**Name :- Raghav Parashar**

**Sap Id :- 500084199**

**Batch :- Big Data (Hons)**

**Simple-Web-Calculator**

**PROJECT REPORT:-**

I have made a website for calculator and deployed it on AWS.

HTML CODE :- <!DOCTYPE html>

<html lang="en">

<head>

    <meta charset="utf-8">

    <title>Simple Web Calculator</title>

    <link type="text/css" rel="stylesheet" href="calculatorStyle.css">

    <link type="text/css" rel="stylesheet"

    href="https://cdnjs.cloudflare.com/ajax/libs/font-awesome/4.7.0/css/font-awesome.min.css">

    <link rel="stylesheet"

    href="https://fonts.googleapis.com/icon?family=Material+Icons">

    <link type="image/png" rel="shortcut icon" href="imgs/favicon.png">

</head>

<body>

    <div id="container">

        <section id="main">

            <header><h1 id="title">Simple Web Calculator</h1></header>

            <img src="imgs/limit-screen.png" id="skull" draggable="false">

            <div id=calculator>

                <div id="calculator-interface">

                    <div id="calculator-screen">

                        <div id="screen-top">

                            <p id="nums-top"></p>

                        </div>

                        <div id="screen-bottom">

                            <p id="nums-bottom">0</p>

                        </div>

                    </div>

                    <div id="functional-container">

                        <div id="negate" class="button">+/-</div>

                        <div id="pi" class="button">π</div>

                        <div id="euler" class="button">e</div>

                        <div id="factorial" class="button">n!</div>

                        <div id="ce" class="button">CE</div>

                        <div id="del1" class="button">

                            <img id="del2" src="imgs/delete.png" draggable="false">

                        </div>

                    </div>

                    <div id="nums-container">

                        <div class="numbers-line">

                            <div id="num7" class="button">7</div>

                            <div id="num8" class="button">8</div>

                            <div id="num9" class="button">9</div>

                        </div>

                        <div class="numbers-line">

                            <div id="num4" class="button">4</div>

                            <div id="num5" class="button">5</div>

                            <div id="num6" class="button">6</div>

                        </div>

                        <div class="numbers-line">

                            <div id="num1" class="button">1</div>

                            <div id="num2" class="button">2</div>

                            <div id="num3" class="button">3</div>

                        </div>

                        <div class="numbers-line">

                            <div id="clear" class="button">C</div>

                            <div id="num0" class="button">0</div>

                            <div id="comma" class="button">,</div>

                        </div>

                    </div>

                    <div id="arithmetic-container">

                        <div id="squareRoot" class="button">√</div>

                        <div id="cubeRoot" class="button">∛</div>

                        <div id="divide" class="button">÷</div>

                        <div id="multiply" class="button">x</div>

                        <div id="substract" class="button">-</div>

                        <div id="sum" class="button">+</div>

                        <div id="overX" class="button">1/x</div>

                        <div id="square-power" class="button">x²</div>

                        <div id="equalTo" class="button">=</div>

                    </div>

                </div>

            </div>

        </section>

    </div>

    <footer id="footer">

        <div id="logo-container">

            <img src="imgs/calculator\_img.png">

        </div>

        <div class="footer-third">

            <h1>Need help?</h1>

            <a id="terms">Terms &amp; Conditions</a>

            <a id="privacy">Privacy Policy</a>

        </div>

        <div class="footer-third">

            <h1>More</h1>

            <a href="https://www.britannica.com/technology/Pascaline"

            target="\_blank">The First Calculator</a>

            <a href="https://edtechmagazine.com/k12/article/2012/11/calculating-firsts-visual-history-calculators"

            target="\_blank">Evolution of Calculators</a>

            <a href="https://github.com/LucioFex/Simple\_Web\_Calculator/"

            target="\_blank">This Calculator</a>

        </div>

        <div class="footer-third">

            <h1>Follow Me</h1>

            <li><a href="https://github.com/LucioFex" target="\_blank">

                <i class="fa fa-github"></i></a></li>

            <li><a href="https://twitter.com/LucioFex" target="\_blank">

                <i class="fa fa-twitter"></i></a></li>

            <li><a id="email"><i class="material-icons">

                &#xe0d0;</i></a></li>

            <span>

                This is a simple arithmetic web calculator, with some implementations of a scientific one.

            </span>

        </div>

    </footer>

    <script type="text/javascript" src=calculatorFunctionality.js></script>

</body>

</html>

CSS:-

@charset "utf-8";

/\* CSS document \*/

\* {

    padding: 0;

    margin: 0;

}

html, body {

    height: 100%;

    background-image: radial-gradient(at center, #253770, #382569);

}

#container {

    min-height: calc(100% - 10em);

}

#title {

    color: white;

    background-color: #2b4499;

    font: 2.5em "Helvetica", "Candara", "Arial";

    width: fit-content;

    top: 20px;

    left: calc(50% - 230px);

    padding: 5px 25px 5px 25px;

    border-radius: 20px;

    text-shadow: 5px 5px 5px #000000;

    box-shadow: 0px 5px 10px #220a36;

    position: absolute;

    transition: 3s ease-in-out 0.1s;

    user-select: None;

}

#calculator {

    user-select: None;

    top: 98px;

    left: calc(50% - 300px);

    width: 600px;

    height: 600px;

    background-image: radial-gradient(at center, #281f58 70%, #193444);

    border-radius: 30px;

    box-shadow: 10px 10px 25px black;

    position: absolute;

}

#skull {

    top: 120px;

    left: calc(50% + 300px);

    position: absolute;

}

#calculator-interface {

    margin: 17px;

    width: 560px;

    height: 565px;

    background-image: linear-gradient(to top right, #131f30, #1d2b3d);

    position: relative;

    border-radius: 15px;

}

#calculator-screen {

    position: absolute;

    background-image: radial-gradient(at center, #375077 25%, #2d446b);

    border: #213353 inset 4px;

    width: 504px;

    height: 80px;

    top: 6%;

    left: 25.2px;

    border-radius: 5px;

}

#screen-top, #screen-bottom {

    position: absolute;

    width: 100%;

}

#screen-top {

    top: 0;

    height: 30%;

    background-color: #2e4366;

}

#screen-bottom {

    top: 30%;

    height: calc(70% - 5px);

    background-color: #293c5e;

    border-top: #31486e solid 5px;

}

#nums-top, #nums-bottom {

    position: absolute;

    width: 100%;

    height: 100%;

    font-family: "Arial", "Helvetica", "sans-serif", "Century Gothic";

    text-align: right;

}

#nums-top {

    color: #e0e0e0b0;

    font-size: 18px;

    padding: 2px 0;

    user-select: text;

}

#nums-bottom {

    color: #e0e0e0;

    font-size: 43px;

    user-select: text;

}

#functional-container {

    position: absolute;

    width: 520px;

    height: 60px;

    top: 23.5%;

    left: 27px;

}

#nums-container {

    background-image: linear-gradient(to top right, #16253b, #1e3047);

    position: absolute;

    border-radius: 10px;

    width: 299.6px;

    height: 61%;

    top: 37%;

    left: 11.2px;

}

#arithmetic-container {

    position: absolute;

    left: 327.8px;

    width: 215px;

    top: calc(53% - 90px);

}

.button {

    margin: 5px;

    font-family: "helvetica", "century gothic", "arial";

    color: white;

    border-radius: 5px;

    display: flex;

    float: left;

    justify-content: center;

    align-items: center;

    transition: 0.17s ease-in-out 0.01s;

}

.button:hover {

    transform: scale(1.15);

}

#functional-container .button:active,

#nums-container .button:active,

#arithmetic-container .button:active{

    transition: 0.01s ease-in-out 0.01s;

    transform: scale(1);

}

#functional-container .button:active {

    background-color: #182a53;

}

#arithmetic-container .button:active {

    background-color: #273e61;

}

#nums-container .button:active {

    background-color: #1c385e;

}

#functional-container .button {

    border: #3e568a dashed 3px;

    font-size: 2.2em;

    width: 70px;

    height: 55px;

}

#skull, #functional-container #del1 img {

    user-select: none;

}

#functional-container #del1 img {

    width: 40px;

    height: 40px;

}

#euler, #factorial, #pi {

    font-family: 'Times New Roman', Times, serif;

}

.numbers-line {

    margin: 13px 0 20px 4%;

    clear: both;

}

#nums-container .button {

    background-color: #243b5a;

    font-size: 2.2em;

    width: 80px;

    height: 70px;

}

#nums-container #clear {

    font-size: 1.8em;

    background-color: #291246;

    border: 1px solid #1103244d;

}

#nums-container #clear:active {

    background-color: #3a1764;

}

#functional-container #del1,

#functional-container #ce {

    font-size: 1.3em;

    background-color: #472a69;

    border: 1px solid #280e4d80;

}

#functional-container #del1:active,

#functional-container #ce:active {

    background-color: #462075;

}

#nums-container #comma {

    font-size: 3em;

    align-items: flex-start;

}

#arithmetic-container .button {

    background-color: #24355a;

    font-size: 2.2em;

    width: 95px;

    height: 55px;

}

#arithmetic-container #equalTo {

    background-color: #3a5285;

    width: calc(100px \* 2);

    height: 65px;

}

#arithmetic-container #equalTo:active {

    background-color: #314e8b;

    transform: scale(1.09);

}

footer {

    background-image: linear-gradient(to right, #19171b 20%, #18181a 20%);

    height: 18rem;

    width: 99.1vw;

    overflow: hidden;

}

#logo-container {

    float: left;

    padding: 25px 50px 0 30px;

}

#logo-container img {

    width: 265px;

    height: auto;

}

.footer-third {

    width: calc(21.6666666667% - 20px);

    margin-right: 10px;

    margin-top: 10px;

    float: left;

}

.footer-third:last-child {

    margin-right: 0;

}

.footer-third h1 {

    font-family: "arial", "sans-serif";

    font-size: 30px;

    color: white;

    display: block;

    font-weight: 200px;

    width: 100%;

    margin-bottom: 20px;

    margin-top: 20px;

}

.footer-third a {

    font-family: "arial", "sans-serif";

    font-size: 18px;

    color: #8d8a96;

    display: table;

    font-weight: 200;

    width: fit-content;

    margin-bottom: 20px;

    cursor: pointer;

    text-decoration: none;

    transition: 0.2s ease-in-out 0.01s;

}

.footer-third a:hover {

    color: white;

    transform: scale(1.15);

    text-decoration: underline;

}

.footer-third li {

    display: inline-block;

    padding: 0 5px;

    font-size: 20px;

}

.footer-third span {

    color: white;

    font-family: "arial", "sans-serif";

    font-size: 18px;

    font-weight: 200;

    display: block;

    width: 105%;

}

.footer-third li i {

    font-size: 65px;

    padding-right: 15px;

}

/\* --- -Responsive alterations- ---\*/

@media (max-height: 1040px) {

    #container {min-height: calc(10vh + 700px);}

    footer {width: 118.9em;}

}

Java Script :-

// JavaScript document - Simple Web Calculator - Luciano Esteban (2021)

// Fundamental constants & variables

const topScreen = document.getElementById("nums-top");

const bottomScreen = document.getElementById("nums-bottom");

const calculator = document.getElementById("calculator");

const calculatorInterface = document.getElementById("calculator-interface");

const calculatorScreen = document.getElementById("calculator-screen");

const skull = document.getElementById("skull")

const footer = document.getElementById("footer");

const colors = ["#294192", "#2f4d0d", "#790979", "#811414"];

const calcValues = {

    num1: "1", num2: "2", num3: "3", num4: "4", num5: "5", num6: "6",

    num7: "7", num8: "8", num9: "9", num0: "0", comma: ",", sum: "+",

    substract: "-", divide: "÷", multiply: "x", factorial: "!", overX: "1/",

    equalTo: "=", squareRoot: "√", cubeRoot: "∛", squarePower: "²",

    pi: "3,1415926535897932384", euler: "2,7182818284590452353"};

const keyboardSymbols = {

    "1": "num1", "2": "num2", "3": "num3", "4": "num4", "5": "num5",

    "6": "num6", "7": "num7", "8": "num8", "9": "num9", "0": "num0",

    "Backspace": "del1", "Delete": "clear", ",": "comma",

    "+": "sum", "-": "substract", "/": "divide", "\*": "multiply",

    "Enter": "equalTo", "=": "equalTo", "e": "euler"

}

var givenResult = false;

var resultValue = "0";

var colorNum = 0;

var record = [];

function setUp() {

    /\*

    Preparations for the usage of the calculator

    \*/

    let terms = document.getElementById("terms");

    let privacy = document.getElementById("privacy");

    // Functionality of the terms and privacy buttons:

    for (element of [terms, privacy]) {

        element.addEventListener("click", helpSection, false);

    }

    // Update of the footer's width when the user opens the page

    skullPosition()

    // Change of the title background color in intervals of 4 seconds:

    setInterval(multiColor, 1000 \* 4, document.getElementById("title"));

    // Functionality of the calculator buttons:

    for (idName of document.getElementsByClassName("button")) {

        buttonAction(idName);

    }

    // Link some symbols of the keyboard to the calculator

    document.addEventListener("keydown", keyboardButtons, false);

}

function multiColor(title) {

    /\*

    Change of the background color of the title of the page every 4 seconds

    \*/

    if (colorNum > colors.length - 1) {colorNum = 0}

    title.style.background = colors[colorNum];

    colorNum += 1;

}

function buttonAction(input) {

    /\*

    Button selection action:

    It prepares all AddEventListeners() for the calculator buttons.

    It divides the 'specialValues' from the normals.

    \*/

    let specialValues = [

        "equalTo", "overX", "factorial", "squareRoot", "cubeRoot",

        "squarePower", "divide", "multiply", "sum", "substract"];

    if (specialValues.includes(input.id)) {

        input.addEventListener(

            "click", () => processValue(input.id), false);

    }

    else if (specialValues.includes(input.id) === false) {

        // If input.id is a number or not in the 'specialValues' list:

        input.addEventListener(

            "click", () => bottomScreenPrint(input.id), false);

    }

}

function arithmeticSection(total, symbol, number) {

    /\*

    The 'Total' parameter will be processed by 'number' with arithmetic symbols

    \*/

    switch (symbol) {

        case "+": return total + parseFloat(number);

        case "-": return total - parseFloat(number);

        case "x": return total \* parseFloat(number);

        case "÷": return total / parseFloat(number);

    }

}

function scientificSection(symbol) {

    /\*

    The 'Total' parameter will be processed by 'number' with scientific symbols

    \*/

    let number = parseFloat(bottomScreen.innerHTML.replace(",", "."));

    if (wrongInput(number, symbol)) {

        bottomScreen.innerHTML = wrongInput(number, symbol);

        return "error"

    }

    switch (symbol) {

        case "1/": return 1 / number;

        case "√":  return Math.sqrt(number);

        case "∛":  return Math.cbrt(number);

        case "²":  return Math.pow(number, 2);

        case "!":

            if (number === 0) {return 1}

            let inputNumber = number;

            for (num=1; num < inputNumber; num++) {number \*= num}

            return number;

    }

}

function calculateValues(history) {

    /\*

    It process the history of values to send these numbers (depending

    of their symbols) to diferents functions to return the result.

    \*/

    if (Number.isNaN(parseFloat(history[0]))) {history.unshift("0")}

    let result = parseFloat(history[0]);

    for (value in history) {

        let numberAndSymbol = [history[value -1], history[value]];

        // Arithmetic section

        if (["+", "-", "x", "÷"].includes(history[value - 1])) {

            result = arithmeticSection(result, ...numberAndSymbol);

        }

        // Scientific section

        else if (["1/", "!", "√", "∛", "²"].includes(history[value])) {

            result = scientificSection(numberAndSymbol[1]);

        }

    }

    if (result === "error") {record = [], resultValue = "0"}

    return result;

}

function wrongInput(number, symbol) {

    /\*

    Function that alerts if an input has an incorrect symbol.

    \*/

    number = number.toString()

    console.log(number);

    let factorialError    = symbol === "!"  && number.includes("-", ".");

    let rootError         = symbol === "√"  && number[0] === "-";

    let zeroDivisionError = symbol === "1/" && number === undefined;

    if      (factorialError || rootError)  {return "Invalid Input"}

    else if (zeroDivisionError) {return "You can't divide by zero"}

}

function topScreenPrint(total) {

    /\*

    Function to change the aspect of the top screen when a

    the input is a scientific operator.

    \*/

    let symbol = record.slice(-1)[0];

    let preSymbol

    let preTotal

    let preProcess

    if (record.length >= 4 && symbol) {

        preTotal = calculateValues(record.slice(0, -2)).toString();

        preSymbol = record.slice(-3)[0];

        preProcess = `${preTotal} ${preSymbol}`;

    }

    else if (record.length < 4 && symbol !== "=") {preProcess = ""}

    let screenNumber = bottomScreen.innerHTML;

    switch (symbol) {

        case "!":

        case "²":

            topScreen.innerHTML =

                `${preProcess} (${screenNumber})${symbol}`;

            break;

        case "1/":

        case "√":

        case "∛":

            topScreen.innerHTML =

                `${preProcess} ${symbol}(${screenNumber})`;

            break;

        case "=":

            topScreen.innerHTML += " =";

            break

    }

    // Beginning of the givenResult mode

    if (symbol !== "=" && record.length >= 4) {record = [preTotal, preSymbol]}

    else if (symbol === "=" || record.length < 4) {record = []}

    resultValue = total;

    givenResult = true;

}

function screenModification(total) {

    /\*

    Function that shows the output of the result in the bottom screen,

    but will also show the process in the top one.

    \*/

    topScreen.innerHTML = "";

    total = total.toString();

    if (total === "Infinity") {

        bottomScreenPrint("clear");

        return bottomScreen.innerHTML = "You can't divide by zero";

    }

    for (value in record) {

        // If there's a scientific symbol

        if (["1/", "!", "√", "∛", "²", "="].includes(record[value])) {

            topScreenPrint(total);

            break;

        }

        // If there's a simple number or an arithmetic symbol

        topScreen.innerHTML += ` ${record[value].replace(".", ",")}`;

    }

    if (total !== "error") {bottomScreen.innerHTML = total.replace(".", ",")}

}

function processValue(sym) {

    /\*

    Function that process the inserted symbol to print the

    progress of the calculation's in the top screen and

    the result of it in the bottom screen.

    \*/

    if (resultValue.slice(-1) === ",") {resultValue = resultValue.slice(0, -1)}

    record.push(resultValue.replace(",", "."), calcValues[sym]);

    if (record.slice(-2)[0] === "0" && record.slice(-1)[0] !== "=" && record.length === 2) {

        record = record.slice(0, -3);

        record.push(calcValues[sym]);

    }

    // Visual process of the calculation in the top and bottom screen:

    screenModification(calculateValues(record));

    // Preparation for the next calculation

    if (["1/", "!", "√", "∛", "²", "="].includes(calcValues[sym]) === false) {

        resultValue = "0"}

    skullPosition();

}

function givenResultCheck(sym) {

    /\*

    Looks if the user got a result, after that checks if the

    next input is a number or a symbol.

    If the input is a number:

        It restart the values of every screen.

    If the input is a symbol:

        It adds the last number in the top screen and then the operator.

    \*/

    if (givenResult && sym !== "negate" && [0, 3].includes(record.length)) {

        givenResult = false;

        resultValue = "0";

        record = [];

        topScreen.innerHTML = "";

    }

}

function bottomScreenPrint(sym) {

    /\*

    Prints the selected number in the bottom screen,

    including variables such as "pi" or "e". Even the 'negate'.

    But if the input is a system calculator button such as

    "clear", "ce" or "del", then it will delete characters.

    \*/

    givenResultCheck(sym);

    if (["clear", "ce"].includes(sym) || ["del1", "del2"].includes(sym)

    && resultValue.length === 1 || sym === "num0"

    && (resultValue === "" || resultValue === "0")) {

        resultValue = "0";

    }

    if (sym === "clear") {

        topScreen.innerHTML = "";

        record = [];

    }

    else if (sym.includes("num") || sym === "comma"

    && resultValue.includes(",") === false) {

        if (resultValue === "0" && sym !== "comma") {resultValue = ""}

        resultValue += calcValues[sym];

    }

    else if (["pi", "euler"].includes(sym)) {

        resultValue = calcValues[sym];

    }

    else if (sym === "negate" && resultValue !== "0") {

        if      (resultValue[0] !== "-") {resultValue = "-" + resultValue}

        else if (resultValue[0] === "-") {resultValue = resultValue.slice(1)}

    }

    else if (["del1", "del2"].includes(sym) && resultValue.length > 1) {

        resultValue = resultValue.slice(0, -1);

    }

    // Final print

    bottomScreen.innerHTML = resultValue;

    skullPosition();

}

function skullPosition() {

    /\*

    This function changes the position of the skull

    in the right of the calculator, including its image.

    It also increases or reduces the width of the calculator

    depending of the calculator's top and bottom screen length.

    \*/

    let bottomWidth = (bottomScreen.innerHTML.length - 21) \* 24;

    let topWidth = (topScreen.innerHTML.length - 51) \* 8;

    let greaterWidth = topWidth;

    if (bottomWidth >= topWidth) {greaterWidth = bottomWidth}

    switch (greaterWidth <= 0) {

        case true:

            skull.style.left = "calc(50% + 300px)";

            skull.src = "imgs/limit-screen.png";

            calculator.style.width = "600px";

            calculatorInterface.style.width = "560px";

            calculatorScreen.style.width = "504px";

            footer.style.width = "100%";

            break;

        case false:

            skull.src = "imgs/over-limit-screen.png";

            skull.style.left = `calc(50% + 300px + ${greaterWidth}px)`;

            calculator.style.width = `calc(600px + ${greaterWidth}px)`;

            calculatorInterface.style.width = `calc(560px + ${greaterWidth}px)`;

            calculatorScreen.style.width = `calc(504px + ${greaterWidth}px)`;

            footer.style.width = `calc(100% + ${greaterWidth}px)`;

            break;

    }

}

function keyboardButtons(event) {

    /\*

    Function to use the numbers and some symbols of

    the keyboard as calculator buttons.

    \*/

    let bottomValues = Object.keys(keyboardSymbols).slice(0, 13);

    let topValues = Object.keys(keyboardSymbols).slice(13);

    if (bottomValues.includes(event.key)) {

        bottomScreenPrint(keyboardSymbols[event.key]);

    }

    else if (topValues.includes(event.key)) {

        processValue(keyboardSymbols[event.key]);

    }

}

function helpSection(event) {

    /\*

    Usage of the "terms and conditions" and "privacy policy" buttons.

    \*/

    let id = event.target.id;

    alert("I am supposed to show you something about " +

        `${id[0].toUpperCase() + id.slice(1)} and stuff like that.`);

    if (id === "terms") {

        alert("The license of this web site is the MIT LICENSE.");

    }

    else if (id === "privacy") {

        privacyTexts = [

            "Knowing that this web site is about a calculator, there's " +

            "no need to set any kind of privacy politic. Relax...",

            "But I wanna learn how to redirect you from this page to another" +

            " one, so... Let's look at the formal definition of privacy :)",

            "Oh, I almost forget: \nIf you'd have read this, then surely your" +

            " navigator will cancel the next page that I will try to open." +

            "\n\nIf you skipped everything, then you will have no problem >:("]

        for (text of privacyTexts) {alert(text)}

        window.open("https://en.wikipedia.org/wiki/Privacy", "\_blank");

    }

}

window.addEventListener('load', setUp, false);  // Starts the script

Algorithm

Procedure :-

* First I wrote the HTML code for the game which include CSS, javascript, etc.
* I started an EC2 Instance in my machine
* Then I moved the web application folder to the EC2 instance.
* Go into the server manager and install the IIS service which is a set of internet-based services for servers using Microsoft windows.
* To deploy the Website on IIS server we have to provide the path of the website from the file. So we have to add the web folder in C drive(C:\inetpub\wwwroot).
* Then go back to the Instance and copy the IP address and paste it on the browser and then the Website is deployed.

**output :-**

