Refresher Assignment: Report

By Siddharth Sircar - 015384343

Problem Statement

SortYourLife is a task management app. Users can log in and view their unique tasks, add more tasks, and mark them as complete. It has a profile page that shows user details and an option to connect with fellow users to collaborate with their tasks.

Deployment URL

http://ec2-3-144-121-83.us-east-2.compute.amazonaws.com:3000/

GitHub Link

https://github.com/siddharthsircar/CMPE-273-Refresher/

App Video

https://youtu.be/9U55ZuRa21c

JavaScript: Introduction to Topic

1. **LET, VAR and CONST:**
   LET: variable declared with LET have a block scope. They cannot be referenced outside that block.
   VAR: variable declared with VAR is defined throughout the program.
   CONST: is used to declare constant variables. These variables cannot be updated once declared.
2. **SPLIT:** is used to split a string based on some pattern.
3. **ARROW FUNCTION:** is a new way of declaring functions in ES6.
4. **INCLUDES:** is used to verify if a certain string is present in an array or another string. Returns True if found.
5. **REGEX:** regular expression is a sequence of characters that can be used as a validation/search pattern by following certain sequence conventions.
6. **OBJECT.ASSIGN:** can be used to modify an object by updating its values or concatenating a new object to it.
7. **CALLBACKS:** allows user to pass a function as an argument to another functions which is helpful when we want a function to call another function.
8. **PROMISE:** utilizes Callbacks in a different way. We do not pass a callback function as argument we attach it in the form of *.then()*. It has 2 outcomes- Success/Resolve or Failure/ Reject. It is used where there is a blocking code like making an API call.
9. **ASYNC / AWAIT:** is a better way of writing promises. Does the same thing.

10. **JSON.STRINGIFY:** is used to convert a JSON object into string.

Code Snippet for above topics:

login_register.js

```
'use strict'

// Using CONST to declare constant variable which can not be updated later
const emailTxtbx = document.getElementById('email');
const nameTxtbx = document.getElementById('name');
const passwordTxtbx = document.getElementById('password');
const loginBtn = document.getElementById('login');
const registerBtn = document.getElementById('register');

// Using VAR
var firstName;
var lastName;

// Using SPLIT func to split full name.
// Using ARROW FUNCTION
const splitName = (name) => {
    // Use of LET to create block scope variable (Can not be accessed outside this
 block)
    let fullName = name.split(' ');
    fullName = [fullName[0], fullName[fullName.length - 1]]
    return fullName;
}

// console.log(fullName); will throw an ERROR

// Using AXIOS API call to validate user
function authenticateUser() {
    if (document.title === 'REGISTER') location.href = '../modules/login.html';
    else {
        axios.get('https://jsonplaceholder.typicode.com/users').then(response => {
            let userEmails = ['sid@gmail.com'];
            for (let i = 0; i < response.data.length; i++) {
                userEmails.push(response.data[i].email);
            }
            // Using LET to declare function variables
            let email = emailTxtbx.value;
            let password = passwordTxtbx.value;

            if (email.length <= 0) alert('Please enter email');
            else if (password.length <= 0) alert('Please enter password');
            else {
                if (validateEmail(email)) {
                    // Using INCLUDES to verify if the entered email exists in the
 registered email list.
```

```
                    if (userEmails.includes(email)) {
                        if (password === '1234') {
                            storeUserDetails(email);
                            location.href = '../modules/todo.html';
                        }
                        else alert('Incorrect Password!');
                    }
                    else alert('Email not registered')
                }
                else alert('Enter Valid Email.')
            }
        }).catch(error => {
            console.log(error);
            alert('Could not connect to database. ', error);
        });
    }
}

// Used Regular Expression to validate email format.
function validateEmail(email) {
    if (/^\w+([\.-]?\w+)*@\w+([\.-]?\w+)*(\.\w{2,3})+$/.test(email)) {
        return true;
    }
    return false;
}

// OBJECT
let userDeets = {
    'id': 1,
    'name': 'Siddharth Sircar',
    'email': 'sid@gmail.com',
    'address': {
        'city': 'San Jose',
        'zipcode': '95112',
        'geo': {
            'lat': '',
            'lng': ''
        }
    },
    'phone': '1-408-207-7389'
}

// Using ASYNC / AWAIT
async function getUserData(email) {
    let response = await fetch(`https://jsonplaceholder.typicode.com/users?email=$
{email}`);
    let data = await response.json();
    return data;
```

```
}

function storeUserDetails(email) {
    if (email === 'sid@gmail.com') {
        // Use JSON.stringify to convert JSON object into string
        let userData = JSON.stringify(userDeets);
        sessionStorage.setItem('user-data', userData);
    } else {
        // Using ASYNC/AWAIT
        getUserData(email).then((data) => {
            let apiResponse = data[0];
            // Using OBJECT.ASSIGN
            Object.assign(userDeets, {
                'id': apiResponse.id,
                'name': apiResponse.name,
                'email': `${email}`,
                'address': {
                    'city': `${apiResponse.address.city}`,
                    'zipcode': `${apiResponse.address.zipcode}`,
                    'geo': {
                        'lat': `${apiResponse.address.geo.lat}`,
                        'lng': `${apiResponse.address.geo.lng}`
                    }
                },
                'phone': `${apiResponse.phone}`
            })
            let userData = JSON.stringify(userDeets);
            // Using SessionStorage
            sessionStorage.setItem('user-data', userData);
        })
    }
}

function registerUser() {
    if (document.title === 'LOGIN') {
        location.href = '../modules/register.html';
        return false;
    }
    else {
        // Using Promise
        registerPromise().then((message) => {
            let userData = JSON.stringify(userDeets);
            sessionStorage.setItem('user-data', userData);
            location.href = '../modules/todo.html';
            console.log(message);
        }).catch((error) => {
            alert(error);
        })
```

```
        return false;
    }
}

// Using PROMISE
function registerPromise() {
    return new Promise((resolve, reject) => {
        let emailTxtbx = document.getElementById('email');
        let email = emailTxtbx.value;
        if (validateEmail(email)) {
            resolve('Registration Successful!');
        } else reject('Invalid Email!');
    })
}

loginBtn.addEventListener('click', authenticateUser);
```

11. **SLICE:** return a sub portion / substring of an array/string based on start and end index.
12. **JSON.PARSE:** converts a JSON string into a JSON object.
13. **TYPEOF:** is used to validate the datatype of an expression or variable.
14. **DESTRUCTURING:** is used to unpack values from an ARRAY or an OBJECT
15. **DEFAULT ARGUMENTS:** are used when we want to specify default values to its arguments in a scenario when the function call does not have the same parameter.
16. **EXPORT:** is used when we want to use an object in one module from another. We export the desired object.
17. **REQUIRE / IMPORT:** is used to utilize the exported object in the desired module.
18. **STATIC METHOD:** are referenced by the class itself. We do not need to create an object of the class to call this function.
19. **METHOD OVERRIDING:** when a subclass has defined a function which already exists in the parent class with same name, param and return types, the subclass method overrides the parent class method.
20. **INHERITENCE:** is a way of acquiring properties of a class by extending it.
21. **CLOSURE:** allows a subfunction to have access to parent function scope even after parent function has been executed.
22. **REST:** allows functions to dynamically accept arguments. In this case, unique parameters are not specified.
23. **SPREAD:** allows user to expand arrays. It can be used to concatenate values of an array into another by unpacking them.
24. **CALL, BIND and APPLY:**
    Call: is used to invoke a function call. Arguments are passed separately.
    Apply: is also used to invoke a function call but unlike Call, the arguments are passed as array.
    Bind: take an object as an argument and creates a new function.

Code Snippet for above topics:

to_do.js

```
'use strict'

const input = document.getElementById('todo-title');
const addButton = document.getElementById('new-todo');
const taskList = document.querySelector('#tasks');

function inputLength() {
    return input.value.length
}

var userId;
var sessionData;

// Use of SLICE to get first letter of name
const getFirstLetter = (n) => {
    return n.slice(0, 1);
};

function profileName() {
    sessionData = sessionStorage.getItem('user-data');
    // using JSON.Parse to convert JSON string into JSON object
    sessionData = JSON.parse(sessionData);
    let [firstName, lastName] = sessionData.name.split(' ');
    let firstNameInit = getFirstLetter(firstName);
    let secondNameInit = getFirstLetter(lastName);
    document.getElementById('initialsText').innerHTML = firstNameInit + second
NameInit;
}

// Object
let fullName = {
    firstName: 'Siddharth',
    lastName: 'Sircar'
}

const greetUser = () => {
    // Using TYPEOF to check datatype of sessionData.name
    if (typeof sessionData.name !== 'undefined' && sessionData.name !== null)
{
        // Destructuring ARRAY
        let [fName, lName] = sessionData.name.split(' ');
        // Using OBJECT.ASSIGN
        Object.assign(fullName, { firstName: fName, lastName: lName });
    }
```

```
    // Destructuring OBJECT
    const { firstName, lastName } = fullName;
    alert(`Hi ${firstName} ${lastName}`);
}

let tasksTitle = []

function displayUserTasks() {
    userId = sessionData.id;
    axios.get(`https://jsonplaceholder.typicode.com/users/${userId}/todos`).th
en(response => {
        for (const task of response.data) {
            if (task.completed === false) {
                tasksTitle.push(task.title);
                addListItem(task.title);
            }
        }
        // Using CALLBACK: passing a function as an argument to another functi
on
        taskCount(tasksTitle, displayCount);
    }).catch(error => {
        console.log(error);
        alert('Could not connect to database. ', error);
    });
}

// Callback
const taskCount = (tasks, myCallback) => {
    let count = tasks.length;
    myCallback(count);
};

function displayCount(count) {
    let countEl = document.getElementById('task-count');
    countEl.innerHTML = `No. of tasks: ${count}`;
}

// Using DEFAULT ARGUMENTS in function in case function call doesnot send any
params
function addListItem(title = null) {
    let li = document.createElement('li');

    let delButton = document.createElement('button')
    delButton.appendChild(document.createTextNode('Delete'));
    delButton.setAttribute('class', 'delete');
    if (title === null) {
        title = input.value;
        // Using LOCALSTORAGE (storage does not expire)
```

```
        localStorage.setItem('taks', title);
        tasksTitle.push(title);
        taskCount(tasksTitle, displayCount);
    }
    li.appendChild(document.createTextNode(title));
    li.appendChild(delButton)
    taskList.appendChild(li)
    input.value = '';

    delButton.addEventListener('click', function () {
        delButton.parentNode.parentNode.removeChild(li);
    });

    li.addEventListener('click', function () {
        li.classList.toggle('done');
    });
}

function addTodoOnclick() {
    if (inputLength() > 0) {
        addListItem();
    }
}

function addTodoOnEnter(event) {
    if (inputLength() > 0 && event.keyCode == 13) {
        addListItem();
    }
}

profileName();
displayUserTasks();

addButton.addEventListener('click', addTodoOnclick);
input.addEventListener('keypress', addTodoOnEnter);
```

helper.js

```
// Using EXPORT
export default function getFirstLetter(n) {
    return n.slice(0, 1);
};

export function validateEmail(email) {
    if (/^\w+([\.-]?\w+)*@\w+([\.-]?\w+)*(\.\w{2,3})+$/.test(email)) {
        return true;
    }
    return false;
}
```

profile.js

```
'use strict'

// Using IMPORT as REQUIRE needed NodeJS integration
import getFirstLetter from './helper.js';
import validateEmail from './helper.js';

const nameTxtbx = document.getElementById('name');
const phoneTxtbx = document.getElementById('phone');
const emailTxtbx = document.getElementById('email');
const cityTxtbx = document.getElementById('city');
const dobTxtbx = document.getElementById('bdate');
const followBtn = document.getElementById('follow');
const locateButton = document.getElementById('locate');

// Use of Class
class user {
    constructor(userData) {
        this.userData = userData;
    }

    getUserDetails() {
        return this.userData;
    }

    // Using Static Method
    static getBirthDate() {
        return '07/29/1998';
    }
}

// Inheritence
class profile extends user {
    constructor(userData) {
        super(userData);
    }

    displayProfile() {
        let userData = this.getUserDetails();
        nameTxtbx.value = userData.name;
        emailTxtbx.value = userData.email;
        phoneTxtbx.value = userData.phone;
        dobTxtbx.value = user.getBirthDate();
        cityTxtbx.value = userData.address.city;
    }
}

let sessionData;
```

```
function displayProfileName() {
    sessionData = sessionStorage.getItem('user-data');
    // using JSON.Parse to convert JSON string into JSON object
    sessionData = JSON.parse(sessionData);
    let [firstName, lastName] = sessionData.name.split(' ');
    let firstNameInit = getFirstLetter(firstName);
    let secondNameInit = getFirstLetter(lastName);
    document.getElementById('initialsText').innerHTML = firstNameInit + second
NameInit;
}

// Using Geolocation
const getMyLocation = () => {
    if (navigator.geolocation) {
        navigator.geolocation.getCurrentPosition((position) => {
            let latitude = position.coords.latitude;
            latitude = latitude.toFixed(5);
            let longitude = position.coords.longitude;
            longitude = longitude.toFixed(5);
            document.getElementById('location').value = latitude + ',' + longi
tude;
        });
    }
    else {
        document.getElementById('location').value = 'No permission to fetch lo
cation';
    }
}

// Using CLOSURES
const reqCounter = (function () {
    let requests = 0;
    return function () {
        requests += 1;
        localStorage.setItem('follow-requests', requests);
        return requests;
    }
})()

function displayRequestCount() {
    document.getElementById('reqcount').innerHTML = `Follow Requests Sent: ${r
eqCounter()}`;
}

// Using REST operator
const requestInfo = (...rest) => {
    document.getElementById('followText').innerHTML = `You sent request to: ${
rest}`;
```

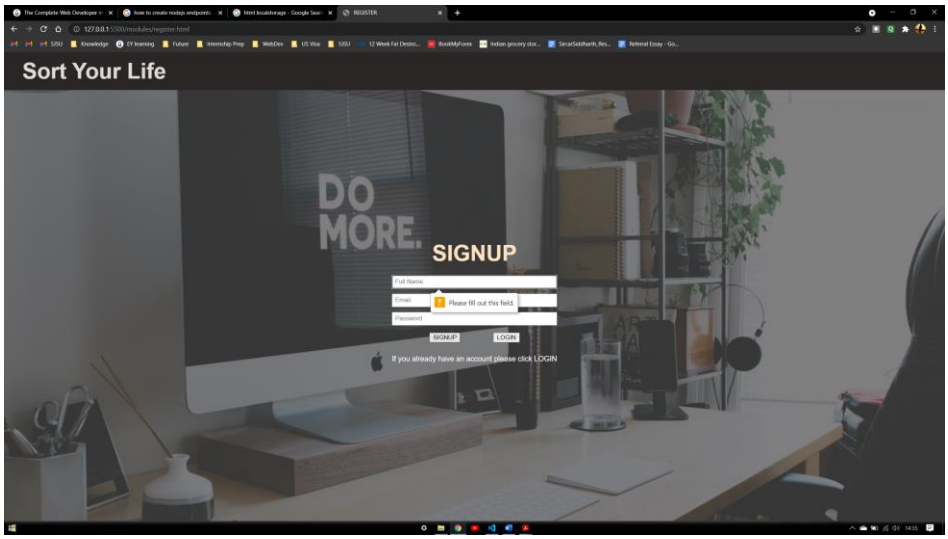
```
}

function followUser() {
    const folName = document.getElementById('fName');
    const folEmail = document.getElementById('fEmail');
    console.log(folEmail.value);
    // Using CALL and APPLY
    if (folName.value === "" && folEmail.value !== "") {
        // Using CALL
        if (validateEmail(folEmail.value)) {
            requestInfo.call("", folEmail.value);
            folEmail.value = "";
            displayRequestCount();
        } else alert('Invalid Email!');
    } else if (folName.value !== "" && folEmail.value === "") {
        requestInfo.call("", folName.value);
        folName.value = "";
        displayRequestCount();
    } else if (folName.value !== "" && folEmail.value !== "") {
        // Using APPLY
        if (validateEmail(folEmail.value)) {
            requestInfo.apply("", [folName.value, folEmail.value]);
            folName.value = "";
            folEmail.value = "";
            displayRequestCount();
        } else alert('Invalid Email!');
    } else alert('Enter either follower Name or Email!');
}

displayProfileName();

let userProfile = new profile(sessionData);
userProfile.displayProfile();

locateButton.addEventListener('click', getMyLocation);
followBtn.addEventListener('click', followUser);
```

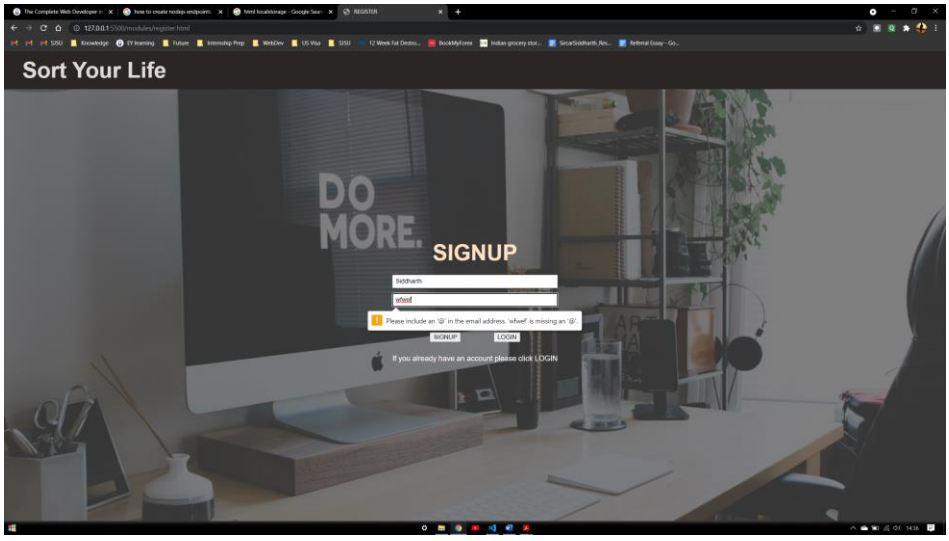
HTML5: Introduction to Topic

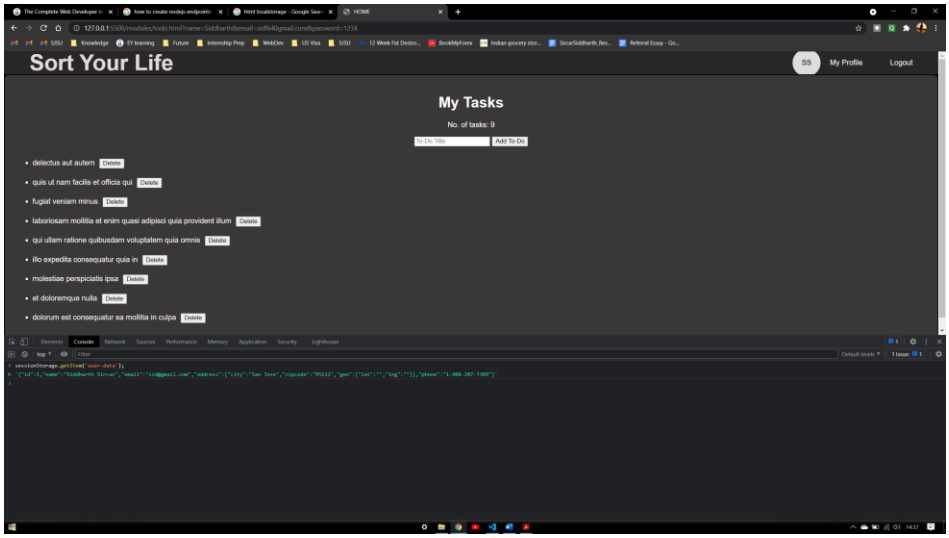
1. **LOCALSTORAGE:** stores data with no expiration date. Data is not deleted once the session ends or browser is closed. [used in to_do.js]
2. **SESSIONSTORAGE:** the data is stored only for the duration of the active session, once the session ends the data is deleted. [used in login_register.js]
3. **GEOLOCATION:** api is used to fetch the longitude and latitude. [not working after being deployed to AWS hence screenshot attached below][used in profile.js]

4. **EVENTS:** we can execute functions when certain events are triggered like onClick, onSubmit, onload etc.
5. **VALIDATIONS:** used on inputs to validate entered data.
    a. **Pattern:** data validated using regex patterns. Eg. For validating emails.
    b. **Autofocus:** puts cursor focus on the specified element when HTML loads.
    c. **Required:** marks an input field as required. Throws error if field left empty.
    d. **Email:** allows user to only enter email.

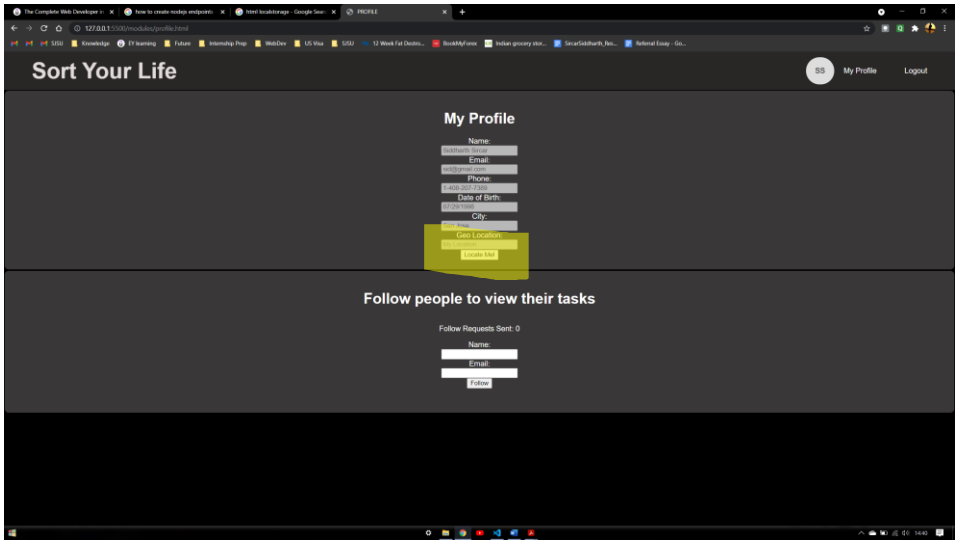
Screenshots:

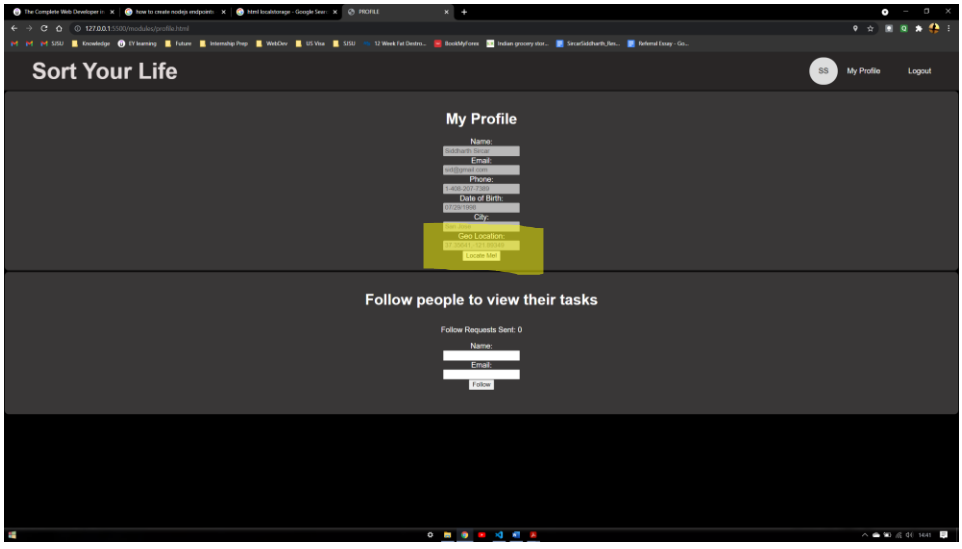






Click 'LOCATE ME!' button to fetch lat and long using geolocation





Code Snippet for above topics:

login.html

```
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>LOGIN</title>
    <link rel="stylesheet" type="text/css" href="../styles/style.css" />
    <link rel="stylesheet" type="text/css" href="../styles/login.css" />
  </head>
  <body>
    <nav class="navigation-bar">
      <a href="../index.html"><h1 class="company-logo">Sort Your Life</h1></a>
    </nav>
    <div class="form-container">
      <header>
        <h2><strong>LOGIN</strong></h2>
      </header>
      <div class="form" >
        <!-- Used AUTOFOCUS -->
        <input
          type="email"
          name="email"
          id="email"
          placeholder="Email"
          required
          autofocus
        />
        <input
          type="password"
          name="password"
          id="password"
          placeholder="Password"
          required
        />
        <div class="buttons">
          <input type="submit" value="LOGIN" id="login" />
          <input
            type="button"
            value="SIGNUP"
            id="register"
            onclick="location.href='./register.html'"
          />
        </div>
        <p>If you don't have an account please click SIGNUP</p>
      </div>
```

```
    </div>
    <script src="https://unpkg.com/axios/dist/axios.min.js"></script>
    <script type="text/javascript" src="../scripts/login_register.js"></script
>
  </body>
</html>
```

register.html

```
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta http-equiv="X-UA-Compatible" content="IE=edge" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>REGISTER</title>
    <link rel="stylesheet" type="text/css" href="../styles/style.css" />
    <link rel="stylesheet" type="text/css" href="../styles/login.css" />
  </head>
  <body>
    <nav class="navigation-bar">
      <a href="../index.html"><h1 class="company-logo">Sort Your Life</h1></a>
    </nav>
    <div class="form-container">
      <header>
        <h2><strong>SIGNUP</strong></h2>
      </header>
      <!-
- Using REQUIRED, AUTOFOCUS, EMAIL and PASSWORD type fields for validation -->
      <form class="form" action="../modules/todo.html" onsubmit="registerUser(
);">
        <input
          type="text"
          value=""
          name="name"
          id="name"
          placeholder="Full Name"
          required
          autofocus
        />
        <input
          type="email"
          name="email"
          id="email"
          placeholder="Email"
          required
        />
        <input
          type="password"
```

```
          name="password"
          id="password"
          placeholder="Password"
          required
        />
        <div class="buttons">
          <input type="submit" value="SIGNUP" id="register" />
          <input
            type="button"
            value="LOGIN"
            id="login"
          />
        </div>
        <p>If you already have an account please click LOGIN</p>
      </form>
    </div>
    <script src="https://unpkg.com/axios/dist/axios.min.js"></script>
    <script type="text/javascript" src="../scripts/login_register.js"></script
>
  </body>
</html>
```

to_do.html

```
<!DOCTYPE html>
<html>
  <head>
    <title>HOME</title>
    <link rel="stylesheet" href="../styles/todo.css" />
  </head>
  <!-- Added HTML Events -->
  <body onload="greetUser();">
    <nav class="navigation-bar">
      <a class = "logo" href="./todo.html"><h1 class="company-
logo">Sort Your Life</h1></a>
      <ul class="nav-container">
        <li class="push-right">
          <div class="initials">
            <span id="initialsText"></span>
          </div>
          <a class="profile" href="./profile.html">My Profile</a>
        </li>
        <a id="logout" href="./login.html">Logout</a>
      </ul>
    </nav>

    <div class="container">
      <h1>My Tasks</h1>
      <p id="task-count"></p>
```

```
      <input
        type="text"
        name="to-do"
        id="todo-title"
        placeholder="To-Do Title"
      />
      <button id="new-todo">Add To-Do</button>
      <ul id = "tasks"></ul>
    </div>
    <script src="https://unpkg.com/axios/dist/axios.min.js"></script>
    <script type="text/javascript" src="../scripts/to_do.js"></script>
  </body>
</html>
```

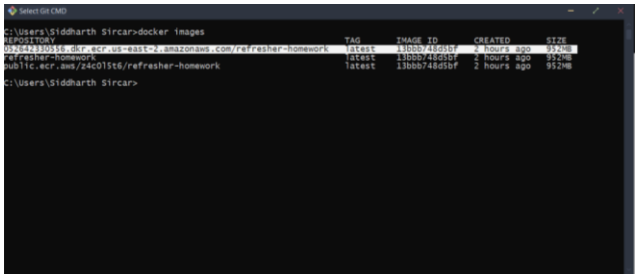
DEPLOYMENT

Problem Statement: Deploy the developed application, demonstrated in JavaScript and HTML topics, to AWS ECS.

Introduction To Topic:

Docker enables the separation of our application from the infra using containers. It uses OS level virtualization where the docker works like a virtual OS thus making deployments easier.

Docker Screenshot:



Code Snippet:

NodeJs File

```
// Using Require
var express = require('express');
var app = express();

app.set('views', './views');
app.set('view engine', 'ejs');
app.engine('html', require('ejs').renderFile);
app.use(express.static(__dirname + '/public'));

app.get('/', (req, res) => {
    res.render('index.html');
});
```

```
app.get('/login', (req, res) => {
    res.render('login.html');
});
app.get('/register', (req, res) => {
    res.render('register.html');
});
app.get('/profile', (req, res) => {
    res.render('profile.html');
});
app.get('/todo', (req, res) => {
    res.render('todo.html');
});

var server = app.listen(3000, function () {
    console.log("Server listening on port 3000");
});
```

Docker File

```
FROM node:14.15.5
RUN mkdir -p /usr/src/app
WORKDIR /usr/src/app
COPY . .
RUN npm install
EXPOSE 3000
CMD [ "node", "index" ]
```