**Research and Development on Initial Setup tools and requirements**

Before diving into any kind of development and implementation, there are some initial tools and setup required to create your own/common development environment. Where developers and technical creators can collaboratively, cooperatively develop and build softwares to solve real-world problems.

Some of the common tools which are often used are Visual Studio Code, Git and Github.

**Visual Studio Code**

Visual Studio Code or VS code, is a source-code editor application created by Microsoft with the help of Electron framework for system applications like windows, MacOS and Linux.

It offers numerous kinds of operations and functionalities which make code editing easy and distinguished.

The operations and settings are so much better than the usual code editors which have been out there for years. Features like support for debugging, syntax completion, intelligent code completion, code refactoring, embedded Git are offered by this tool.

Shortcuts often used in vscode:

Ctrl+S - To save a file

Ctrl+P – allowing to open files by name

Ctrl + ` - show/hide terminal

Alt +click – To add multiple cursors at different places.

**Git & GitHub**

Git is an open-source distributed version control system used to deploy, maintain any small or large projects for speed, efficiency and robustness. Git is very light-weight because of its fast and modern implementation of version control. It provides the history of changes that has occurred over the file and by who. It is easy and adaptable for any technical worker. For certain operating systems certain kind of git commands are used.

GitBash is an application for Microsoft Windows environments which acts as an emulation layer for that command line utility experience. Bash is an acronym for bourne again shell.

Github is a hosting service for version control and software development using git. It not only provides control of git but also bug tracking, feature updates, continuos integration over open-source projects.

The following git command can be used:

* To activate python virtual environment:

1. python -m venv project\_env
2. Windows - . project\_env/scripts/activate MacOS – source project\_env/bin/activate

* For installation of packages:

1. pip install django

* Commands such as these are also written in gitbash:

1.django-admin startproject my\_project .

* Common commands used by developers:

**git init**: initializes a git repository in the current directory/project.

**git add**: Stages the changes for commit. A single file can also be specified or multiple files are also specified with dot notation.

**git status**: to show the status of your files, indicating which of them are staged, untracked or modified.

**git push**: Pushes the local commits to your local repository.

**git pull**: Pulls the changes from your remote repository and merges them to your current branch.

**Fundamental Concepts of Web Development**

HTML

Html also known as Hyper text Markup Language, is a language often used to build the fundamental structure of websites, apps, and other software ends. To present anything over web such as words, images, videos and many interactive forms, to render these kind of files HTML comes into use.

The browser takes up markup tags, formats it and displays it according to what we want.

Some of the HTML basic concepts are:

Tags: These are used to define elements. These are enclodes in angular brackets.

Eg: <div> (Opening tag) </div> (Closing tag)

Attributes: To provide additional information HTML elements have attributes. These attributes are added at the opening of a tag.

Eg: <img src =” Image.jpg”>

Document Structure: An HTML document structure begins with its <!DOCTYPE> declaration following its basic structure which includes <html>,<head>,<body> elements.

CSS

CSS also known as Cascading Style Sheet, this is the aspect what makes a web page beautiful, clean, organized and colorful.

Selectors: To apply styles to your web page, CSS selectors target HTML elements.

Properties and Values: To specify what aspect of an element in the web page to be enhanced and values define the styling.

CSS Rules: The enclosing of selector and declaration should be in curly braces. The declaration block contains property-value pairs.

Eg: h1{

color: red;

font-size:24px;

}

JavaScript

It is a scripting language which helps in complex interactivity of the web page with the frontend and backend of a website.

Fundamental Concepts of JavaScript for web development are:

Variable: variable declarations in JavaScript often done using ‘let’, ‘var’, or ‘const’.

Eg: let name = ‘Saro’;

Function: A block of code which performs a specific task and returns values.

Eg: function greet(name)

{

return “Hello + (name)”;

}

Events: One of the aspects in JavaScript is to respond to user interactions (eg: clicks) by giving event listeners to HTML listeners.

Eg: document.getElementById(“my Button”).addEventListener(“click”, function() {});

Manipulation: Document Object Model (DOM) to adjust the structure of web page, to change contents and styling.

Eg: document.getElementById(“demo”).innerHTML