background: #eab716;
}
caption {
    font-size: 0.8rem;
}

```

Output:

<input type="text" value="Search..."/>	<input type="checkbox"/> Only show products in stock
Name	Price
Fruits	
Apple	\$1
Dragonfruit	\$1
Passionfruit	\$2
Vegetables	
Spinach	\$2
Pumpkin	\$4
Peas	\$1

<input type="text" value="APPlie"/>	<input type="checkbox"/> Only show products in stock
Name	Price
Fruits	
Apple	\$1

<input type="text" value="Search..."/>	<input checked="" type="checkbox"/> Only show products in stock
Name	Price
Fruits	
Apple	\$1
Dragonfruit	\$1
Vegetables	
Spinach	\$2
Peas	\$1

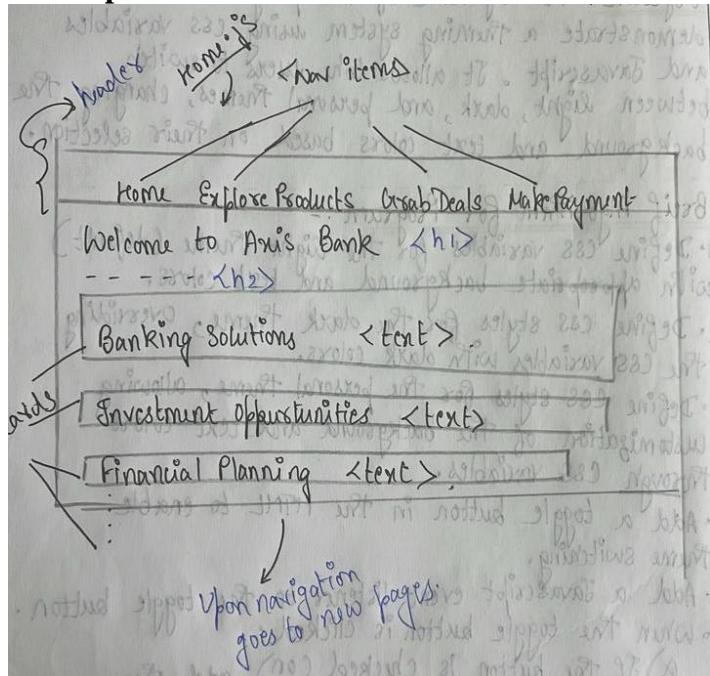
Result: Thus search and filter functions in the react application have been successfully executed.

Ex. No: 5	
21/8/23	

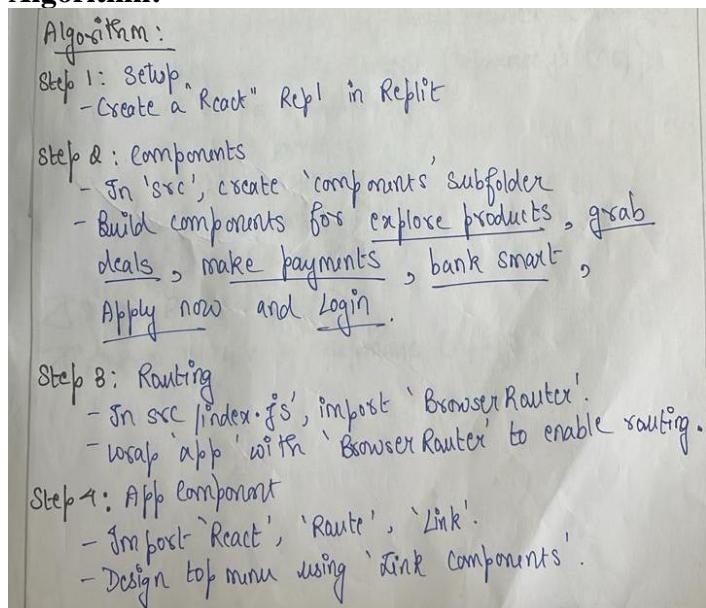
React - Menu Navigation

Aim: To write a program using React.js that focuses on Menu Navigation for a Nifty 200 company. (Axis bank)

Mockup:

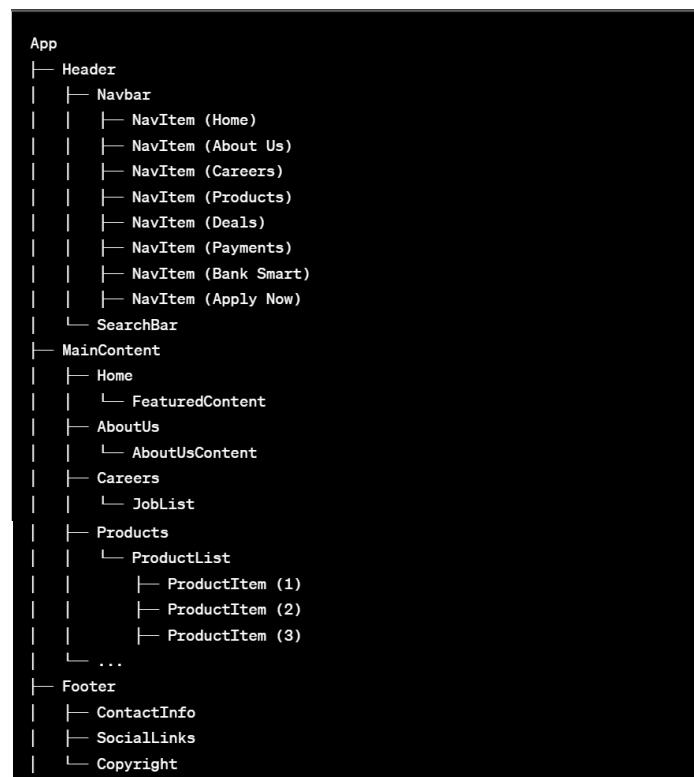


Algorithm:



- Use 'Router' to render menu components based on navigation.
- Step 5: Styling**
- Modify 'index.css' for top menu styling
 - Apply branding - relevant background, alignment, typography.
- Step 6: Content**
- Design menu components (In website)
 - Structure content according to Axis Bank's branding.

Component Hierarchy:



Program :

App.js

```

import React from 'react';
import { Routes, Route, Link } from 'react-router-dom';
import ExploreProducts from './ExploreProducts';
import GrabDeals from './GrabDeals';
import MakePayments from './MakePayments';
import BankSmart from './BankSmart';
import ApplyNow from './ApplyNow';

```

```
import Home from './Home';
import './App.css'; // Import the CSS file

function App() {
  return (
    <>
    <div className= "App">
      <nav>
        <ul>
          <li><Link to="/">Home</Link></li>
          <li><Link to="/explore-products">Explore Products</Link></li>
          <li><Link to="/grab-deals">Grab Deals</Link></li>
          <li><Link to="/make-payments">Make Payments</Link></li>
          <li><Link to="/bank-smart">Bank Smart</Link></li>
          <li><Link to="/apply-now">Apply Now</Link></li>
        </ul>
      </nav>

      <div className="container">
        <Routes>
          {/* Other routes */}
          <Route exact path="/" element={<Home/>} />
          <Route path="/explore-products" element={<ExploreProducts/>} />
          <Route path="/grab-deals" element={<GrabDeals/>} />
          <Route path="/make-payments" element={<MakePayments/>} />
          <Route path="/bank-smart" element={<BankSmart/>} />
          <Route path="/apply-now" element={<ApplyNow/>} />
        </Routes>
      </div>
    </div>
  );
}

export default App;

/*
AI and DS Roles at Axis Bank:

Many financial institutions, including banks like Axis Bank, have been
exploring the integration of
AI (Artificial Intelligence) and DS (Data Science) in various aspects of
their operations.
This includes areas such as fraud detection, customer service chatbots,
credit risk assessment,
```

personalized marketing, and process automation. These technologies help streamline operations, enhance customer experiences, and make data-driven decisions.

Future Growth of Axis Bank:

The future of Axis Bank, like any other bank, largely depends on its ability to adapt and innovate in a rapidly changing technological landscape. As customers increasingly expect digital solutions and personalized experiences, integrating AI and DS could contribute to the bank's growth by providing more efficient and tailored services.

AI and DS Disruption in the Banking Sector:

AI and DS have the potential to disrupt the banking sector by revolutionizing various processes and customer interactions. Automation, predictive analytics, and real-time insights can lead to more effective risk management, fraud prevention, customer engagement, and operational efficiency.

Utilization of AI and DS by Axis Bank:

Axis Bank's successful utilization of AI and DS could lead to improved customer experiences, more accurate risk assessments, efficient fraud detection, and enhanced data-driven decision-making. AI-powered chatbots, personalized recommendations, and automated processes could offer convenience and value to customers.

Interest in Making a Career at Axis Bank:

If Axis Bank continues to invest in AI and DS, there could be growing opportunities for professionals with expertise in these areas. Roles related to data analysis, machine learning, AI development, and data-driven strategy could be in demand. As with any career choice, it's important to assess the alignment between your skills, interests, and the company's goals.

*/

Pages/ Home.js

```
import React from 'react';
import './Home.css';
```

```
function Home() {
  return (
    <div className="home-container">
      <div className="welcome-section">
        <h2>Welcome to Axis Bank</h2>
        <p>Your trusted partner for all your banking and financial needs.</p>
      </div>

      <div className="features-section">
        <h3>Discover Our Services</h3>
        <div className="feature">
          <h4>Banking Solutions</h4>
          <p>Explore a range of banking products including savings accounts, personal loans, and credit cards.</p>
        </div>
        <div className="feature">
          <h4>Investment Opportunities</h4>
          <p>Maximize your wealth with our investment options, from fixed deposits to mutual funds.</p>
        </div>
        <div className="feature">
          <h4>Financial Planning</h4>
          <p>Plan for your future with our expert financial advisors who can help you achieve your goals.</p>
        </div>
      </div>

      <div className="commitment-section">
        <h3>Our Commitment</h3>
        <p>At Axis Bank, we are committed to delivering exceptional customer experiences and innovative solutions.</p>
        <p>With a focus on security, convenience, and personalized service, we're here to make banking effortless for you.</p>
      </div>

      <div className="get-started-section">
        <h3>Get Started Today</h3>
        <p>Whether you're new to banking or looking to switch, we're here to guide you on your financial journey.</p>
        <p>Explore our website, visit a branch near you, or reach out to our customer support team to get started.</p>
      </div>
    </div>
  );
}
```

```
export default Home;
```

ApplyNow.js

```
// ApplyNow.js
import React from 'react';
import './ApplyNow.css'; // Import the CSS file for this component

function ApplyNow() {
  return (
    <div className="apply-now">
      <h2>Apply Now</h2>
      <p>Take the next step towards achieving your financial goals by applying for our products and services.</p>

      <div className="application">
        <h3>Apply for a Credit Card</h3>
        <p>Enjoy exclusive benefits and rewards by applying for an Axis Bank credit card.</p>
        <p>Features:</p>
        <ul>
          <li>Cashback offers and discounts</li>
          <li>Travel and dining privileges</li>
          <li>Secure and convenient payments</li>
        </ul>
        <button className="application-button">Apply Now</button>
      </div>

      <div className="application">
        <h3>Home Loan Application</h3>
        <p>Turn your dream of owning a home into reality with our easy home loan application process.</p>
        <p>Features:</p>
        <ul>
          <li>Flexible repayment options</li>
          <li>Attractive interest rates</li>
          <li>Assistance at every step of the application</li>
        </ul>
        <button className="application-button">Apply Now</button>
      </div>

      <div className="application">
        <h3>Open a Savings Account</h3>
        <p>Start saving for your future with our range of savings accounts tailored to your needs.</p>
      </div>
    </div>
  );
}
```

```

<p>Features:</p>
<ul>
  <li>High interest rates</li>
  <li>No minimum balance requirement</li>
  <li>Convenient online account management</li>
</ul>
<button className="application-button">Apply Now</button>
</div>

/* Add more application sections as needed */
</div>
);
}

export default ApplyNow;

```

BankSmart.js

```

// BankSmart.js
import React from 'react';
import './BankSmart.css'; // Import the CSS file for this component

function BankSmart() {
  return (
    <div className="bank-smart">
      <h2>Bank Smart</h2>
      <p>Unlock a world of smart banking solutions designed to make managing your finances easier.</p>

      <div className="smart-feature">
        <h3>Axis Mobile Banking</h3>
        <p>Experience hassle-free banking on the go with our feature-rich mobile banking app.</p>
        <p>Features:</p>
        <ul>
          <li>View account statements and transaction history</li>
          <li>Transfer funds between accounts</li>
          <li>Pay bills and make mobile recharges</li>
        </ul>
        <button className="smart-button">Download App</button>
      </div>

      <div className="smart-feature">
        <h3>Net Banking</h3>
        <p>Manage your accounts, pay bills, and perform transactions online through our secure net banking platform.</p>
      </div>
    </div>
  );
}

export default BankSmart;

```

```

<p>Features:</p>
<ul>
  <li>Monitor account balances and transaction history</li>
  <li>Set up standing instructions for regular payments</li>
  <li>Access e-statements and tax-related documents</li>
</ul>
<button className="smart-button">Login</button>
</div>

<div className="smart-feature">
  <h3>Personalized Alerts</h3>
  <p>Stay informed about your account activity with custom alerts and notifications.</p>
  <p>Alert Types:</p>
  <ul>
    <li>Balance alerts</li>
    <li>Transaction alerts</li>
    <li>Payment due date reminders</li>
  </ul>
  <button className="smart-button">Set Up Alerts</button>
</div>

  /* Add more smart features as needed */
</div>
);
}

export default BankSmart;

```

ExploreProducts.js:

```

// ExploreProducts.js
import React from 'react';
import './ExploreProducts.css'; // Import the CSS file for this component

function ExploreProducts() {
  return (
    <div className="explore-products">
      <h2>Explore Products</h2>
      <p>Discover a wide range of banking and financial products tailored to your needs.</p>

      <div className="product">
        <h3>Personal Loans</h3>
        <p>Get the funds you need for life's important moments, whether it's a vacation, wedding, or home renovation.</p>
        <p>Features:</p>

```

```

        <ul>
          <li>Competitive interest rates</li>
          <li>Flexible repayment options</li>
          <li>No collateral required</li>
        </ul>
        <button className="product-button">Apply Now</button>
      </div>

      <div className="product">
        <h3>Savings Accounts</h3>
        <p>Start saving with our variety of flexible and rewarding accounts designed to help you achieve your financial goals.</p>
        <p>Features:</p>
        <ul>
          <li>High interest rates</li>
          <li>No minimum balance requirement</li>
          <li>ATM access and online banking</li>
        </ul>
        <button className="product-button">Learn More</button>
      </div>

      <div className="product">
        <h3>Credit Cards</h3>
        <p>Choose from a selection of credit cards with great rewards and benefits tailored to your spending habits.</p>
        <p>Features:</p>
        <ul>
          <li>Cashback on every purchase</li>
          <li>Travel rewards and airline miles</li>
          <li>24/7 customer support</li>
        </ul>
        <button className="product-button">Apply Now</button>
      </div>

      {/* Add more product sections as needed */}
    </div>
  );
}

export default ExploreProducts;

```

GrabDeals.js:

```

// GrabDeals.js
import React from 'react';
import './GrabDeals.css'; // Import the CSS file for this component

```

```
function GrabDeals() {
  return (
    <div className="grab-deals">
      <h2>Grab Deals</h2>
      <p>Explore our latest offers and promotions to make the most of your banking experience.</p>

      <div className="deal">
        <h3>Cashback Bonanza</h3>
        <p>Get up to 10% cashback on your credit card purchases for a limited time.</p>
        <p>Terms and Conditions:</p>
        <ul>
          <li>Valid for purchases made between [start date] and [end date]</li>
          <li>Maximum cashback amount per transaction is [amount]</li>
          <li>Applicable only on select credit cards</li>
        </ul>
        <button className="deal-button">Learn More</button>
      </div>

      <div className="deal">
        <h3>Home Loan Special</h3>
        <p>Avail of special interest rates and waived processing fees when you apply for a home loan this season.</p>
        <p>Terms and Conditions:</p>
        <ul>
          <li>Valid for new home loan applications submitted by [date]</li>
          <li>Applicable to loans with a minimum amount of [amount]</li>
          <li>Processing fee waiver subject to credit approval</li>
        </ul>
        <button className="deal-button">Apply Now</button>
      </div>

      <div className="deal">
        <h3>Travel Card Promotion</h3>
        <p>Get a complimentary travel card loaded with [amount] when you book an international holiday package.</p>
        <p>Terms and Conditions:</p>
        <ul>
          <li>Offer valid on select holiday packages</li>
          <li>Travel card will be issued upon booking confirmation</li>
          <li>[amount] will be pre-loaded on the card and can be used for travel expenses</li>
        </ul>
      </div>
    </div>
  )
}
```

```

        </ul>
        <button className="deal-button">Book Now</button>
    </div>

    {/* Add more deal sections as needed */}
    </div>
);
}

export default GrabDeals;

```

MakePayments.js:

```

// MakePayments.js
import React from 'react';
import './MakePayments.css'; // Import the CSS file for this component

function MakePayments() {
    return (
        <div className="make-payments">
            <h2>Make Payments</h2>
            <p>Easily manage your payments and transactions with our convenient banking solutions.</p>

            <div className="payment-option">
                <h3>Online Bill Payments</h3>
                <p>Pay your utility bills, credit card bills, and more online with just a few clicks.</p>
                <p>Features:</p>
                <ul>
                    <li>Secure and encrypted payments</li>
                    <li>Instant confirmation and receipt</li>
                    <li>Save payee details for future use</li>
                </ul>
                <button className="payment-button">Pay Bills</button>
            </div>

            <div className="payment-option">
                <h3>Mobile Banking App</h3>
                <p>Download our mobile app to make payments on the go using your smartphone.</p>
                <p>Features:</p>
                <ul>
                    <li>Transfer funds between accounts</li>
                    <li>Scan and pay using QR codes</li>
                    <li>View transaction history and account balances</li>
                </ul>
            </div>
        </div>
    );
}

export default MakePayments;

```

```

        </ul>
        <button className="payment-button">Download App</button>
    </div>

    <div className="payment-option">
        <h3>Contactless Payments</h3>
        <p>Use your Axis Bank debit or credit card for contactless payments at participating merchants.</p>
        <p>Features:</p>
        <ul>
            <li>Fast and secure transactions</li>
            <li>No need to enter a PIN for small purchases</li>
            <li>Accepted at a wide range of stores</li>
        </ul>
        <button className="payment-button">Learn More</button>
    </div>

    {/* Add more payment options as needed */}
    </div>
);
}

export default MakePayments;

```

App.css:

```

/* App.css */

/* Reset some default styles */
body, h1, h2, h3, p, ul, li, button {
    margin: 0;
    padding: 0;
}

body {
    font-family: Arial, sans-serif;
}

/* Navigation menu */
nav {
    background-color: #333;
    color: white;
    padding: 10px;
}

nav ul {

```

```
list-style: none;
display: flex;
justify-content: center;
}

nav ul li {
  margin-right: 20px;
}

nav ul li a {
  color: white;
  text-decoration: none;
}

/* Container for content */
.container {
  padding: 20px;
}
```

Output:

The screenshot shows the homepage of the Axis Bank website. At the top, there is a dark navigation bar with links: Home, Explore Products, Grab Deals, Make Payments, Bank Smart, and Apply Now. Below the navigation bar, the main content area has a light gray background. It features several sections with rounded corners and thin borders:

- Welcome to Axis Bank**: A section with the text "Your trusted partner for all your banking and financial needs." and a "Discover Our Services" button.
- Banking Solutions**: A section describing banking products like savings accounts, personal loans, and credit cards.
- Investment Opportunities**: A section about investment options from fixed deposits to mutual funds.
- Financial Planning**: A section for expert financial advisors helping achieve goals.
- Our Commitment**: A section stating the bank's commitment to exceptional customer experiences, security, convenience, and personalized service.
- Get Started Today**: A section encouraging users to guide them on their financial journey, with a note about exploring the website, visiting a branch, or reaching customer support.

Explore Products

Discover a wide range of banking and financial products tailored to your needs.

Personal Loans

Get the funds you need for life's important moments, whether it's a vacation, wedding, or home renovation.

Features:

- Competitive interest rates
- Flexible repayment options
- No collateral required

[Apply Now](#)

Savings Accounts

Start saving with our variety of flexible and rewarding accounts designed to help you achieve your financial goals.

Features:

- High interest rates
- No minimum balance requirement
- ATM access and online banking

[Learn More](#)

Credit Cards

Choose from a selection of credit cards with great rewards and benefits tailored to your spending habits.

Features:

- Cashback on every purchase
- Travel rewards and airline miles
- 24/7 customer support

[Apply Now](#)

Grab Deals

Explore our latest offers and promotions to make the most of your banking experience.

Cashback Bonanza

Get up to 10% cashback on your credit card purchases for a limited time.

Terms and Conditions:

- Valid for purchases made between [start date] and [end date]
- Maximum cashback amount per transaction is [amount]
- Applicable only on select credit cards

[Learn More](#)

Home Loan Special

Avail of special interest rates and waived processing fees when you apply for a home loan this season.

Terms and Conditions:

- Valid for new home loan applications submitted by [date]
- Applicable to loans with a minimum amount of [amount]
- Processing fee waiver subject to credit approval

[Apply Now](#)

Travel Card Promotion

Get a complimentary travel card loaded with [amount] when you book an international holiday package.

Terms and Conditions:

- Offer valid on select holiday packages
- Travel card will be issued upon booking confirmation
- [amount] will be pre-loaded on the card and can be used for travel expenses

[Book Now](#)

Make Payments

Easily manage your payments and transactions with our convenient banking solutions.

Online Bill Payments

Pay your utility bills, credit card bills, and more online with just a few clicks.

Features:

- Secure and encrypted payments
- Instant confirmation and receipt
- Save payee details for future use

[Pay Bills](#)

Mobile Banking App

Download our mobile app to make payments on the go using your smartphone.

Features:

- Transfer funds between accounts
- Scan and pay using QR codes
- View transaction history and account balances

[Download App](#)

Contactless Payments

Use your Axis Bank debit or credit card for contactless payments at participating merchants.

Features:

- Fast and secure transactions
- No need to enter a PIN for small purchases
- Accepted at a wide range of stores

[Learn More](#)

The screenshot displays the Axis Bank website's homepage. At the top, there is a navigation bar with links: Home, Explore Products, Grab Deals, Make Payments, Bank Smart, and Apply Now. Below the navigation bar, there are three main content sections.

- Bank Smart**: This section is titled "Bank Smart" and describes it as a world of smart banking solutions. It includes a sub-section for "Axis Mobile Banking" which details features like account statements, transaction history, fund transfers, bill payments, and mobile recharges, along with a "Download App" button. Another sub-section, "Net Banking", describes managing accounts online with features like monitoring balances, setting up standing instructions, and accessing e-statements, accompanied by a "Login" button.
- Apply Now**: This section is titled "Apply Now" and encourages users to take the next step towards achieving financial goals. It includes a sub-section for "Apply for a Credit Card" which lists features such as cashback offers, travel and dining privileges, and secure payments, with an "Apply Now" button. Other sub-sections include "Home Loan Application" (describing the process of turning dreams into reality) and "Open a Savings Account" (describing savings accounts tailored to needs), each with its own "Apply Now" button.
- Home Loan Application**: This section is titled "Home Loan Application" and describes turning dreams into reality through an easy application process. It lists features like flexible repayment options, attractive interest rates, and assistance at every step, with an "Apply Now" button.

Result: The React App with Menu Navigation using routers has been implemented successfully for Axis Bank website.

Ex. No: 6	React- Simple Applications
28/7/23	

Aim: Implement a react counter app as below.

Algorithm:

① Implementation of react app "Counter":

Objective: To implement a react counter App and to include concepts like components, states, event handling & styling.

Algorithm

STEP 1: To check if react environment exists

STEP 2: Create a new react app

STEP 3: Navigate to project directory

STEP 4: Implement the Counter App, 'src/App.js',

STEP 5: Inside the App.js
→ Create title "Counter App"

→ Create increment button

→ Create decrement button

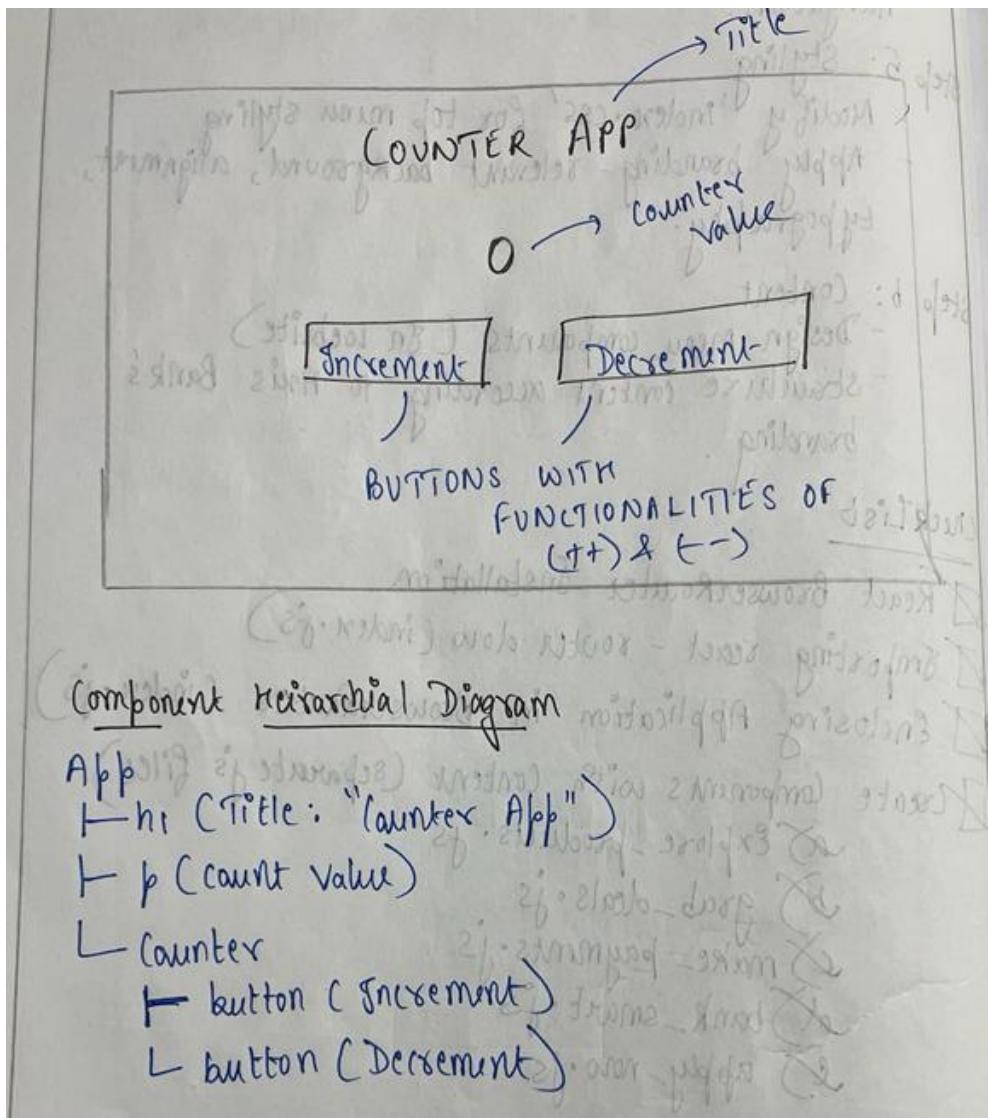
→ Count Display creation

STEP 6: For the increment & decrement buttons,
create functions handleIncrement()
create function handleDecrement()

STEP 7: Create stylesheet App.css & link it to
the main App.js

STEP 8: Start the program npm start & debug
any errors that pops.

Mockup and Component Hierarchy Diagram:



Program :

```

App.js
import React, { useState } from 'react';
import './App.css';

function App() {
  const [count, setCount] = useState(0);

  const handleIncrement = () => {
    setCount(count + 1);
  };
}
  
```

```
const handleDecrement = () => {
  setCount(count - 1);
};

return (
  <div className="App">
    <h1>Counter App</h1>
    <p className="count-value">{count}</p>
    <div className="counter">
      <button className="increment-button"
        onClick={handleIncrement}>Increment</button>
      <button className="decrement-button"
        onClick={handleDecrement}>Decrement</button>
    </div>
  </div>
);

export default App;
```

App.css:

```
.App {
  text-align: center;
  margin-top: 100px;
  font-family: Georgia, serif;
}

.counter {
  display: flex;
  align-items: center;
  justify-content: center;
  margin-top: 20px;
}

.increment-button {
  background-color: green;
  color: white;
  border: none;
  padding: 10px 20px;
  margin-right: 10px;
  cursor: pointer;
}
```

```
.decrement-button {  
background-color: red;  
color: white;  
border: none;  
padding: 10px 20px;  
cursor: pointer;  
}  
  
.count-value {  
font-size: 24px;  
font-weight: bold;  
}
```

Output:



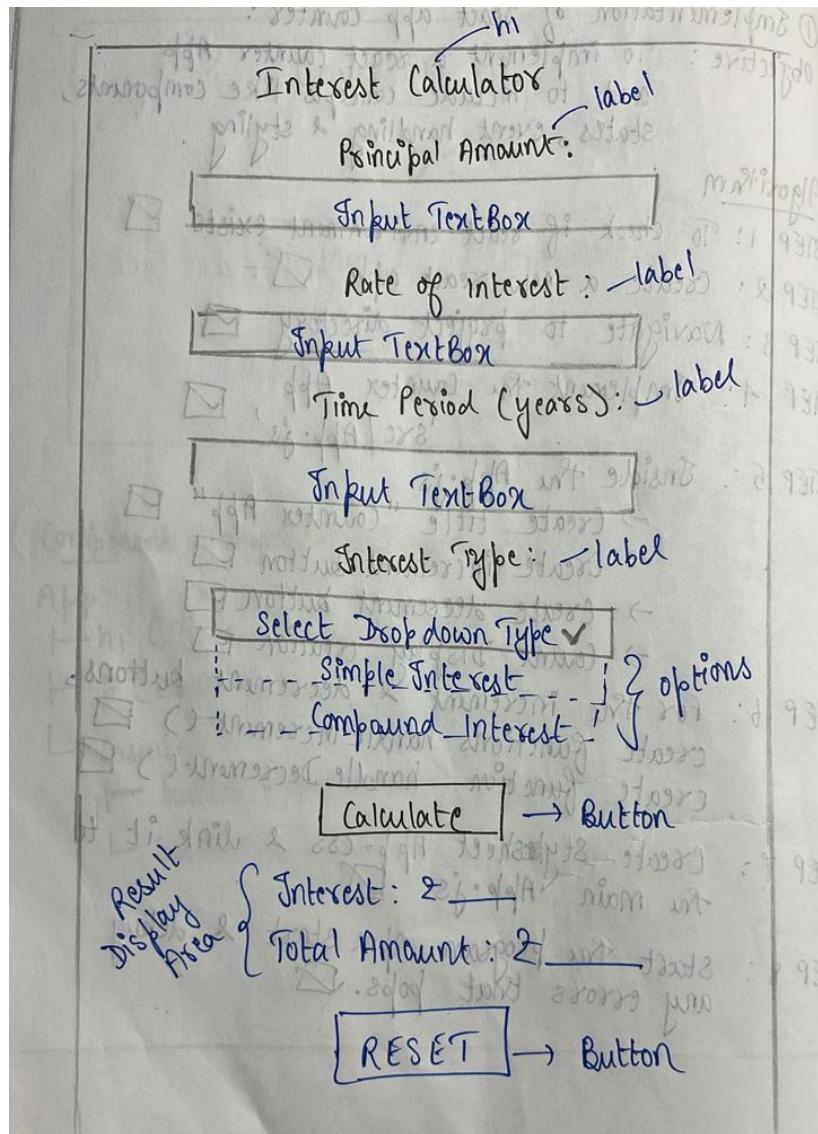
Aim:

Implement a simple and compound interest calculator as below.

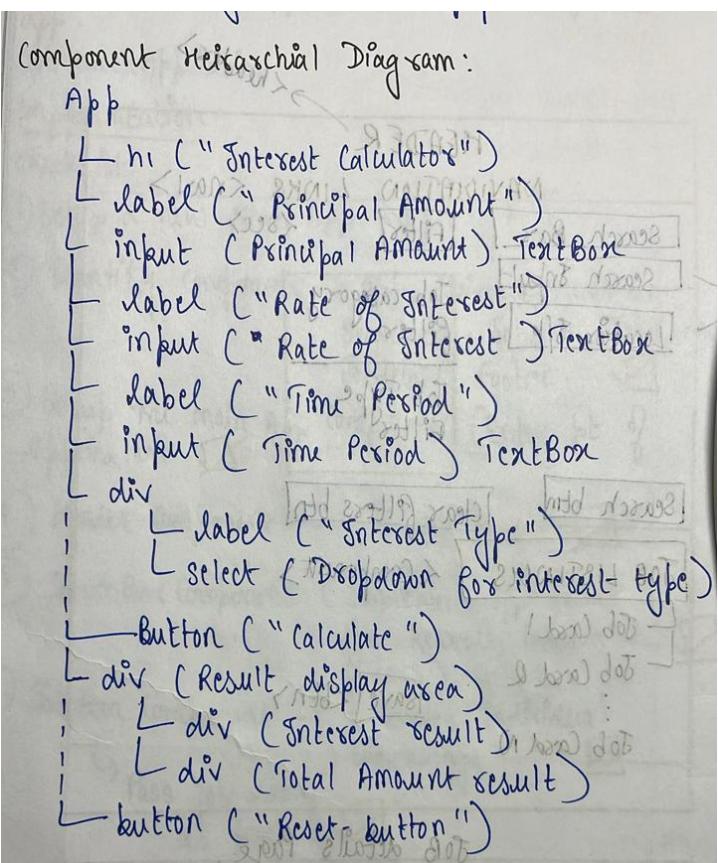
Algorithm:

- Algorithm:-
- STEP 1: To check if the react environment exists
- STEP 2: Create a new react app
- STEP 3: Navigate to project directory & in the src folder → App.js, edit the code.
- STEP 4: Define state & state update functions
- ↳ Declare state variables for 'principal', 'rate', 'time', 'interestType', 'result' & 'totalAmount' using 'useState'
- STEP 5: Implement calculation logic
- ↳ Create a function 'calculateInterest':
 - i) Parse the values
 - ii) If 'interestType' == 'simple':
calculate SI & update 'result' & 'totalAmount'
 - iii) Else:
calculate CI.
- STEP 6: Implement Reset functionality,
- ↳ Create a 'resetCalculator' fn.
(reset all state vars to initial value)
- STEP 7: Building UI using JSX
Add necessary buttons, labels, dropdowns, headers etc.

Mockup:



Component Hierarchy Diagram:



Program:

```

App.js
import React, { useState } from 'react';
import './App.css';

function App() {
  const [principal, setPrincipal] = useState('');
  const [rate, setRate] = useState('0');
  const [time, setTime] = useState('0');
  const [interestType, setInterestType] = useState('simple');
  const [result, setResult] = useState('');
  const [totalAmount, setTotalAmount] = useState('');

  const calculateInterest = () => {
    const p = parseFloat(principal);
    const r = parseFloat(rate) / 100;
    const t = parseFloat(time);
  }
}

```

```

if (interestType === 'simple') {
  const interest = (p * r * t).toFixed(2);
  setResult(`Interest: ₹${interest}`);
  setTotalAmount(`Total amount: ₹${(p +
parseFloat(interest)).toFixed(2)}`);
} else {
  const amount = p * Math.pow(1 + r, t);
  const interest = (amount - p).toFixed(2);
  setResult(`Interest: ₹${interest}`);
  setTotalAmount(`Total amount: ₹${amount.toFixed(2)})`);
}
};

const resetCalculator = () => {
  setPrincipal('');
  setRate('');
  setTime('');
  setResult('');
  setTotalAmount('');
};

return (
  <div className="App">
    <h1>Interest Calculator</h1>
    <label>Principal Amount:</label>
    <input type="text" value={principal} onChange={(e) =>
setPrincipal(e.target.value)} />

    <label>Rate of Interest (%):</label>
    <input type="text" value={rate} onChange={(e) =>
setRate(e.target.value)} />

    <label>Time Period (years):</label>
    <input type="text" value={time} onChange={(e) =>
setTime(e.target.value)} />

    <div>
      <label>Interest Type:</label>
      <select value={interestType} onChange={(e) =>
setInterestType(e.target.value)}>
        <option value="simple">Simple Interest</option>
        <option value="compound">Compound Interest</option>
      </select>
    </div>
  </div>
)

```

```
<button onClick={calculateInterest}>Calculate</button>
<div>{result}</div>
<div>{totalAmount}</div>

      <button className="reset-button"
onClick={resetCalculator}>Reset</button>
    </div>
  );
}

export default App;
```

App.css:

```
.App {
  font-family: Arial, sans-serif;
  text-align: center;
  margin: 50px auto;
  padding: 20px;
  border: 1px solid #ccc;
  width: 400px;
  box-shadow: 0px 2px 5px rgba(0, 0, 0, 0.1);
}

label {
  display: block;
  margin-top: 10px;
}

input {
  width: 100%;
  padding: 8px;
  margin-top: 5px;
  margin-bottom: 15px;
  border: 1px solid #ccc;
  border-radius: 4px;
  box-sizing: border-box;
}

select {
  width: 100%;
  padding: 8px;
  margin-top: 5px;
```

```
margin-bottom: 15px;
border: 1px solid #ccc;
border-radius: 4px;
box-sizing: border-box;
}

button {
  background-color: #007bff;
  color: white;
  border: none;
  padding: 10px 20px;
  border-radius: 4px;
  cursor: pointer;
  margin-top: 15px;
}

button.reset-button {
  background-color: darkgray;
}

button:hover {
  background-color: #0056b3;
}

div {
  margin-top: 10px;
}

.reset-button {
  margin-top: 20px;
}

h1 {
  margin-bottom: 20px;
}
```

Output:

Interest Calculator

Principal Amount:

Rate of Interest (%):

Time Period (years):

Interest Type:

Simple Interest

CalculateReset

Result:

Thus, simple react applications were written and studied.

Ex. No: 7	React - Real Time Form Validation, and Submission Validation
4/9/23	

Aim: Implement a react app as below, (K4) (Login page)

Algorithm:

Initialize State Variables:

- Use useState to set up state variables for isLoggedIn, username, and name.

Define User Data:

- Create an array users containing user objects with username, name, and password properties.

Handle Login Function:

- Implement a function handleLogin that checks if the entered username and password are valid.
- Use regular expressions to validate the password.
- Update state variables when login is successful or display appropriate error messages using alert.
-

Handle Logout Function:

- Create a function handleLogout to reset state variables.

Render the Login Page:

- Based on the value of isLoggedIn, conditionally render a welcome message and a "Logout" button or a login form.
- Attach the handleLogin function to the form's onSubmit event.

Form Fields:

- Use input fields for name, username, and password within the form, with the required attribute.

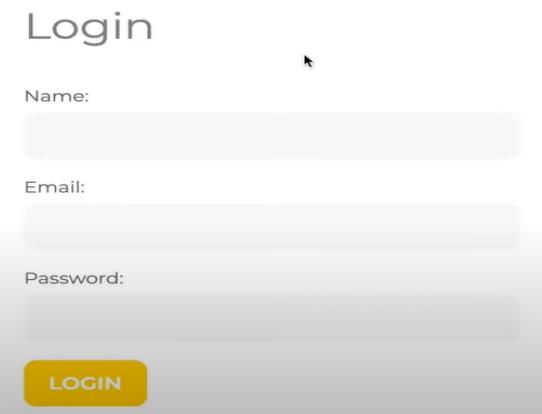
Conditional Content:

- Use conditional rendering to display content based on isLoggedIn.

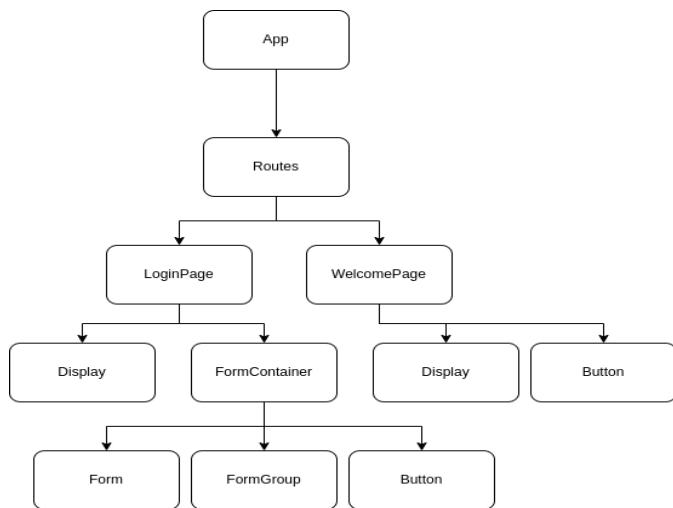
Export the App Component:

- Export the App component as the default export of the module.

Mockup:



Component Hierarchy Diagram :



Program:

Pages

APP.js

```
import React, { useState } from 'react';
import './App.css';

function App() {
  const [isLoggedIn, setIsLoggedIn] = useState(false);
```

```
const [username, setUsername] = useState("");
const [name, setName] = useState("");
const users = [
  { username: 'rishi', name: 'Rishi', password: 'Rishi123' },
  { username: 'chef', name: 'Heisenberg', password: 'walterwhite' },
];
const handleLogin = (enteredUsername, enteredPassword) => {
  const matchedUser = users.find(
    (user) =>
      user.username === enteredUsername && user.password ===
```

Ex. No: 7 React -Real Time Form Validation, and Submission Validation

enteredPassword

);

```
const lowercaseRegex = /[a-z]/;
```

```
const uppercaseRegex = /[A-Z]/;
```

```
const numberRegex = /[0-9]/;
```

```
const isPasswordValid =
```

```
lowercaseRegex.test(enteredPassword) &&
```

```
uppercaseRegex.test(enteredPassword) &&
```

```
numberRegex.test(enteredPassword);
```

```
if (matchedUser && isPasswordValid) {
```

```
  setUsername(enteredUsername);
```

```
  setName(matchedUser.name);
```

```
  setIsLoggedIn(true);
```

```
    } else {
      if (!isValidPassword) {
        alert(
          'Password must contain at least one lowercase letter, one uppercase letter, and one number.'
        );
      } else {
        alert('Invalid username or password. Please try again.');
      }
    };
  }

  const handleLogout = () => {
    setUsername("");
    setName("");
    setIsLoggedIn(false);
  };

  return (
    <div className="App">
      {isLoggedIn ? (
        <div>
          <h2>Welcome, {name} ({username})!</h2>
          <button onClick={handleLogout}>Logout</button>
        </div>
      ) : (
        <form>
```

```
onSubmit={(e) => {
  e.preventDefault();
  handleLogin(
    e.target.username.value,
    e.target.password.value
  );
}}
```

>

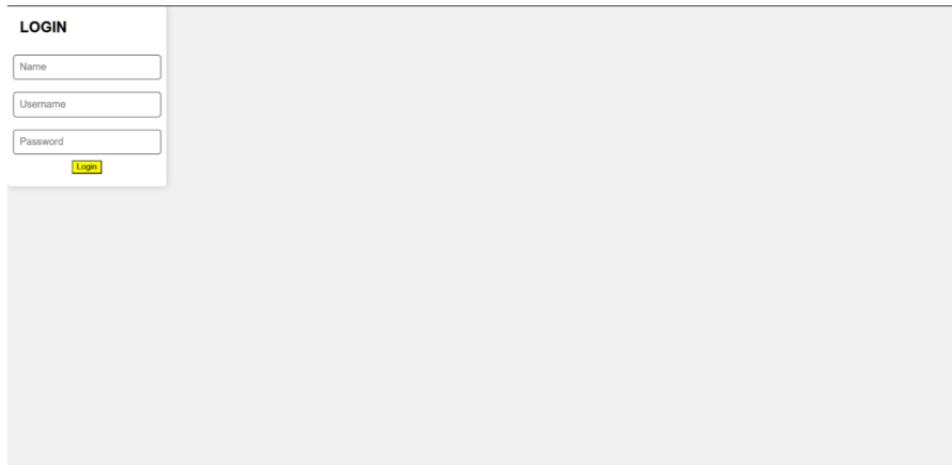
```
<input
  type="text"
  name="name"
  placeholder="Name"
  required
/>
```

```
<input
  type="text"
  name="username"
  placeholder="Username"
  required
/>
```

```
<input
  type="password"
  name="password"
  placeholder="Password"
```

```
required  
/>  
  
<button type="submit">Login</button>  
  
</form>  
)  
  
</div>  
  
)  
  
}  
  
export default App;
```

Output:



Welcome!

Logout

Result: Thus, form validation in react was studied and implemented.

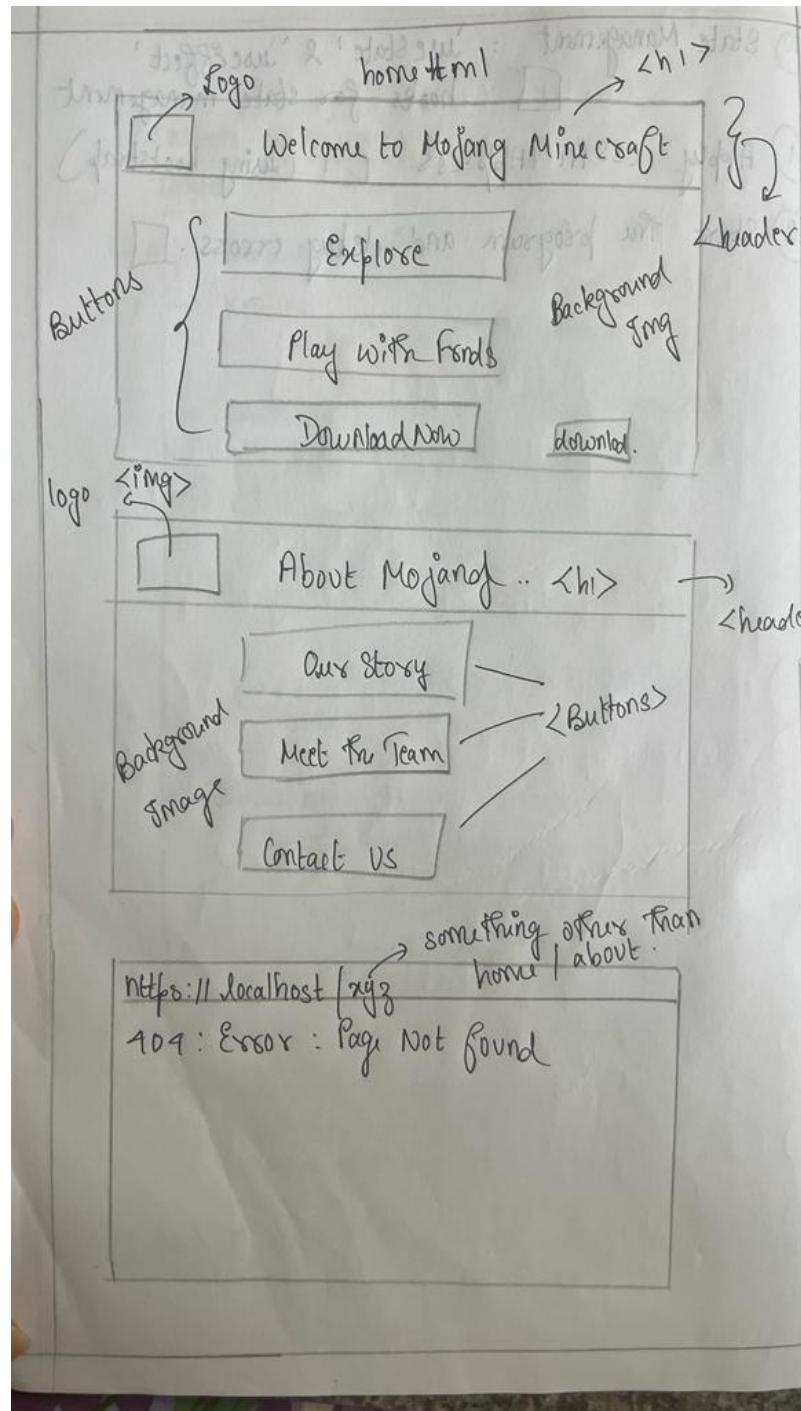
Ex. No: 8	Node JS
9/10/23	

Aim: To create a Node JS server that has 2 pages - Homepage, and About and to implement proper error handling for invalid routes (e.g., return a 404 status code for unknown routes), and also, Implement a middleware to log incoming requests to the console.

Algorithm:

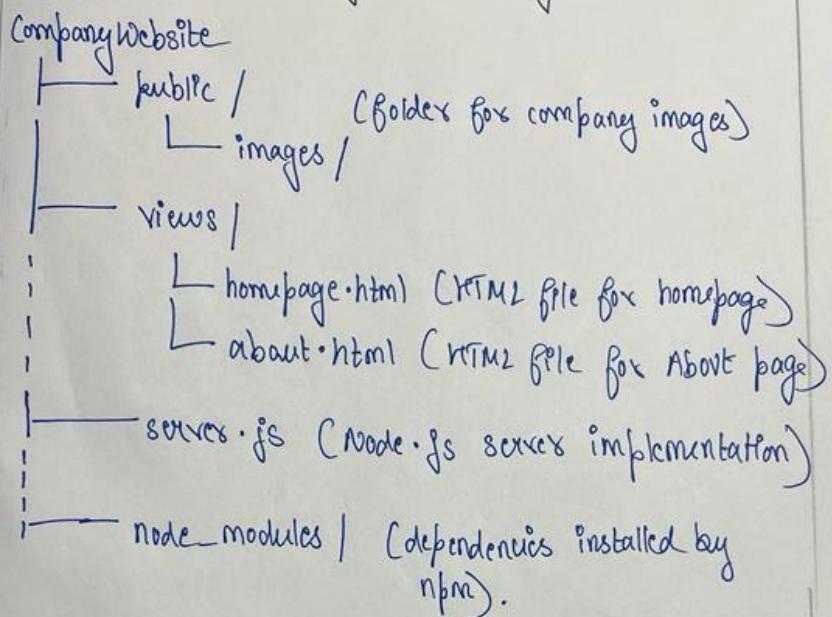
<u>Algorithm Implementation Checklist</u>	
STEP 1:	Initialise a Node.js project Create a new directory for the project <input checked="" type="checkbox"/>
STEP 2:	Install required dependencies Install Express.js & Morgan <input checked="" type="checkbox"/>
STEP 3:	Create a directory structure → Create directories 'public' for static files & 'views' for HTML files <input checked="" type="checkbox"/> → Place images in 'public/images' <input checked="" type="checkbox"/> → Create HTML files for HOME PAGE & ABOUT <input checked="" type="checkbox"/> → Implement a 'server.js' file for Node.js <input checked="" type="checkbox"/>
STEP 4:	Server Implementation → Import necessary modules (express, morgan, path) <input checked="" type="checkbox"/> → Create an express app <input checked="" type="checkbox"/> → Set the server port (eg 8000) <input checked="" type="checkbox"/> → Implement request logger middleware with Morgan <input checked="" type="checkbox"/> → Define Routes for Homepage & About <input checked="" type="checkbox"/> → Handle 404 error for unknown routes <input checked="" type="checkbox"/>
STEP 5:	Start the server & test it. <input checked="" type="checkbox"/>

MockUp:

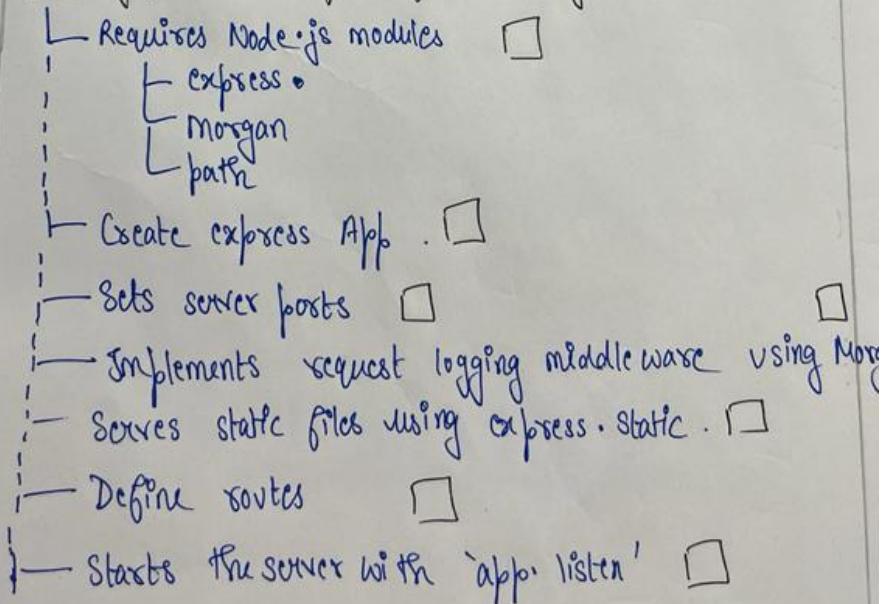


Component Hierarchy:

Basic Component hierarchy structure diagram :



server.js (Work flow for server.js .



Program :

Server.js// server.js

```
const express = require('express');
const morgan = require('morgan');
const path = require('path');

const app = express();
const port = process.env.PORT || 3000;

app.use(morgan('dev'));
app.use(express.static(path.join(__dirname, 'public')));

app.get('/', (req, res) => {
  res.sendFile(path.join(__dirname, 'views', 'homepage.html'));
});

app.get('/about', (req, res) => {
  res.sendFile(path.join(__dirname, 'views', 'about.html'));
});

app.use((req, res) => {
  res.status(404).send('404 - Page Not Found');
});

app.listen(port, () => {
  console.log(`Server is running on port ${port}`);
});
```

Home.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Mojang Minecraft App</title>
  <style>
    body {
      font-family: Arial, sans-serif;
      background-image: url('/images/background.jpg'); /* Background image
URL */
      background-size: cover;
```

```
background-repeat: no-repeat;
background-attachment: fixed; /* Fixed background */
margin: 0;
padding: 0;
}
header {
  background-color: rgba(139, 69, 19, 0.7); /* Brown header background
color with transparency */
  color: #fff;
  text-align: center;
  padding: 2rem;
  position: relative; /* Relative positioning for logo */
}
.logo {
  max-width: 150px; /* Adjust logo size as needed */
  position: absolute;
  left: 20px; /* Position the logo to the left */
  top: 20px; /* Adjust vertical position of the logo */
}
.header-content {
  position: relative; /* Relative positioning for header content */
  z-index: 1; /* Place content above the logo */
}
h1 {
  font-size: 2.5rem;
  margin-bottom: 1rem;
}
p {
  font-size: 1.2rem;
}
.container {
  max-width: 800px;
  margin: 0 auto;
  padding: 2rem;
  text-align: center;
}
.feature {
  margin: 1rem 0;
  padding: 1rem;
  background-color: rgba(255, 255, 255, 0.9);
  border-radius: 5px;
  box-shadow: 0 2px 4px rgba(0, 0, 0, 0.1);
}
.download-button {
  background-color: #009688;
```

```
        color: #fff;
        padding: 1rem 2rem;
        font-size: 1.5rem;
        text-decoration: none;
        border-radius: 5px;
        display: inline-block;
        margin-top: 1rem;
    }
    .download-button:hover {
        background-color: #007f76;
    }
</style>
</head>
<body>
<header>
    
    <div class="header-content">
        <h1>Welcome to Mojang Minecraft</h1>
        <p>Your Adventure Awaits</p>
    </div>
</header>

<div class="container">
    <div class="feature">
        <h2>Explore</h2>
        <p>Discover vast worlds and unleash your creativity.</p>
    </div>

    <div class="feature">
        <h2>Play with Friends</h2>
        <p>Join multiplayer servers and build together.</p>
    </div>

    <div class="feature">
        <h2>Download Now</h2>
        <p>Start your Minecraft journey today!</p>
    </div>

    <a href="#" class="download-button">Download Now</a>
</div>
</body>
</html>
```

About.html:

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>About Mojang Minecraft</title>
    <style>
        /* Common styles for both pages */
        body {
            font-family: Arial, sans-serif;
            background-image: url('/images/background.jpg'); /* Background image
URL */
            background-size: cover;
            background-repeat: no-repeat;
            background-attachment: fixed; /* Fixed background */
            margin: 0;
            padding: 0;
        }
        header {
            background-color: rgba(139, 69, 19, 0.7); /* Brown header background
color with transparency */
            color: #fff;
            text-align: center;
            padding: 2rem;
            position: relative; /* Relative positioning for logo */
        }
        .logo {
            max-width: 150px; /* Adjust logo size as needed */
            position: absolute;
            left: 20px; /* Position the logo to the left */
            top: 20px; /* Adjust vertical position of the logo */
        }
        .header-content {
            position: relative; /* Relative positioning for header content */
            z-index: 1; /* Place content above the logo */
        }
        h1 {
            font-size: 2.5rem;
            margin-bottom: 1rem;
        }
        p {
            font-size: 1.2rem;
        }
    </style>

```

```
.container {
    max-width: 800px;
    margin: 0 auto;
    padding: 2rem;
    text-align: center;
}
.feature {
    margin: 1rem 0;
    padding: 1rem;
    background-color: rgba(255, 255, 255, 0.9);
    border-radius: 5px;
    box-shadow: 0 2px 4px rgba(0, 0, 0, 0.1);
}
.download-button {
    background-color: #009688;
    color: #fff;
    padding: 1rem 2rem;
    font-size: 1.5rem;
    text-decoration: none;
    border-radius: 5px;
    display: inline-block;
    margin-top: 1rem;
}
.download-button:hover {
    background-color: #007f76;
}

/* About Page-specific styles */
.about-header {
    background-color: rgba(0, 128, 0, 0.7); /* Green header background
color with transparency */
}
</style>
</head>
<body>
<header>
    
    <div class="header-content">
        <h1>About Mojang Minecraft</h1>
        <p>Discover the world of Minecraft and its creators.</p>
    </div>
</header>

<div class="container">
    <div class="feature">
```

```

<h2>Our Story</h2>
<p>We started as a small indie game development studio...</p>
</div>

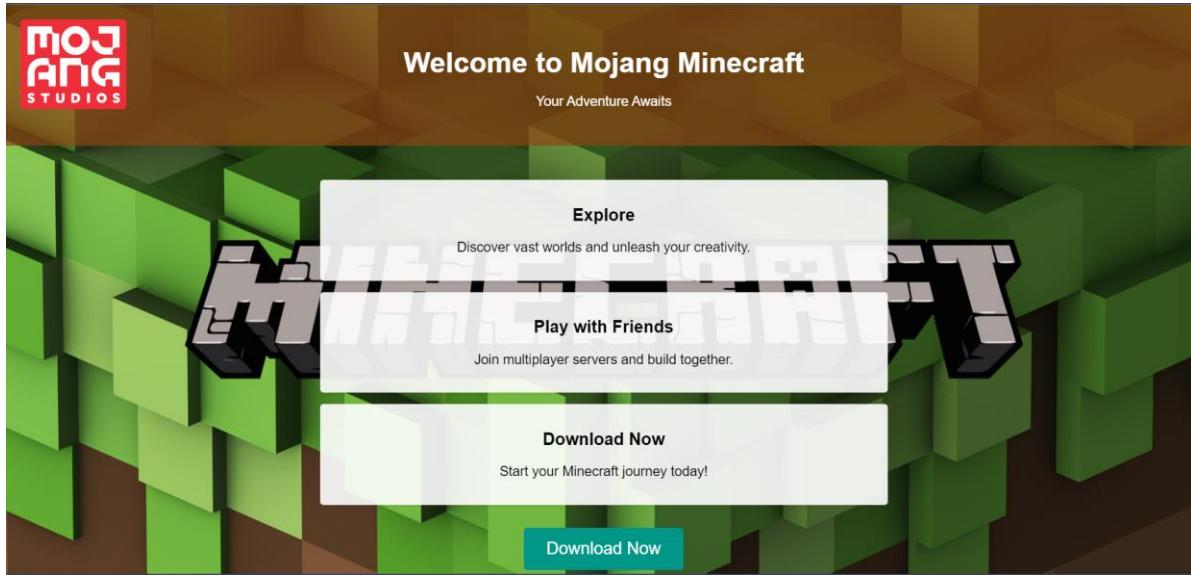
<div class="feature">
  <h2>Meet the Team</h2>
  <p>Our passionate team of developers and creators...</p>
</div>

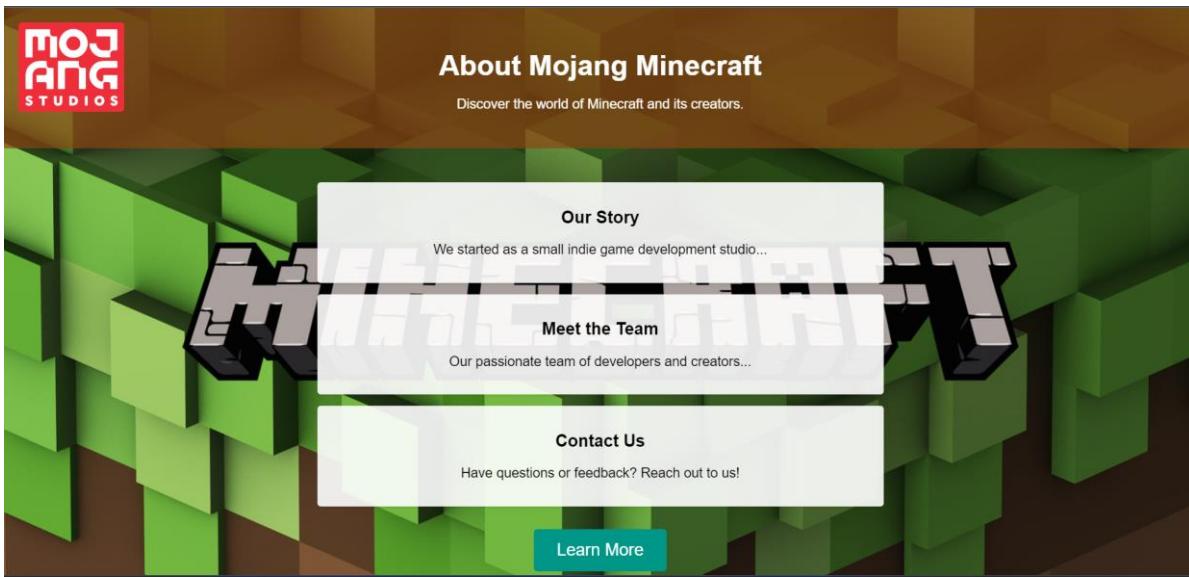
<div class="feature">
  <h2>Contact Us</h2>
  <p>Have questions or feedback? Reach out to us!</p>
</div>

  <a href="#" class="download-button">Learn More</a>
</div>
</body>
</html>

```

Output Screenshots:





404 - Page Not Found

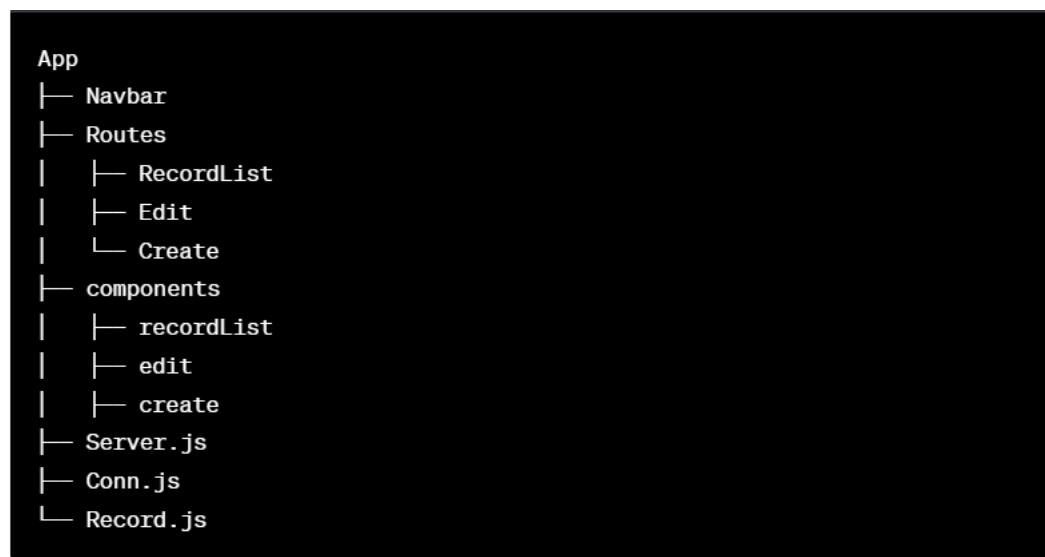
Result: Using Node JS, a web server of a website, containing Home and About pages were successfully implemented and errors were successfully handled.

Ex. No: 9	MERN STACK - 1
16/10/2023	

Aim:

To design and implement a MERN Stack (MongoDB, Express, React, Node.js) Application.

Component Hierarchy Diagram:



Algorithm:

Database Setup (MongoDB):

- Establish a MongoDB database to store application data.
- Create collections and define data schemas.

Server Setup (Node.js and Express):

- Create a Node.js server using Express to handle backend logic.
- Configure routes for CRUD (Create, Read, Update, Delete) operations.
- Connect the server to the MongoDB database using Mongoose or the MongoDB Node.js driver.

Frontend Setup (React):

- Develop a React application to create the user interface.
- Organize components for various application parts like listing records, creating, updating, and deleting records.

API Integration:

- Set up API endpoints on the Express server to expose data operations to the frontend.
- Utilize Axios in React to make HTTP requests from the frontend to the server.

Routing and Navigation:

- Implement client-side routing using React Router to facilitate navigation between different views and components within the React application.

Server.js:

```
const express = require("express");
const app = express();
const cors = require("cors");
require("dotenv").config({ path: "./config.env" });
const port = process.env.PORT || 5000;
app.use(cors());
app.use(express.json());
app.use(require("./routes/record"));
const dbo = require("./db/conn");
app.listen(port, () => {
  dbo.connectToServer(function (err) {
    if (err) console.error(err);
  });
  console.log(`Server is running on port: ${port}`);
});
```

Conn.js:

```
const { MongoClient } = require("mongodb");
const Db = process.env.ATLAS_URI;
const client = new MongoClient(Db, {
  useNewUrlParser: true,
  useUnifiedTopology: true,
});
var _db;

module.exports = {
  connectToServer: function (callback) {
    client.connect(function (err, db) {
      if (db) {
        _db = db.db("employees");
        console.log("Successfully connected to MongoDB.");
      }
      return callback(err);
    },
  },
  getDb: function () {
    return _db;
  },
};
```

Record.js:

```
const express = require("express");
const recordRoutes = express.Router();
const dbo = require("../db/conn");
const ObjectId = require("mongodb").ObjectId;

recordRoutes.route("/record").get(function (req, res) {
  let db_connect = dbo.getDb("employees");
  db_connect
    .collection("records")
    .find({})
    .toArray(function (err, result) {
      if (err) throw err;
      res.json(result);
    });
});

// Other CRUD routes...

module.exports = recordRoutes;
```

Index.js:

```
import React from "react";
import ReactDOM from "react-dom";
import App from "./App";
import { BrowserRouter } from "react-router-dom";
ReactDOM.render(
  <React.StrictMode>
    <BrowserRouter>
      <App />
    </BrowserRouter>
  </React.StrictMode>,
  document.getElementById("root")
);
```

App.js:

```
import React from "react";
import { Route, Routes } from "react-router-dom";
import Navbar from "./components/navbar";
import RecordList from "./components/recordList";
import Edit from "./components/edit";
import Create from "./components/create";

const App = () => {
  return (
    <div>
      <Navbar />
      <Routes>
        <Route exact path="/" element={<RecordList />} />
        <Route path="/edit/:id" element={<Edit />} />
        <Route path="/create" element={<Create />} />
      </Routes>
    </div>
  );
};

export default App;
```

Output :

Create New Record

Name of the person:

Person's position:

Intern Junior Senior

Create person

A screenshot of a web browser window titled "React App" showing a MongoDB record list. The URL is "localhost:3001". The page has a header with "MongoDB" and "Create Record" buttons. Below is a table titled "Record List" with columns: Name, Position, Level, and Action. Two rows are present: one for "Richard" (Developer, Senior) and one for "Billy" (Designer, Junior). Each row has "Edit | Delete" links in the Action column.

Name	Position	Level	Action
Richard	Developer	Senior	Edit Delete
Billy	Designer	Junior	Edit Delete

Result : A functional MERN stack to-do list application that allows users to add and display tasks stored in a MongoDB database has been implemented.

Ex No: 10	
Date:	MERN Stack-II

Aim: To implement the Express.js And MongoDB REST API Tutorial | MongoDB

Design (Project Tree):

```
project-root/
├── app/
│   └── src/
│       ├── App.tsx
│       ├── components/
│       │   └── PostSummary.js
│       └── pages/
│           ├── Archive.js
│           ├── Create.js
│           ├── Home.js
│           └── Post.js
└── server/
    ├── .env
    ├── db/
    │   └── conn.mjs
    ├── index.mjs
    ├── loadEnvironment.mjs
    └── routes/
        └── posts.mjs
```

Algorithm:

- Begin by setting up an Atlas cluster to deploy the MongoDB database.
- Create a server directory and install the necessary npm packages.
- Run the server to start the Express.js application.
- Configure environment variables to establish a connection to the MongoDB database.
- Create a file to access the .env file for environment variables.
- Develop an entry point script for the server application.
- Create the database module for MongoDB interactions.
- Define routes for creating, reading, updating, and deleting posts.
- Set up the frontend using native browser fetch for API requests.

- Test the application to ensure its functionality.

Program:

App.tsx:

```

import "./styles.css";
import "./fonts.css";
import LeafygreenProvider from '@leafygreen-ui/leafygreen-provider';
import Layout from './components/Layout';
import { BrowserRouter as Router, Route, Routes } from "react-router-dom";
import Home from "./pages/Home";
import Archive from "./pages/Archive";
import Create from "./pages/Create";
import Post from "./pages/Post";

function App() {
  return (
    <LeafygreenProvider>
      <Router>
        <Routes>
          <Route path="/" element={<Layout />}>
            <Route path="/" element={<Home />} />
            <Route path="/archive" element={<Archive />} />
            <Route path="/create" element={<Create />} />
            <Route path="/post/:id" element={<Post />} />
          </Route>
        </Routes>
      </Router>
    </LeafygreenProvider>
  );
}

export default App;

```

index.mjs:

```

import express from "express";
import cors from "cors";
import "./loadEnvironment.mjs";
import "express-async-errors";
import posts from "./routes/posts.mjs";

```

```
const PORT = process.env.PORT || 5050;
const app = express();

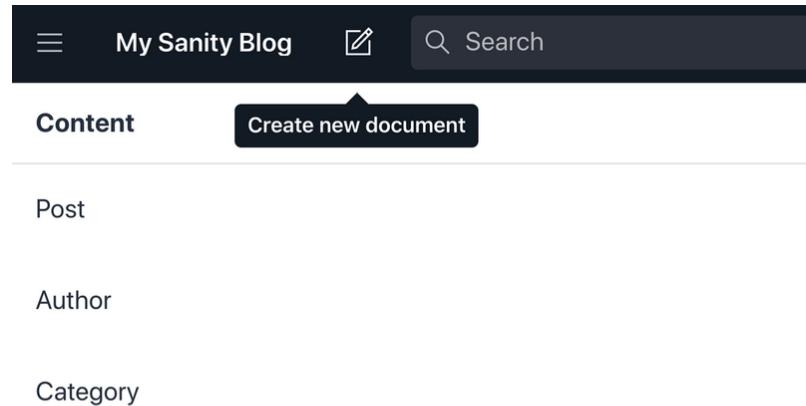
app.use(cors());
app.use(express.json());

// Load the /posts routes
app.use("/posts", posts);

// Global error handling
app.use((err, _req, res, next) => {
  res.status(500).send("Uh oh! An unexpected error occurred.");
});

// Start the Express server
app.listen(PORT, () => {
  console.log(`Server is running on port: ${PORT}`);
});
```

Output:



Result: The Express.js And MongoDB REST API Tutorial | MongoDB has been implemented.