

**Course Name**

COMP8967-1-R-2023F | Internship Project I

**Document Type**

P1: Initial Setup

**Professor**

Dr. Kalyani Selvarajah

**Group Number | Business Selected (Business Name)**

19 | 2 (Climate Neutral Technologies)

**Team Name**

Data Doobies

Team - Members	Student ID
Manjinder Singh	110097177
Harbhajan Singh	110100089
Karan Vishavjit	110099867
Dhrumil Limbad	110097066
Ajwad Maahi	110096720

## 1. Project Details:

The application's primary purpose is to demonstrate 'Multi-Object Decision Making' analysis. It will be a web-based computational application designed to assist in making decisions based on user inputs. It will calculate the impact of decisions based on metrics within specified categories, associated weights, and directions.

### Step 1 -

	Name	Scoring Type	Weight	Direction to Optimize
Category 1	Emissions Reduction	Number	Sum of all categories must be equal to 1(it can be divided based on the weightage)	It can be either Up or Down
Category 2	Local Air Quality Impact	Number		
Category 3	Wildlife Disturbance	Descriptive		
Category 4	Local Income Generation	Number		
Category 5	Job Creation	Number		
<b>Note</b> – 1. There can be multiple categories. 1. Always sum of all categories must not be greater than 1.				

**Table 1.1:** Category Input Table

Scenario	Name
Scenario 1	Construct Bike Pathway
Scenario 2	Add Bike Lanes to Road
Scenario 3	Add Vehicle Traffic Lane
Scenario 4	Add Bus-Route

**Table 1.2:** Scenario Input Table

### Step 2 – Add data and scores.

	Emission Reduction	Local Air Quality Impact	Wildlife Disturbance	Local Income Generation	Job Creation
<b>Construction Bike Pathway</b>	It will have value range from negative numbers to positive numbers.	It can be Low (1), Low-Mid (3), Mid (5), Mid-High (7.5), High (9).	It can be Low (1), Low-Mid (3), Mid (5), Mid-High (7.5), High (9).	It can be Low (1), Low-Mid (3), Mid (5), Mid-High (7.5), High (9).	A numeric value will be entered for this field.
<b>Add Bike Lanes to Road</b>					
<b>Add Vehicle Traffic Lane</b>					
<b>Add Bus-Route</b>					

**Table 1.3:** Parameters range for different Scenarios

Data is processed through a linear scoring function once the user enter values to the modal.

Also, it is recommended by the stakeholder (Kyle) to have column name at an angle of 45 degrees to better use the space on UI.

Then the values are converted using linear score function as

$$\textbf{Linear Score} = \frac{\text{min} - x}{\text{max} - \text{min}}$$

Also, Linear Score can be used to calculate the Dimensionless Score

$$\textbf{Dimensionless Score} = \{ \text{Weight} * \text{Linear Score} \}$$

Then after calculation, we need to display the Modeling results in the form of Build Bike Lane in Decreasing order after calculation.

Furthermore, we need to calculate the Total Dimensionless Score Per Scenario as

$$\textbf{Total Dimensionless Score Per Scenario} = \sum_{k=1}^n \text{Dimensionless Score Category } k; \text{ where } 1 \leq k \leq n$$

Lastly Recommended Scenario based on max of Total Dimensionless scores from Scenarios.

To Summarize, different equations will be used to calculate for the recommended scenario based on data and then based on the processed data, we need display Modeling Results in the form of “Build Bike Lane” as result.

## 2. Team Details:

**Team Name** – Data Doobies

**Business Selected** – 2

**Business Title** – Climate Neutral Technologies

**Group Number** – 19

## MEET OUR TEAM



### Manjinder Singh (Business Analyst & Developer)

- **Programming Languages:** Python, R.
- **Database:** MySQL, SQLite, Oracle, MongoDB, DynamoDB.
- **Cloud Platforms:** AWS (2x Certified), Microsoft Azure, Google Cloud Platform.
- **Software Development Lifecycle:** Agile Methodology, Scrum with agile implications, Waterfall Model.
- **Source Code Management and Collaboration Tools:** Git, Git Hub, Jira, Jenkins, Putty, Microsoft Teams.
- **Libraries Used:** Pandas, NumPy, Scikit-learn, TensorFlow, PyTorch Matplotlib, NLTK.

#### GitHub Account Details

GitHub Account URL – <https://github.com/Manjinder-Singh>

GitHub Username – Manjinder-Singh

#### Short Bio Apart from Technical Skills

- 5 years of experience in Accenture Solutions Private Limited (Last Designation – Senior Software Developer)
- 2X AWS Certified.
- Worked for Retail, Logistics, Healthcare, Industrial and Automation domains.



## Harbhajan Singh (Scrum Master & Back-end Developer)

- **Programming Languages:** Python, R, SQL, C, LaTeX
- **Libraries & Frameworks:** Scikit-learn, Tensorflow, Keras, PyTorch, Transformers, YOLO, OpenCV, MediaPipe, dlib, caffe, NLTK, SpaCy, ScanPy, Pandas, NumPy, SciPy, Scikit-learn, matplotlib, seaborn, plotly, PySpark, CNN, RNN, Flask, FastAPI, Streamlit, Docker, Kubernetes, SQLite, Linux, MLflow, huggingface
- **Database:** MSSQL, MySQL, Impala, MongoDB
- **Tools:** Git, GitHub, Advanced MS-Excel, Talend ETL Tool, UNIX Tools, Shell Scripting, Jupyter Notebook, RStudio, Anaconda, SSMS, Cloudera, Big Data, MS-Suite, JIRA, Spyder, VS Code, Google Colab
- **Visualization Tools:** Tableau, Power BI, Google Data Studio
- **Data Science Skills:** Data Analysis, Data Mining, Data Cleaning, Statistical Analysis, Predictive Analysis, Time Series Forecasting, Statistics, Recommendations System, Machine Learning, Deep Learning (ml), Computer Vision, Artificial Intelligence (ai), Generative AI, Natural Language Processing (NLP), Large Language Models (LLM)
- **Cloud Deployment:** Google Cloud Platform (GCP), Microsoft Azure, Heroku
- **Web Development:** HTML, CSS

#### GitHub Account Details

GitHub Account URL – <https://github.com/harbhajan21>

GitHub Username – harbhajan21

#### Short Bio Apart from Technical Skills

Having around 3 years of experience as a Data Analyst, Machine Learning Engineer, and Data Engineer. Interested in Data Science and AI domain.



## Karan Vishavjit (Developer)

- **Programming Languages:** Python, Java, SQL, C, Bash
- **Data Science and Machine Learning:** Pandas, NumPy, Scikit-learn, TensorFlow, Matplotlib, Plotly
- **Frameworks:** Spring, Hibernate, Jacoco, Rest API
- **Technologies:** Appium, Maven, Redis, Kafka, Kibana, Elasticsearch, IBM TDP, Jira, Confluence, Postman, Tableau
- **Cloud and DevOps:** Amazon AWS, Microsoft Azure, Bitbucket, Git, Jenkins, Docker, Grafana, Kubernetes
- **Servers and Database Management:** Unix CLI, Putty, MySQL, MongoDB, DynamoDB

### GitHub Account Details

GitHub Account URL – <https://github.com/karanvishavjit>

GitHub Username – karanvishavjit

### Short Bio Apart from Technical Skills

5+ years of professional experience, worked on various end to end applications with the knowledge of complete in and out of the system, deployed and managed various applications on cloud infrastructure.



## Dhrumil Limbad (Frontend Developer)

- **Programming Languages:** JavaScript, TypeScript, C
- **Database:** MSSQL, MySQL, MongoDB
- **Software Development Lifecycle:** Agile Methodology, Scrum with agile implications, Iterative Model.
- **Source Code Management and Collaboration Tools:** Git, GitHub, Jira, Microsoft Teams.
- **Libraries Used:** React.js, Next.js, Node.js, jQuery, Three.js, Express.js, p5.js, D3.js

### GitHub Account Details

GitHub Account URL – <https://github.com/dhruimilimbad>

GitHub Username – dhruimilimbad

### Short Bio Apart from Technical Skills

Shopify, AR/VR and Full Stack Enthusiast. Passionate about designing and building SaaS applications. In my free time I write technical blogs.



# Ajwad Maahi (Frontend Developer)

- **Programming Languages:** JavaScript, C++
- **Database:** MySQL
- **Libraries Used:** Bootstrap, jQuery, React.js
- **Project Management Tools:** GitHub, Jira

## GitHub Account Details

GitHub Account URL – <https://github.com/Maahi5656>

GitHub Username – Maahi5656

## Short Bio Apart from Technical Skills

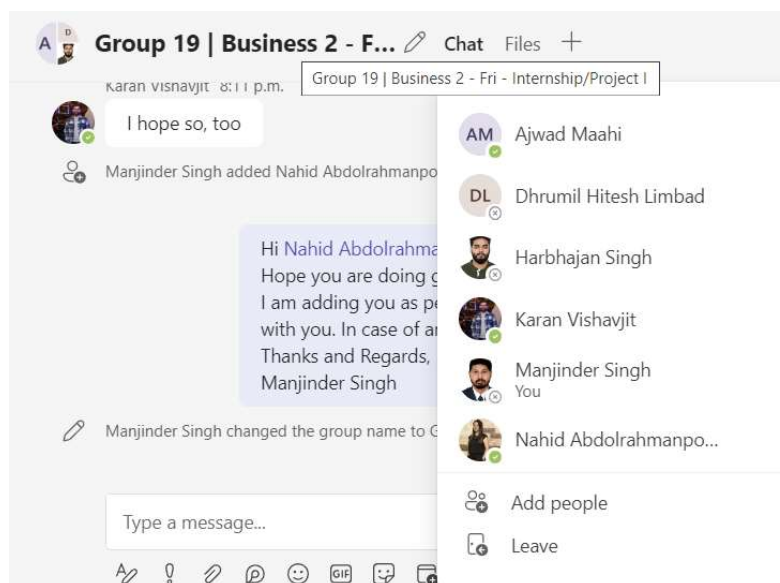
Worked for 1.5 years as Frontend Developer and 8 months as

Laravel Developer

## Team agreements:

- Name of the primary contact person – Manjinder Singh([lnu8@uwindsor.ca](mailto:lnu8@uwindsor.ca))
- communication (MS Teams is recommended)- should include your GA in the chat.

(Already added to the Teams Chat Group. Please find below screenshot for reference.



## Screenshot 1: Microsoft Teams Group

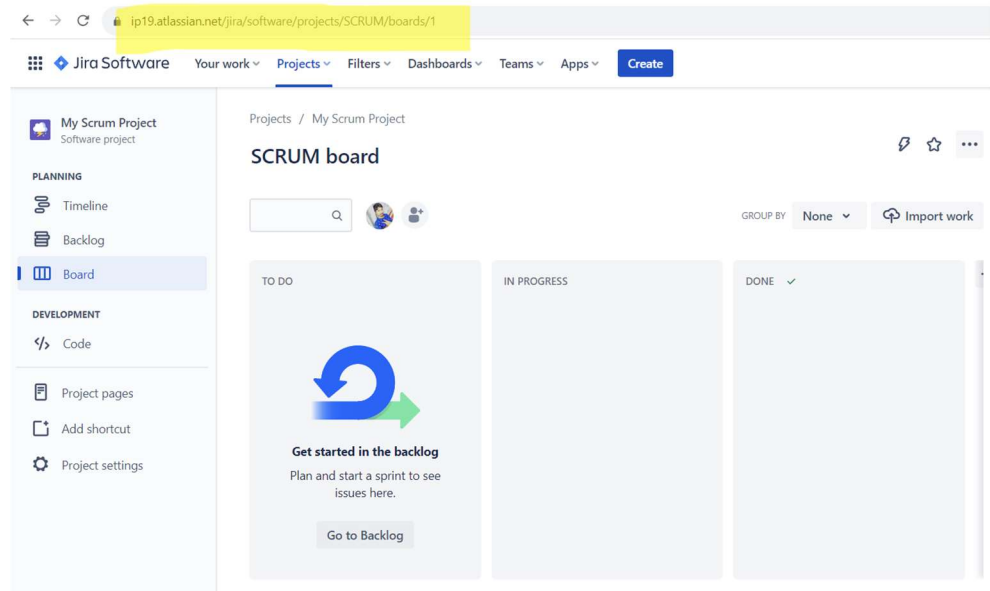
### Project management tool

1. We will be using Jira (free trial version),

Jira Link for Group-

<https://ip19.atlassian.net/jira/software/projects/SCRUM/boards/1>

Please find below screenshot for reference.

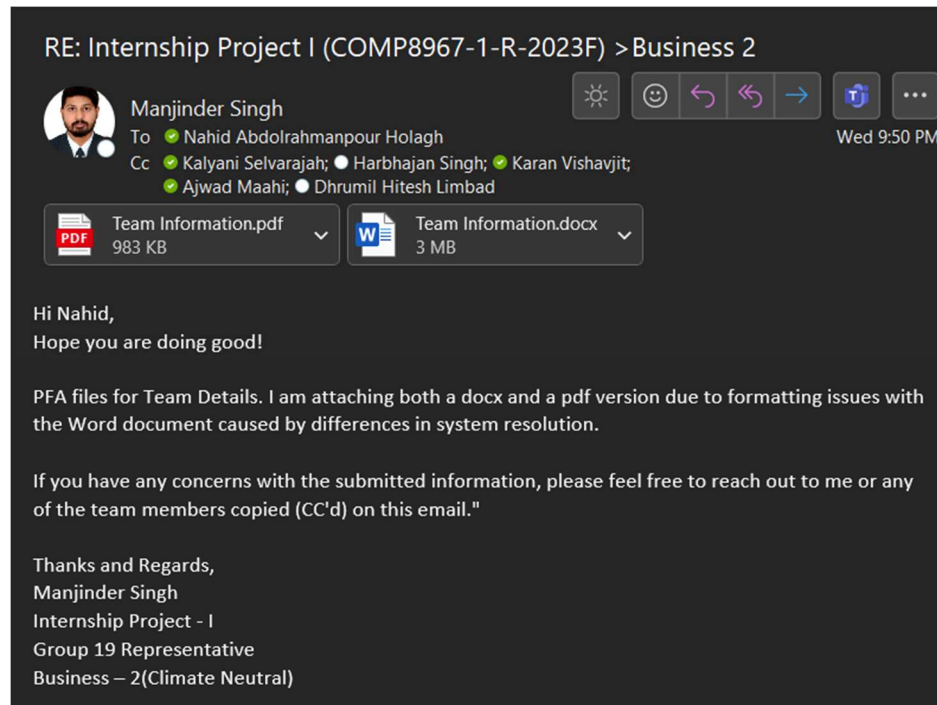


## Screenshot 2: Jira Home Screen for Project

2. Microsoft Teams: -

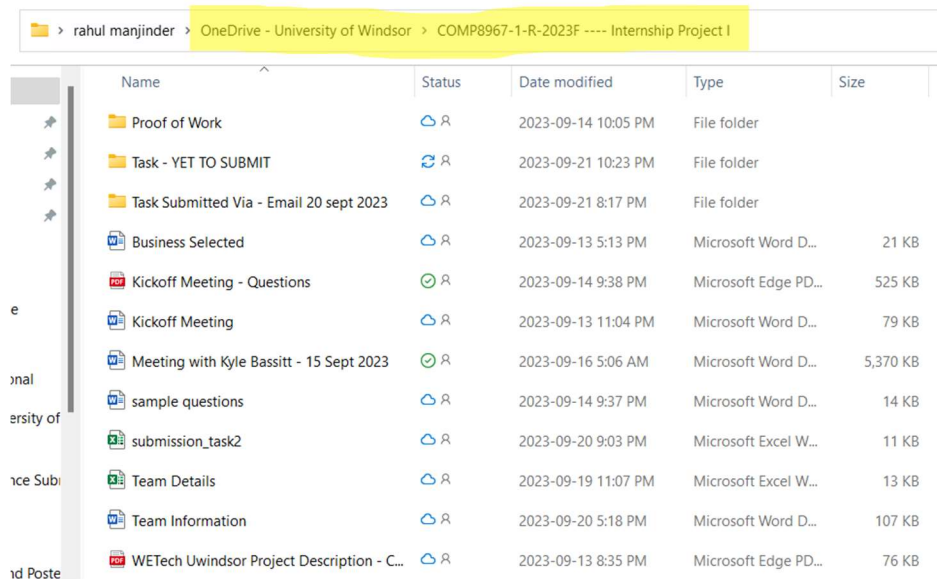
Screenshot attached above for reference.

3. Microsoft Outlook (for clarifications in case of doubts and submission of work in case requested through email),



**Screenshot 3:** Reference of Microsoft Outlook mail for clarifications and work submission.

#### 4. Microsoft One Drive (for sharing documents in a secure way)

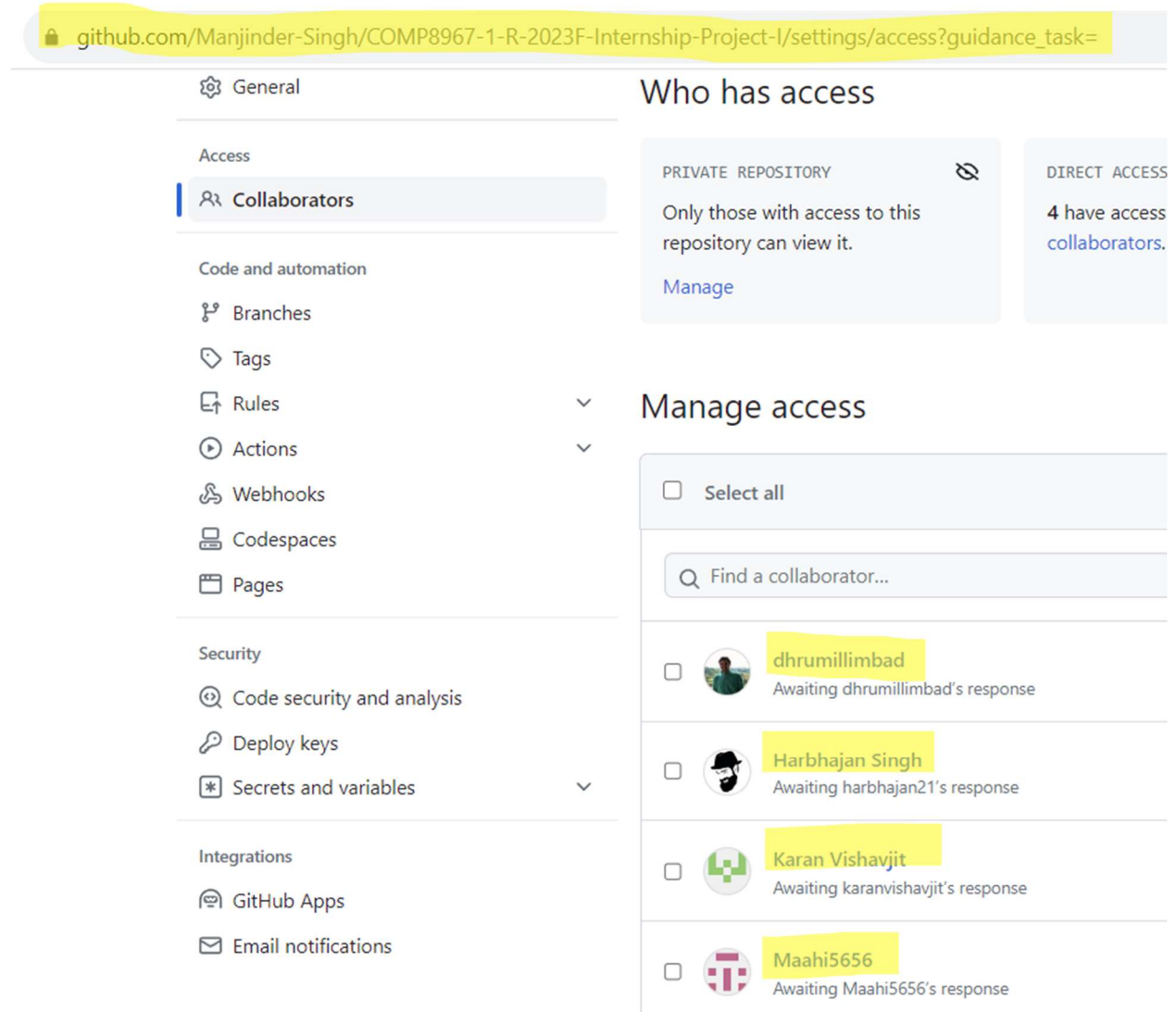


**Screenshot 4:** One Drive Folder Reference for File(s) sharing for effective Collaboration.



Collaboration for Development Work: Team will be collaborating through GitHub for code sharing with a private repository.

Repository URL: <https://github.com/Manjinder-Singh/COMP8967-1-R-2023F-Internship-Project-I>



**Screenshot 5:** GitHub Team Members Collaboration

### Contingency planning

- ➔ In case **a team member drops out**, we will continue to work with the available team members as backing off from the competition is not an option for us. Even though it will impact the team with limited members for deliverables, but team will still deliver as per the deadlines. However, it is expected of the GA and professor to grade the team based on that situation.
- ➔ In case **a team member consistently misses meetings** then it will be escalated to the below stakeholders:

Escalation Level 1: Nahid Abdolrahmanpour Holagh ([abdolran@uwindsor.ca](mailto:abdolran@uwindsor.ca))

Escalation Level 2: Kalyani Selvarajah ([kalyani.selvarajah@uwindsor.ca](mailto:kalyani.selvarajah@uwindsor.ca))

Also, we would request not to reward any assignment points to the person who fails to contribute.

- ➔ In case **a team member is academically dishonest**, we will make sure the submitted work is plagiarism free and, the efforts must be put in by all team members to make sure we are working at the right track to meet the deadlines.

## 2. Summary of Kickoff meeting:

**Business details:** Name of the contact person and other details – Kyle Bassett (But we will be reaching out to our GA, Nahid for clarifications and then We will reach out to Dr. Kalyani Selvarajah)

### Questions asked by our Group:

1. Is there any relationship between categories and scenarios and weight value is predefined or user input?

Answer: It is user input for category weight.

2. If Certain scenario has minimal impact on given category, we will still allow user to input into that category?

Answer: yes, we will allow user to enter value into that category, and we must make sure weight does not exceed the value 1.

*Due to fire drill, the call was cancelled, and we were not able to ask further questions, so we sent the mail with below questions to our GA, Nahid with our team question set. (Yet to get response from Kyle Bassett)*

3. Can you give us an example of working Linear scoring algorithm that includes Min and Max values?
4. What is the relationship among factors with weight and direction to optimize?
5. Will the UI design be provided by you or we've to make our own?
6. Can you please brief up about user Auth and file saving?
7. Can you please provide some data sample to study so that we can understand and analyse?

### Questions asked by other Groups:

1. How will we consider the “Low”, “Medium”, and “High” for the calculation?
  - It was mentioned to consider categories like low, low-mid, mid, mid-high, high. Scores can be associated with these categories based on our understanding but to clarify the assigned scores as

Category Name	Score Associated
Low	1
Low – Mid	3
Mid	5
Mid – High	7
High	9

**Table 1.4:** Scores associated with categories.

2. How weight will be considered for each category?
  - Weight will be assigned to different categories and the sum of all categories must be equal to 1.
3. What type of authentication do you prefer?
  - Normal authentication, no need to include two-factor authentication.
4. Is the application session or local storage based?
  - Local storage based.
5. The text file is stored in the local storage.
  - Yes.
6. The data is being pre-fetched from the text file.
  - Yes.
7. What is the format of the text file that the user will download?
  - The format will be provided, and values will be tab separated.
8. What chart library are we using?
  - Plotly.js preferably but other libraries like D3.js or Charts.js can also be used. The choice is up to developers, anything works.
9. Is the application responsive?
  - No need to make it responsive. Also use pure CSS.
10. Are we storing any data in the DB?
  - No need to use data base we only must use local storage.
11. How many categories can we have?
  - An approach to give a add button to add category rows can be implemented and bonus points will be given if we can handle “n” number of categories.
12. Is there a relationship between user data?
  - Every user has its own data and there is no communication of data between users, but user can come back and fetch his old data.
13. How Dimensionless score per scenario is calculated?
  - It will be sum of dimensionless score for each category and recommended scenario is based on maximum dimensionless score from array.
14. Is the login necessary to access the application or we can visualize even without login?
  - Yes, login is necessary to even view the home page of application and even to perform analysis and authentication is more like an access wall.
15. Is session maintained by application.
  - It can be stored into the local storage and in case of reload application can pull the session data from the local storage.
16. User must always clear the values to input new data.

- We must give option to FILE SAVE, FILE OPEN and FILE NEW, and file new resets the value.
17. What will be the default value of application.?
- Default state is the last stored value in the local storage.
18. What can be the size of data?
- It is a dynamic data; it can be of any range.

### 3. Plan your first sprint:

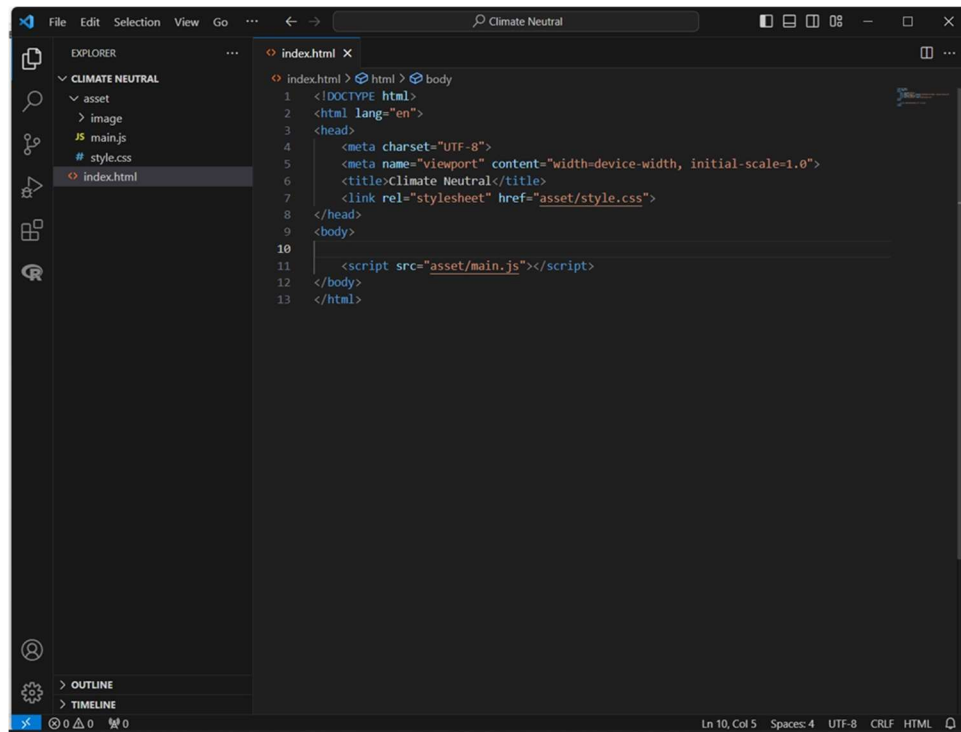
- **User Stories:**

- 1. As a team member, I want to learn HTML fundamentals and its structure, including the use of HTML elements like links, headings, nav, div, and paragraphs so that I can build web pages effectively.
- 2. As a team member, I want to grasp the process of applying basic CSS styles to HTML elements, covering properties such as color, font size, and margin so that I can improve the visual design of web pages.
- 3. As a team member, I want to understand the fundamental concepts of JavaScript, including variables, data types, DOM manipulation, and basic control structures like if statements and loops so that I can create dynamic and interactive web applications.
- 4. As a team member, I want to learn how to create HTML forms and understand different form elements like text inputs, checkboxes, and radio buttons so that I can build interactive and user-friendly web forms.
- 5. As a team member, I want to comprehend CSS layout techniques, including the box model, positioning, and CSS flexbox, so that I can design responsive and well-structured web layouts.

- **Tasks:**

- Generate an HTML document containing headings and paragraphs.
- Generate an HTML document containing table.
- Generate an HTML document containing a list and empty div element.
- Establish hyperlinks for seamless navigation between various pages.
- Enhance the appearance of your previous HTML document by modifying the background color and font.
- Explore the impact of various CSS properties such as padding and margin on the layout.
- Craft JavaScript code to define variables with various data types (e.g., string, number, Boolean).
- Construct a basic if statement to execute a condition-based action.
- Employ a loop (e.g., for loop) to traverse an array of elements.
- Generate an HTML form containing text inputs, radio buttons, and checkboxes.
- Include labels for every form element and grasp the purpose of the for attribute.
- Investigate various input types such as password and email.
- Construct a fundamental webpage layout using HTML and CSS.
- Get values from HTML form and display it.
- Get values from HTML form and perform a simple mathematical operation and display.

## Our Initial Project Setup



Screenshot 6: Initial Project Structure

We have also started the development portion. This is the overall setup of our file structure in the project. In the 'Climate Neutral' folder we have one file name '**index.html**' which contains the overall HTML code. We also have one folder name '**asset**' which contains another '**image**' folder for storing all the images, a '**style.css**' file for containing all the CSS code and a '**main.js**' file for containing all the JavaScript codes. This is the initial setup, and each of the files will be updated and more files will be added based on the requirements received from the stakeholder.