Submitted By: M. Talha Atif   F2021266573

Assignment 4

1. Code:

```html
<!DOCTYPE html>
<html lang="en">
    <!-- content -->
<head>
    <title>Unit Converter Created By Talha Atif</title>
    <style>
        /* styling of html page*/
body {
    /* here flex with align-item and justify-content is used to align divs of
body at center */
    font-family: Arial, sans-serif;
    background-color: #f4f4f4;
    display: flex;
    font-size: 20px;
    justify-content: center;
    align-items: center;
    height: 100vh;
    margin: 0;
}

.unitConverter {
    background: white;
    padding: 20px;
    border-radius: 8px;
    box-shadow: 0 0 10px rgba(206, 51, 51, 0.1);
    text-align: center;
}

h1 {
    margin-bottom: 20px;
}

input, select, button {
    margin: 9px 0;
    padding: 8px;
    border-radius: 5px;
    border: 1px solid #c02c2c;
    font-size: 10px;
}

button {
```

```css
    background-color: #ff8800;
    color: white;
    border: none;
}

button:hover {
    background-color: #e7b249;
}

#result {
    margin-top: 20px;
    padding: 10px;
    background-color: #e9ecef;
    border-radius: 4px;
    color:#c02c2c;
    font-weight: bold;
    font-size: 70px;
}

    </style>
</head>
<body>
    <!-- div having all tags -->
    <div class="unitConverter">
        <!--  heading tag -->
        <h1>Unit Converter By Talha Atif</h1>
        <!--  input for number by user -->
        <input type="number" id="value" placeholder="Hey there! Enter value to
convert">
        <!-- selction for source unit -->
        <select id="fromUnit">
            <!-- optgroup is used to make grouping of units here, Length for
length grouping and Weight for weight -->
            <optgroup label="Length">
                <option value="m">Meters (m)</option>
                <option value="km">Kilometers (km)</option>
                <option value="mi">Miles (mi)</option>
                <option value="ft">Feet (ft)</option>
            </optgroup>
            <!-- optgroup is used to make grouping of units here, Length for
length grouping and Weight for weight -->
            <optgroup label="Weight">
                <option value="g">Grams (g)</option>
                <option value="kg">Kilograms (kg)</option>
                <option value="oz">Ounces (oz)</option>
                <option value="lb">Pounds (lb)</option>
            </optgroup>
        </select>
```

```html
        <!-- selection for target unit -->
        <select id="toUnit">
            <!-- optgroup is used to make grouping of units here, Length for
length grouping and Weight for weight -->
            <optgroup label="Length">
                <option value="m">Meters (m)</option>
                <option value="km">Kilometers (km)</option>
                <option value="mi">Miles (mi)</option>
                <option value="ft">Feet (ft)</option>
            </optgroup>
            <!-- optgroup is used to make grouping of units here, Length for
length grouping and Weight for weight -->
            <optgroup label="Weight">
                <option value="g">Grams (g)</option>
                <option value="kg">Kilograms (kg)</option>
                <option value="oz">Ounces (oz)</option>
                <option value="lb">Pounds (lb)</option>
            </optgroup>
        </select>
        <!-- When use will click this button, conversion will be done -->
        <button id="convertBtn" onclick="convertUnits()">Convert
Value</button>
        <!-- Dive For storing result -->
        <div id="result"></div>
    </div>
    <!-- code for behaviour -->
    <script>

function convertUnits(){
    //  objects are used here which are actually dictionaries you can say or
even map of keys
    // here units are as keys and values are convertion rates
const lengthToBase = {
    m: 1,
    km: 1000,
    mi: 1609.34,
    ft: 0.3048
};
// here units are as keys and values are convertion rates
const baseToLength = {
    m: 1,
    km: 0.001,
    mi: 0.000621371,
    ft: 3.28084
};
// here units are as keys and values are convertion rates
const weightToBase = {
    g: 1,
```

```javascript
    kg: 1000,
    oz: 28.3495,
    lb: 453.592
};
// here units are as keys and values are convertion rates
const baseToWeight = {
    g: 1,
    kg: 0.001,
    oz: 0.035274,
    lb: 0.00220462
}
//  get number and cast into float for more precision
    const value = parseFloat(document.getElementById('value').value);
    // get source and target uni
    const fromUnit = document.getElementById('fromUnit').value;
    const toUnit = document.getElementById('toUnit').value;

    // isNan function will return false if value obtained from user input is a
number else true for not a number
    if (isNaN(value) || value<0) {
        document.getElementById('result').textContent = 'Please enter a valid
number.';
        return;
    }
    //  create variable with let for storing calculated result
    let covertedResultAfterUnits;

    // if source and target unit are from length class then do accordingly

    if (lengthToBase[fromUnit] && baseToLength[toUnit]) {
        // Convert length
        const valueInBase = value * lengthToBase[fromUnit]; // Convert to base
(meters)
        covertedResultAfterUnits = valueInBase * baseToLength[toUnit]; //
Convert from base to target unit
        document.getElementById('result').style.color = 'green';


    }
    // if source and target unit are from weight class then do accordingly
    else if (weightToBase[fromUnit] && baseToWeight[toUnit]) {
        // Convert weight
        const valueInBase = value * weightToBase[fromUnit]; // Convert to base
(grams)
        covertedResultAfterUnits = valueInBase * baseToWeight[toUnit]; //
Convert from base to target unit
        document.getElementById('result').style.color = 'blue';
```

```
    } else {
        document.getElementById('result').innerHTML = 'Invalid unit
conversion.';
        document.getElementById('result').style.color = 'red';
        return;
    }

    document.getElementById('result').innerHTML= `${value} ${fromUnit} =
${covertedResultAfterUnits} ${toUnit}`;
}

    </script>
    <!--  end of script tag -->
</body> <!--  end of body tag -->
<!--  end of html tag -->
</html>
```

2. Output:

Unit Converter By Talha Atif

23 | Meters (m) ▾ | Kilometers (km) ▾ | Convert Value

23 m = 0.023 km

Unit Converter By Talha Atif

| 23 | Meters (m) ▾ | Pounds (lb) ▾ | Convert Value |

Invalid unit conversion.

Unit Converter By Talha Atif

| 23 | Ounces (oz) ▾ | Ounces (oz) ▾ | Convert Value |

23 oz = 23.000006049 oz

Unit Converter By Talha Atif

| -23 | Meters (m) ▾ | Meters (m) ▾ | Convert Value |

Please enter a valid number.

Unit Converter By Talha Atif

| 234 | Ounces (oz) ▾ | Pounds (lb) ▾ | Convert Value |

234 oz = 14.624970677459999 lb

Unit Converter By Talha Atif

234 | Pounds (lb) | Kilograms (kg) | Convert Value

234 lb = 106.14052799999999 kg

Unit Converter By Talha Atif

234 | Miles (mi) | Feet (ft) | Convert Value

234 mi = 1235516.9686704 ft

Unit Converter By Talha Atif

234 | Miles (mi) | Meters (m) | Convert Value

234 mi = 376585.56 m

Unit Converter By Talha Atif

234 | Meters (m) | Feet (ft) | Convert Value

234 m = 767.71656 ft