Sri Indu College of Engineering & Technology
UGC Autonomous Institution
Recognized under 2(f) & 12(B) of UGC Act 1956,
NAAC, Approved by AICTE &
Permanently Affiliated to JNTUH

Estd.2001

SKILL DEVELOPMENT COURSE (NODE JS/REACT JS/DJANGO)
LAB MANUAL

III-AI&DS -Semester I

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE (AI&DS)

ACADEMIC YEAR 2024-25

SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

B. TECH – ARTIFICIAL INTELLIGENCE AND DATASCIENCE

INSTITUTION VISION.

To be a premier institution in engineering & technology and management for competency, values and social consciousness

INSTITUTION MISSION

IM1 Provide high quality academic programs, training activities and research facilities.

IM2 Promote Continuous Industry-Institute interaction for employability, Entrepreneurship, leadership and research aptitude among stakeholders.

IM3 Contribute to the economical and technological development of the region, state and nation.

DEPARTMENT VISION

To produce competent professionals recognized for excellence, innovation and societal relevance by impacting their knowledge of Artificial Intelligence and Data Science.

DEPARTMENT MISSION

The Department has following Missions:

DM1 To produce industry-ready professionals and leverage Artificial Intelligence and Data science innovative models for automation, effective decision-making, and competitive advantage.

DM2 To develop state-the-art of academic and infrastructural services with modern learning Resources to produce self- sustainable professionals..

DM3 To inculcate the prominence of higher studies, research and entrepreneurship to pursue global standards.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Comply with the contemporary trends and best practices of industry and research standards of Artificial Intelligence and Data Science.

PEO2: Develop Artificial Intelligence and Data Science based solutions to address diverse needs of the community for improving the quality of life and environment

PEO3: To produce creative and technically strong engineers with research pioneering solutions to meet global challenges

PEO4: Inculcate values of professional ethics, social concerns, environment protection and life-long learning.

PROGRAMOUTCOMES(POs)

PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design / Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one‟s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

COURSE OUTCOMES

C216.1	Implement data link layer farming methods and Analyze error detection and error correction codes.
C216.2	Implement and analyze routing and congestion issues in network design.
C216.3	Implement Encoding and Decoding techniques used in presentation layer.

COsMAPPINGWITHPOs&PSOs

Course Outcome	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
C216.1	2	2	3	2	2	-	-	-	-	1	-	-	1	2	1
C216.2	2	1	2	1	2	-	-	-	-	-	2	-	1	1	1
C216.3	1	2	1	2	1	-	-	--	-	-	-	-	2	1	1
C216	**1.6**	**1.6**	**2.0**	**1.6**	**1.6**	**-**	**-**	**-**	**-**	**0.3**	**0.6**	**-**	**1.3**	**1.3**	**1.16**

List of Experiments

1. Build a responsive web application for shopping cart with registration, login, catalog and cart pages using CSS3 features, flex and grid.

2. Make the above web application responsive web application using Bootstrap framework.

3. Use JavaScript for doing client – side validation of the pages implemented in experiment 1 and experiment 2.

4. Explore the features of ES6 like arrow functions, callbacks, promises, async/await. Implement an application for reading the weather information from openweathermap.org and display the information in the form of a graph on the web page.

5. Develop a java stand alone application that connects with the database (Oracle / mySql) and perform the CRUD operation on the database tables.

6. Create an xml for the bookstore. Validate the same using both DTD and XSD.

7. Design a controller with servlet that provides the interaction with application developed inexperiment 1 and the database created in experiment 5.

8. Maintaining the transactional history of any user is very important. Explore the various sessiontracking mechanism (Cookies, HTTP Session).

9. Create a custom server using http module and explore the other modules of Node JS like OS,path, event.

10. Develop an express web application that can interact with REST API to perform CRUDoperations on student data. (Use Postman).

11. For the above application create authorized end points using JWT (JSON Web Token).

12. Create a react application for the student management system having registration, login, contact, about pages and implement routing to navigate through these pages.

13. Create a service in react that fetches the weather information from openweathermap.org and the display the current and historical weather information using graphical representation usingchart.js.

14. Create a TODO application in react with necessary components and deploy it into github.

SKILL DEVELOPMENT PROGRAMS

EXERCISE 1:

Aim:

☛ **Build a responsive web application for shopping cart with registration, login, catalog and cart pages using CSS3 features, flex andgrid.**

Solution :

index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
<link  rel="stylesheet"href="./style.css">
<title>Home - FBS</title>
</head>
<body>
<div class="wrapper">
<div class="container">
<header>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tr>
<thwidth="20%"><imgsrc="fbs.png"alt="FBS LOGO"width="130"height="100"/></th>
<thcolspan=4>
<h1 style="color:white;">FBS - WORLD BEST ONLINE EBOOKS WEBSITE</h1>
</th>
</tr>
</table>
</header>
<nav>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tbodyalign="center"style="font-weight:bold;font-size:18px;"">
<tr>
<td  width="20%"><hr><a  href="index.html">Home</a><hr></td>

<td  width="20%"><hr><a  href="login.html">Login</a><hr></td>
<td width="20%"><hr><a href="registration.html">Registration</a><hr></td>
<td  width="20%"><hr><a  href="cart.html">Cart</a><hr></td>
</tr>
</tbody>
</table>
</nav>
</div>
```

```
<div class="container1">
<div class="sidebar1"></div>
<div class="container2">
<main>
<center>
<h2>Welcome to FBS e-Book's Website</h2>
<p>Shopping at <font size=5>FBS</font> can be both <fontsize=5>fun</font>
                                    and <font size=5>savings</font>.</br>Shop withus in this special
<font
size=5>discount</font> season and save upto<font size=5>90%</font> onall your
purchases.</br></p>
<br/><br/><br/><br/><br/><br/><br/><br/>
</main>
</div>
<div class="sidebar2"></div>
</div>
<footer><font color="white">(C) 2024 All rights reserved by FBSebooks</font></footer>
</div>
</body>
</html>
```

login.html

```
<!DOCTYPE html>
<html lang="en">
<head>
<link  rel="stylesheet"href="./style.css">
<title>Login - FBS</title>
</head>
<body>
<div class="wrapper">
<div class="container">
<header>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tr>
<thwidth="20%"><imgsrc="fbs.png"alt="FBS  LOGO"width="130"height="100"/></th>
<thcolspan=4>
<h1 style="color:white;">FBS - WORLD BEST ONLINE EBOOKS WEBSITE</h1>
</th>
</tr>
</table>
</header>
<nav>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tbodyalign="center"style="font-weight:bold;font-size:18px;"">
```

```
<tr>
<td  width="20%"><hr><a  href="index.html">Home</a><hr></td>
<td  width="20%"><hr><a  href="login.html">Login</a><hr></td>
<td width="20%"><hr><a href="registration.html">Registration</a><hr></td>
<td  width="20%"><hr><a  href="cart.html">Cart</a><hr></td>
</tr>
</tbody>
</table>
</nav>
</div>
<div class="container1">
<div class="sidebar1"></div>
<div class="container2">
<main>
<center><br>
<h3> Login Details</h3><br/>
<form name="f1">
<table  width="100%"align="center">
<tr>
<td> User Name :</td>
<td><input  type="text"name="username"></td>
</tr>
<tr><td><br></td></tr>
<tr>
<td>Password :</td>
<td><input  type="password"name="password"></td>
</tr>
<tr><td><br></td></tr>
<tr><td></td>
<td><input type="submit"value="SUBMIT">
<input  type="reset"value="RESET"></td>
</tr>
</table>
</form>
</center>
</main>
</div>
<div class="sidebar2"></div>


  </div>
  <footer><font color="white">(C) 2024 All rights reserved by FBSebooks</font></footer>
  </div>
  </body>
  </html>
```

registration.html

```
<!DOCTYPE html>
<html lang="en">
<head>
<link  rel="stylesheet"href="./style.css">
<title>Registration - FBS</title>
</head>
<body>
<div class="wrapper">
<div class="container">
<header>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tr>
<thwidth="20%"><imgsrc="fbs.png"alt="FBS LOGO"width="130"height="100"/></th>
<thcolspan=4>
<h1 style="color:white;">FBS - WORLD BEST ONLINE EBOOKS WEBSITE</h1>
</th>
</tr>
</table>
</header>
<nav>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tbodyalign="center"style="font-weight:bold;font-size:18px;"">
<tr>
<td  width="20%"><hr><a  href="index.html">Home</a><hr></td>
<td  width="20%"><hr><a  href="login.html">Login</a><hr></td>
<td width="20%"><hr><a href="registration.html">Registration</a><hr></td>
<td  width="20%"><hr><a  href="cart.html">Cart</a><hr></td>
</tr>
</tbody>
</table>
</nav>
</div>
<div class="container1">
<div class="sidebar1"></div>
<div class="container2">
<main>
<center><br>
<h3>Registration Form </h3>
<br/>
<form name="f1">
<table  cellpadding="1"align="center">
```

```
<tr><td>Name:*</td>
<td><input  type="text"name="username"></td></tr>
<tr><td>Password:*</td>
<td><input  type="password"name="password"></td></tr>
<tr><td>Email ID:*</td>
<td><input  type="text"name="email"></td></tr>
<tr><td>Phone Number:*</td>
<td><input  type="text"name="phno"></td></tr>
<tr><td valign="top">Gender:*</td>
<td><input type="radio"name="radio"value="1">Male   
<input  type="radio"name="radio"value="2">Female</td></tr>
<tr><td valign="top">Language Known:*</td>
<td><input  type="checkbox"name="checkbox"value="English">English<br/>
<input  type="checkbox"name="checkbox"value="Telugu">Telugu<br>
<input  type="checkbox"name="checkbox"value="Hindi">Hindi<br>
<input  type="checkbox"name="checkbox"value="Tamil">Tamil
</td></tr>
<tr><td  valign="top">Address:*</td>
<td><textareaname="address"></textarea></td>
<tr><td></td><td><input  type="submit"value="submit"hspace="10">
<input  type="reset"value="reset"></td></tr>
<tr><td colspan=2>*<font color="#FF0000">fields are mandatory</font>
</td>
</tr>
</table>
</form>
</center>
</main>
</div>
<div class="sidebar2"></div>
</div>
<footer><font color="white">(C) 2024 All rights reserved by FBSebooks</font></footer>
</div>
</body>
</html>
```

cart.html

```
<!DOCTYPE html>
<html lang="en">
<head>
<link  rel="stylesheet"href="./style.css">
<title>Cart - FBS</title>
</head>
<body>
<div class="wrapper">
<div class="container">
<header>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tr>
<thwidth="20%"><imgsrc="fbs.png"alt="FBS
LOGO"width="130"height="100"/></th>
<thcolspan=4>
<h1 style="color:white;">FBS - WORLD BEST ONLINE EBOOKS WEBSITE</h1>
</th>
</tr>
</table>
</header>
<nav>
<table    width="100%"align="center"cellpadding="0"cellspacing="2">
<tbodyalign="center"style="font-weight:bold;font-size:18px;"">
<tr>
<td  width="20%"><hr><a  href="index.html">Home</a><hr></td>
<td  width="20%"><hr><a  href="login.html">Login</a><hr></td>
<td width="20%"><hr><a href="registration.html">Registration</a><hr></td>
<td  width="20%"><hr><a  href="cart.html">Cart</a><hr></td>
</tr>
</tbody>
</table>
</nav>
</div>
<div class="container1">
<div class="sidebar1"></div>
<div class="container2">
<main>
<center>
<h3>Cart</h3>
<table  width="100%"align="center">
<tbody>
<tr>
<thwidth="40%"><hr>BookName<hr></th>
<thwidth="20%"><hr>Price<hr></th>
```

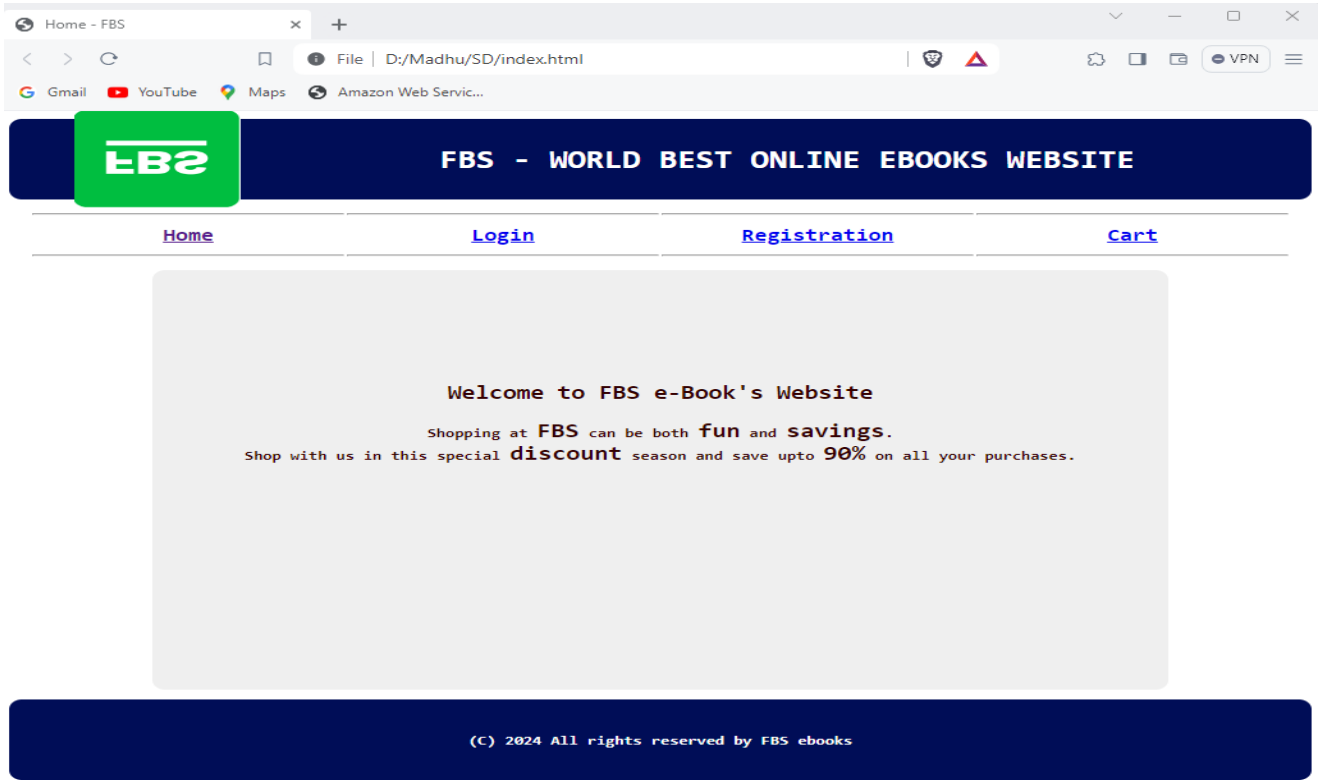
```
<thwidth="20%"><hr>Quantity<hr></th>
<thwidth="20%"><hr>Amount<hr></th></tr>
</tbody>
<tbodyalign=center>
<tr><td>Java Programming </td>
<td>Rs. 2300/-</td>
<td>2</td>
<td>Rs. 4600/-</td></tr>
<tr><td>Web  Technologies</td>
<td>Rs. 3000/-</td>
<td>1</td>
<td>Rs. 3000/-</td></tr>
<tr><td></td>
<td><hr><font  color="#996600">Total  Amount:</font><hr></td>
<td><hr>3<hr></td>
<td><hr>Rs.  7600/-<hr></td></tr>
</tbody>
</table>
</center>
</main>
</div>
<div class="sidebar2"></div>
</div>
<footer><font color="white">(C) 2024 All rights reserved by FBSebooks</font></footer>
</div>
</body>
</html>
```

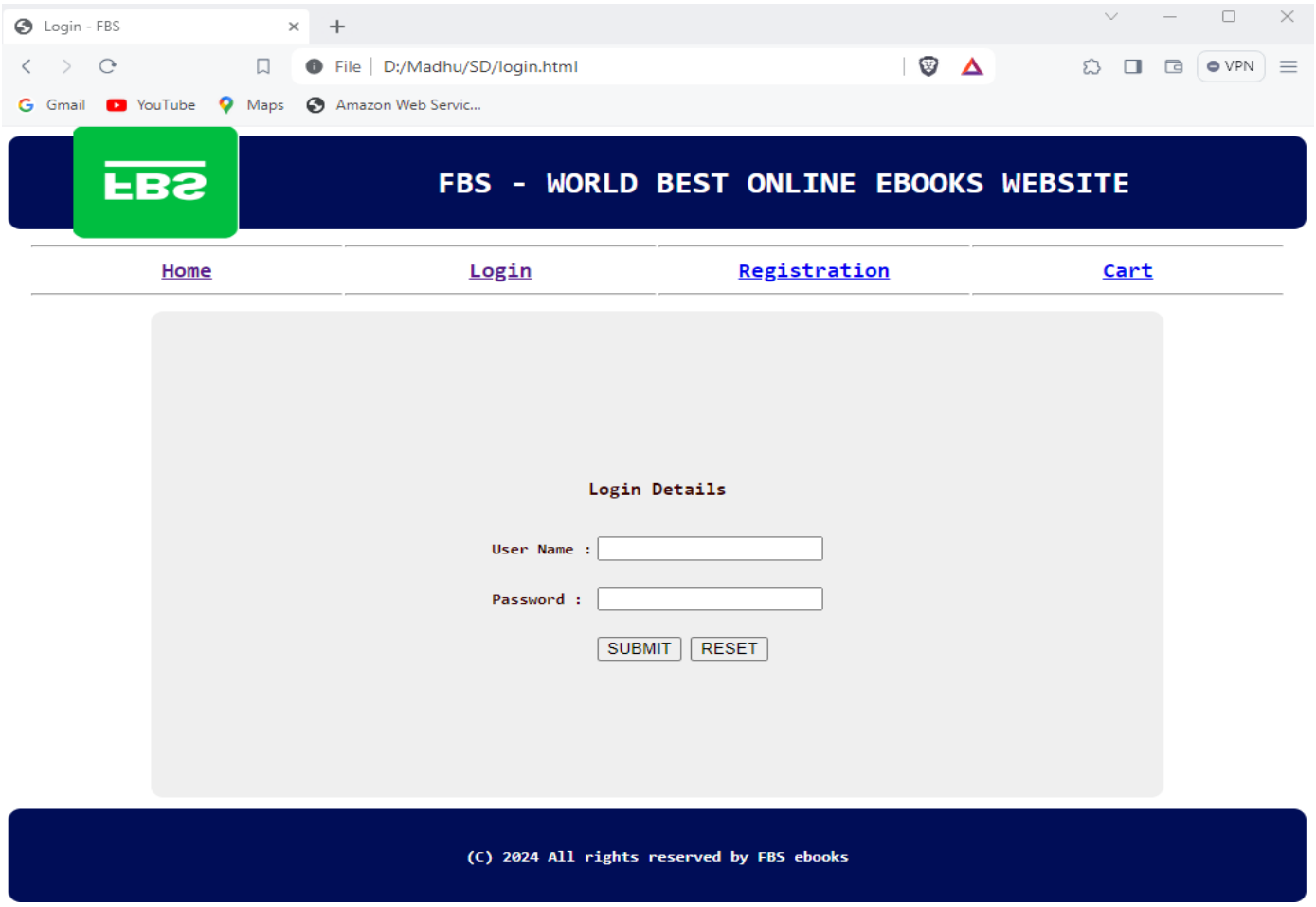
style.css

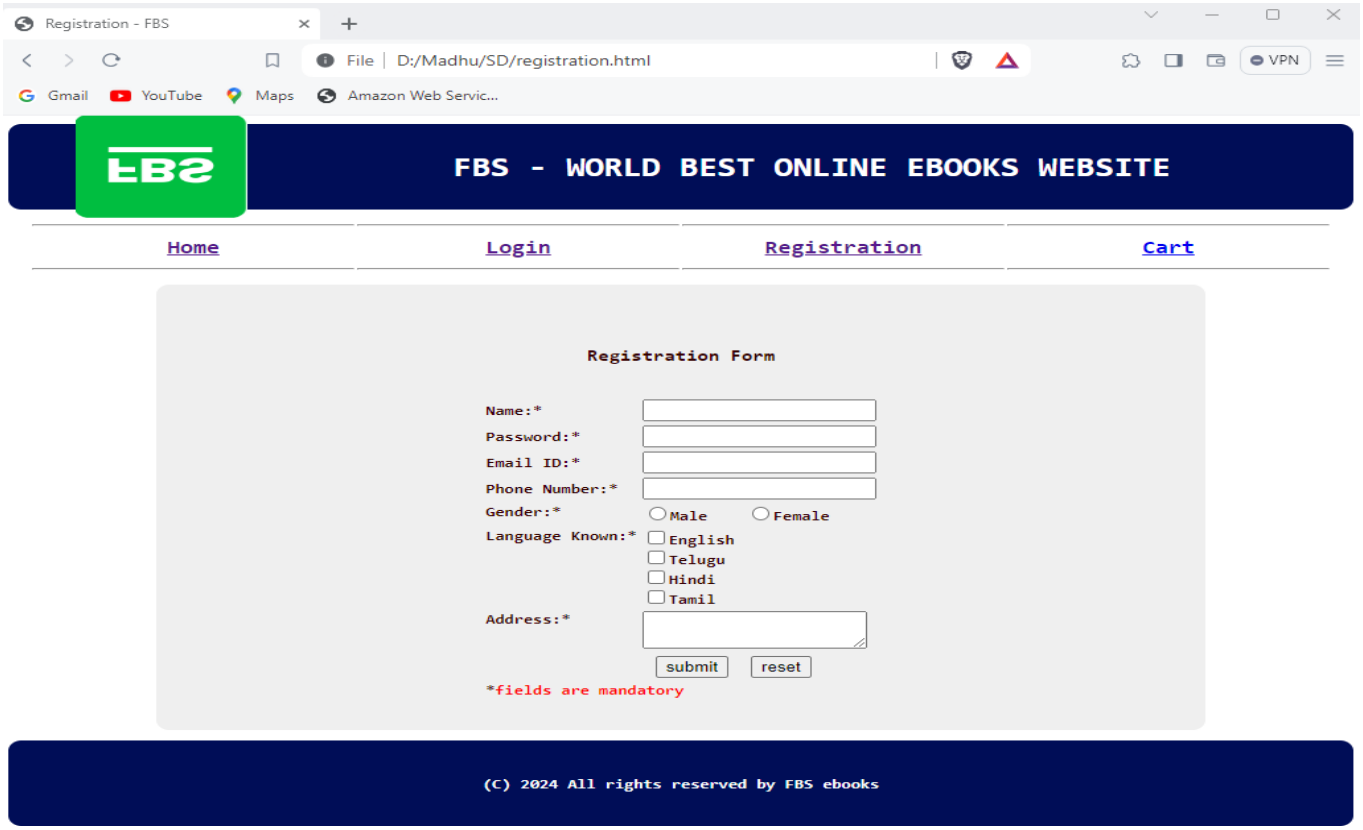
```
body{
font-family: monospace;
}

main{
background-color: #efefef;color:
#330000;
margin-left:10px;height:60vh;
}

header, footer{ background-color:
#000d57;
```

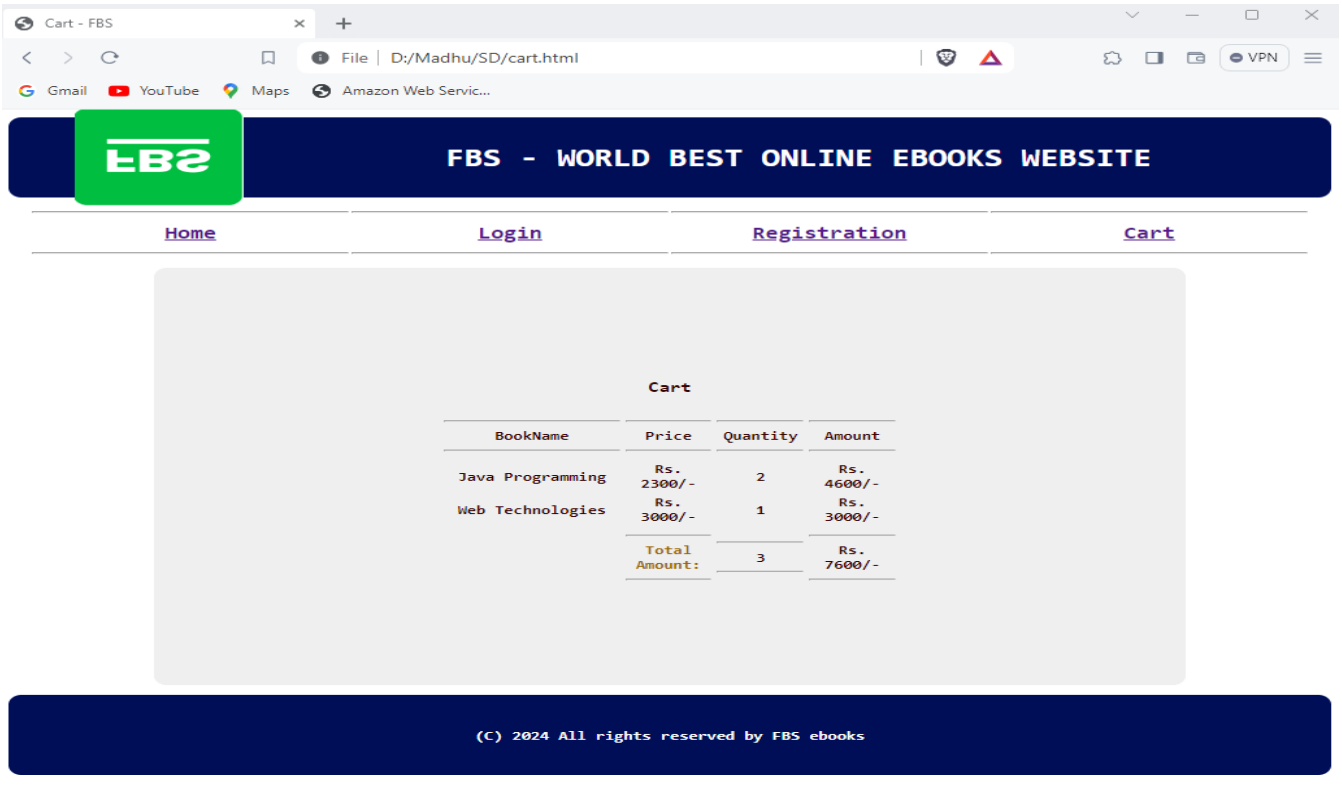
```
color: #fff;padding:1rem;
height:50px;
}

header,nav{
margin-bottom:10px;flex-
basis:50%;
}

footer{
margin-top:10px;
}
nav{
background-color:  #fff;color:
#000; padding:1rem;
height:20px;
}

.sidebar1, .sidebar2{ flex-
basis:10%; background-color:
#fff;color: #000;
}

.sidebar2{
margin-left:10px;
}

.container1{ display:
flex;
}

.container2{ display:
flex;
flex-direction: column;flex:1;
}

header,nav, main, .sidebar1, .sidebar2, footer{display: flex;
align-items: center; justify-
content: center;border-
radius:10px;
}

.wrapper{ display:
flex;
flex-direction: column;
font-weight:600;
  }
```

Output :


Home - FBS
File | D:/Madhu/SD/index.html
Gmail
YouTube
Maps
Amazon Web Servic...
VPN
FBS - WORLD BEST ONLINE EBOOKS WEBSITE
Home
Login
Registration
Cart
Welcome to FBS e-Book's Website
Shopping at FBS can be both fun and savings.
Shop with us in this special discount season and save upto 90% on all your purchases.
(C) 2024 All rights reserved by FBS ebooks


Login - FBS
File | D:/Madhu/SD/login.html
Gmail
YouTube
Maps
Amazon Web Servic...
VPN
FBS - WORLD BEST ONLINE EBOOKS WEBSITE
Home
Login
Registration
Cart
Login Details
User Name :
Password :
SUBMIT
RESET
(C) 2024 All rights reserved by FBS ebooks





Result :

Hence the program was executed successfully.

Viva Questions :

1. Expand HTML & CSS.
2. Explain in brief about below tags
    - <h1>
    - <p>
    - <a>
    - <img>
    -
3. What is CSS?
4. Write a short note on following form elements:

- <input>
- <label>
- <select>
- <textarea>
- <button>

5. Write a short note on following form elements:

- <fieldset>
- <legend>
- <datalist>
- <output>
- <option>

EXERCISE 2:

Aim:

☛ **Make the above web application responsive web application using Bootstrap framework.**

Solution :

This is views.py

```
fromdjango.shortcutsimportrender

defhome(request):
    returnrender(request,"home.html")
```

this is project level urls.py

```
#from django.contrib import admin
fromdjango.urlsimportpath

urlpatterns= [
   # path('admin/', admin.site.urls),
]
```

This is app level urls.py

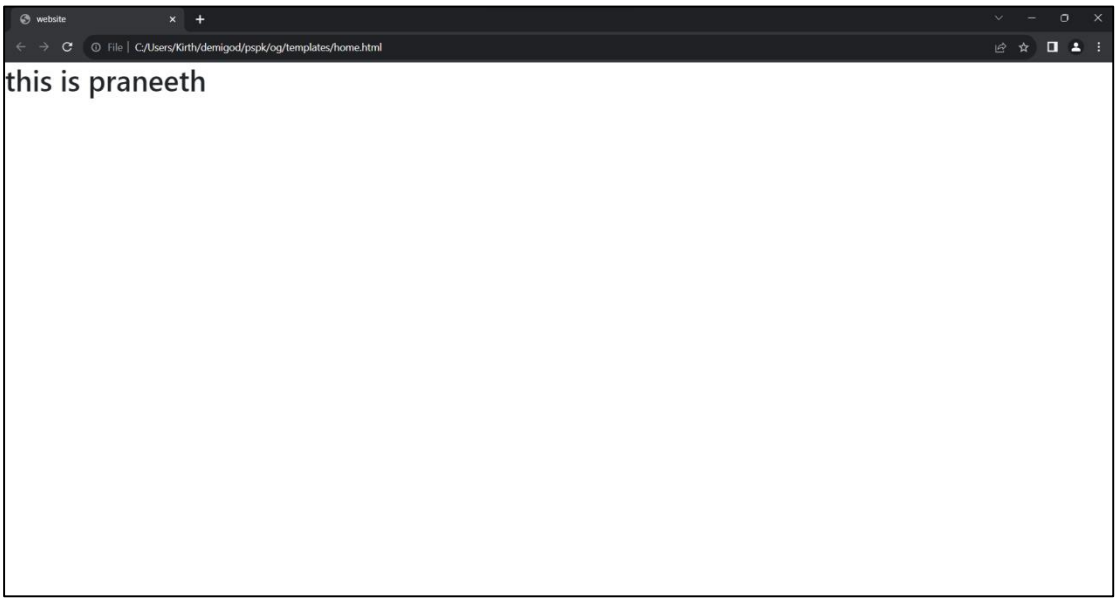
```
fromdjango.contribimportadmin
fromdjango.urlsimportpath,include

urlpatterns= [
    path('admin/', admin.site.urls),
    path('',include('app.urls'))
]
```

This is in home.html

```
<!doctypehtml>
<htmllang="en">
  <head>
    <metacharset="utf-8">
    <metaname="viewport"content="width=device-width, initial-scale=1">
    <title>website</title>
    <linkhref="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/css/bootstrap.min.css"re
l="stylesheet"integrity="sha384-
T3c6CoIi6uLrA9TneNEoa7RxnatzjcDSCmG1MXxSR1GAsXEV/Dwwykc2MPK8M2HN"crossorigin="anonymous">
  </head>
  <body>
    <h1>this is praneeth</h1>
```

```
<scriptsrc="https://cdn.jsdelivr.net/npm/bootstrap@5.3.2/dist/js/bootstrap.bundle.min.js"
integrity="sha384-
C6RzsynM9kWDrMNeT87bh95OGNyZPhcTNXj1NW7RuBCsyN/o0jlpcV8Qyq46cDfL"crossorigin="anonymous">
</script>
  </body>
</html>
```

Output:



Result :

Hence the program was executed successfully.

Viva Questions :

1. What is Bootstrap?
2. What is Responsive Web design?
3. Write advantages of bootstrap.
4. How to create web page with Bootstrap.
5. Write a short note on `.table-responsive` class .

EXERCISE 3:

Aim:

☛ **Use JavaScript for doing client – side validation of the pages.**

Solution :

☛ **Client - Side validation of Registration Page**

registration.html

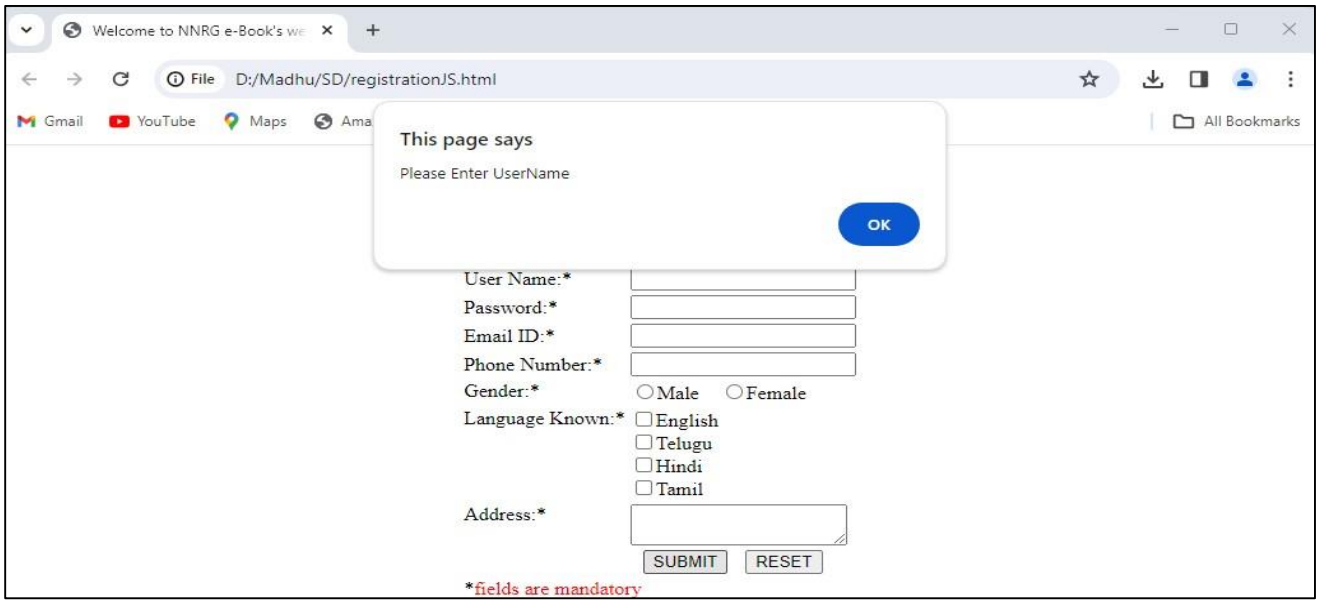
```
<html>
<head>
	<title> Welcome to NNRG e-Book's website</title>
	<script language="javascript">function
	validate() {
		// username validation
		var uname = f1.username.value;if
		(uname.length<=0)
		{
			alert("Please Enter UserName");f1.username.focus();
			return false;
		}
		if (uname.length < 8)
		{
			alert("Please enter UserName not less than 8");f1.username.focus();
			return false;
		}
		//password validation
		var pwd = f1.password.value;if
		(pwd.length<=0)
		{
			alert("Please Enter password");f1.password.focus();
			return false;
		}
		if (pwd.length < 6)
		 {
			alert("Please enter Password not less than 6");
			f1.password.focus();
			return false;
		}
```

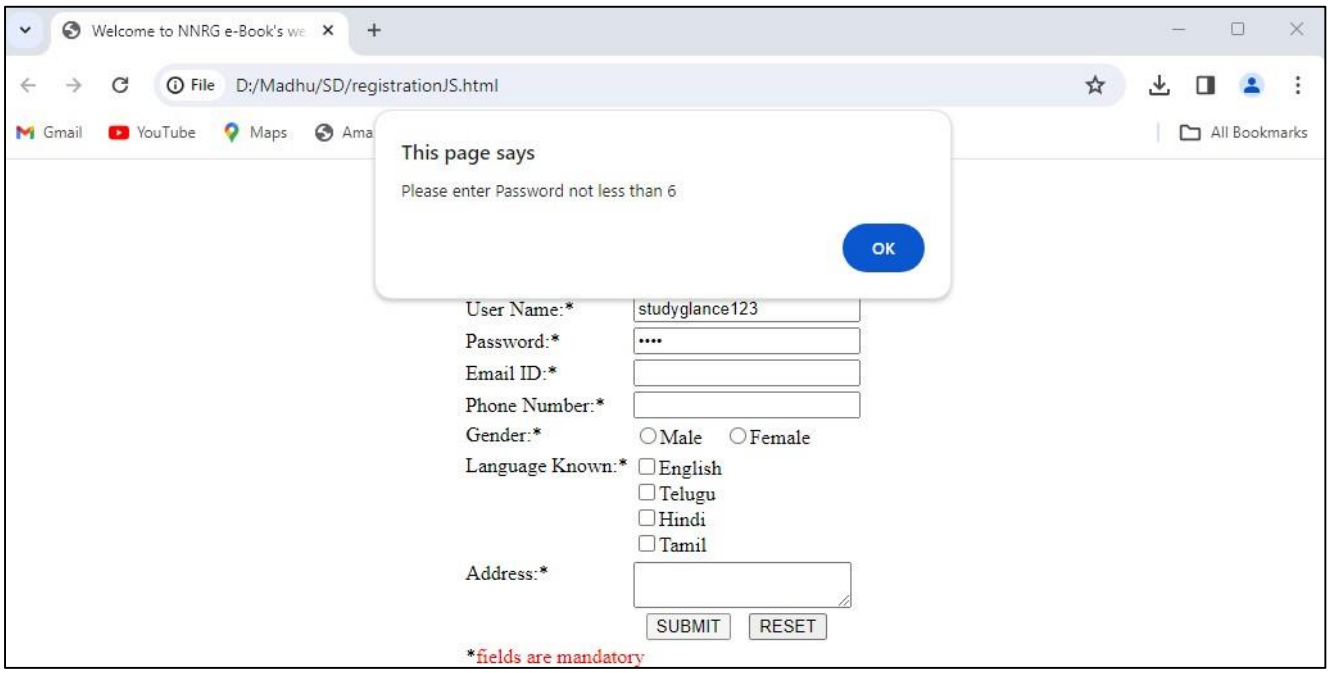
```
// email validation
var email = f1.email.value;if
(email.length<=0)
{
	alert("Please Enter email");f1.email.focus();
	return false;
}
else {
	let eflag=false; for(i=0;i<email.length;i++)  {
		if(email.charAt(i)=="@")
			{
				eflag=true;
			}
	}
		if(!(eflag))
		{
			alert("Please enter a valid Email ID");f1.email.focus();
			return false;
		}
}
// phone number validationvar
phno = f1.phno.value;if
(phno.length<=0)
{
	alert("Please Enter Phone Number");f1.phno.focus();
	return false;
}
if (isNaN(phno))
{
	alert("Please Enter Valid Phone Number");f1.phno.focus();
	return false;
}
if (phno.length != 10)
{
	alert("Please Enter Valid Phone Number");f1.phno.focus();
	return false;
}
// gender validationlet
flag=false;
```

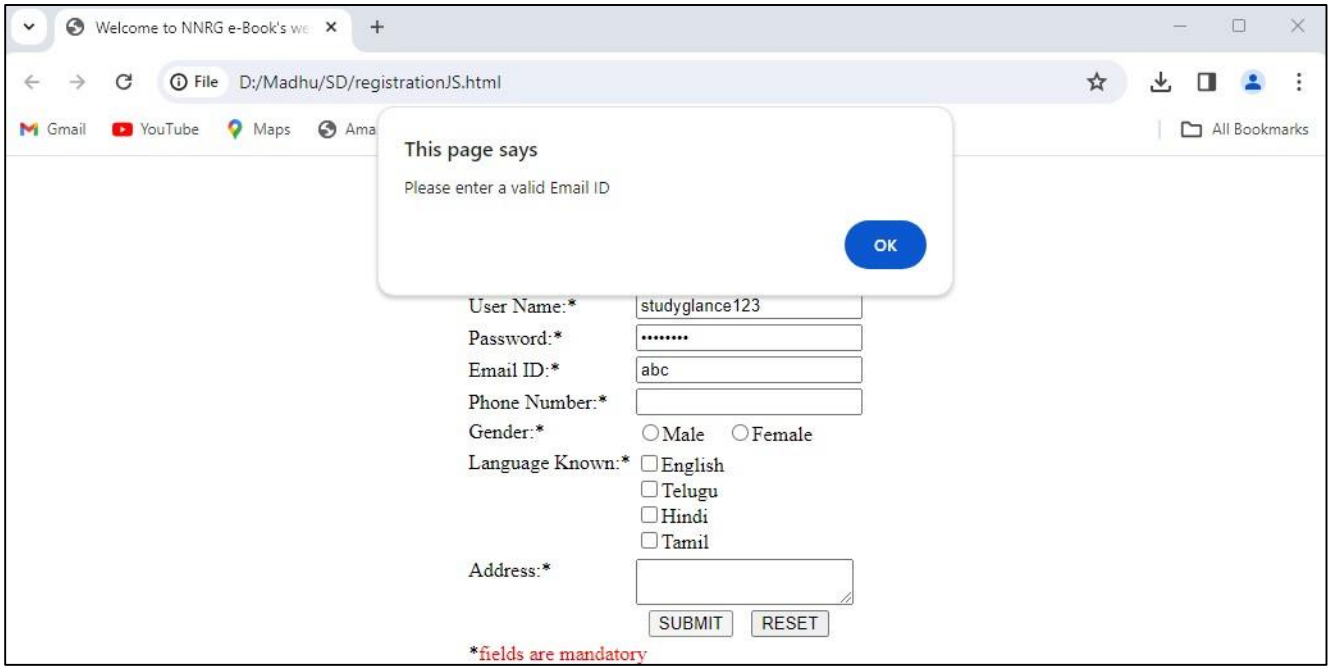
```
        for(i=0;i<f1.gen.length;i++) if(f1.gen[i].checked)
                flag=true;if(!(flag))
        {
        alert("Please choose a Gender");return
        false;
        }
        // Language validation flag=false;
        for(i=0;i<f1.lang.length;i++)
            if(f1.lang[i].checked)
                flag=true;
        if(!(flag))
        {
        alert("Please select at least one of the Language options.");return false;
        }
        // address validation
        var addr = f1.address.value;if
        (addr.length<=0)
        {
            alert("Please Enter address");f1.address.focus();
            return false;
        }
        // to display Success message alert("Registration
        Successful");
  }
  </script>
</head>
<body>
<center><br>
  <h3>Registration Form </h3>
  <br/>
  <form name="f1">
  <table cellpadding="1" align="center" >
  <tr><td> User Name:*</td>
  <td><input type="text" name="username"></td></tr>
  <tr><td>Password:*</td>
  <td><input type="password" name="password"></td></tr>
  <tr><td>Email ID:*</td>
  <td><input type="text" name="email"></td></tr>
  <tr><td>Phone Number:*</td>
  <td><input type="text" name="phno"></td></tr>
  <tr><td  valign="top">Gender:*</td>
  <td><input type="radio" name="gen" value="Male">Male   
  <input type="radio" name="gen" value="Female">Female</td></tr>
  <tr> <td valign="top">Language Known:*</td>
```

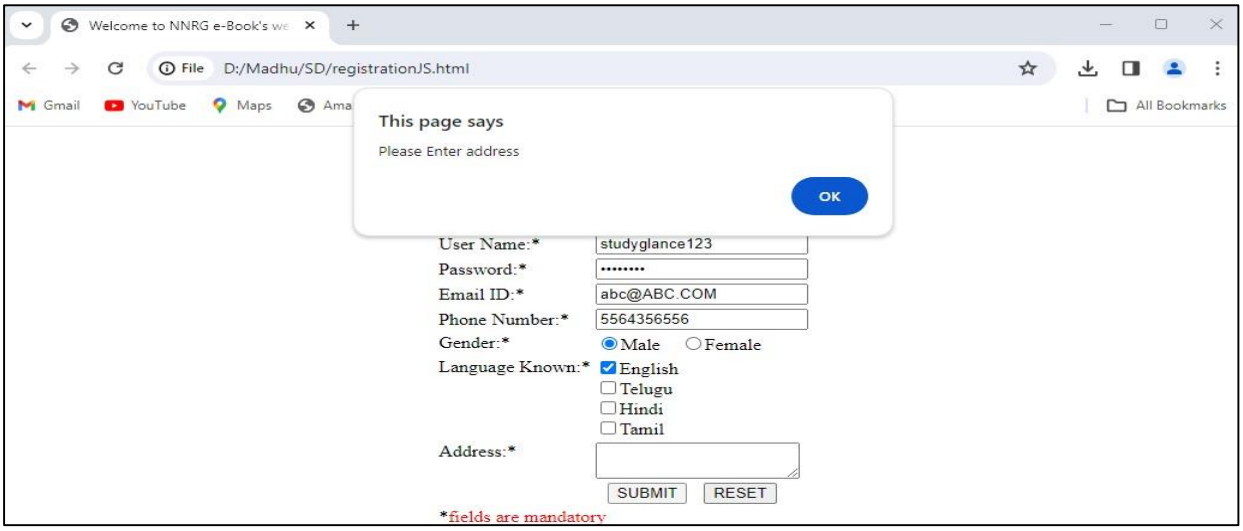
```
        <td> <input type="checkbox" name="lang"value="English">English<br/>
        <input type="checkbox" name="lang" value="Telugu">Telugu<br>
        <input type="checkbox" name="lang" value="Hindi">Hindi<br>
        <input type="checkbox" name="lang" value="Tamil">Tamil
        </td></tr>
        <tr> <td valign="top">Address:*</td>
        <td><textarea   name="address"></textarea></td>
        <tr><td></td><td><input type="button" value="SUBMIT" hspace="10"
onclick="validate()">
        <input type="reset" value="RESET"></td></tr>
        <tr> <td colspan=2 >*<font color="#FF0000">fields aremandatory</font>
        </td>
        </tr>
        </table>
        </form>
</center>
</body>
</html>
```

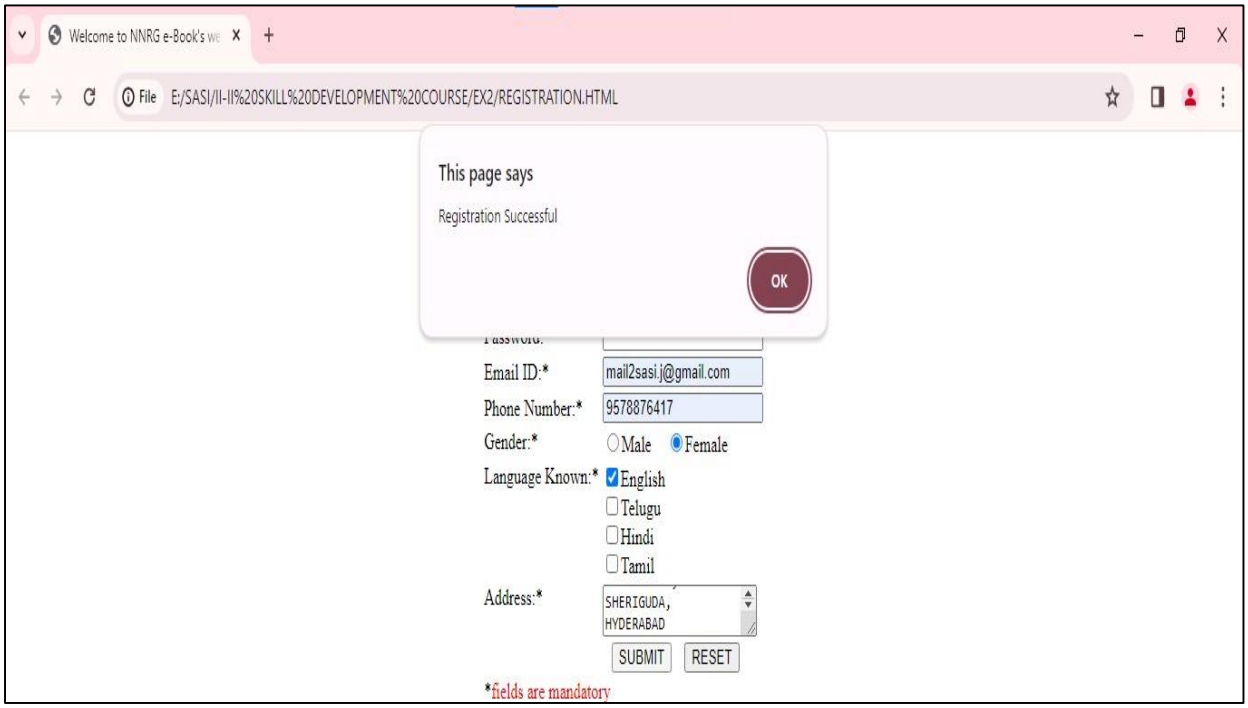
Output :




Welcome to NNRG e-Book's we
File D:/Madhu/SD/registrationJS.html
Gmail YouTube Maps
All Bookmarks
This page says
Please enter Password not less than 6
OK
User Name:* studyglance123
Password:* ••••
Email ID:*
Phone Number:*
Gender:* Male Female
Language Known:* English Telugu Hindi Tamil
Address:*
SUBMIT RESET
*fields are mandatory


Welcome to NNRG e-Book's we
File D:/Madhu/SD/registrationJS.html
Gmail YouTube Maps
All Bookmarks
This page says
Please enter a valid Email ID
OK
User Name:* studyglance123
Password:* ••••••••
Email ID:* abc
Phone Number:*
Gender:* Male Female
Language Known:* English Telugu Hindi Tamil
Address:*
SUBMIT RESET
*fields are mandatory





Result :

Hence the program was executed successfully.

Viva Questions :

- Define Validation.
- Define Verification.
- What is the use of alert message?
- Define table tag.
- Expand isNaN.

EXERCISE 4:

Aim:

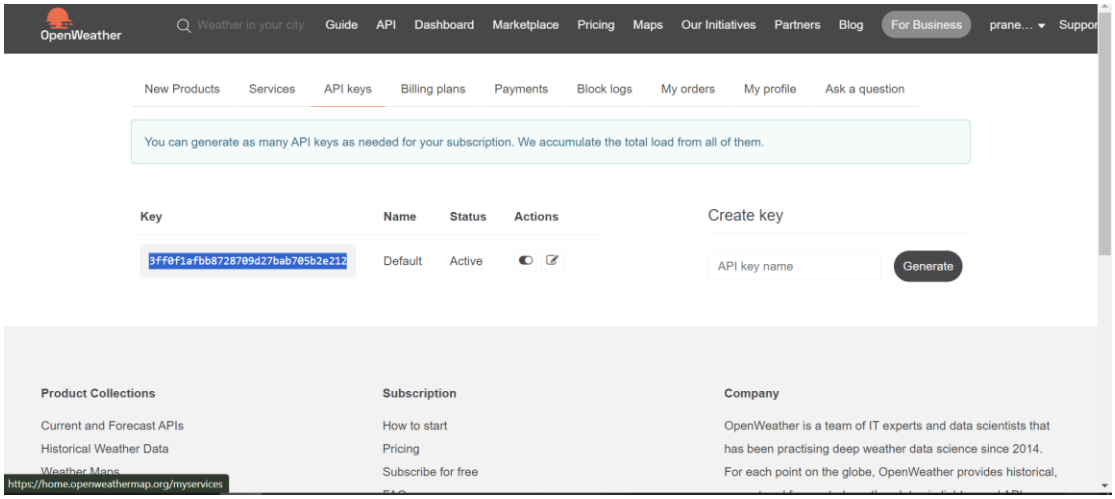
☛ **Explore the features of ES6 like arrow functions, call backs, promises, async/wait. Implement an application for reading the weather information from open weathermap.org and display the information in the form of a graph on the web page.**

Solution :

STEPS TO CREATE WEATHER PROJECT .

1. CREATE THE PROJECT AND APPLICATION USING CMD(DJANGO INSTALLATION PROCESS) .
2. PROJECT NAME – WEATHERPROJECT.
3. APPLICATION NAME – WEATHERAPP.
4. CREATE THE APPLICATION LEVEL URLS.PY

OPEN WEATHER WEBSITE AND SIGN IN.

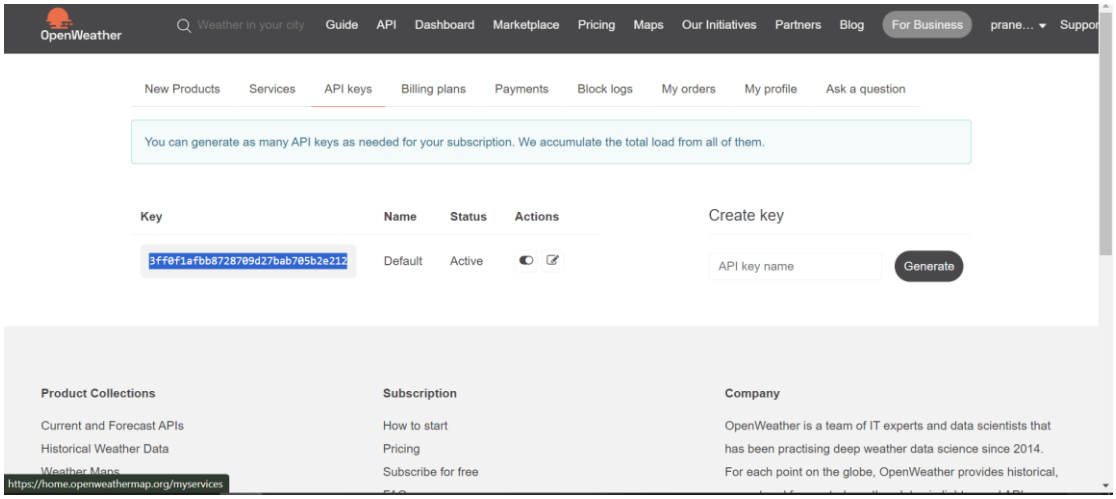


CLICK ON API, THEN CLICK ON THE API DOC UNDER THE CONTINUE WEATHER REPORT .

COPY THE URL IN THE NEW WEB PAGE .

```
https://api.openweathermap.org/data/2.5/weather?q={city name}&appid={API key}
```

CITY NAME – REQUIRED
API KEY – PROFILE KEY .



AS PER HIGHLIGHTED FORMAT

NOW IN VS CODE
IN VIEWS.PY:

```
fromdjango.shortcutsimportrender
# import json to load json data to python dictionary
importjson
# urllib.request to make a request to api
importurllib.request


defindex(request):
    ifrequest.method=='POST':
        city=request.POST['city']
        ''' api key might be expired use your own api_key
            place api_key in place of appid ="your_api_key_here " '''

        # source contain JSON data from API

        source=urllib.request.urlopen('https://api.openweathermap.org/data/2.5/weather?q='+city+'&appid=f39864907892c57a3ac10b3b4c73db7d').read()

        # converting JSON data to a dictionary
        list_of_data=json.loads(source)
```

```
        # data for variable list_of_data
        data= {
            "country_code": str(list_of_data['sys']['country']),
            "coordinate": str(list_of_data['coord']['lon']) +' '
                        +str(list_of_data['coord']['lat']),
            "temp": str(list_of_data['main']['temp']) +'k',
            "pressure": str(list_of_data['main']['pressure']),
            "humidity": str(list_of_data['main']['humidity']),
        }
        print(data)
    else:
        data={}
    returnrender(request, "index.html",data)
```

NOW IN APPLICATION URLS.PY :

```
fromdjango.urlsimportpath
from .importviews

urlpatterns=[  path('', views.index),
]
```

NOW IN PROJECT LEVEL URLS.PY :

```
fromdjango.contribimportadmin
fromdjango.urlsimportpath, include

urlpatterns= [
    path('admin/', admin.site.urls),
    path('',include('weatherapp.urls')),
]
```

NOW IN INDEX.HTML

```
<!DOCTYPEhtml>
<htmllang="en"dir="ltr">

<head>
  <metacharset="utf-8">
  <title>weather</title>
  <!-- Latest compiled and minified CSS -->
  <linkrel="stylesheet"href="https://maxcdn.bootstrapcdn.com/bootstrap/
3.4.0/css/bootstrap.min.css">

  <!-- jQuery library -->
  <scriptsrc="https://ajax.googleapis.com/ajax/libs/jquery/3.4.1/jquery
.min.js"></script>

  <!-- Latest compiled JavaScript -->
  <scriptsrc="https://maxcdn.bootstrapcdn.com/bootstrap/3.4.0/js/bootst
```

```
rap.min.js"></script>

</head>

<body>
  <navclass="row"style="background: red; color: white;">
    <h1class="col-md-3 text-center">weather</h1>
  </nav>
  <br/>
  <br/>
  <centerclass="row">
    <formmethod="post"class="col-md-6 col-md-offset-3">
      {% csrf_token %}
      <divclass="input-group">
        <inputtype="text"class="form-
control"name="city"placeholder="Search">
        <divclass="input-group-btn">
          <buttonclass="btnbtn-default"type="submit">
            <iclass="glyphiconglyphicon-search"></i>
          </button>
        </div>
        <form>
  </center>
  <divclass="row">
    {% if country_code and coordinate and temp and pressure and
humidity %}
    <divclass="col-md-6 col-md-offset-3">
      <h3>country code : {{country_code}}</h1>
        <h5>coordinate : {{coordinate}}</h5>
        <h5>temp : {{temp}}</h5>
        <h5>pressure : {{pressure}} </h5>
        <h5>humidity : {{humidity}}</h5>
    </div>
    {% endif %}
  </div>
</body>

</html>
```

Output :

Result :

Hence the program was executed successfully.

Viva Questions :

1. Write short notes on Django Views.
2. What is the function of path()?
3. Give use of `urlpatterns[]` list.
4. Define render() function.
5. How to import python libraries in Django.

EXERCISE 5:

Aim:

☛ **Develop a java stand-alone application that connects with the database (Oracle / MySql) and perform the CRUD operation on the database tables.**

Solution :

I will provide you with the MySQL code for creating the student table and make some changes to your Java code to improve it:

☛ MySQL Code:

```
sql> CREATE TABLE IF NOT EXISTS student (
s_id INT PRIMARY KEY,
s_nameVARCHAR(255),
s_addressVARCHAR(255)
);
```

This SQL code creates a table with three columns: s_id for student ID (primary key), s_name for student name, and s_address for student address.

☛ **Java Code:**

InsertData.java

```
import java.sql.*;
import java.util.Scanner;

public class InsertData {
    public static void main(String[] args) {
        try (Connection con = DriverManager.getConnection("jdb
c:mysql://localhost/mydb", "root", "");
             Statements = con.createStatement()) {

            Scanner sc = new Scanner(System.in);
            System.out.println("Inserting Data into student ta
ble:");

 System.out.println("_____"
);
```

```
  System.out.print("Enter student id: ");
  int sid = sc.nextInt();
  System.out.print("Enter student name: ");
  String sname = sc.next();
  System.out.print("Enter student address: ");
  String saddr = sc.next();
  String insertQuery = "INSERT INTO student VALUES(" + sid + "
,'"
     + sname + "','" + saddr + "')";
  s.executeUpdate(insertQuery);
 System.out.println("Data inserted successfully into student t
able");

 } catch (SQLException err) {
 System.out.println("ERROR: " + err);
   }
  }
}
```

Output :

```
Inserting Data into student table:

_____________________________________________

Enter student id: 101

Enter student name: John Doe

Enter student address: 123 Main Street

Data inserted successfully into student table
```

UpdateData.java

```
import java.sql.*;
import java.util.Scanner;

public class UpdateData {
    public static void main(String[] args) {
       try (Connection con = DriverManager.getConnection("jdbc
:mysql://localhost/mydb", "root", "");
    Statements = con.createStatement()) {

    Scanner sc = new Scanner(System.in);
```

```
    System.out.println("Update Data in student table:");
    System.out.println("_____________________________________
__");

     System.out.print("Enter student id: ");
     int sid = sc.nextInt();
     System.out.print("Enter student name: ");
     String sname = sc.next();
     System.out.print("Enter student address: ");
     String saddr = sc.next();
     String updateQuery = "UPDATE student SET s_name='" + snam
e +
         "', s_address='" + saddr + "' WHERE s_id=" + sid;
     s.executeUpdate(updateQuery);
     System.out.println("Data updated successfully");

     } catch (SQLException err) {
     System.out.println("ERROR: " + err);
    }
  }
}
```

Output :

```
Update Data in student table:

_____________________________________

Enter student id: 101

Enter student name: Jane Doe

Enter student address: 456 Broad Street

Data updated successfully
```

DeleteData.java

```
import java.sql.*;
import java.util.Scanner;
public class DeleteData {
    public static void main(String[] args) {
        try (Connection con = DriverManager.getConnection("jdb
c:mysql://localhost/mydb", "root", "");
    Statements = con.createStatement())
```

```
    Scanner sc = new Scanner(System.in);
    System.out.println("Delete Data from student table:");
    System.out.println("_____________________________________________
__");
    System.out.print("Enter student id: ");
    int sid = sc.nextInt();

    String deleteQuery = "DELETE FROM student WHERE s_id=" + s
id;
    s.executeUpdate(deleteQuery);

    System.out.println("Data deleted successfully");

    } catch (SQLException err) {
    System.out.println("ERROR: " + err);
    }
  }
}
```

Output :

```
Delete Data from student table:

_____________________________________________

Enter student id: 101

Data deleted successfully
```

DisplayData.java

```
import java.sql.*;

public class DisplayData {
public static void main(String[] args) {
   try (Connection con = DriverManager.getConnection("jdbc:mys
ql://
    localhost/mydb", "root", "");
   Statement s = con.createStatement()) {

   ResultSet rs = s.executeQuery("SELECT * FROM student");
   if (rs != null) {
   System.out.println("SID \t STU_NAME \t ADDRESS");
   System.out.println("_____________________________________
_");
```

```
   while (rs.next()) {
      System.out.println(rs.getString("s_id") + " \t " + rs.ge
tString
       ("s_name") + " \t " + rs.getString("s_address"));
     System.out.println("_____________________________________
___");
                }
            }

        } catch (SQLException err) {
            System.out.println("ERROR: " + err);
        }
    }
}
```

Output :

```
SID STU_NAME ADDRESS

_____________________________________________

102 Alice Smith 789 Oak Avenue

_____________________________________________

103 Bob Johnson 567 Pine Road

_____________________________________________
```

Result :

Hence the program was executed successfully.

Viva Questions :

1. What are CURD operations.
2. Write syntax for create & insert command
3. Write short note on select and delete command.
4. Define Primary Key.
5. Define Database.

EXERCISE 6:

Aim:

☛ **Create an xml for the bookstore. Validate the same using both DTD and XSD.**

Solution :

☛ **XML data to validate:**

bookstore.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<!DOCTYPE bookstore[
<!ELEMENT bookstore (book+)>
<!ELEMENT book (title, author, price)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT author (#PCDATA)>
<!ELEMENT price (#PCDATA)>
]>
<bookstore>
<book>
<title>Introduction to XML</title>
<author>John Doe</author>
<price>29.99</price>
</book>
<book>
<title>Programming with XML</title>
<author>Jane Smith</author>
<price>39.99</price>
</book>
</bookstore>
```

☛ XML schema (XSD) data:

bookstore.xsd

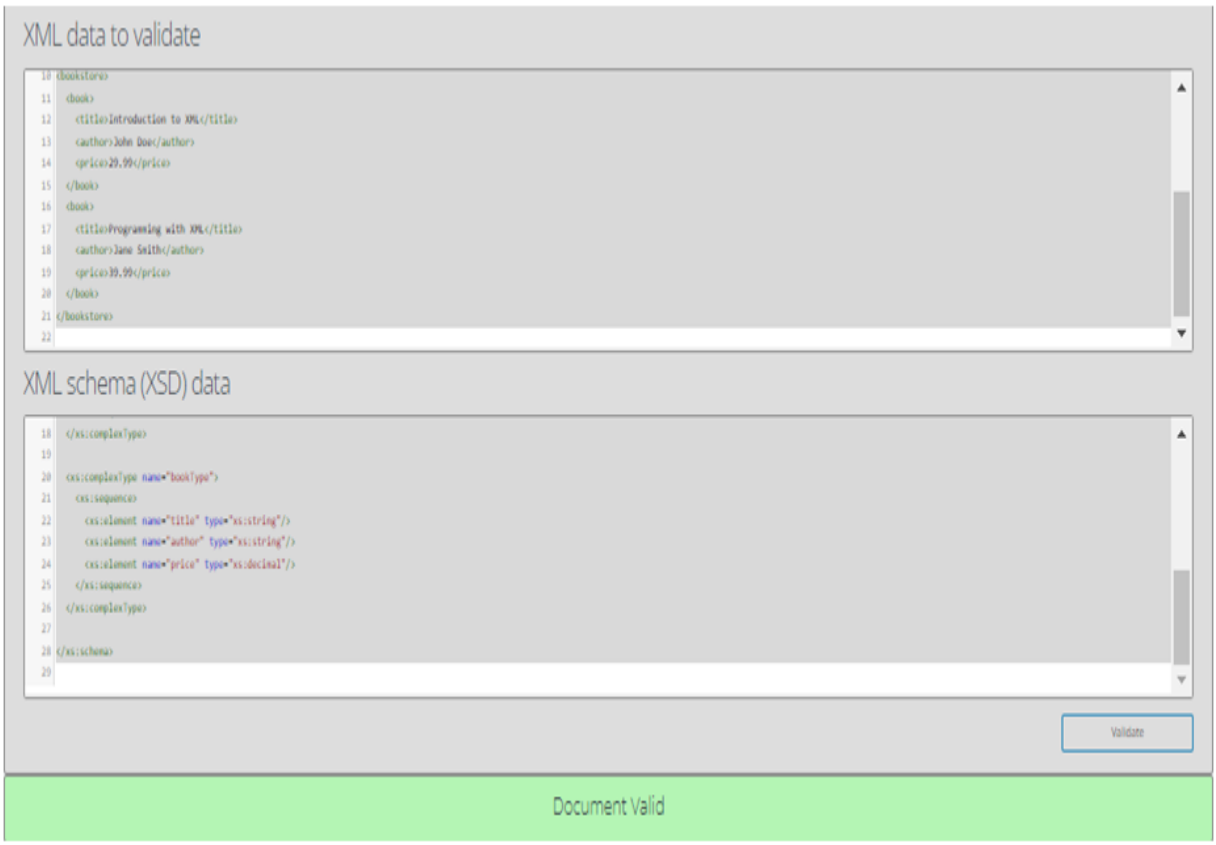
```
<?xml version="1.0" encoding="UTF-8"?>

<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema"
```

```
           targetNamespace="http://example.com"
           xmlns="http://example.com">
<xs:element name="root">
<xs:complexType>
<xs:sequence>
<xs:element name="bookstore" type="bookstoreType"/>
</xs:sequence>
</xs:complexType>
</xs:element>

<xs:complexType name="bookstoreType">
<xs:sequence>
<xs:element name="book" type="bookType" minOccurs="0" maxOccur
s="unbounded"/>
</xs:sequence>
</xs:complexType>
<xs:complexType name="bookType">
<xs:sequence>
<xs:element name="title" type="xs:string"/>
<xs:element name="author" type="xs:string"/>
<xs:element name="price" type="xs:decimal"/>
</xs:sequence>
</xs:complexType>
</xs:schema>
```

To Check the Validity :

1. Go to the below link, https://www.liquid-technologies.com/online-xsd-validator
2. Place the **XML code** in the XML Validate.
3. Place the **XSD code** in the XML Schema Data.
4. Then click the **validate** Button.
5. Then it will show the Document as Valid.

Output :



Result :

Hence the program was executed successfully.

Viva Questions :

1. What is Xml?
2. Difference between Xml and Html.
3. Difference between DTD and XSD.
4. Define Schema.
5. What is a well formed XML document?

EXERCISE 8:

Aim:

☛ **Maintaining the transactional history of any user is very important .Explore the various session tracking mechanism (cookies ,HTTP session).**

Solution :

Steps:

1. **Create a** Django project named as sessionapp.
2. **Create a** Django app named as seapp

This is views.py:

```
1   from django.shortcuts import render
2
3   # Create your views here.
4   # set sessions
5   def setsession(request):
6       request.session['name'] = 'sriniketh'
7       return render(request, 'setsessions.html')
8
9   # get sessions
10  def getsession(request):
11      name = request.session['name'] = 'sriniketh'
12      return render(request, 'getsessions.html', {'name':name})
13
14
15  # del sessions
16
17  def delsession(request):
18      if 'name' in request.session:
19          del request.session['name']
20      return render(request, 'delsessions.html')
```

This is project level urls.py:

```
from django.contrib import admin
from django.urls import path
from seapp import views
urlpatterns = [
    path('admin/', admin.site.urls),
    path('set/', views.setsession),
    path('get/', views.getsession),
```

```
    path('del/', views.delsession),
]
```

No need to create app level urls.py..

3]create templates folder in app level.

delsessions.html:

```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "UTF-8">
    <meta name="viewport" content = "width=device-width,initial-scale=1.0">
    <title>del sessions</title>
</head>
<body>
    <h4>sessions deleted</h4>
</body>
</html>
```

setsessions.html:

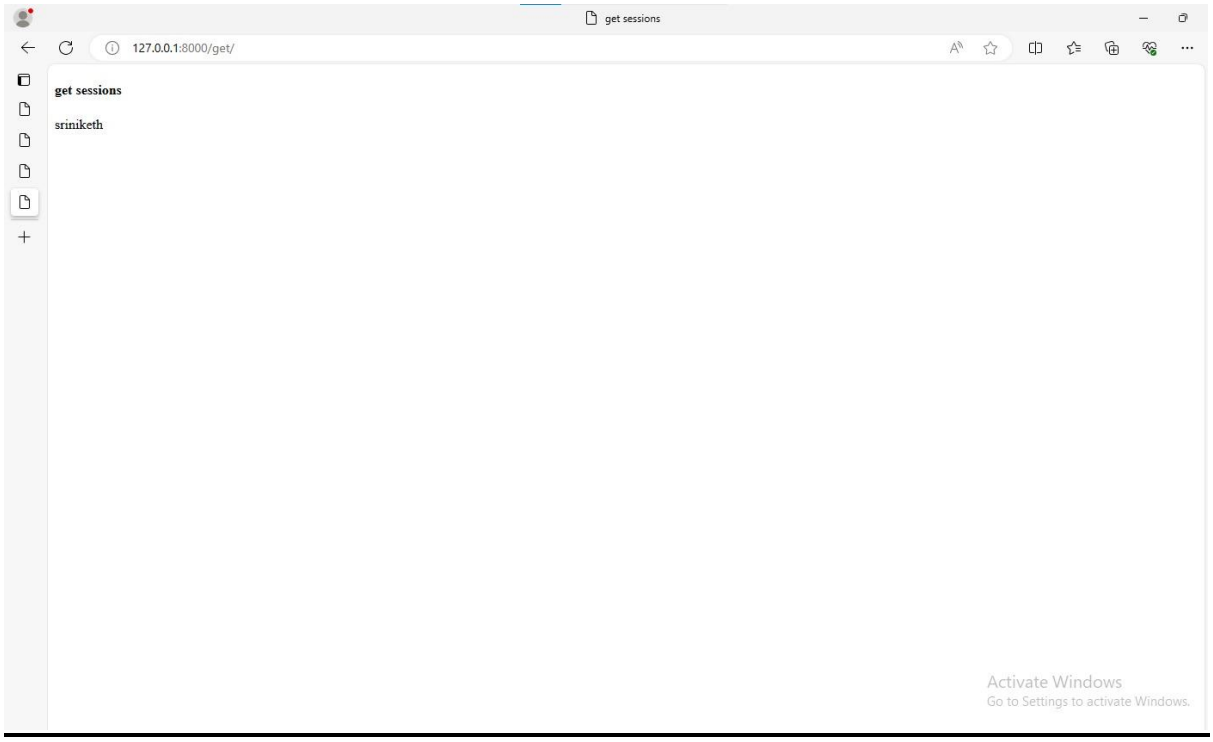
```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "UTF-8">
    <meta name="viewport" content = "width=device-width,initial-scale=1.0">
    <title>set sessions</title>
</head>
<body>
    <h4>set sessions</h4>
    {{name}}
</body>
</html>
```

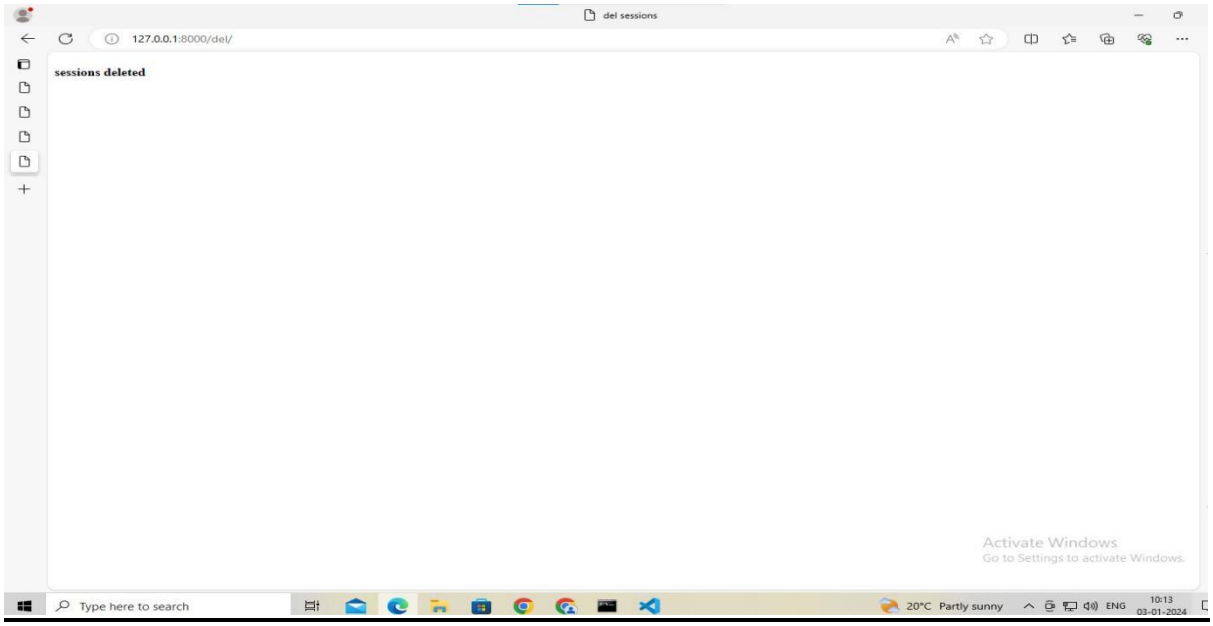
getsessions.html:

```
<!DOCTYPE html>
<html lang = "en">
<head>
    <meta charset = "UTF-8">
    <meta name="viewport" content = "width=device-width,initial-scale=1.0">
    <title>get sessions</title>
</head>
<body>
    <h4>get sessions</h4>
    {{name}}
</body>  </html>
```

Output :


127.0.0.1:8000/set/
set sessions
Activate Windows
Go to Settings to activate Windows.


get sessions
127.0.0.1:8000/get/
get sessions
sriniketh
Activate Windows
Go to Settings to activate Windows.



Cookies:

1) Create a project
2) Create a app in the command prompt

This is views.py:

```
from django.shortcuts import render
from datetime import datetime, timedelta
# Create your views here.


# set sessions
def setcookie(request):
    response =  render(request, 'cookieapp/setcookies.html')
    response.set_cookie('name', 'praneeth', expires =
datetime.utcnow()+timedelta(days=2))
    return response
```

```
# get sessions
def getcookie(request):
    name = request.COOKIES.get('name')
    return render(request, 'cookieapp/getcookies.html', {'name':name})
```

```
# del sessions
```

```
def delcookie(request):
    response =  render(request, 'cookieapp/delcookies.html')
    response.delete_cookie('name')
    return response
```

This is project level urls.py:

```
from django.contrib import admin
from django.urls import path
from cookieapp import views

urlpatterns = [
    path('admin/', admin.site.urls),
    path('set/', views.setcookie),
    path('get/', views.getcookie),
    path('del/', views.delcookie),
]
```

THIS IS getcookie.html :

```
<!DOCTYPE html>
<html lang = "en">
<head>
   <meta charset = "UTF-8">
   <meta name="viewport" content = "width=device-width,initial-scale=1.0">
   <title>get cookie</title>
</head>
<body>
   <h4>get cookie</h4>
   {{name}}
</body>
</html>
```

This is setcookie.html:

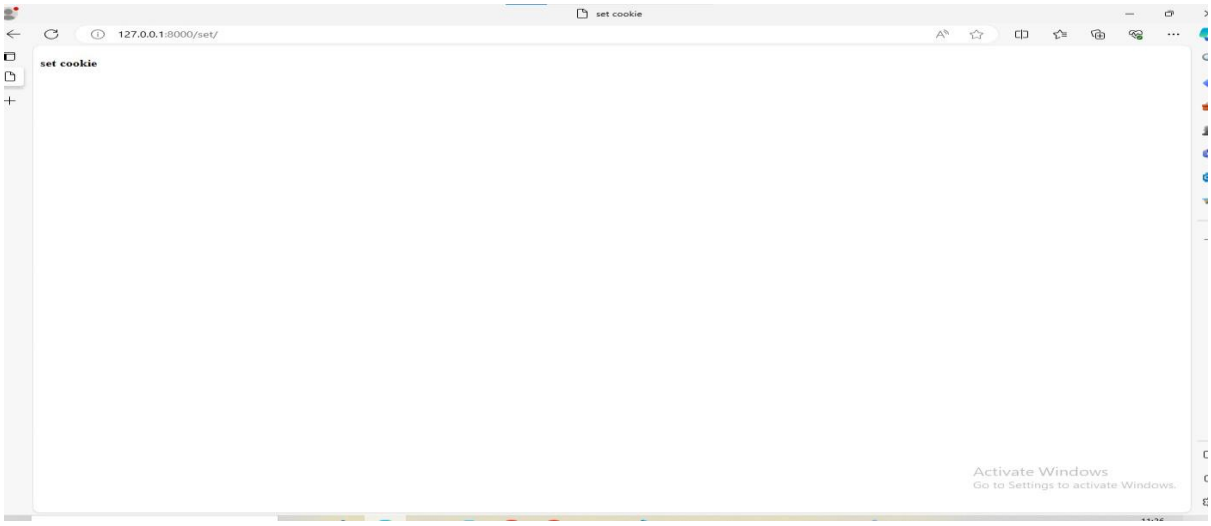
```
<!DOCTYPE html>
<html lang = "en">
<head>
   <meta charset = "UTF-8">
   <meta name="viewport" content = "width=device-width,initial-scale=1.0">
   <title>set cookie</title>
</head>
<body>
   <h4>set cookie</h4>
   {{name}}
</body>
</html>
```

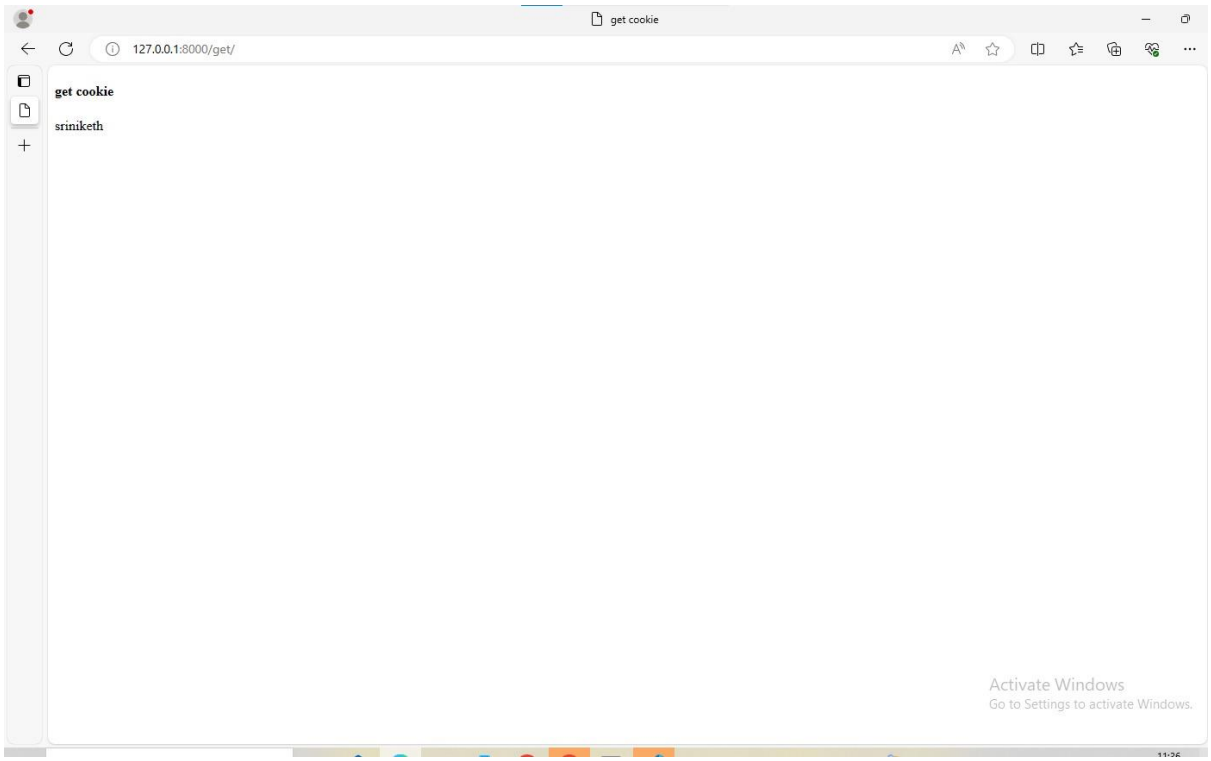
This is delcookie.html :

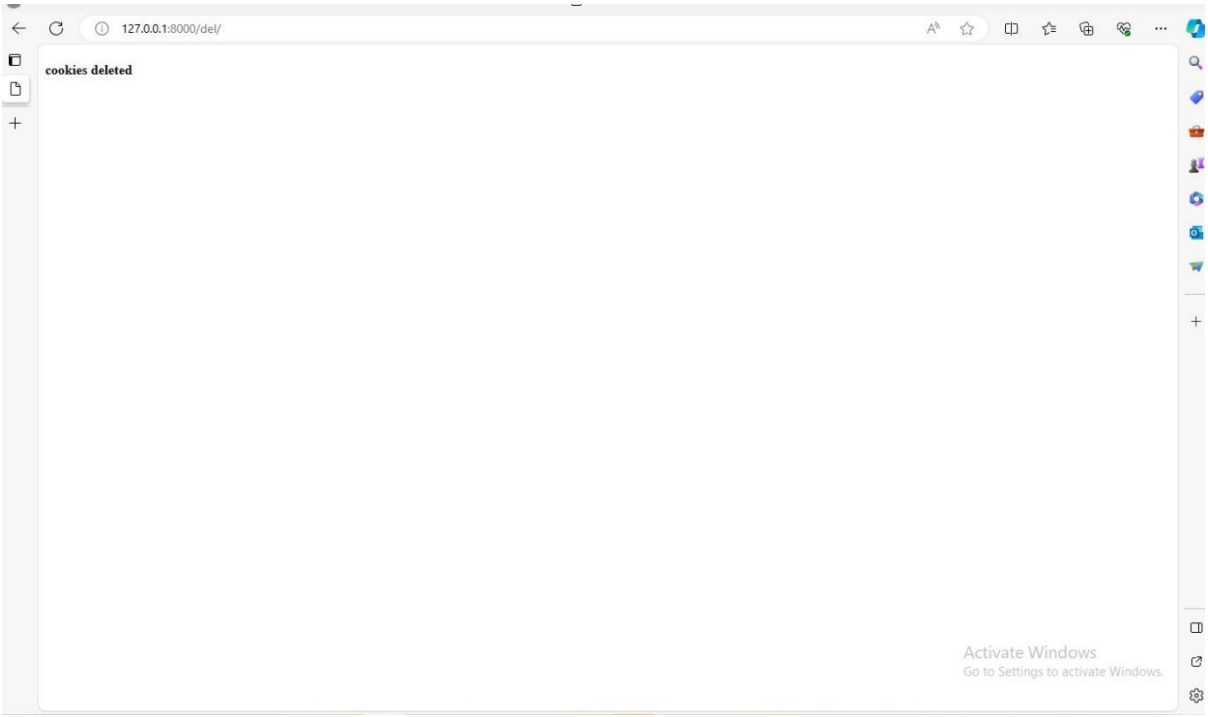
```
<!DOCTYPE html>
<html lang = "en">
<head>
   <meta charset = "UTF-8">
   <meta name="viewport" content = "width=device-width,initial-scale=1.0">
   <title>del cookies</title>
</head>
```

```
<body>
   <h4>cookies deleted</h4>
</body>
</html>
```

Output :







Result :

Hence the program was executed successfully.

Viva Questions :

1. **Define cookies.**
2. **What is session mechanism?**
3. **How to delete cookies.**
4. **Define Http session.**
5. **How to set cookies.**

EXERCISE 9:

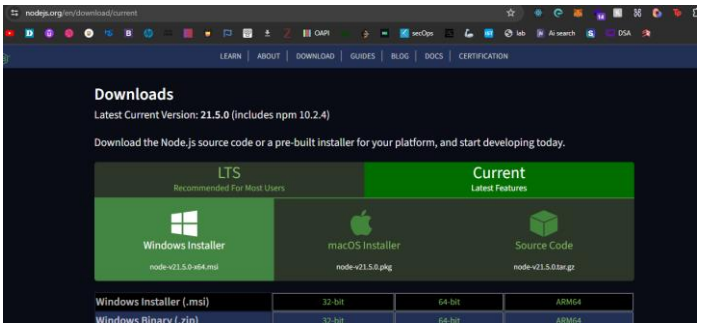
Aim:

☛ **Create a custom server using http module and explore the other modules of Node JS like OS, path , event.**

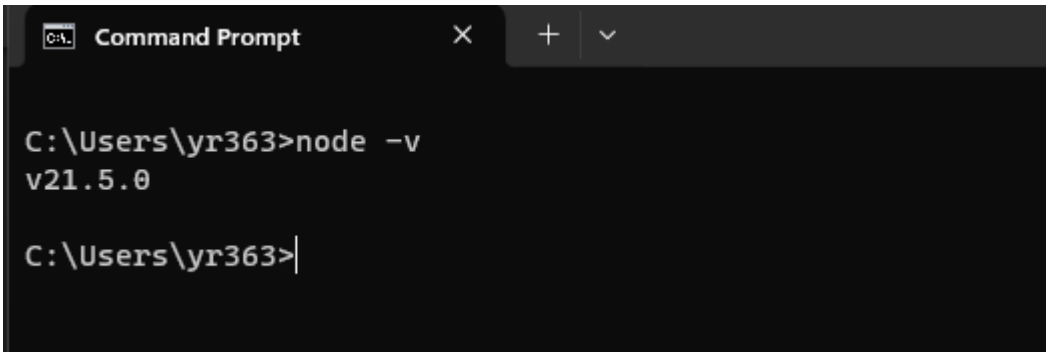
Solution :

NodeJs Installation Steps

1. Download the Node.js installer from the official website.



2. Run the downloaded .msi file2.
3. Follow the setup wizard instructions, accept the End-User License Agreement (EULA), set the destination folder, and choose the components to install.
4. Complete the installation.
5. Verify the installation by opening your command prompt or Windows Powershell and running the command node -v



Now Installation of node is done.

To create custom server we need to write a javascript code, mostly we use file name server.js or index.js

Server.js

```
const http = require('http');
const os = require('os');
const path = require('path');
const EventEmitter = require('events');
```

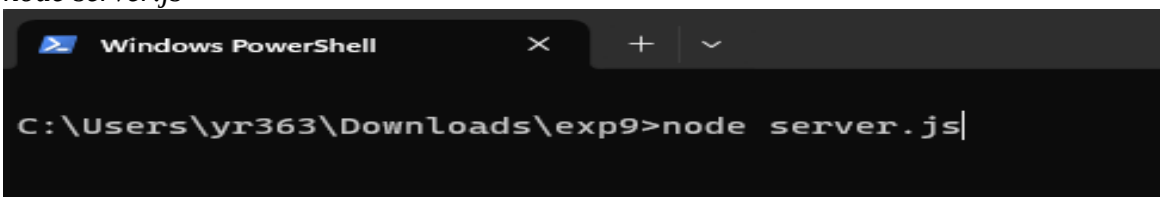
```
const server = http.createServer((req, res) => {
  res.writeHead(200, {'Content-Type': 'text/plain'});
  res.end('Hello, this is your custom server!\n');
});

const PORT = 3000;
server.listen(PORT, () => {
  console.log(`Server running at http://localhost:${PORT}/`);
});

// os:
console.log('OS Platform:', os.platform());
console.log('CPU Architecture:', os.arch());
console.log('Free Memory:', os.freemem());
console.log('Total Memory:', os.totalmem());

// path
const filePath = 'C:/Users/yr363/Downloads/exp9/file.txt';
//replace the path with your system path
console.log('File Name:', path.basename(filePath));
console.log('Directory Name:', path.dirname(filePath));
console.log('File Extension:', path.extname(filePath));

// events:
class MyEmitter extends EventEmitter {}

const myEmitter = new MyEmitter();

myEmitter.on('customEvent', (arg) => {
  console.log('Custom Event Occurred:', arg);
});

myEmitter.emit('customEvent', 'This is an argument for the
event');
```

Now We have created our server.js file to run the server using node we need to follow:

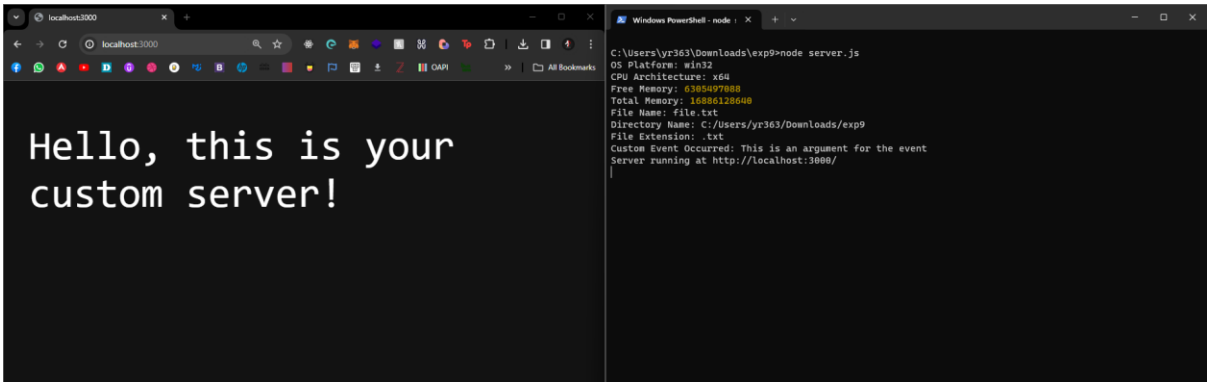
1. Open a terminal or command prompt in the directory where the server.js file is located. (In My Case it is *"C:\Users\yr363\Downloads\exp9"*).

```
C:\Users\yr363\Downloads\exp9>dir
 Volume in drive C is Acer
 Volume Serial Number is AA2C-9B17

 Directory of C:\Users\yr363\Downloads\exp9

08-01-2024  23:31    <DIR>          .
08-01-2024  23:12    <DIR>          ..
08-01-2024  23:26                 0 file.txt
08-01-2024  23:28             1,199 server.js
               2 File(s)          1,199 bytes
               2 Dir(s)  264,603,234,304 bytes free
```

2. Run the following command to start the server:
   node server.js

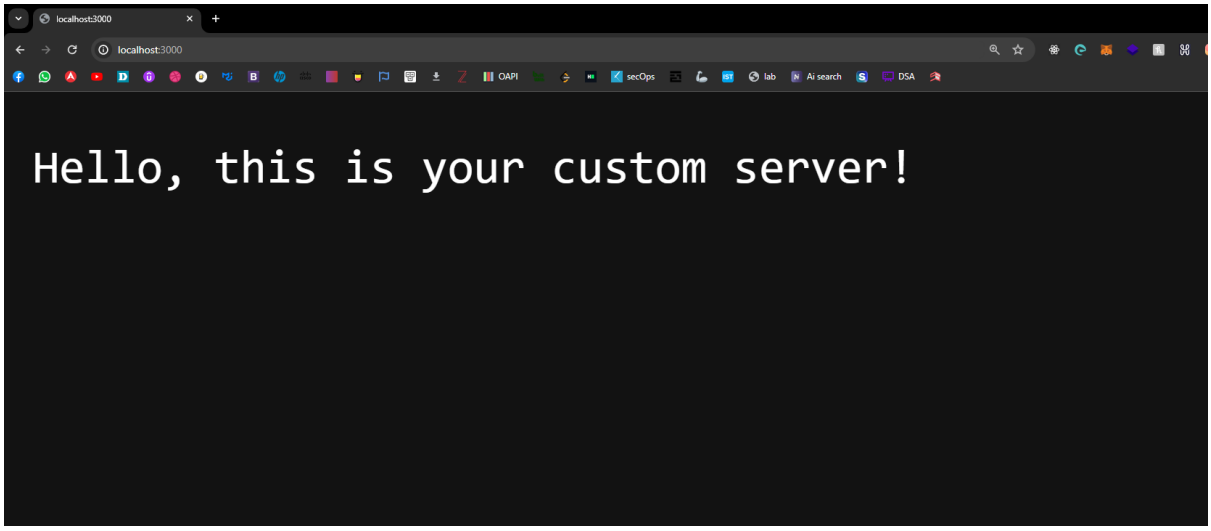


Output :

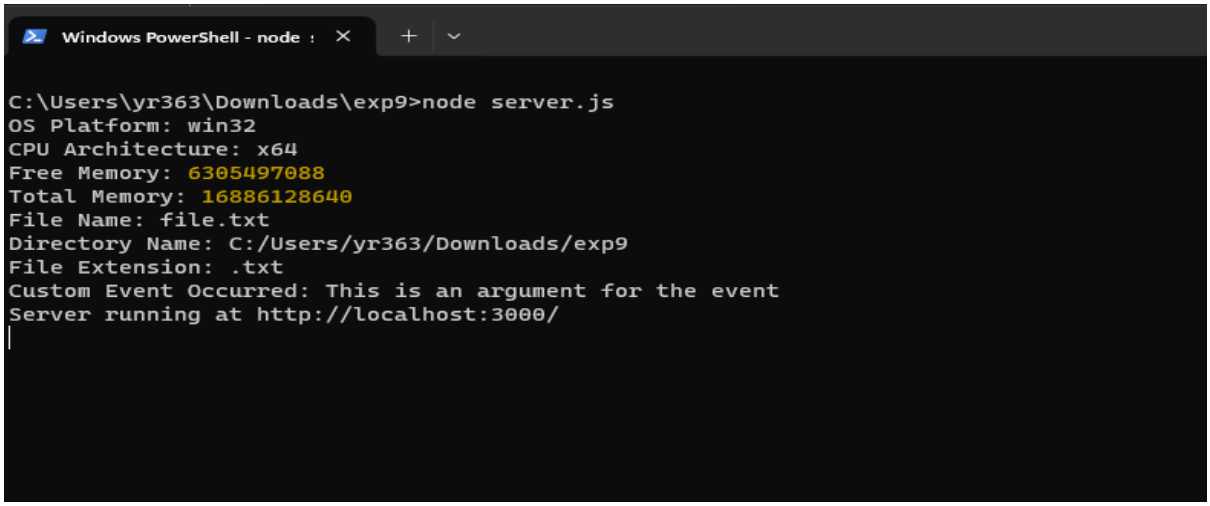


Now our server is running

Below is the response came from the server after it is running without any error



Below it shows that the server is running in localhost:3000 as we used os, path , events as we run the server we will get the stats of our system , path of a file we want to know and event occurred



The last line “Sever running at http://localhost:3000/” refers that our server is running on the port number 3000

Result :

Hence the program was executed successfully.

Viva Questions :

1. What is Node.Js ?Where can we use it.
2. How dose Node.js work?
3. Write the steps to install Node.js.
4. Difference between angular and node.js
5. Define server.

EXERCISE 10:

Aim:

☛ **Develop an express web application that can interact with REST API to perform CRUD operations on student data. (Use Postman)**

Solution :

- Firstly we need to create a new folder and open the folder in the command prompt and enter a command as below:

- npminit -y

- Open that folder in the vscode by entering *code*.
- Next in the terminal we need to install all the packages we need, so we mainly use express and sqlite3.
- The Command to install express and sqlite3 is

- npm install express sqlite3

Then create file named as the **app.js** and **db.js**

db.js

```
const sqlite3 = require('sqlite3').verbose();

// Function to initialize the database schema
function initializeDatabase() {
    const db = new sqlite3.Database('./mydatabase.db', (err) =
> {
        if (err) {
            console.error(err.message);
        } else {
            console.log('Connected to the SQLite database.');
            createStudentsTable(db);
        }
    });

    // Close the database connection when the Node process exi
ts
    process.on('exit', () => {
        db.close((err) => {
            if (err) {
                console.error(err.message);
```

```
            } else {
              console.log('Disconnected from the SQLite databa
se.');
            }
        });
    });
}
// Function to create the 'students' table if it doesn't exist
function createStudentsTable(db) {
    const createTableQuery = `
        CREATE TABLE IF NOT EXISTS students (
            id INTEGER PRIMARY KEY AUTOINCREMENT,
            name TEXT,
            age INTEGER,
            grade TEXT
        ); `;

    db.run(createTableQuery, (err) => {
        if (err) {
            console.error(err.message);
        } else {
            console.log('The students table has been created o
r already exists.');
        }
    });
}

module.exports = { initializeDatabase };
```

when we execute both the **db.js** then the database will be created that is **mydatabase.db**

app.js

```
const express = require('express');
const sqlite3 = require('sqlite3');
const{ initializeDatabase } = require('./db');
const app = express();
const port = 3000;
// Connect to SQLite database
const db = new sqlite3.Database('./mydatabase.db', (err) => {
    if (err) {
       console.log(err.message);
     else {
```

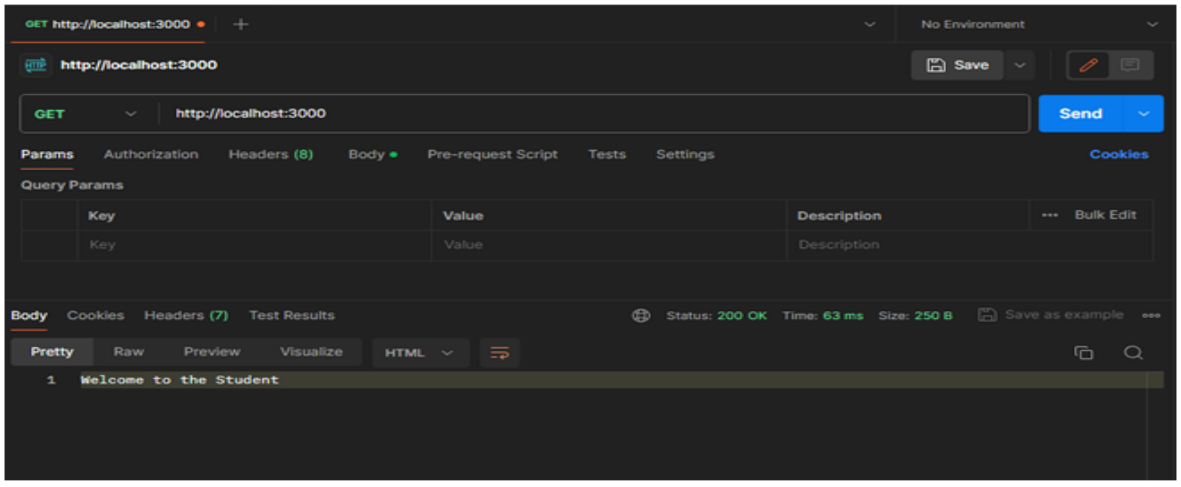
```
        console.log('Connected to the SQLite database.');
    }
});

// Middleware to parse request body as JSON
app.use(express.json());

app.get('/', (req, res) => {
    res.send('Welcome to the Student');
});

// Get all Students
app.get('/students', (req, res) => {
    db.all('SELECT * FROM students', [], (err, rows) => {
        if (err) {
            return console.error(err.message);
        }
        res.json(rows);
    });
});

// Get a single student by id
app.get('/students/:id', (req, res) => {
    const id = req.params.id;
    db.all('SELECT * FROM students WHERE id = ?', [id], (err,
row) => {
        if (err) {
            return console.error(err.message);
        }
        res.json(row);
    });
});

// Create a new student
app.post('/students', (req, res) => {
    const{ name, age, grade } = req.body;
    db.run('INSERT INTO students (name, age, grade) VALUES (?,
?, ?)', [name, age, grade], function (err) {
        if (err) {
            return console.error(err.message);
        }
        res.status(201).json({ id:this.lastID });
    });});

// Update a student
appput('/students/:id', (req, res) => {
    cons id = req.params.id;

    cons{ name, age, grade } = req.body;
```

```
    db.run('UPDATE students SET name = ?, age = ?, grade = ? WH
ERE id = ?', [name, age, grade, id], function (err) {
        if (err) {
            return console.error(err.message);
        }
        res.json({ updatedID:id });
    });
});

// Delete a student
app.delete('/students/:id', (req, res) => {
    const id = req.params.id;
    db.run('DELETE FROM students WHERE id = ?', id, function (
err) {
        if (err) {
            return console.error(err.message);
        }
        res.json({ deletedID:id });
    });
});

app.listen(port, () => {
    console.log('Server running at http://localhost:${port}');
});
```

Output :

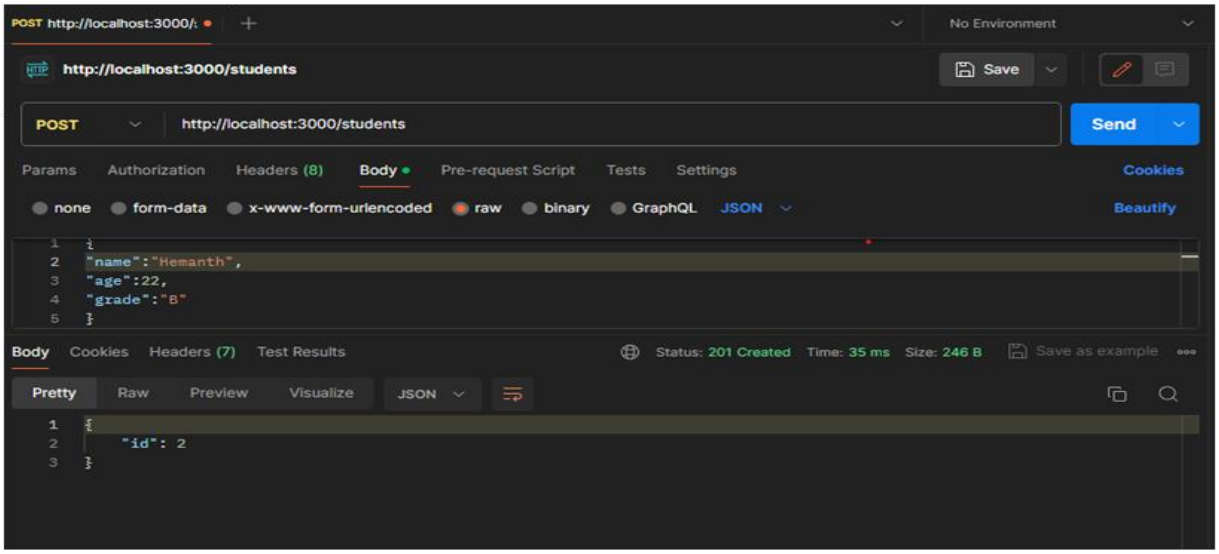
GET:

- Open Postman.
- Set the request type to GET.
- Enter the URL: *http://localhost:3000/students*.



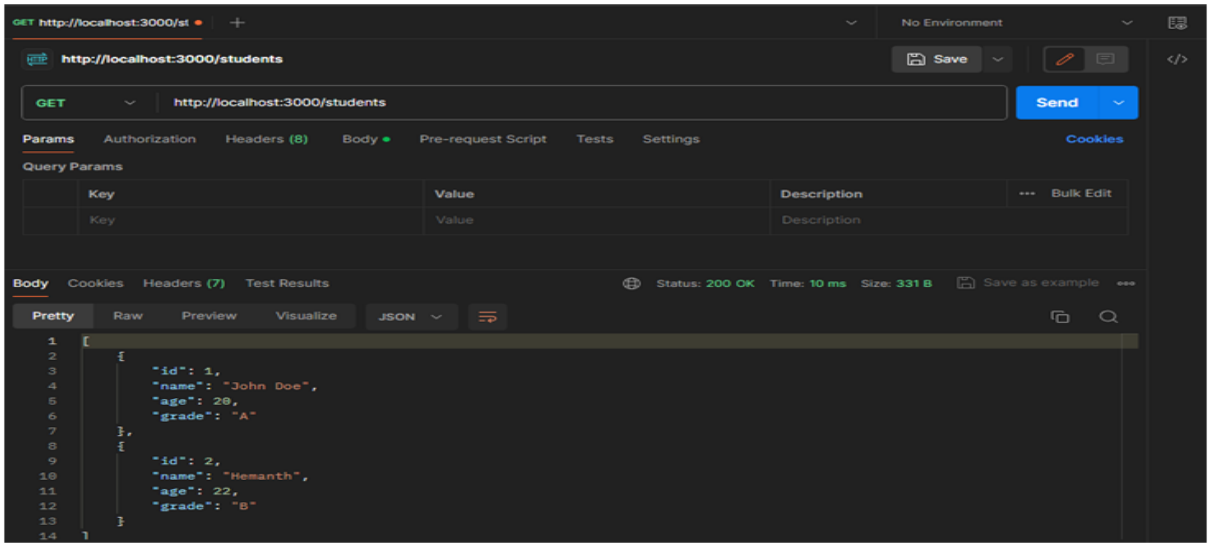
POST : Create a New Student

- Open Postman.
- Set the request type to POST.
- Enter the URL: *http://localhost:3000/students.*
- Go to the **"Body"** tab.
- Select raw and set the body to JSON format.



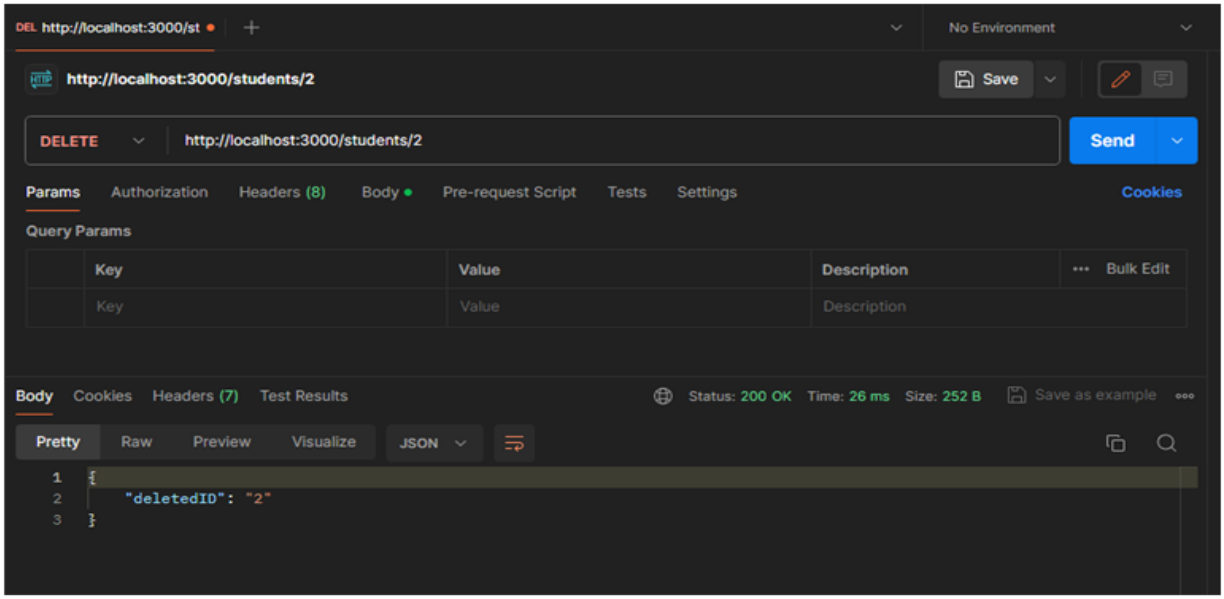
GET: #all Students

- Set the request type to GET.
- Enter the URL: *http://localhost:3000/students.*
- Click on the **"Send"** button
- You should receive a response with details of all students in your SQLite database.



DELETE:

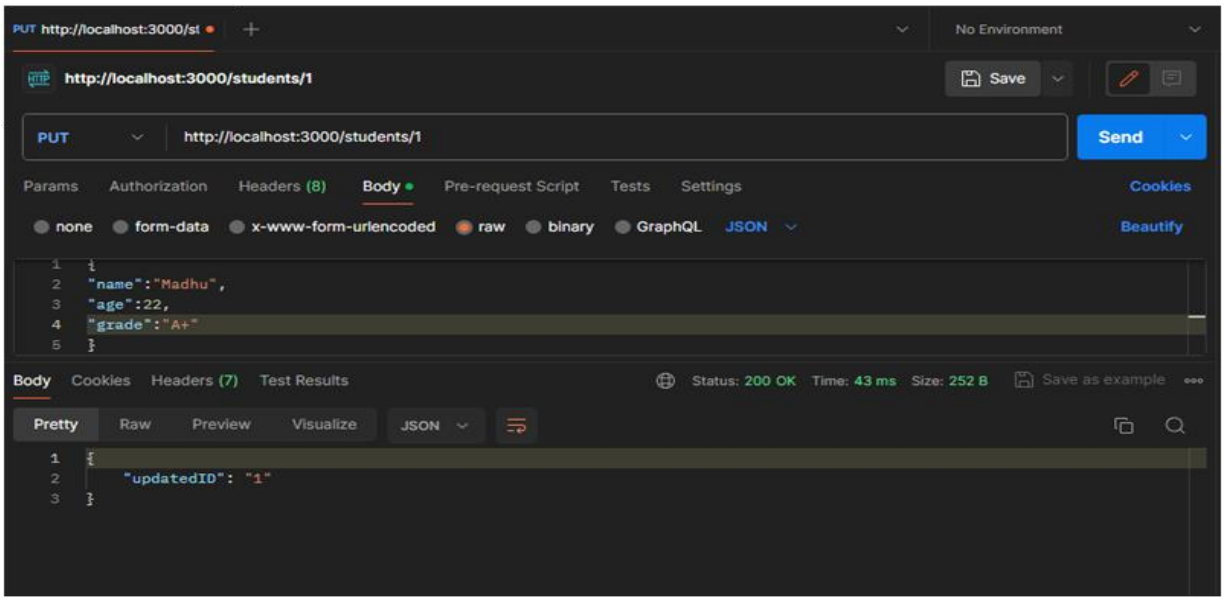
- Set the request type to DELETE.
- Enter the URL for the student you want to delete (replace: id with an actual student ID): *http://localhost:3000/students/:id*
- Place instead of ID which replace with number that is ID to be deleted.
- Then click **send**



PUT:

- Set the request type to PUT.
- Enter the URL for the student you want to delete (replace: id with an actual student ID): *http://localhost:3000/students/:id*
- Go to the **"Body"** tab.

- Select raw and set the body to JSON format



Result :

Hence the program was executed successfully.

Viva Questions :

1. What is web application?
2. What Rest Api.
3. Write short note on postman api.
4. Explain about GET & PUT.
5. How to create a serializers.py to convert complex data types.

EXERCISE 11:

Aim:

☛ **For the above application create authorized end points using JWT(JSON Web Token).**

Solution :

1) create a project

2) create an application

3) in app/models.py create email and password fields in place of admin login .
add auth_user_model in settings.py

4)include that in installed apps.

5)python manage.py makemigrations,
python manage.py migrate
python manage.py makemigrations appname

6)make changes in admin.py at application level

7)create superuser

8) once check with the server .and login into the admin and go through users .

9)Next Step is to install Django Rest Framework in your Project Directory. Django Rest Framework (DRF) is a toolkit build in web application which is used for creating web API's. It returns web API's in the form of raw JSON. Install DRF using following command.
-->pip install djangorestframework
-->add rest_framework in settings.py

10) create serializers.py in app

11) define the views in application

12)define urls for the views in application

13) add urls of application at project level

14)now we will use simplejwt to login user
We will use simple JWT to login user an generate access and refresh Token for authentication of user. Install simple JWT in your project directory with the pip command.

-->pip install djangorestframework-simplejwt

15) add rest_framework_simplejwt in installed apps of settings

16)configure jwt at settings

```
REST_FRAMEWORK = {
   'DEFAULT_AUTHENTICATION_CLASSES': (
      'rest_framework_simplejwt.authentication.JWTAuthentication',
   ),
}
```

17) lastly, In our app level urls.py we'll add routes for simple jwt as TokenObtainPairView and TokenRefreshView views.

18) use postman

first register using post request- because to store into database
-body
-form-data

19) after registrering login we will get
two tokens access and refresh token

20)Access Token : Access token is the encoded string which contains information about user, permissions etc. Token are used as a bearer token, Bearer means which hold data in it. An access token is put in the Authorization header of your request for the user's API.

Refresh Token : An access tokens have very short life span because of the security purpose. When it expires a user need to generated new access token for authentication. So refresh token is used to request new access tokens without user interaction.

21)We can also customize the behavior of simple JWT by changing some of the settings variables in the settings.py. Copy and paste the following code in settings.py file.

THIS IS VIEWS.PY:

```python
from django.shortcuts import render
from rest_framework.views import APIView
from .serializers import UserSerializer
from rest_framework.response import Response


# view for registering users
class RegisterView(APIView):
    def post(self, request):
        serializer = UserSerializer(data=request.data)
        serializer.is_valid(raise_exception=True)
        serializer.save()
        return Response(serializer.data)
```

THIS IS URLS.PY IN APP LEVEL:

```
from django.urls import path
from .views import RegisterView
from rest_framework_simplejwt.views import (
    TokenObtainPairView,
    TokenRefreshView,
)



urlpatterns = [
    path('api/login/', TokenObtainPairView.as_view(),
name='token_obtain_pair'),
    path('api/login/refresh/', TokenRefreshView.as_view(),
name='token_refresh'),
    path('api/register/', RegisterView.as_view(), name="sign_up"),
]
```

THIS IS URLS.PY IN PROJECT LEVEL:

```
from django.contrib import admin
from django.urls import path, include

urlpatterns = [
    path('admin/', admin.site.urls),
    path('account/', include('myapp.urls')),
]
```

THIS IS MODEL.PY:

```
from django.db import models

# Create your models here.
#from django.db import models
from django.contrib.auth.models import AbstractUser, BaseUserManager


class UserManager(BaseUserManager):

    use_in_migration = True

    def create_user(self, email, password=None, **extra_fields):
        if not email:
            raise ValueError('Email is Required')
        user = self.model(email=self.normalize_email(email),
**extra_fields)
        user.set_password(password)
        user.save(using=self._db)
        return user
```

```
    def create_superuser(self, email, password, **extra_fields):
        extra_fields.setdefault('is_staff', True)
        extra_fields.setdefault('is_superuser', True)
        extra_fields.setdefault('is_active', True)

        if extra_fields.get('is_staff') is not True:
            raise ValueError('Superuser must have is_staff = True')
        if extra_fields.get('is_superuser') is not True:
            raise ValueError('Superuser must have is_superuser = True')

        return self.create_user(email, password, **extra_fields)


class UserData(AbstractUser):

    username = None
    name = models.CharField(max_length=100, unique=True)
    email = models.EmailField(max_length=100, unique=True)
    date_joined = models.DateTimeField(auto_now_add=True)
    is_admin = models.BooleanField(default=False)
    is_active = models.BooleanField(default=True)
    is_staff = models.BooleanField(default=False)
    is_superuser = models.BooleanField(default=False)

    objects = UserManager()

    USERNAME_FIELD = 'email'
    REQUIRED_FIELDS = ['name']

    def _str_(self):
        return self.name
```

THIS IS ADMIN.PY:

```
from django.contrib import admin
from .models import UserData

admin.site.register(UserData)
```

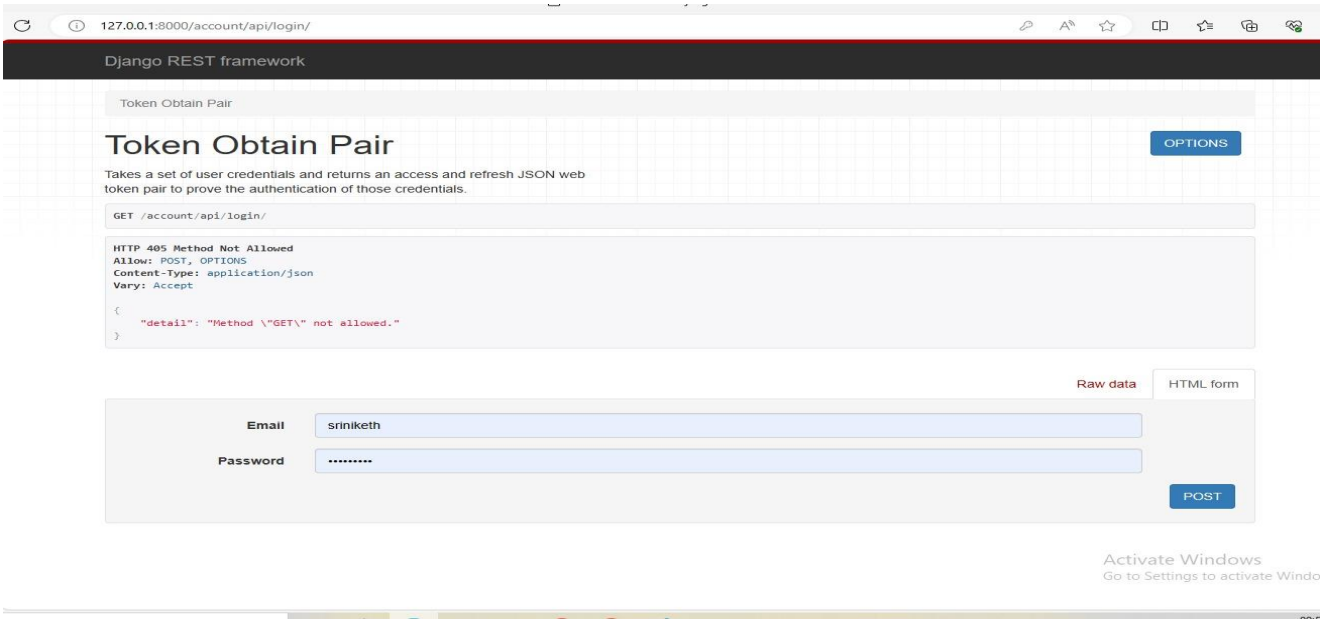
THIS IS SERIALIZERS.PY:

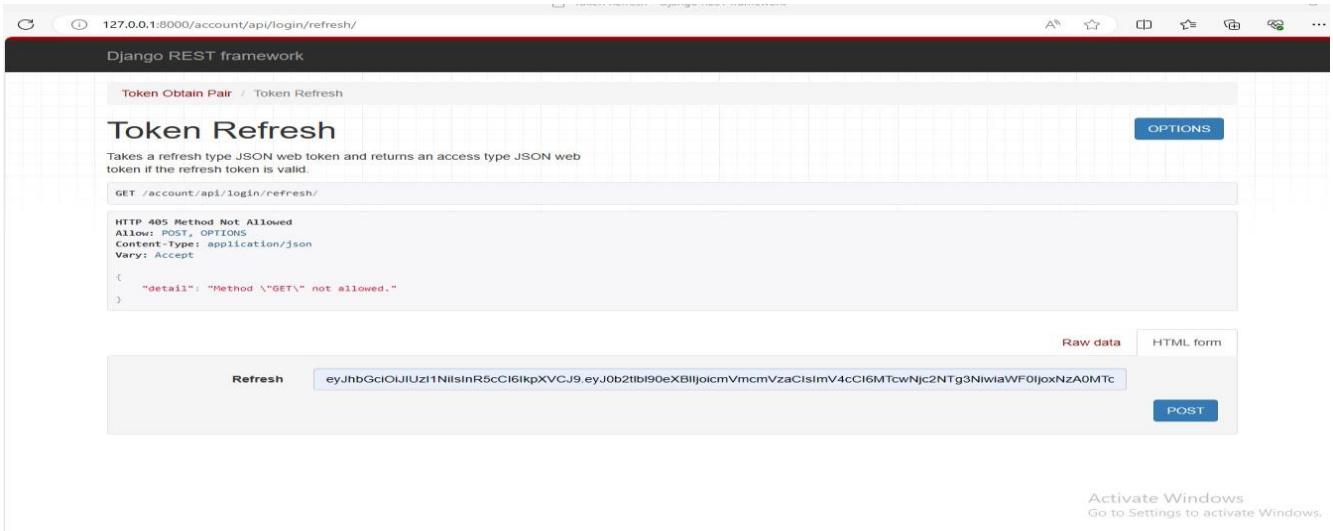
```
from rest_framework import serializers
from .models import UserData


class UserSerializer(serializers.ModelSerializer):

    class Meta:
        model = UserData
```

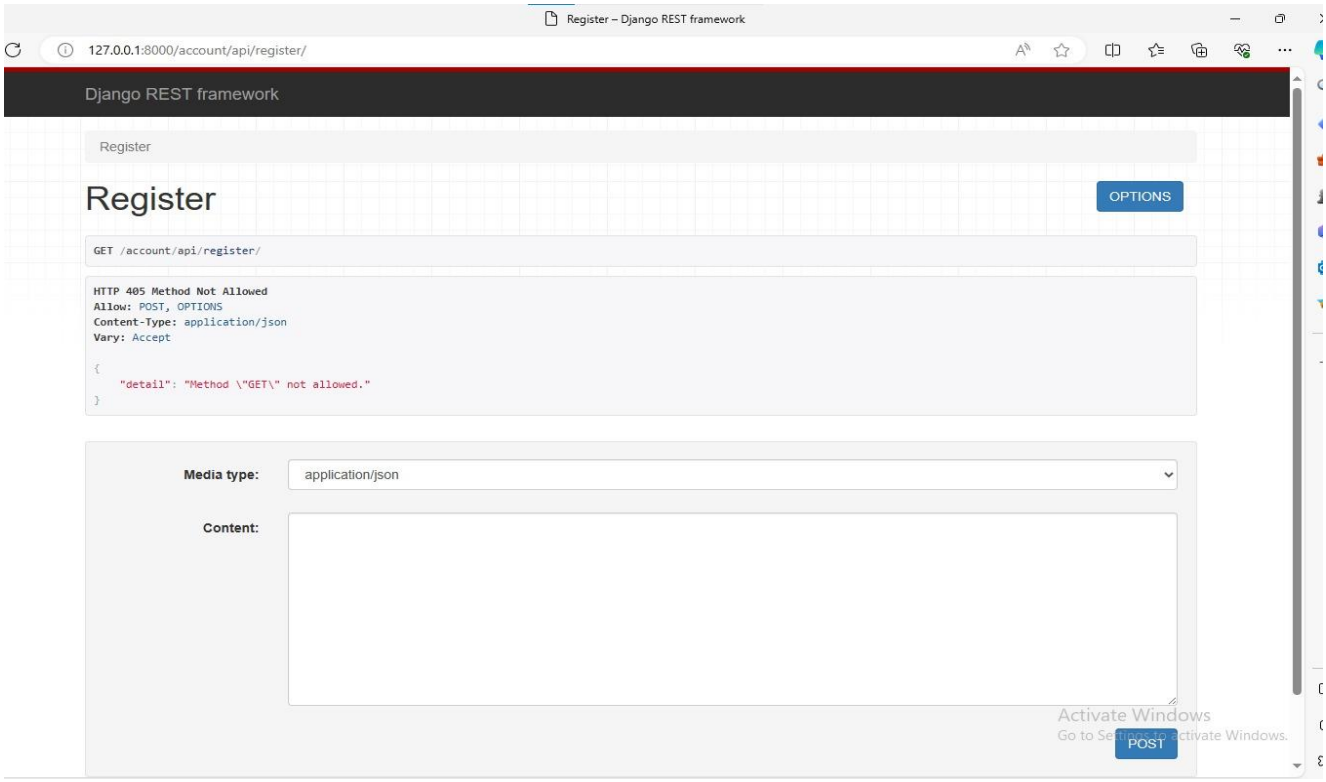
```
        fields = ["id", "email", "name", "password"]

    def create(self, validated_data):
        user = UserData.objects.create(email=validated_data['email'],
                                       name=validated_data['name']
                                         )
        user.set_password(validated_data['password'])
        user.save()
        return user
```

In seetings.py include the app name in installed apps and also add the rest_framework in it

Output :







Result :

Hence the program was executed successfully.

Viva Questions :

1. What is JWT.
2. What is the need for JWT.
3. What are advantages of JWT.
4. What is structure of JWT.
5. How to install Django Rest Framework in your Project Directory

EXERCISE 12:

Aim:

☛ **Create a react application for the student management system having registration, login, contact, about pages and implement routing to navigate through these pages.**

Solution :

Creating a React application for a student management system involves several steps. Below is a basic example to get you started with registration, login, contact, and about pages using React Router for navigation.

Firstly, make sure you have Node.js installed on your machine. Then, follow these steps:

1. **Create React App:**
   Open your terminal and run the following command to create a new React app:
npx create-react-app student-management-system

2. **Install React Router:**
   Navigate to your project folder:
cd student-management-system
   Install React Router:
npm install react-router-dom

3. **Create Components:**
   Inside the `src` folder, create components for `Registration`, `Login`, `Contact`, and `About`. For instance, in the `src` folder, create files like `Registration.js`, `Login.js`, `Contact.js`, and `About.js`. These files will contain your component logic and JSX.

4. **Set Up Routing:**

Create a file called `AppRouter.js` to handle routing:

```
import React from 'react';
import { BrowserRouter as Router, Route, Switch } from 'react-router-dom';
import Registration from './Registration';
import Login from './Login';
import Contact from './Contact';
import About from './About';

const AppRouter = () => {
  return (
```

```
   <Router>
   <Switch>
<Route exact path="/" component={Login} />
<Route path="/registration" component={Registration} />
<Route path="/contact" component={Contact} />
<Route path="/about" component={About} />
</Switch>
</Router>
    );
  };

  export default AppRouter;
```

5. **Implement Navigation:**

Update your `App.js` to use the `AppRouter` component:

```
  import React from 'react';
  import AppRouter from './AppRouter';

  function App() {
    return (
   <div className="App">
   <AppRouter />
   </div>
    );
  }

  export default App;
```

6. **Add Navigation Links:**
   In each component (`Login.js`, `Registration.js`, etc.), use `Link` from `react-router-dom` to navigate between pages:

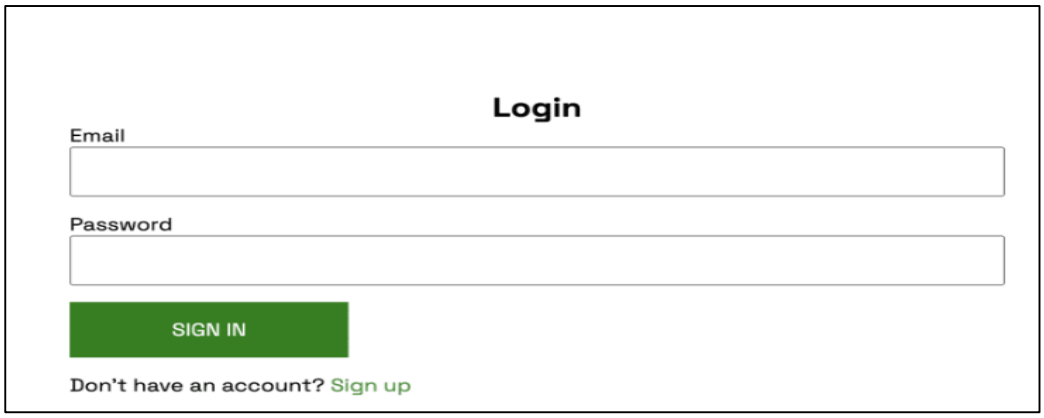
```
  import React from 'react';
  import { Link } from 'react-router-dom';

  const Login = () => {
    return (
   <div>
   <h1>Login Page</h1>
        {/* Add Link to other pages */}
   <Link to="/registration">Register</Link>
   <Link to="/contact">Contact</Link>
   <Link to="/about">About</Link>
   </div>
    );
  };

  export default Login;
```

7. **Run the App:**
   Start your React app:

npm start

   This will launch your application in the browser. You should be able to navigate between the pages using the links provided.

Output :



Result :

Hence the program was executed successfully.

Viva Questions :

1. What is React and JSX?
2. What are the major features of React?
3. How to create components in React.
4. What are the advantages of using React?
5. What are the limitations of React?

EXERCISE 13:

Aim:

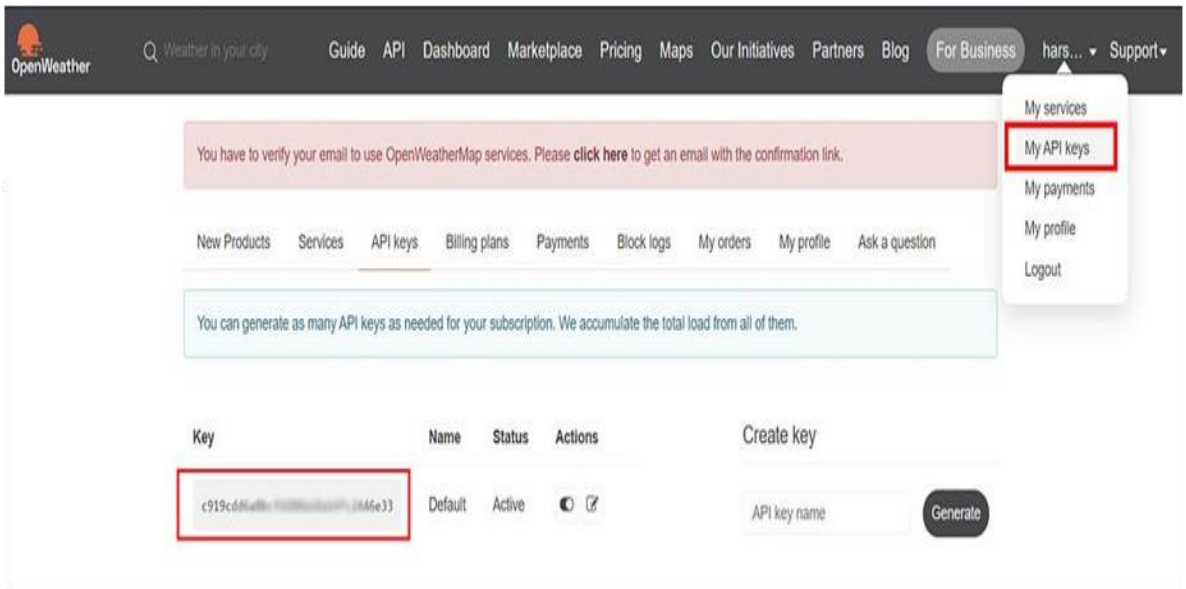
☛ **Create a service in react that fetches the weather information from open weathermap.org and the display the current and historical weather information using graphical representation using chart.js**

Solution :

Step 1: Create an OpenWeatherMap Account and Generate API Key

- Visit the OpenWeatherMap website *(https://openweathermap.org/)* and click on "**Sign Up**" or "**Log In**" to create an account or log into your existing account.
- Once logged in, navigate to your account dashboard.
- From the dashboard, locate my API Keys section and click on "**Create Key**" or "**API Keys**" to generate a new API key.
- Provide a name for your API key (e.g., "**WeatherApp**") and click on the "**Generate**" or "**Create**" button.
- Your API key will be generated and displayed on the screen. Make sure to copy it as we will need it later.

Locate API key



Step 2: Set up a new React project

- Open your terminal or command prompt.
- Run the following command to create a new React project:

```
npxcreate-react-app weather-app
```

- Once the project is created, navigate into the project directory:

```
cd weather-app
```

Step 3: Install required packages

In the project directory, install the necessary packages by executing the following command

```
npm install axios
```

We will use the Axios library to make HTTP requests to the OpenWeatherMap API.

Step 4: Create a Weather component

- Inside the "src" directory, create a new file called "Weather.js" and open it in your code editor.
- Add the following code to define a functional component named Weather:

```
import React, { useEffect, useState } from 'react';
import axios from 'axios';

const Weather = () => {
  const [city, setCity] = useState('');
  const [weatherData, setWeatherData] = useState(null);

  const fetchData = async () => {
    try {
      const apiKey = 'c97c0c1086d42990e89d64d76f50bb61';
// Replace with your OpenWeatherMap API key
      const response = await axios.get(
        'https://api.openweathermap.org/data/2.5/weather?q=${c
ity}&units=metric&appid=${apiKey}');
     setWeatherData(response.data);
     console.log(response.data);
//You can see all the weather data in console log
   } catch (error) {
   cnsole.error(error);
   }
```

```
  };
useEffect(() => {
fetchData();  }, []);



  const handleInputChange = (e) => {
    setCity(e.target.value);
  };

  const handleSubmit = (e) => {
e.preventDefault();
fetchData();
  };

  return (
<div>
<form onSubmit={handleSubmit}>
<input
          type="text"
          placeholder="Enter city name"
          value={city}
          onChange={handleInputChange}
        />
<button type="submit">Get Weather</button>
</form>
      {weatherData ? (
<>
<h2>{weatherData.name}</h2>
<p>Temperature: {weatherData.main.temp} C</p>
<p>Description: {weatherData.weather[0].description}</p>
<p>Feels like : {weatherData.main.feels_like} C</p>
<p>Humidity : {weatherData.main.humidity}%</p>
<p>Pressure : {weatherData.main.pressure}</p>
<p>Wind Speed : {weatherData.wind.speed}m/s</p>
</>      ) : (<p>Loading weather data...</p>
      )}
</div>  );};
export default Weather;
```

Replace {YOUR_API_KEY} in the API URL with the API key you generated from OpenWeatherMap.

Step 5: Connect the Weather component to your app.

- Open the "App.js" file in the "src" directory.
- Replace the existing code with the following code:

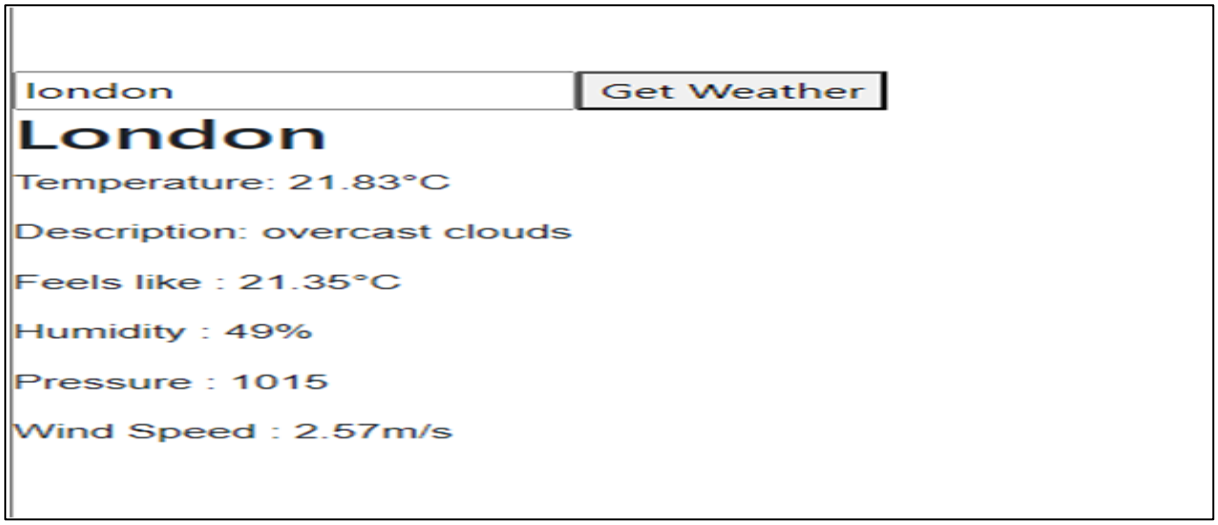
```
import React from'react';
import Weather from'./Weather';

const App = () => {
return (
<div>
<h1>Weather Forecast App</h1>
<Weather />
</div>
  );
};

exportdefault App;
```

Your output should look like this:

Output :

Initial Screen

After Supply the City name



Result :

Hence the program was executed successfully.

Viva Questions :

1. What is use state Hook?
2. What is use effect Hook?
3. How to create weather component.
4. What is axios?
5. What are the rules that must be followed while using React Hooks?

EXERCISE 14:

Aim:

☛ **Create a TODO application in react with necessary components and deploy it into github.**

Solution :

Step 1: Set Up the Project

Our first task is to set up the React project. This step involves creating the necessary project structure. Here's how you can do it:

1. Create a React App:

Open your terminal and navigate to your preferred directory. Run the following command to generate a new React app. Replace **"todo-app"** with your desired project name:

```
npx create-react-app todo-app
```

This command will create a directory named "todo-app" with all the initial code required for a React app.

2. Navigate to the Project Directory:

Change your working directory to the "todo-app" folder:

```
cd todo-app
```

3. Start the Development Server:

Launch the development server with the following command:

```
npm start
```

This will open your React app, and you'll see the default React starter page in your web browser at *'http://localhost:3000'*.

Step 2: Create the App Component

In this step, we create the App component, which serves as the entry point to our Todo List application.

```
import React from'react';
```

```
import TodoList from'./components/TodoList';
function App() {
return (
<div className="App">
<TodoList />
</div>
 );
}
exportdefault App;
```

Step 3: Create the TodoList

src->Component

Now, let's create the 'TodoList' component, which is responsible for managing the list of tasks and handling task-related functionality.

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

function TodoList() {
const [tasks, setTasks] = useState([
 {
id: 1,
text: 'Doctor Appointment',
completed: true
 },
 {
id: 2,
text: 'Meeting at School',
completed: false
 }
 ]);

const [text, setText] = useState('');
function addTask(text) {
const newTask = {
id: Date.now(),
 text,
completed: false
 };

 setTasks([tasks, newTask]);

 setText('');
 }
function deleteTask(id) {
```

```
 setTasks(tasks.filter(task => task.id !== id));
}
function toggleCompleted(id) {
 setTasks(tasks.map(task => {
if (task.id === id) {
return {task, completed: !task.completed};
 } else {
return task;
 }
 }));
 }
return (
<div className="todo-list">
 {tasks.map(task => (
<TodoItem
 key={task.id}
 task={task}
 deleteTask={deleteTask}
 toggleCompleted={toggleCompleted}
 />
 ))}
<input
 value={text}
 onChange={e => setText(e.target.value)}
 />
<button onClick={() => addTask(text)}>Add</button>
</div>
 );
}
exportdefault TodoList;
```

Step 4: Create the place the TodoItem in

src->Component

In this step, we create the 'TodoItem' component, which represents an individual task in our Todo List.

```
import React from'react';
function TodoItem({ task, deleteTask, toggleCompleted }) {

function handleChange() {
 toggleCompleted(task.id);

 }

return (
```

```
<div className="todo-item">

<input
 type="checkbox"
 checked={task.completed}
 onChange={handleChange}
 />
<p>{task.text}</p>
<button onClick={() => deleteTask(task.id)}>
 X
</button>
</div>
 );
}
exportdefault TodoItem;
```

These three components, 'App', 'TodoList', and 'TodoItem', work together to create a functional Todo List application in React. The 'TodoList' component manages the state of the tasks, and the 'TodoItem' component represents and handles individual tasks within the list.

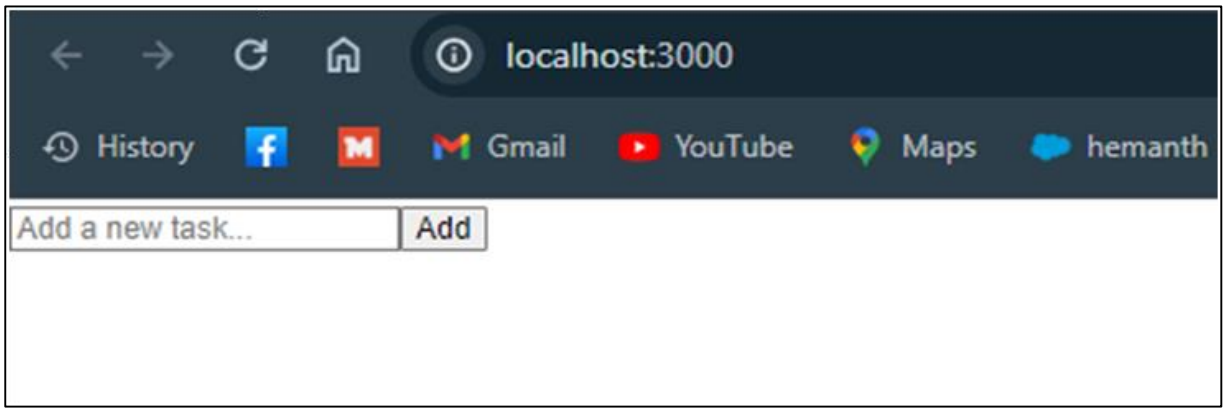
Step 5: Styling

To enhance the visual appeal of your Todo List, you can apply some basic styling. Here's an example of how you can style the todo items. In the `App.css` file, add the following styles:

```
.todo-item {
display: flex;
justify-content: space-between;
margin-bottom: 8px;
}
.todo-itemp {
color: #888;
text-decoration: line-through;
}
```

Output :

Initially it looks like:



Next,

Result :

Hence the program was executed successfully.

Viva Questions :

1.How to create TODO list.
2.Explain about the advantages of TODO list.
3.what is <form method="POST">?
4. Explain the following:
<form action="/del/{{i.id}}" method="POST" style=" padding-right: 4%; padding-bottom: 3%;">
5.What is react?