**EXPERMENT 1**

**Install Node.js and Create React App**

bash

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npm install -g create-react-app

npx create-react-app hello-world

cd hello-world

**Update App.js**

Replace the contents of src/App.js with:

javascript

CopyEdit

import React from 'react';

import './App.css';

function App() {

return (

<div className="App">

<h1>Hello World</h1>

</div>

);

}

export default App;

**Start the Development Server**

bash

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npm start

This will start the React app on <http://localhost:3000>.

OUTPUT :

Localhost:3000 says

Hello world

**MongoDB CRUD Operations**

**Insert Documents**

javascript

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db.students.insertOne({ name: "John Doe", age: 22, course: "Computer Science" });

db.students.insertOne({ name: "Jane Doe", age: 20, course: "Mathematics" });

**Retrieve All Documents**

javascript

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db.students.find();

**Update a Document**

javascript

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db.students.updateOne({ name: "John Doe" }, { $inc: { age: 1 } });

**Delete a Document**

javascript

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db.students.deleteOne({ name: "Jane Doe" });

**EXP 2**

**Install Node.js and Create React App**

bash

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npm install -g create-react-app

npx create-react-app hello-world

cd hello-world

**Create Greet.js Component**

Create a new file src/Greet.js and add:

jsx

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import React from 'react';

function Greet() {

return (

<div>

<h1>Greetings!</h1>

<p>Welcome to my React App</p>

</div>

);

}

export default Greet;

**Update App.js**

Replace the contents of src/App.js with:

jsx

CopyEdit

import React from 'react';

import Greet from './Greet';

function App() {

return (

<div>

<Greet />

</div>

);

}

export default App;

**Start the Development Server**

bash

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npm start

This will start the React app on http://localhost:3000, displaying:  
**"Greetings! Welcome to my React App"**

OUTPUT :

Greetings! Welcome to my React App

**MongoDB Query Filtering and Projection**

**Retrieve Students Older than 21**

javascript

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db.students.find({ age: { $gt: 21 } });

**Retrieve Only Name and Course of Students Older than 21**

javascript

CopyEdit

db.students.find(

{ age: { $gt: 21 } },

{ name: 1, course: 1, \_id: 0 }

);

**EXP 3**

### Check Node.js and npm Installation

bash

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node -v

npm -v

Ensure both commands return a version number. If not, install Node.js from [nodejs.org](https://nodejs.org/en/).

### Create a React App

bash

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npx create-react-app hello-world

cd hello-world

### Create Welcome.js Class Component

Create a new file src/Welcome.js and add:

javascript

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import React, { Component } from 'react';

class Welcome extends Component {

render() {

return <h1>Welcome to React!</h1>;

}

}

export default Welcome;

### Update App.js

Replace the contents of src/App.js with:

javascript

CopyEdit

import React, { Component } from 'react';

import Welcome from './Welcome';

class App extends Component {

render() {

return (

<div className="App">

<Welcome />

</div>

);

}

}

export default App;

### Start the Development Server

bash

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npm start

This will start the React app on http://localhost:3000, displaying:  
**"Welcome to React!"**

OUTPUT :Welcome to React!

### MongoDB Aggregation

#### Count Total Students

javascript

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db.students.countDocuments();

#### Group Students by Course

javascript

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db.students.aggregate([

{ $group: { \_id: "$course", totalStudents: { $sum: 1 } } }

]);

**EXP 4**

**Create a React App**

bash

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npx create-react-app hello-world

cd hello-world/src

touch Hello.js

**Create Hello.js Component**

Create a new file src/Hello.js and add:

jsx

CopyEdit

import React from 'react';

function Hello() {

// Using JSX

return <h1>Hello Vishwas</h1>;

// Without using JSX

// return React.createElement('h1', null, 'Hello Vishwas');

}

export default Hello;

**Update App.js**

Replace the contents of src/App.js with:

jsx

CopyEdit

import React from 'react';

import Hello from './Hello';

function App() {

return (

<div>

<Hello />

</div>

);

}

export default App;

**Start the Development Server**

bash

CopyEdit

npm start

This will start the React app on http://localhost:3000, displaying:  
**"Hello Vishwas"**

**MongoDB Indexing and Performance**

**Create an Index on the name Field**

javascript

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db.students.createIndex({ name: 1 });

**Use the Index to Query by Name**

javascript

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db.students.find({ name: "John Doe" });

**EXP 5**

**Create a React App**

bash

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npx create-react-app hello-world

cd hello-world

**Create Greet.js Component**

Create a new file src/Greet.js and add:

javascript

CopyEdit

import React from 'react';

function Greet(props) {

return <h1>Welcome {props.name}</h1>;

}

export default Greet;

**Update App.js**

Replace the contents of src/App.js with:

javascript

CopyEdit

import React from 'react';

import Greet from './Greet';

function App() {

return (

<div className="App">

<Greet name="Bruce" />

</div>

);

}

export default App;

**Start the Development Server**

bash

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npm start

This will start the React app on http://localhost:3000, displaying:  
**"Welcome Bruce"**

**MongoDB Embedded Documents**

**Insert a Document with an Embedded Address**

javascript

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db.students.insertOne({

name: "John Doe",

age: 22,

course: "Computer Science",

address: {

street: "123 Elm St",

city: "New York",

zipcode: "10001"

}

});

**Retrieve Students from New York**

javascript

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db.students.find({ "address.city": "New York" });

**EXP 6**

**Create a React App**

bash

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npx create-react-app hello-world

cd hello-world

**Create Message.js Component**

Create a new file src/Message.js and add:

javascript

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import React, { Component } from 'react';

class Message extends Component {

constructor(props) {

super(props);

this.state = {

message: "Welcome Visitor"

};

}

handleSubscribeClick = () => {

this.setState({ message: "Thank You For Subscribing" });

};

render() {

return (

<div>

<h1>{this.state.message}</h1>

<button onClick={this.handleSubscribeClick}>Subscribe</button>

</div>

);

}

}

export default Message;

**Update App.js**

Replace the contents of src/App.js with:

javascript

CopyEdit

import React from 'react';

import Message from './Message';

function App() {

return (

<div className="App">

<Message />

</div>

);

}

export default App;

**Start the Development Server**

bash

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npm start

This will display:  
**"Welcome Visitor"** with a **"Subscribe"** button. Clicking the button updates the message to:  
**"Thank You For Subscribing"**

**MongoDB $and and $or Conditions**

**Retrieve students who are either older than 21 or enrolled in "Computer Science"**

javascript

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db.students.find({

$or: [

{ age: { $gt: 21 } },

{ course: "Computer Science" }

]

});

**Retrieve students who are older than 21 and enrolled in "Computer Science"**

javascript

CopyEdit

db.students.find({

$and: [

{ age: { $gt: 21 } },

{ course: "Computer Science" }

]

});

**EXP 7**

**React Application - Button Click Event**

**Create a React App**

bash

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npx create-react-app hello-world

cd hello-world

**Update App.js**

Replace the contents of src/App.js with:

javascript

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import React from 'react';

import FunctionClick from './FunctionClick';

function App() {

return (

<div className="App">

<FunctionClick />

</div>

);

}

export default App;

**Create FunctionClick.js Component**

Create a new file src/FunctionClick.js and add:

javascript

CopyEdit

import React from 'react';

function FunctionClick() {

const handleClick = () => {

console.log('Button Clicked');

};

return (

<div>

<button onClick={handleClick}>Click me</button>

</div>

);

}

export default FunctionClick;

**Start the Development Server**

bash

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npm start

When you click the button, **"Button Clicked"** will be logged in the browser console.

**MongoDB - Basic CRUD Operations**

**Insert Documents**

javascript

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db.students.insertOne({

name: "John Doe",

age: 22,

course: "Computer Science"

});

db.students.insertOne({

name: "Jane Doe",

age: 20,

course: "Mathematics"

});

**Retrieve All Documents**

javascript

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db.students.find();

**Update Student's Age**

javascript

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db.students.updateOne(

{ name: "John Doe" },

{ $inc: { age: 1 } }

);

**Delete a Student**

javascript

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db.students.deleteOne({ name: "Jane Doe" });

**EXP 8**

**Create a React App**

bash

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npx create-react-app hello-world

cd hello-world

code .

**Create Form.js Component**

Create src/Form.js and add:

javascript

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import React, { Component } from "react";

class Form extends Component {

state = {

name: "",

};

handleChange = (event) => {

this.setState({ name: event.target.value });

};

handleSubmit = (event) => {

event.preventDefault();

alert("Hello " + this.state.name);

};

render() {

return (

<form onSubmit={this.handleSubmit}>

<label>

Name:

<input

type="text"

value={this.state.name}

onChange={this.handleChange}

/>

</label>

<button type="submit">Submit</button>

</form>

);

}

}

export default Form;

**Update App.js**

Modify src/App.js as follows:

javascript

CopyEdit

import React from "react";

import Form from "./Form";

function App() {

return (

<div className="App">

<Form />

</div>

);

}

export default App;

**Start the Development Server**

bash

CopyEdit

npm start

Now, entering a name in the text field and clicking **Submit** will display an alert with "Hello [name]".

**MongoDB - Query Filtering and Projection**

**Retrieve Students Older Than 21**

javascript

CopyEdit

db.students.find({ age: { $gt: 21 } });

**Retrieve Only Name & Course of Students Older Than 21**

javascript

CopyEdit

db.students.find(

{ age: { $gt: 21 } },

{ name: 1, course: 1, \_id: 0 }

**EXP 9**

**Fetching Data Using Axios in React**

**Step 1: Create a React Application**

bash

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npx create-react-app react-http

cd react-http

npm install axios

**Step 2: Create PostList.js to Fetch and Display Posts**

Create src/PostList.js and add the following code:

javascript

CopyEdit

import React, { Component } from "react";

import axios from "axios";

class PostList extends Component {

constructor(props) {

super(props);

this.state = {

posts: [],

};

}

componentDidMount() {

axios

.get("https://jsonplaceholder.typicode.com/posts")

.then((response) => {

this.setState({ posts: response.data });

})

.catch((error) => {

console.log("Error fetching posts:", error);

});

}

render() {

const { posts } = this.state;

return (

<div>

<h1>Posts</h1>

{posts.length ? (

posts.map((post) => (

<div key={post.id}>

<h2>{post.title}</h2>

</div>

))

) : (

<div>No posts yet</div>

)}

</div>

);

}

}

export default PostList;

**Step 3: Update App.js to Include PostList**

Modify src/App.js as follows:

javascript

CopyEdit

import React from "react";

import PostList from "./PostList";

function App() {

return (

<div className="App">

<PostList />

</div>

);

}

export default App;

**Step 4: Run the React Application**

bash

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npm start

Now, your browser should display a list of post titles fetched from the JSONPlaceholder API.

**MongoDB Aggregation Framework**

**Count the Total Number of Students**

javascript

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db.students.countDocuments();

**Group Students by Course and Get Total Count Per Course**

javascript

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db.students.aggregate([

{ $group: { \_id: "$course", totalStudents: { $sum: 1 } } }

]);