UNIVERSITI MALAYSIA TERENGGANU

FACULTY OF COMPUTER SCIENCE AND MATHEMATICS

CSM3103
FRONT END PROGRAMMING

LAB 4

Prepared by:

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Prepared for:
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BACHELOR OF COMPUTER SCIENCE (MOBILE COMPUTING)
WITH HONOURS

SEMESTER II 2023/2024

Task 1 : JavaScript Function

Codes

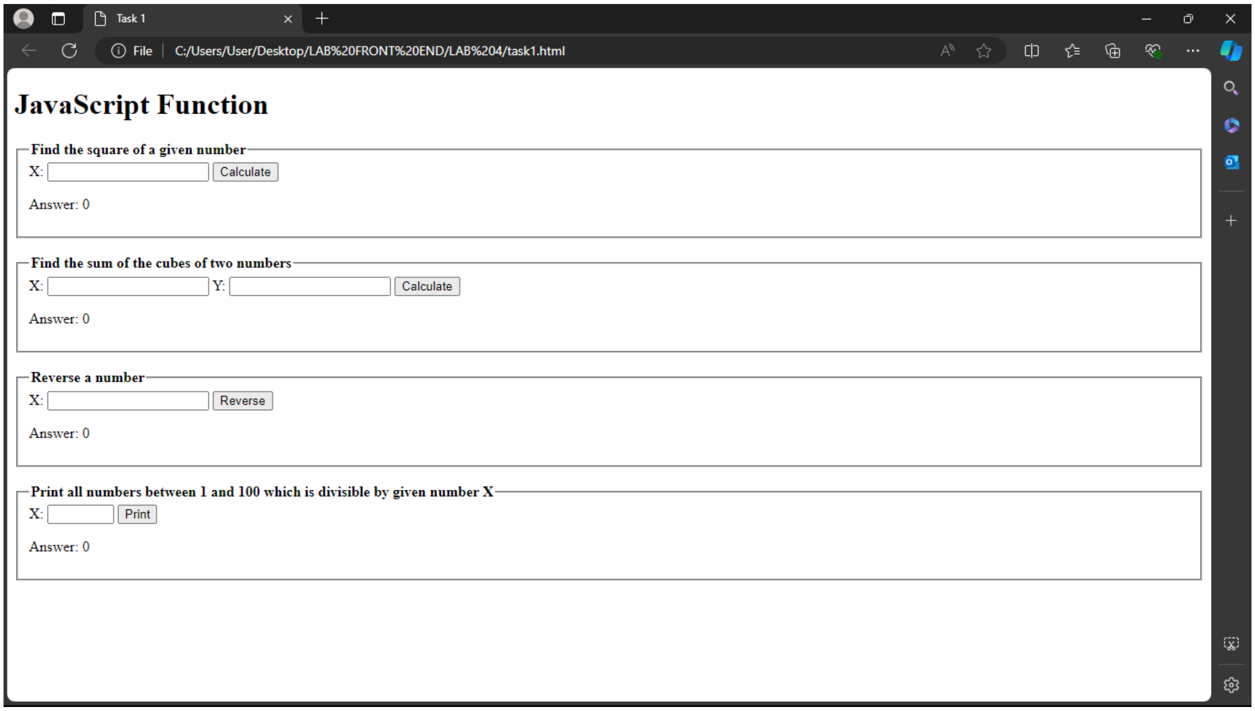
Task1.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Task 1</title>
</head>
<body>

    <h1>JavaScript Function</h1>

    <fieldset>
        <legend><b>Find the square of a given number</b></legend>
        <label for="num1">X: </label>
        <input type="number" id="num1">
        <button onclick="findSquare()">Calculate</button>
        <br>
        <p id="answer1">Answer: 0</p>
    </fieldset>
    <br>

    <fieldset>
        <legend><b>Find the sum of the cubes of two numbers</b></legend>
        <label for="num2X">X: </label>
        <input type="number" id="num2X">
        <label for="num2Y">Y: </label>
        <input type="number" id="num2Y">
        <button onclick="findSumSquare()">Calculate</button>
        <p id="answer2">Answer: 0</p>
    </fieldset>
    <br>

    <fieldset>
        <legend><b>Reverse a number</b></legend>
        <label for="num3">X: </label>
        <input type="number" id="num3">
        <button onclick="findReversedNumber()">Reverse</button>
        <p id="answer3">Answer: 0</p>
    </fieldset>
    <br>

    <fieldset>
        <legend><b>Print all numbers between 1 and 100 which is divisible
by given number X</b></legend>
        <label for="num4">X: </label>
        <input type="number" id="num4" min="1" max="100">
        <button onclick="findDivisibleNumbers()">Print</button>
        <p id="answer4">Answer: 0</p>
    </fieldset>

    <script src="task1.js"></script>

</body>
</html>
```

Task1.js

```
// Function to calculate the square of a number
function findSquare() {
    const x = document.getElementById("num1").value; // Get the value from
input field
    document.getElementById("answer1").innerHTML = "Answer: " + (x * x);
// Display the answer
}

// Function to calculate the sum of cubes of two numbers
function findSumSquare() {
    const x = document.getElementById("num2X").value;
    const y = document.getElementById("num2Y").value;
    document.getElementById("answer2").innerHTML = "Answer: " + ((x * x *
x) + (y * y * y)); // Calculate and display the sum of cubes
}

// Function to reverse a number
function findReversedNumber() {
    const x = document.getElementById("num3").value;
    const reversedStr = x.toString().split('').reverse().join('');
    document.getElementById("answer3").innerHTML = "Answer: " + reversedStr;
}

// Function to print numbers divisible by a given number (between 1 and 100)
function findDivisibleNumbers() {
    const z = document.getElementById("num4").value;
    let nums = "";
    for (let i = 1; i <= 100; i++) {
        if ((i % z) === 0) {
            if (nums === "") {
                nums = i.toString();
            }
            else {
                nums += ", " + i;
            }
        }
    }
    document.getElementById("answer4").innerHTML = "Answer: " + nums;
}
```

Output



JavaScript Function

Find the square of a given number

X: [ ] Calculate

Answer: 0

Find the sum of the cubes of two numbers

X: [ ] Y: [ ] Calculate

Answer: 0

Reverse a number

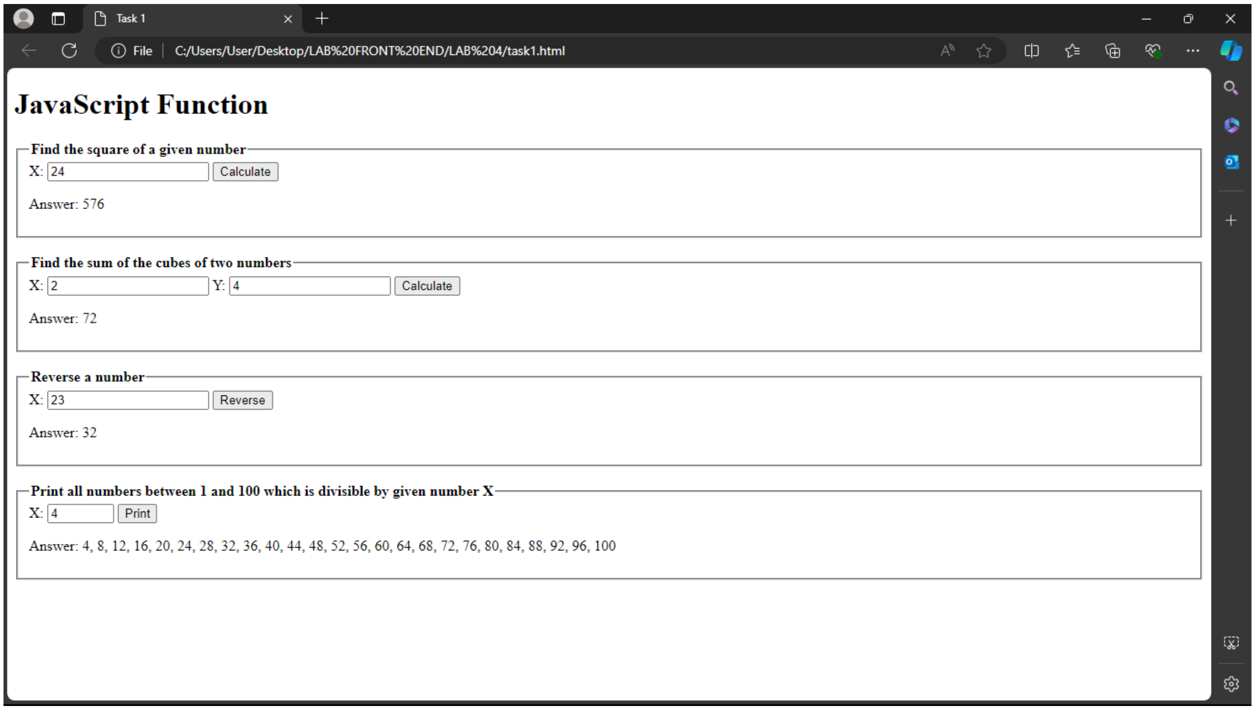
X: [ ] Reverse

Answer: 0

Print all numbers between 1 and 100 which is divisible by given number X

X: [ ] Print

Answer: 0



JavaScript Function

Find the square of a given number

X: 24

Answer: 576

Find the sum of the cubes of two numbers

X: 2 Y: 4

Answer: 72

Reverse a number

X: 23

Answer: 32

Print all numbers between 1 and 100 which is divisible by given number X

X: 4

Answer: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, 48, 52, 56, 60, 64, 68, 72, 76, 80, 84, 88, 92, 96, 100

Task 2 : JavaScript Recursion Function

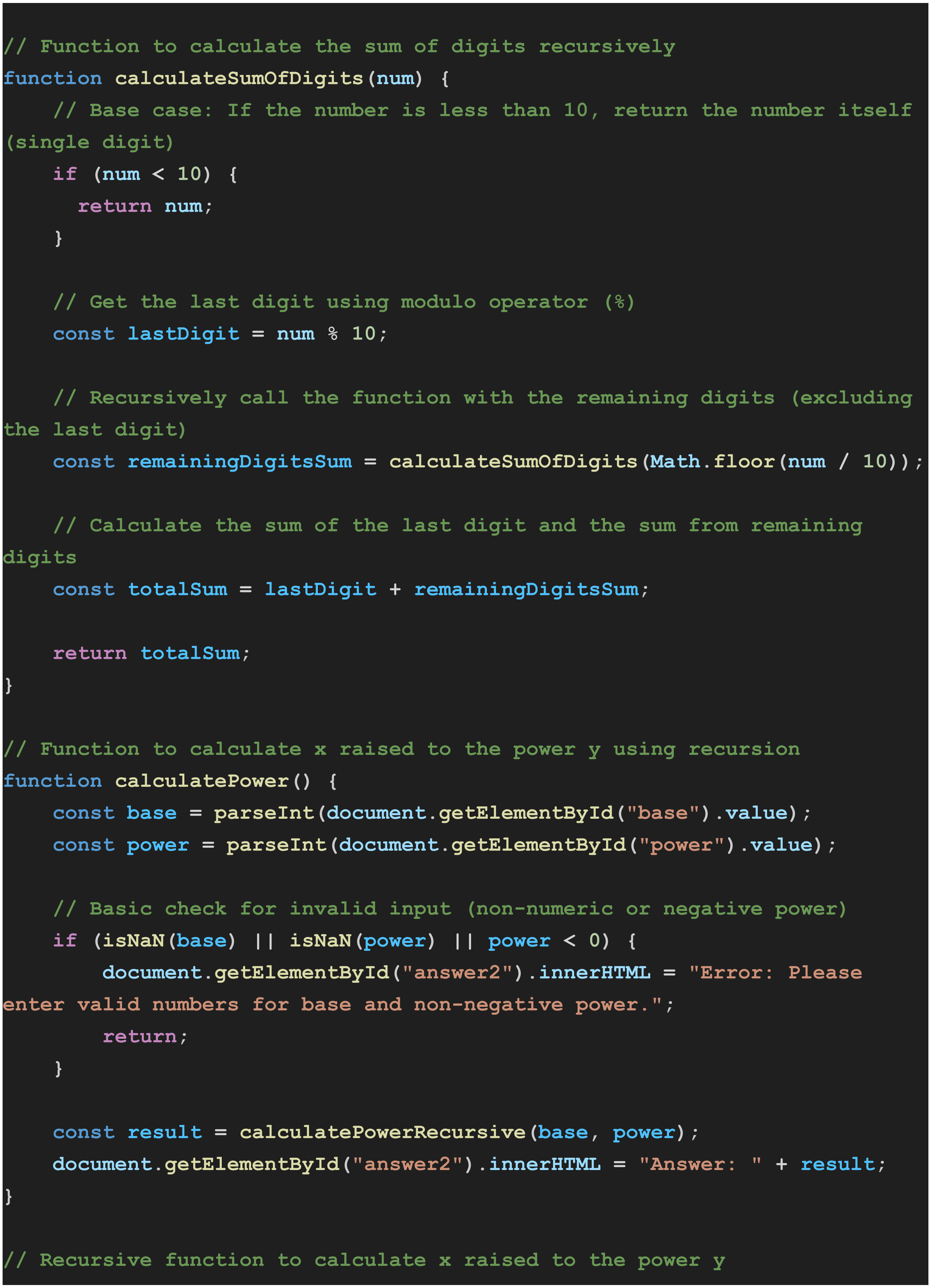
Codes

Task2 .html

```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Task 2</title>
</head>
<body>

    <h1>JavaScript Recursion Function</h1>

    <fieldset>
        <legend><b>Find sum of digits of a number</b></legend>
        <label for="digits">X: </label>
        <input type="number" id="digits">
        <button onclick="findSumOfDigits()">Calculate</button>
        <br>
        <p id="answer1">Answer: 0</p>
    </fieldset>
    <br>
    <fieldset>
        <legend><b>Calculate X raised to the power of Y</b></legend>
        <label for="base">X: </label>
        <input type="number" id="base">
        <label for="power">Y: </label>
        <input type="number" id="power">
        <button onclick="calculatePower()">Calculate</button>
        <br>
        <p id="answer2">Answer: 0</p>
    </fieldset>
    <br>

    <script src="task2.js"></script>

</body>
</html>
```

Task2.js

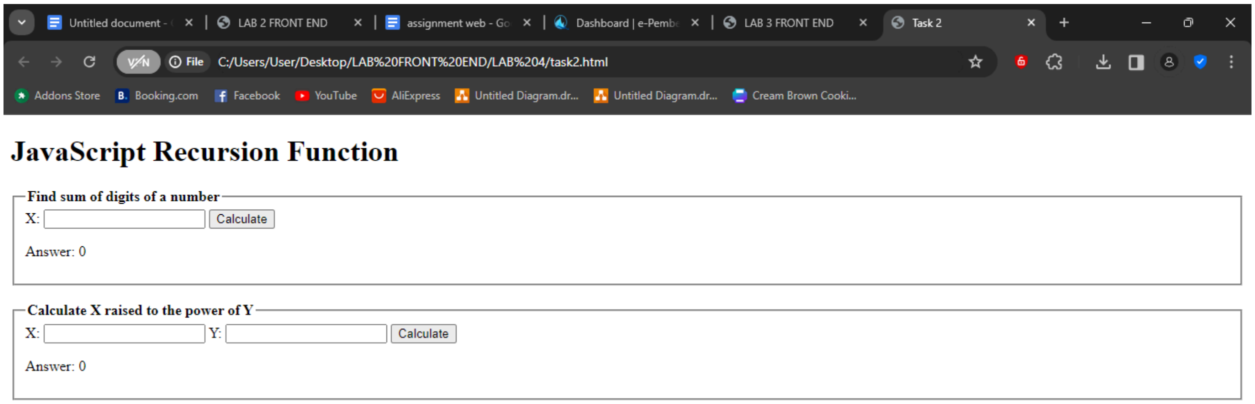
```
// Function to find the sum of digits of a number using recursion
function findSumOfDigits() {
    const number = document.getElementById("digits").value;

    // Basic check for empty input
    if (number === "") {
      document.getElementById("answer1").innerHTML = "Error: Please enter
a number.";
      return;
    }

    // Check for non-numeric input
    if (isNaN(number)) {
        document.getElementById("answer1").innerHTML = "Error: Please
enter a valid number.";
        return;
    }

    const sum = calculateSumOfDigits(number);
    document.getElementById("answer1").innerHTML = "Answer: " + sum;
}
```



```
// Function to calculate the sum of digits recursively
function calculateSumOfDigits(num) {
    // Base case: If the number is less than 10, return the number itself
(single digit)
    if (num < 10) {
      return num;
    }

    // Get the last digit using modulo operator (%)
    const lastDigit = num % 10;

    // Recursively call the function with the remaining digits (excluding
the last digit)
    const remainingDigitsSum = calculateSumOfDigits(Math.floor(num / 10));

    // Calculate the sum of the last digit and the sum from remaining
digits
    const totalSum = lastDigit + remainingDigitsSum;

    return totalSum;
}

// Function to calculate x raised to the power y using recursion
function calculatePower() {
    const base = parseInt(document.getElementById("base").value);
    const power = parseInt(document.getElementById("power").value);

    // Basic check for invalid input (non-numeric or negative power)
    if (isNaN(base) || isNaN(power) || power < 0) {
        document.getElementById("answer2").innerHTML = "Error: Please
enter valid numbers for base and non-negative power.";
        return;
    }

    const result = calculatePowerRecursive(base, power);
    document.getElementById("answer2").innerHTML = "Answer: " + result;
}

// Recursive function to calculate x raised to the power y
```

```
function calculatePowerRecursive(base, power) {
    // Base case: power is 0, anything raised to the power 0 is 1
    if (power === 0) {
      return 1;
    }

    // Recursive case: x raised to the power y is x multiplied by itself
(y-1) times
    return base * calculatePowerRecursive(base, power - 1);
}
```

Output



JavaScript Recursion Function

Find sum of digits of a number

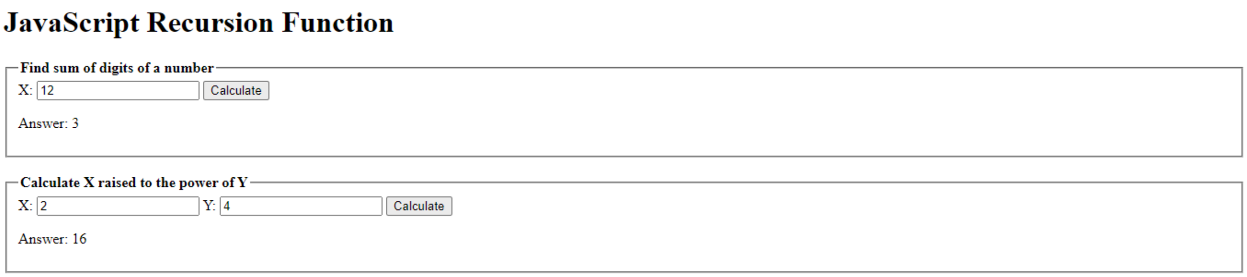
X: [ ] Calculate

Answer: 0

Calculate X raised to the power of Y

X: [ ] Y: [ ] Calculate

Answer: 0



JavaScript Recursion Function

Find sum of digits of a number

X: 12 Calculate

Answer: 3

Calculate X raised to the power of Y

X: 2 Y: 4 Calculate

Answer: 16

Task 3 : JavaScript Object and Prototype

Codes

Task3 .html

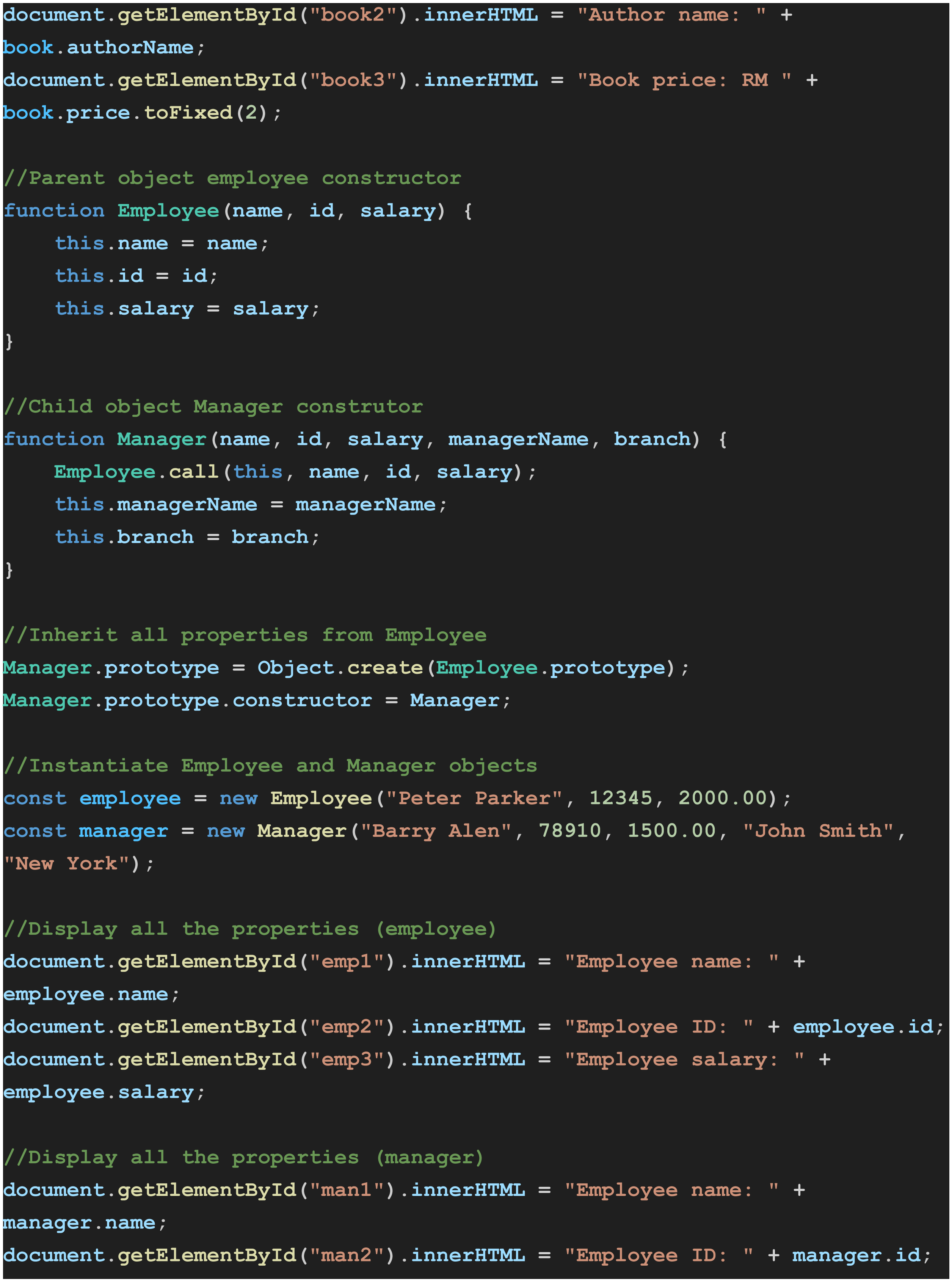
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Task 3</title>
</head>
<body>
```

```html
<h1>JavaScript Object and Prototype</h1>

<fieldset>
    <legend><b>Object product</b></legend>
    <ul>
        <li id="prod1"></li>
        <li id="prod2"></li>
        <li id="prod3"></li>
    </ul>
</fieldset>
<br>

<fieldset>
    <legend><b>Object book</b></legend>
    <ul>
        <li id="book1"></li>
        <li id="book2"></li>
        <li id="book3"></li>
    </ul>
</fieldset>
<br>

<fieldset>
    <legend><b>Object employee</b></legend>
    <ul>
        <li id="emp1"></li>
        <li id="emp2"></li>
        <li id="emp3"></li>
    </ul>
</fieldset>
<br>

<fieldset>
    <legend><b>Object manager</b></legend>
    <ul>
        <li id="man1"></li>
        <li id="man2"></li>
        <li id="man3"></li>
        <li id="man4"></li>
```

```
            <li id="man5"></li>
        </ul>
    </fieldset>

    <script src="task3.js"></script>

</body>
</html>
```

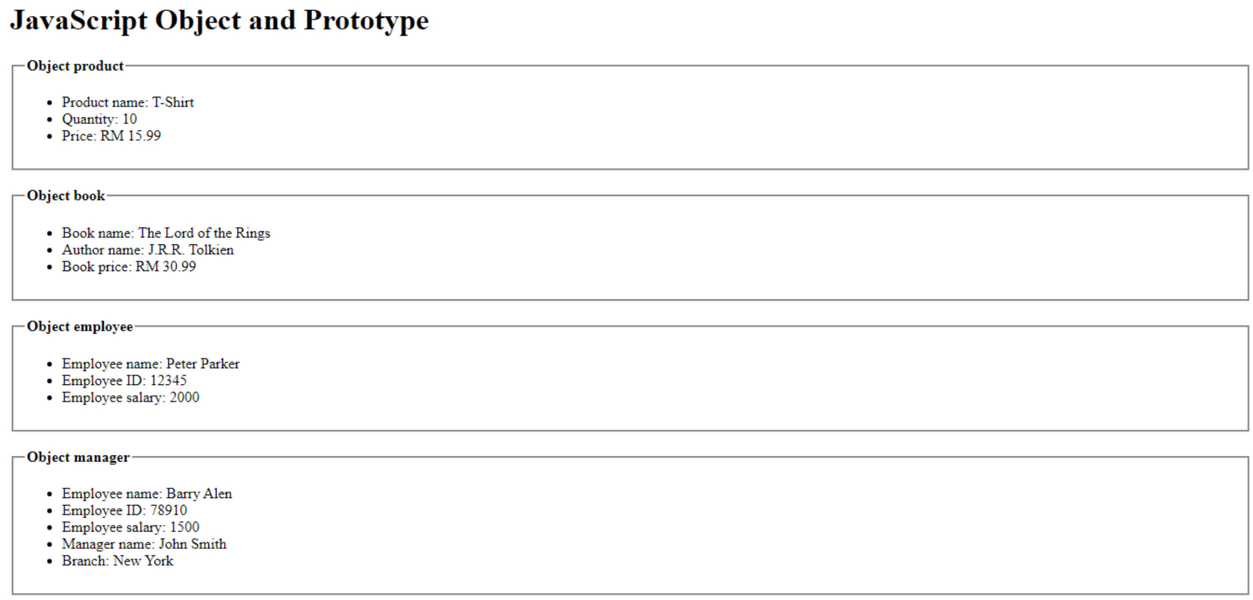
Task3.js

```
//Instantiate object product
const product = {
    name: "T-Shirt",
    quantity: 10,
    price: 15.99
}

//Display object product
document.getElementById("prod1").innerHTML = "Product name: " +
product.name;
document.getElementById("prod2").innerHTML = "Quantity: " +
product.quantity;
document.getElementById("prod3").innerHTML = "Price: RM " +
product.price.toFixed(2);

//Object book constructor
function Book(name, authorName) {
    this.name = name;
    this.authorName = authorName;
}

//Instantiate object book
const book = new Book("The Lord of the Rings", "J.R.R. Tolkien");

//Add the prototype property price
Book.prototype.price = 30.99;

//Display object book
document.getElementById("book1").innerHTML = "Book name: " + book.name;
```



```
document.getElementById("book2").innerHTML = "Author name: " +
book.authorName;
document.getElementById("book3").innerHTML = "Book price: RM " +
book.price.toFixed(2);

//Parent object employee constructor
function Employee(name, id, salary) {
    this.name = name;
    this.id = id;
    this.salary = salary;
}

//Child object Manager construtor
function Manager(name, id, salary, managerName, branch) {
    Employee.call(this, name, id, salary);
    this.managerName = managerName;
    this.branch = branch;
}

//Inherit all properties from Employee
Manager.prototype = Object.create(Employee.prototype);
Manager.prototype.constructor = Manager;

//Instantiate Employee and Manager objects
const employee = new Employee("Peter Parker", 12345, 2000.00);
const manager = new Manager("Barry Alen", 78910, 1500.00, "John Smith",
"New York");

//Display all the properties (employee)
document.getElementById("emp1").innerHTML = "Employee name: " +
employee.name;
document.getElementById("emp2").innerHTML = "Employee ID: " + employee.id;
document.getElementById("emp3").innerHTML = "Employee salary: " +
employee.salary;

//Display all the properties (manager)
document.getElementById("man1").innerHTML = "Employee name: " +
manager.name;
document.getElementById("man2").innerHTML = "Employee ID: " + manager.id;
document.getElementById("man3").innerHTML = "Employee salary: " +
manager.salary;
document.getElementById("man4").innerHTML = "Manager name: " +
manager.managerName;
document.getElementById("man5").innerHTML = "Branch: " + manager.branch;
```

Output



JavaScript Object and Prototype

Object product

- Product name: T-Shirt
- Quantity: 10
- Price: RM 15.99

Object book

- Book name: The Lord of the Rings
- Author name: J.R.R. Tolkien
- Book price: RM 30.99

Object employee

- Employee name: Peter Parker
- Employee ID: 12345
- Employee salary: 2000

Object manager

- Employee name: Barry Alen
- Employee ID: 78910
- Employee salary: 1500
- Manager name: John Smith
- Branch: New York

Task 4 : Event Handling

Codes

Task4.html

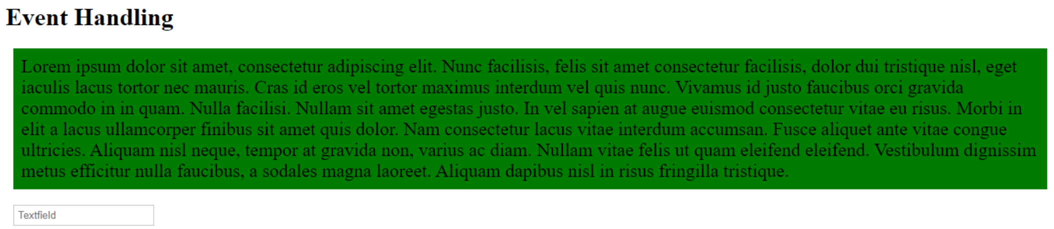
```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Task 4</title>
    <style>
        p {
          padding: 10px;
          margin: 10px;
          cursor: pointer;
          font-size: 1.5rem;
        }

        #myText {
            padding: 5px;
            margin: 10px;
            border: 1px solid #ccc;
        }
    </style>
</head>
<body>

    <h1>Event Handling</h1>

    <p id="myParagraph">
        Lorem ipsum dolor sit amet, consectetur adipiscing elit.
        Nunc facilisis, felis sit amet consectetur facilisis,
        dolor dui tristique nisl, eget iaculis lacus tortor nec mauris.
        Cras id eros vel tortor maximus interdum vel quis nunc.
        Vivamus id justo faucibus orci gravida commodo in in quam.
        Nulla facilisi. Nullam sit amet egestas justo.
        In vel sapien at augue euismod consectetur vitae eu risus.
        Morbi in elit a lacus ullamcorper finibus sit amet quis dolor.
        Nam consectetur lacus vitae interdum accumsan.
        Fusce aliquet ante vitae congue ultricies.
        Aliquam nisl neque, tempor at gravida non, varius ac diam.
        Nullam vitae felis ut quam eleifend eleifend.
        Vestibulum dignissim metus efficitur nulla faucibus,
        a sodales magna laoreet.
        Aliquam dapibus nisl in risus fringilla tristique.
    </p>

    <input type="text" id="myText" placeholder="Textfield">

    <script src="task4.js"></script>

</body>
</html>
```

Task.js

```
/***Mouse events***/
const paragraph = document.getElementById("myParagraph");

//Change background color to yellow when clicked
```

```
paragraph.addEventListener("click", event => {
    event.target.style.backgroundColor = "yellow"
});

//Change background color to blue when double-clicked
paragraph.addEventListener("dblclick", event => {
    event.target.style.backgroundColor = "blue"
});

//Change background color to red when mouse hovers over
paragraph.addEventListener("mouseover", event => {
    event.target.style.backgroundColor = "red"
});

//Change background color to green when mouse leaves
paragraph.addEventListener("mouseout", event => {
    event.target.style.backgroundColor = "green"
});



/***Textfield events***/
const textfield = document.getElementById("myText");

//Convert text to uppercase when its value changes
textfield.addEventListener("change", upperCase => {
    textfield.value = textfield.value.toUpperCase();
});

//Change border color to blue when textfield is focused
textfield.addEventListener("focus", event => {
    event.target.style.border = "1px solid #00f";
});

//Change border color to default when focus is removed from textfield
textfield.addEventListener("blur", event => {
    event.target.style.border = "1px solid #ccc";
});
```

Output



Event Handling

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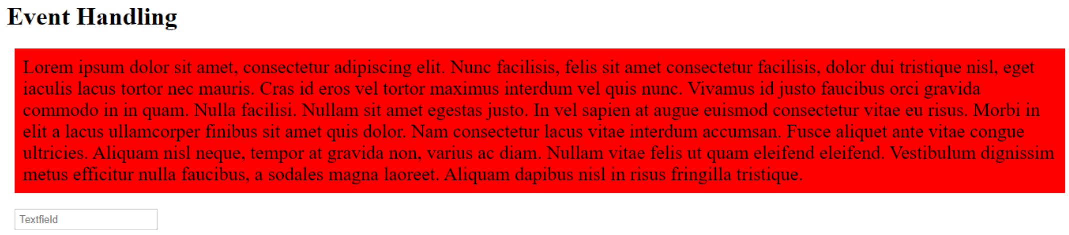
Textfield

When i touch the box;



Event Handling

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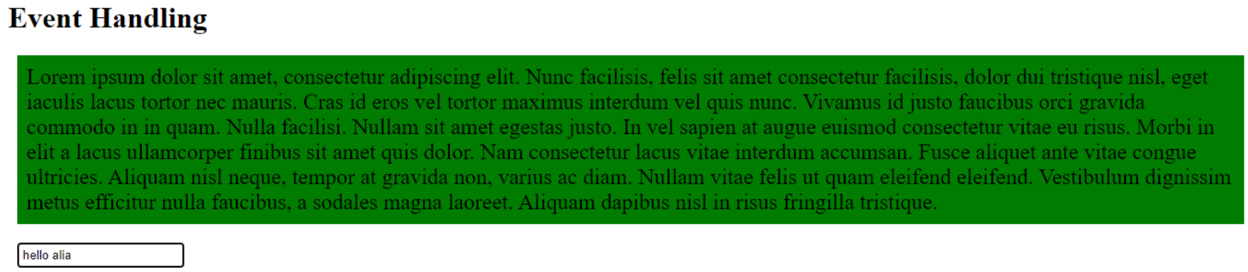
Textfield

Before click enter ;



Event Handling

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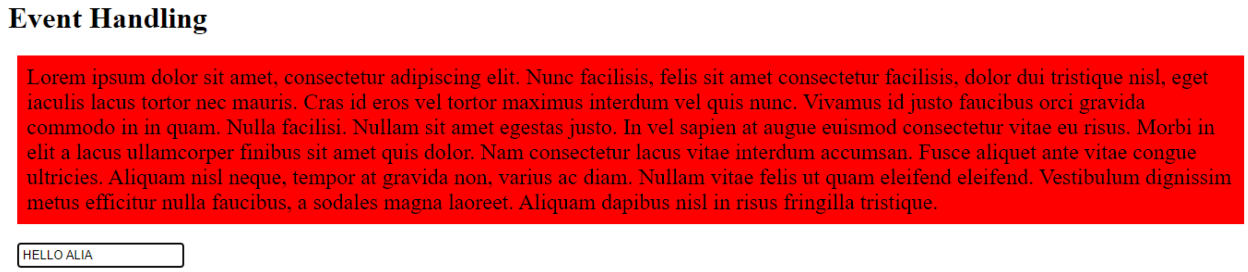
hello alia

After click enter;



Event Handling

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nunc facilisis, felis sit amet consectetur facilisis, dolor dui tristique nisl, eget iaculis lacus tortor nec mauris. Cras id eros vel tortor maximus interdum vel quis nunc. Vivamus id justo faucibus orci gravida commodo in in quam. Nulla facilisi. Nullam sit amet egestas justo. In vel sapien at augue euismod consectetur vitae eu risus. Morbi in elit a lacus ullamcorper finibus sit amet quis dolor. Nam consectetur lacus vitae interdum accumsan. Fusce aliquet ante vitae congue ultricies. Aliquam nisl neque, tempor at gravida non, varius ac diam. Nullam vitae felis ut quam eleifend eleifend. Vestibulum dignissim metus efficitur nulla faucibus, a sodales magna laoreet. Aliquam dapibus nisl in risus fringilla tristique.

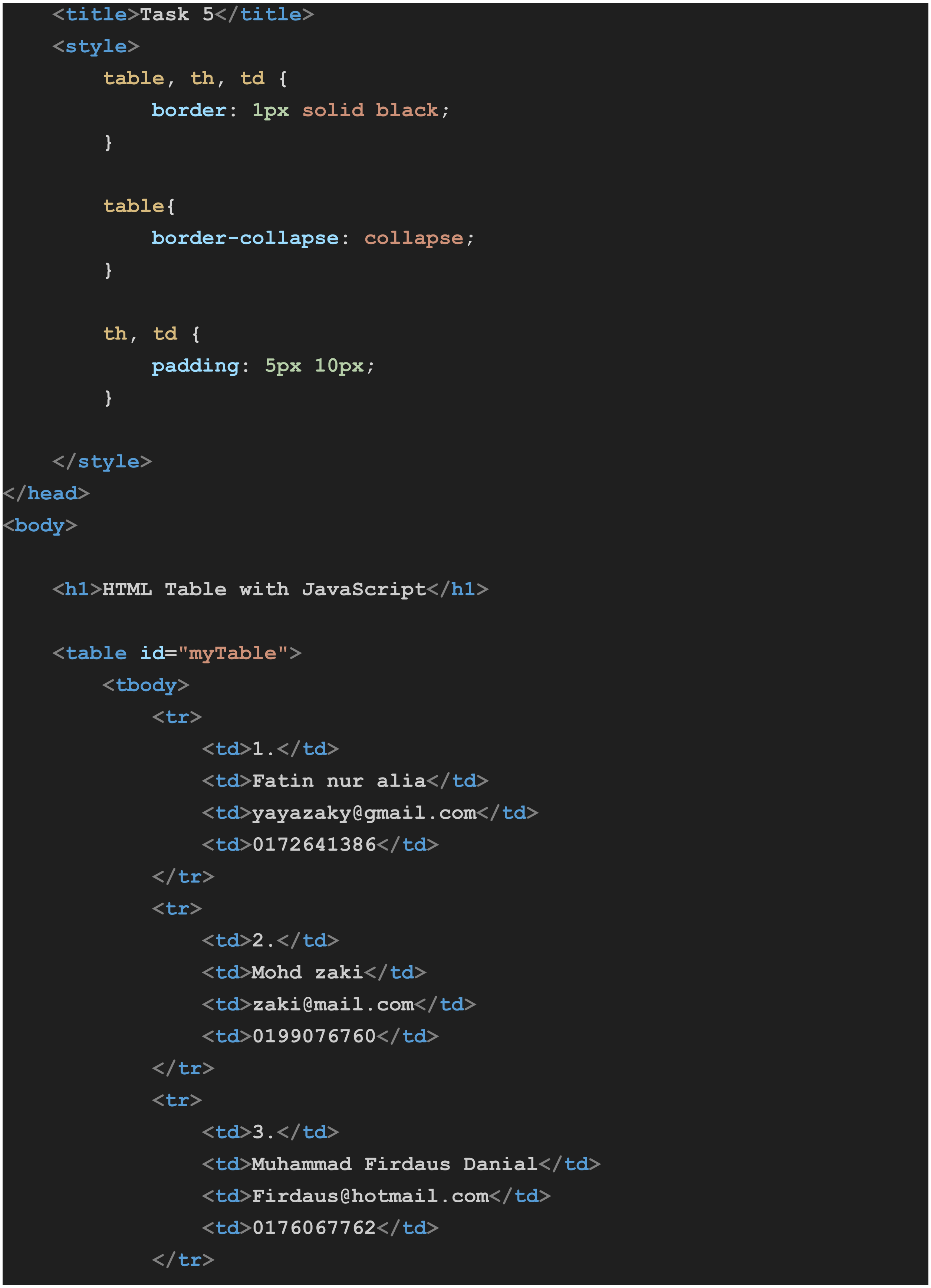
HELLO ALIA

Task 5 : JavaScript with HTML Table

Codes

Task5.html

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

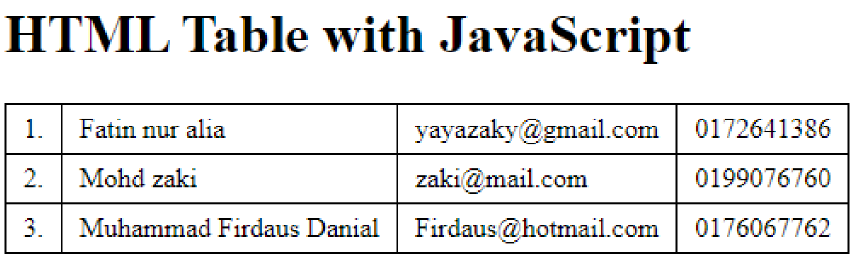


```
    <title>Task 5</title>
    <style>
        table, th, td {
            border: 1px solid black;
        }

        table{
            border-collapse: collapse;
        }

        th, td {
            padding: 5px 10px;
        }

    </style>
</head>
<body>

    <h1>HTML Table with JavaScript</h1>

    <table id="myTable">
        <tbody>
            <tr>
                <td>1.</td>
                <td>Fatin nur alia</td>
                <td>yayazaky@gmail.com</td>
                <td>0172641386</td>
            </tr>
            <tr>
                <td>2.</td>
                <td>Mohd zaki</td>
                <td>zaki@mail.com</td>
                <td>0199076760</td>
            </tr>
            <tr>
                <td>3.</td>
                <td>Muhammad Firdaus Danial</td>
                <td>Firdaus@hotmail.com</td>
                <td>0176067762</td>
            </tr>
        </tbody>
    </table>

    <script src="task5.js"></script>

</body>
</html>
```

task5.js

```
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Task 5</title>
    <style>
        table, th, td {
            border: 1px solid black;
        }

        table{
            border-collapse: collapse;
        }

        th, td {
            padding: 5px 10px;
        }

    </style>
</head>
<body>

    <h1>HTML Table with JavaScript</h1>

    <table id="myTable">
        <tbody>
            <tr>
                <td>1.</td>
                <td>Fatin nur alia</td>
                <td>yayazaky@gmail.com</td>
                <td>0172641386</td>
            </tr>
            <tr>
                <td>2.</td>
                <td>Mohd zaki</td>
                <td>zaki@mail.com</td>
                <td>0199076760</td>
            </tr>
            <tr>
                <td>3.</td>
                <td>Muhammad Firdaus Danial</td>
                <td>Firdaus@hotmail.com</td>
                <td>0176067762</td>
            </tr>
        </tbody>
    </table>

    <script src="task5.js"></script>

</body>
</html>
```

Output

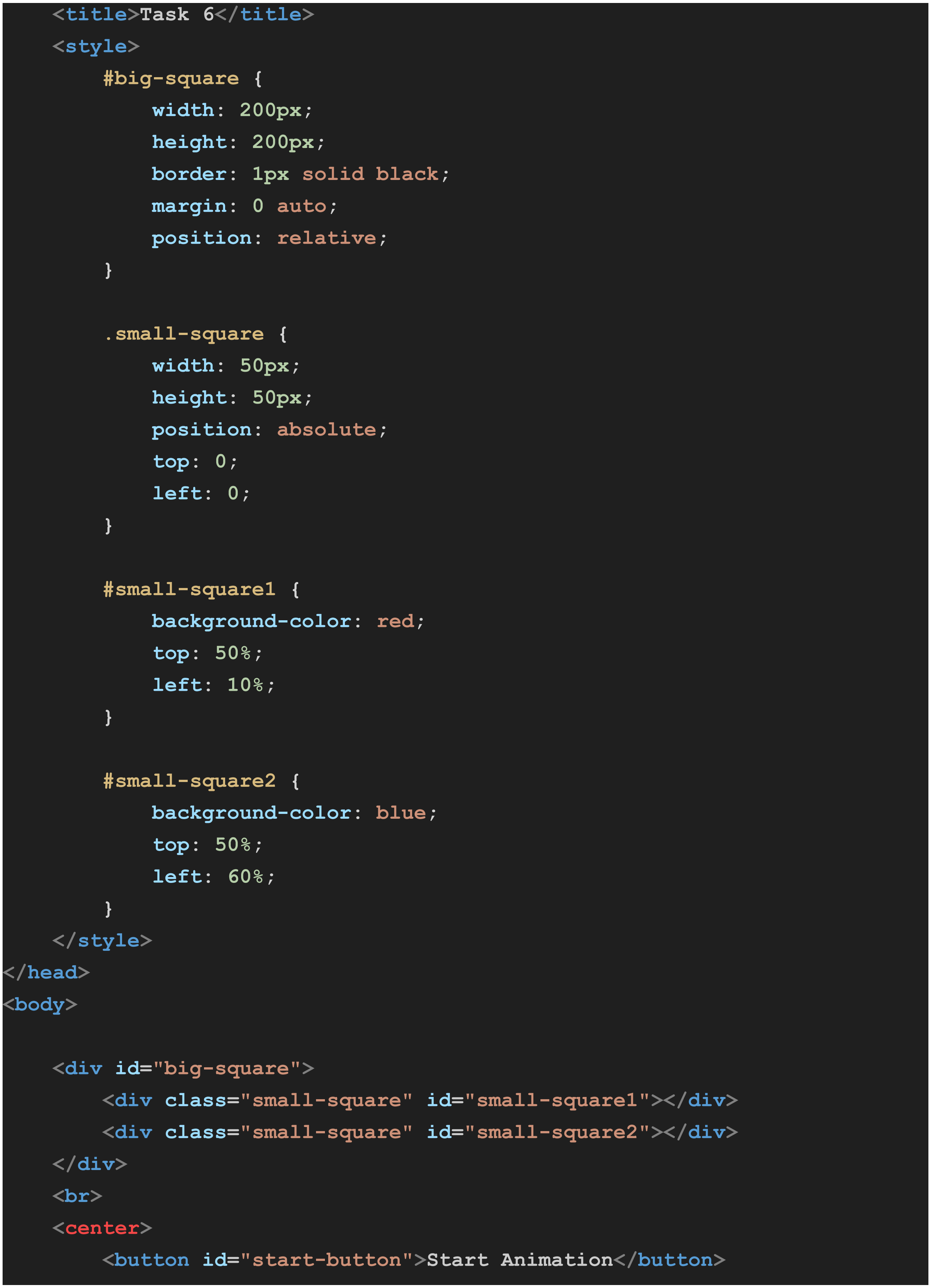


HTML Table with JavaScript

1.	Fatin nur alia	yayazaky@gmail.com	0172641386
2.	Mohd zaki	zaki@mail.com	0199076760
3.	Muhammad Firdaus Danial	Firdaus@hotmail.com	0176067762

Task 6 : JavaScript with HTML Table
Codes
Task6.html

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



```
    <title>Task 6</title>
    <style>
        #big-square {
            width: 200px;
            height: 200px;
            border: 1px solid black;
            margin: 0 auto;
            position: relative;
        }

        .small-square {
            width: 50px;
            height: 50px;
            position: absolute;
            top: 0;
            left: 0;
        }

        #small-square1 {
            background-color: red;
            top: 50%;
            left: 10%;
        }

        #small-square2 {
            background-color: blue;
            top: 50%;
            left: 60%;
        }
    </style>
</head>
<body>

    <div id="big-square">
        <div class="small-square" id="small-square1"></div>
        <div class="small-square" id="small-square2"></div>
    </div>
    <br>
    <center>
        <button id="start-button">Start Animation</button>
```

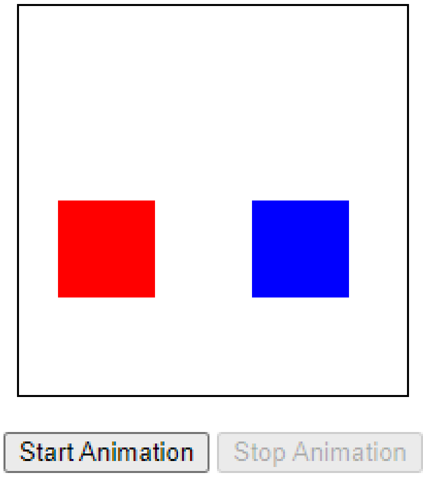
```html
        <button id="stop-button" disabled>Stop Animation</button>
    </center>

    <script src="task6.js"></script>

</body>
</html>
```

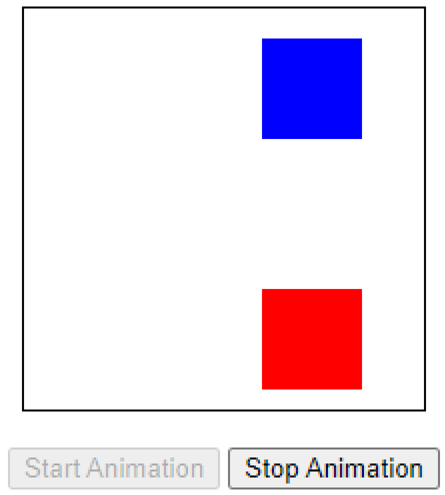
task6.js

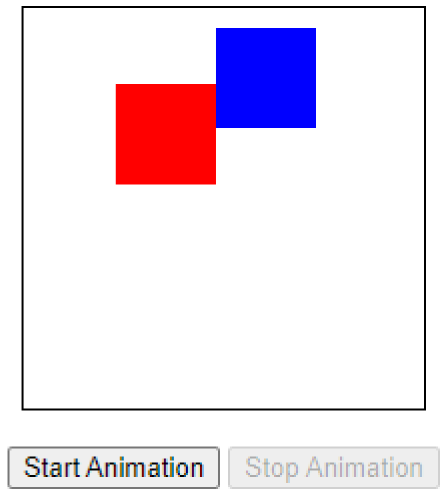
```javascript
const bigSquare = document.getElementById("big-square");
const smallSquare1 = document.getElementById("small-square1");
const smallSquare2 = document.getElementById("small-square2");
const startButton = document.getElementById("start-button");
const stopButton = document.getElementById("stop-button");

let animationInterval; // Reference to the animation interval

function getRandomPosition(max) {
    return Math.floor(Math.random() * max);
}

function moveSquares() {
    const bigSquareWidth = bigSquare.clientWidth - smallSquare1.clientWidth;
    const bigSquareHeight = bigSquare.clientHeight - smallSquare1.clientHeight;

    // Generate random positions within the boundaries of the big square
    const newTop1 = getRandomPosition(bigSquareHeight);
    const newLeft1 = getRandomPosition(bigSquareWidth);
    const newTop2 = getRandomPosition(bigSquareHeight);
    const newLeft2 = getRandomPosition(bigSquareWidth);

    // Update positions of the small squares
    smallSquare1.style.top = `${newTop1}px`;
    smallSquare1.style.left = `${newLeft1}px`;
    smallSquare2.style.top = `${newTop2}px`;
    smallSquare2.style.left = `${newLeft2}px`;
}
```

```
function startAnimation() {
    // Start animation by repeatedly calling moveSquares at a specific interval
    animationInterval = setInterval(moveSquares, 500); // Adjust interval for animation speed (50 milliseconds here)
    startButton.disabled = true;
    stopButton.disabled = false;
}

function stopAnimation() {
    clearInterval(animationInterval); // Clear the animation interval to stop movement
    startButton.disabled = false;
    stopButton.disabled = true;
}

startButton.addEventListener("click", startAnimation);
stopButton.addEventListener("click", stopAnimation);
```

Output




Start Animation
Stop Animation


Start Animation
Stop Animation