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FSD

Assignment : 1

Aim : Develop responsible web design using HTML5 , containing a form. Style the pages using CSS, use of tag selector, class selector & id selector. Use Inline, internal & External CSS

Apply Bootstrap CSS.

Objectives :

i) To understand HTML Tags
ii) To learn the styling of web pages using CSS
iii) To learn Bootstrap front end framework.

Theory:

1) Define responsive web design (RWD). what is its primary goal?

→ RWD is a design technique where websites automatically adjust that layout, images & elements to fit the screen size like desktops to mobile phones. It's used to provide smooth, readable & user friendly experience across the devices without needing separate website for each.

2) Explain the role of the <meta name="viewport" > tag. Why is this tag essential for

→3) External CSS: Involues creating
CSS
file containing all CSS rules & then li
The HTML doc using <link> in <h

```
Ex <html>
     <head>
     <link rel = 'stylesheet' href =

   </head>
&
style.css : p { color : red ; font family
```

* Conclusion :

- In This assignment we built responsi
pages using HTML. We used differ
CSS selectors, The ways to ap
CSS & how the viewport tag wi
bootstrap grid system ensures lay.
adopted to all screen sizes.

22/8/25

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FSD - assign-2

Aim: Develop a web application using javascript to implement session, cookies, DOM. Perform validations such as checking for experiment, only numbers for phone no special character requirement for password, regular expressions for certain formats of the fields etc use the MySQL database.

Objective: i) To understand what form of validation is

ii) To learn basic functioning of DOM objectives

iii) To learn how to apply various techniques & is implement it.

Theory:

→ Regular expressions are pattern used for matching characters combination in strings. They provide a powerful & concise way to validate input formats by defining a set of values.

le: They need check if an input string meets a specific pattern.

Stabality: They can enforce exact format rules like no. of digits, presence of contain characters. For phone numbers, regex ensure the no only contains digits & has specific length

For password it can check for upper & cases

Q2) Difference b/w session & cookie?

Aspect	Cookie	Session
• Storage location	Stored on the Client side	Stored on side
• Data Size limit	limited	No strict
• lifetime	can persist beyond browser session.	~~Not~~ strict until log
• Security	less secure	More secu

Q3) Purpose of performing both client & s/a validation.

Client Validation :-

- Provides immediate feedback to users

- Reduces server load by catching errors befor submission.

⇒ Server side validation :-

- Ensures data integrity & security
- Can't be ~~beyond~~ bypassed by malicious users

Q3) Example scenario where relying solely on clients side validation could lead to security vulnerability.

→ Imagine an at online shopping website that validates the price of item & only on the client side, & malicious users could manipulate the price value in the browser's developer tool before submitting the order, paying less than actual cost without server side validation verify the pride, causing financial loss.

) Provide a simple ex. of how a Javascript can interact with the DOM to diplomacy change the content of web page after a user interaction. ?

```
<form id = "My form" >
<input type = "text" id = "name" placeholders
                           = "Enter name" />
<button type = "submit" > Submit </button>
```

```
</form>
<div id = "greeting > </div>
    <script >

document get element by Id ('my form') a
{ event . prevent default ( );

const name = document get ID ('name'
}, );
  </ script >
```

when form is submitted, the script prev
default submission update contents

5) Steps for connectivity from frontend u
HTML & JS to mysql.

a) front end : create a form & collect u
input.

b) Validation : Use js to check inputs.

c) Send data : Sumit the data to b
end language like php, HTML, py

d) Database connections :
The backend uses
to connect to mySQL.

e) Execute query : Insert / fetch data fr

MYSQL tables

) Send response : The back end sends the result to frontend , & the DOM is updated accordingly.

FAQ's :

) Write 3 reasons why form validation is important ?

Prevents incorrect or incomplete data entry

Protect the web application from malicious inputs such as SQL injection

Improves user experience by highlighting errors before submission.

Q3) Give an ex. how to modify an attribute value using DOM?

html

```
<img id ="logo" src ="old.png" >
<script >
document . get element by ID ("logo").set
Attribute ("src", "new.png");
</script >
```

This change src attribute of image from old.png to new.png

Q3) Write features of JS?

a) Lightweight , interpreted & platfor
-ent.

b) Provides DOM manipulation & event h

c) Supports both object oriented & fu
programming.

d) Enables Asynchronous operation usin

5/9/25

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lab assignment - 03

Aim: Design an interactive front end application using react by implementing templating using components, state & Props, events.

Objective: To develop a responsive, interactive front-end application using React-js that effectively demonstrates the fundamenta-l concepts of component - based architecture & event handling.

The application will serve as a practical exerc-e in building a scalar user interface ba implementing templating with components & props, ensuring seamless user experie across various process & screen sizes.

Theory:

i) Explain the role of State & Props in react. Ho They differ and what is the primary purpose of each in managing data within a component - based application.

State:

→ Represents components' internal data

→ Changes to state trigger re-rendering com

- Props :-
- Passed from parent to child components
- Read only and immutable inside child
- Ex: Passing data to child or event ha

- Difference
- State for the local data changes & Props for data flow between components.

Q2) What is a React Component ? Differiantiate a class component & a functional component & discuss the advantages of using of fun component with hooks like useState & Effect over a class component.

- A React is a reusable component building & represents part of the UI.

- Class component :
  - Defined using ES6 classes
  - Uses this.state for state & lifestyle
  - More verbose.

- Functional component :
  - Defined using plan J.S. functions
  - Use Hooks for state & side e
  - Simpler & cleaner.

Advantages of functional components with hooks

Less boilerplate code.
Easier to read & test.
Hooks unify state & lifestyle logic inside functio

Better performance in most cases

3) Describe this concept of "templating using components" in React, why is this approach considered superior or traditional on monolithic HTML files?

. In React, UI is built by recording small, reusable components.

. Each components manages its own logic & UI
. This modular approach makes apps scalable & reusable

Why better than monolithic HTML files

. Traditional HTML is rigid & rigid to mainta

. Component - based design allows dynamic upd -s, reusability & easier debugging.

Encourage separation of concerns (login + UI i one component)

Q4) How do you handle user events in Reac
Provide a simple code snippet to demon
how an event handler is defined in a
& how it can be used to update the
state?

→ React uses event handlers bound to compon

Ex:

```
    import React, { use State } from "reac
    function counter () {
    const [ count, set Count ] = useStat

const handleClick = () => {
    set Count (count + 1);
};
return {
  <div>
  <p> Count: { count } </p>
<button onClick = handle Click}> Increas
              </button>
</div>
  );
  }
export default Counter;
```

Q5) What is a responsive web design, & wh
crucial for modern applications? Describe
you would implement a responsive design
in a React application using CSS medi

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are a CSS-in-JS library.

- Responsive Web design (RWD) ensures apps adapt to different devices.

- Crucial for modern apps because users accept them on multiple screen sizes.

Implementation in React :-

- CSS media Queries :

```
@media (max-width: 600px) {
 .container {
    font-size : 14px ;
 }
  }
```

- CSS-in-JS

```
const Box = styled.div
 width : 100% ;
@ media (max - width : 600px) {
 background : lightblue ;
 }
  }
```

26/9/25

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FSD - assignment - 04

Aim: Enhance web page developed in earlier assignment by rendering lists & portals, Error handling, Routing & style with React CSS also make it is a responsive design to scale well across PC, tablet & mobile phone

Objectives:

- Enhance User Interface & Experience
- Improve Application Robustness & navigation

Theory:-

1) How do lists & keys work in React?

→ lists: In React, lists are used to render multiple items dynamically using.

→ keys: Keys are unique identifiers assigned to list items to help react track which items change, update or get removed.

Without keys, ~~React~~ re-renders inefficiently, leading to performance issues.

React Portal what is it & when would you use one?

A portal lets your render a child components outside its parent DOM heirarchy, usualy into a differently DOM node

- Use cases: Modals, dialogs, tooltips, ... — when UI should appear on top of else but stay part of React's [illegible]

Q3) Discuss the importance of Error Boundaries

- Error Boundaries are React components ... Javascript errors in their child compon...

- They prevent an entire app from crashing ... - g a fallback UI instead.

- Crucial for improving user experience & ...

Q4) How does React Router enable single Pa... Application (SPA) functionality.

- SPA loads once, & React Router dynamica... → the view without refreshing the page

- It enables client - side routing using com... like <Route> & <Link>.

- This give users fast navigation & a sea... app like experience.

Q5) Explain the different ways to style a... application.

- Different approaches to styling in Rea...

1) CSS Style...

2) Inline ...

3) CSS m... names ...

4) CSS - ... , em...

5) Uti...

1) CSS Stylesheets : traditional .css files

2) Inline styles : Adding style directly to elements

3) Css modules : scoped CSS with unique class names

4) CSS - in-JS libraries : e.g. styled- components , emotion .

5) Utility - first - Frameworks : Tailwind CSS

26/4

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FSD - Assignment: 05

Aim: Develop a responsive web design using Express framework to perform CRUD& operation & deploy with Node Js use MongoDB.

Objectives:

- Full Stack Web Application development.
- Demonstrate Backend development & deployment Proficiency.

Theory:

1) What is the role of Express.js as a web framework or Node.js.

→ Express.js is a lightweight & flexible web framework for Node js that simplifies server-side development.

It provides tools for handling HTTP requests, routing, middleware, making it easier to build scalable web applications and API's

) Explain the concept of CRUD operations in the context of web applications

CRUD stands for Create, Read, Update, Delete.

These are the four basic operations performed on data in a web application.

- Create : Add new data (e.g. new user registration)
- Read : Retrieve data (e.g. view user pro
- Update : Modify existing data.
- Delete : Remove data.

5) Why is MongoDB a suitable choice for this project ?

- Stores data in a flexible JSON-like (BSON) format.
- Handles unstructured or semi-structured data well.
- Scales easily for large applications.
- Integrates smoothly with Node.js & Express.
- Faster development due to schema-less de

Q4) What steps are involved in deploying a node / Express application ?

Ans

- Prepare app & set environment variables.
- Choose host. (heroke, AWS, etc)

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Aim : D
Exposes
Install
→ Use
→ Set up
→ M

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FSD - assignment 05

Aim:

Develop a responsive web design using Express Framework to perform CRUD

→ Install Node.js & dependencies

→ Use PM2 for process management

→ Setup Reverse proxy for NGINX & SSL

→ Monitor & maintain