Buffer Code (index.js) (Output in terminal)

```
const buffer = new Buffer.from("Shreya");
buffer.write("Internet");
console.log(buffer.toString());
console.log(buffer);
console.log(buffer.toJSON());
```

Buffer Code (index.js) (Webpage)

```
const http = require('http');

const server = http.createServer((req, res) => {
    const buffer = Buffer.from("Shreya");
    buffer.write("Internet");

    const outputString = buffer.toString();
    const bufferJson = buffer.toJSON();

    res.writeHead(200, { 'Content-Type': 'text/html' });
    res.end(`
        <html>
            <head>
                <title>Buffer Output</title>
            </head>
            <body>
                <h1>Buffer Outputs</h1>
                <p><strong>Buffer toString:</strong> ${outputString}</p>
                <p><strong>Buffer:</strong> ${buffer.toString('hex')}</p>
                <p><strong>Buffer toJSON:</strong> ${JSON.stringify(bufferJson)}</p>
            </body>
        </html>
    `);
});

const PORT = 3000;
server.listen(PORT, () => {
```

```
    console.log(`Server is running at http://localhost:${PORT}`);
});
```

Stream Code (index.js) (Output in terminal)

```
const fs = require("node:fs");

const readableStream = fs.createReadStream("./file.txt", {
  encoding: "utf-8",
  highWaterMark: 2,
});
const writableStream = fs.createWriteStream("./file2.txt");

readableStream.on("data", (chunk) => {
  console.log(chunk);
  writableStream.write(chunk);
});
```

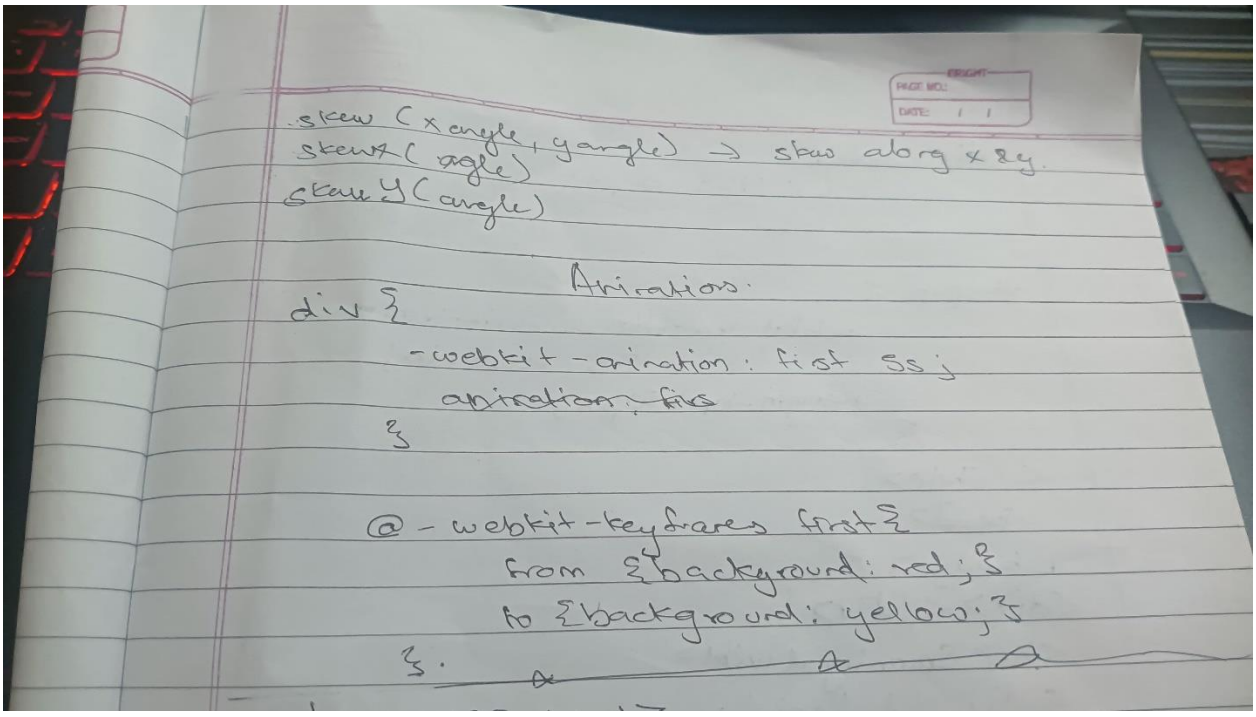
Arrow Function (index.js) (Output in terminal)

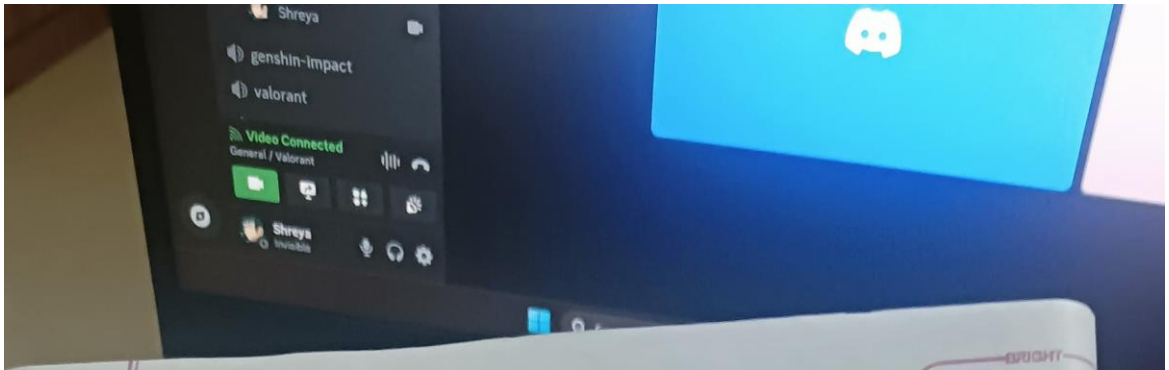
```
let add = (num1, num2) => num1 + num2;
let result = add(3, 43);
console.log(result);
```

CSS 3 Transition, Transformation and Animations

```
<!DOCTYPE html>
<html>
<head>
<style>
div {
        width: 100px;
        height: 100px;
        background: red;
        -webkit-animation:first 5s;
       -webkit-transition-property: width;
        -webkit-transition-timing-function: ease;
```

```
}
@-webkit-keyframes first {
  from {background:red;}
  to {background:yellow;}
}
div:hover {
   width: 200px;
}
#spin {
        -webkit-transition: -webkit-transform 3s ease-in;
        margin-top: 50px;
}
</style>
</head>
<body>
<div></div>
<h1>Spinning Div</h1>
<div id="spin" onmouseover="this.style.webkitTransform='rotate(360deg)'">
This div will do a spin when clicked the first time!
</div>
</body>
</html>
```





Transformation:

```
div{
  -webkit-transform: translate(50px, 100px)
  }

div{
  -webkit transform: rotate(30deg);
  }

div{
  -webkit-transform: scale(2, 4);
  }

div{
  -webkit-transform: skew(30deg, 20deg);
  }
```

matrix(n, n, n, n, n, n).

translate(x, y) → moving element along x & y.

translate X(n) → moving element along x a.

translate Y(n)

scale(x, y) → element width & height.
scaleX(n) width
scaleY(n height

Transition.

```
div {
  -webkit-transition: width 1s;
  transition: width 2s;
}
```

```
div {
  -webkit-transition-property: width, height;
  transition-property: width height;
}
```

```
div:hover {
  width: 300px
  height: 300px;
}
```

fast ← X O → slow

ease

ease ~ O X O

linear ~ ——

ease in ~ O

ease out ~ —O

ease in out ~ O—O

} Transition.

Class Component (Kanishq)

```
import React, { Component } from 'react';

class HelloWorld extends Component {
  // Constructor to initialize the state
  constructor(props) {
    super(props);
    // Setting the initial state
    this.state = {
      message: 'Hello, World!'
    };
  }

  // Method to update the state when button is clicked
  changeMessage = () => {
    this.setState({
      message: 'You clicked the button!'
    });
  };

  // Render method that returns JSX to be displayed
  render() {
    return (
      <div>
        <h1>{this.state.message}</h1>
        <button onClick={this.changeMessage}>Click me!</button>
      </div>
    );
  }
}

export default HelloWorld;
```

Class Component (Shreya)

```
import React from "react";
class Sample extends React.Component {
  render() {
    return <h1>Hello World</h1>;
  }
}
export default Sample;
```

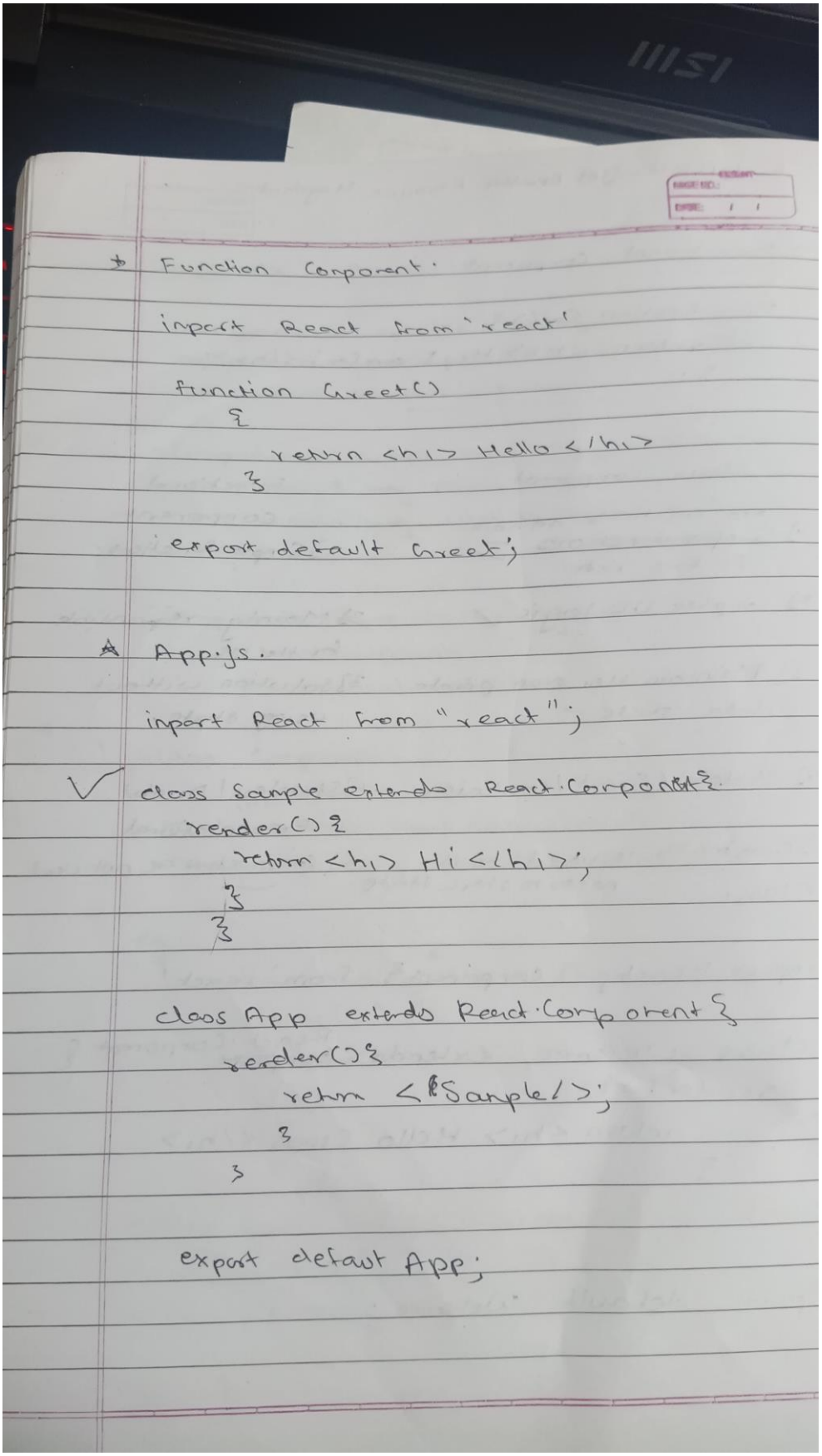
Functional component (Kanishq)

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

function HelloWorld() {
  // Using the useState hook to manage state
  const [message, setMessage] = useState('Hello, World!');

  // Function to update the message when button is clicked
  const changeMessage = () => {
    setMessage('You clicked the button!');
  };

  // Returning JSX to render the UI
  return (
    <div>
      <h1>{message}</h1>
      <button onClick={changeMessage}>Click me!</button>
    </div>
  );
}

export default HelloWorld;
```

Functional Component (Shreya)

```
import React from "react";
```

```
function Greet() {
  return <h1>Hello World</h1>;
}
export default Greet;
```



SVG

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Smiley Face SVG</title>
</head>
<body>
  <!-- SVG code here -->
  <svg width="200" height="200" xmlns="http://www.w3.org/2000/svg">
    <!-- Face circle -->
    <circle cx="100" cy="100" r="80" stroke="black" stroke-width="4" fill="yellow" />

    <!-- Left eye -->
    <circle cx="70" cy="80" r="10" fill="black" />

    <!-- Right eye -->
    <circle cx="130" cy="80" r="10" fill="black" />

    <!-- Smile -->
    <path d="M 60 130 Q 100 170 140 130" stroke="black" stroke-width="4" fill="transparent" />
  </svg>
</body>
</html>
```

Design web page using ES6 arrow functions and Generator

```
<!DOCTYPE html>
<html>
<head>
  <title>ES6 Addition with Generator</title>
</head>
<body>
  <div id="result"></div>

  <script>
    // Arrow function to add two numbers
    const add = (a, b) => a + b;

    // Generator function to handle addition and display result
    function* addAndDisplay() {
      const num1 = 5; // Example numbers
      const num2 = 7;
      const result = add(num1, num2);
      yield result;
      document.getElementById('result').innerHTML = `The result is: ${result}`;
    }

    // Run the generator
    const generator = addAndDisplay();
    const result = generator.next().value;
    generator.next(result);
  </script>
</body>
</html>
```

React usestate

App.js for usestate

```
import React, { useState } from "react";

function App() {
```

```
  const [color] = useState("red");

  return <h1>My favourite color is {color}!</h1>;
}

export default App;
```

index.js for usestate

```
import React from "react";
import ReactDOM from "react-dom/client";
import App from "./App";

const root = ReactDOM.createRoot(document.getElementById("root"));
root.render(<App />);
```

React setstate

app.js for setstate

```
import React, { Component } from "react";

class Color extends Component {
  // Initialize state in the constructor
  constructor(props) {
    super(props);
    this.state = {
      color: "red",
    };
  }

  // Method to update the color in the state
  changeColor = () => {
    this.setState({ color: "blue" });
  };

  render() {
    return (
```

```
      <div>
        <h1>My favourite color is {this.state.color}!</h1>
        <button onClick={this.changeColor}>Change Color</button>
      </div>
    );
  }
}

export default Color;
```

index.js for setstate

```
import React from "react";
import ReactDOM from "react-dom/client";
import Color from "./Color"; // Ensure the correct file path

const root = ReactDOM.createRoot(document.getElementById("root"));
root.render(<Color />);
```

Simple Calculator (HTML and JavaScript)

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <title>Calc</title>
</head>
<body>
    <input id="result" disabled>
    <br>
    <button onclick="clearResult()">C</button>
    <button onclick="append('7')">7</button>
    <button onclick="append('8')">8</button>
    <button onclick="append('9')">9</button>
    <button onclick="append('/')">/</button>
    <br>
    <button onclick="append('4')">4</button>
```

```
    <button onclick="append('5')">5</button>
    <button onclick="append('6')">6</button>
    <button onclick="append(')"></button>
    <br>
    <button onclick="append('1')">1</button>
    <button onclick="append('2')">2</button>
    <button onclick="append('3')">3</button>
    <button onclick="append('-')">-</button>
    <br>
    <button onclick="append('0')">0</button>
    <button onclick="calculate()">=</button>
    <button onclick="append('+')">+</button>

    <script>
        function append(value) {
            document.getElementById('result').value += value;
        }
        function clearResult() {
            document.getElementById('result').value = '';
        }
        function calculate() {
            const result = document.getElementById('result');
            try { result.value = eval(result.value); }
            catch { result.value = 'Error'; }
        }
    </script>
</body>
</html>
```

Form (form.html)

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
```

```
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Form Validation</title>
</head>
<body>
    <script>
        function data(){
            var a=document.getElementById("n1").value;
            var b=document.getElementById("n2").value;
            var c=document.getElementById("n3").value;

            if(a=="" || b=="" || c=="")
            {
                alert("All Fields are Mandatory");
                return false;
            }
            else if(b.length<10 || b.length>10)
            {
                alert("Number should be 10 digits");
                return false;
            }
            else if(isNaN(b))
            {
                alert("Only numbers are allowed");
                return false;
            }
            else{
                true;
            }
        }
    </script>
    <form onsubmit="data()" action="formval.html">
        User Id:<br><input type="text" id="n1"><br><br>
        Contact:<br><input type="text" id="n2"><br><br>
        Password:<br><input type="password" id="n3"><br><br>
```

```
        <input type="submit" value="Submit Data">
    </form>
</body>
</html>
```

Form (formval.html)

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Data Validation</title>
</head>
<body>
    <h1>Your Data Has Been Submitted</h1>
</body>
</html>
```

Form React

app.js form react

```
import React from "react";

function MyForm() {
  return (
    <form>
      <label>
        Enter your name:
        <input type="text" name="name" />
      </label>
    </form>
  );
}

export default MyForm;
```

index.js form react

```
import React from "react";
import ReactDOM from "react-dom/client";
import MyForm from "./App";

const root = ReactDOM.createRoot(document.getElementById("root"));
root.render(<MyForm />);
```

Design web page using HTML5-(including header,footer,nav bar,image,text formatting tags)

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Basic HTML Page</title>
    <style>
        body {
            font-family: Arial, sans-serif;
            margin: 0;
        }
        header, footer, nav {
            text-align: center;
            padding: 10px;
        }
        nav {
            background-color: #333;
        }
        nav a {
            color: white;
            margin: 0 10px;
            text-decoration: none;
        }
        .content img {
            width: 100%;
            max-width: 400px;
```

```
        }
    </style>
</head>
<body>

    <!-- Header -->
    <header>
        <h1>Welcome to My Basic HTML Page</h1>
    </header>

    <!-- Navigation Bar -->
    <nav>
        <a href="#">Home</a>
        <a href="#">About</a>
        <a href="#">Services</a>
        <a href="#">Contact</a>
    </nav>

    <!-- Main Content -->
    <div class="content" style="text-align: center; padding: 20px;">
        <h2>This is a Subheading</h2>
        <p>This is a <strong>bold</strong> paragraph with <em>italicized</em> text. Here’s a list:</p>
        <ul style="list-style-type: disc; text-align: left; display: inline-block;">
            <li>First item</li>
            <li>Second item</li>
            <li>Third item</li>
        </ul>
        <p>Here is an image:</p>
        <img src="https://via.placeholder.com/400" alt="Sample Image">
    </div>

    <!-- Footer -->
    <footer>
        <p>&copy; 2024 My Website</p>
```

```
    </footer>

</body>
</html>
```

React Event

app.js event react

```
import React from "react";

function Football() {
  const shoot = () => {
    alert("Great shot");
  };
  return <button onClick={shoot}>Take shot</button>;
}

export default Football;
```

index.js event react

```
import React from "react";
import ReactDOM from "react-dom/client";
import Football from "./App";

const root = ReactDOM.createRoot(document.getElementById("root"));
root.render(<Football />);
```