Web Application Workshop

Computer Science and Informatics
School of Engineering

London South Bank University

Lsbu_csi ; lsbu_csi_community

Workshop Plan

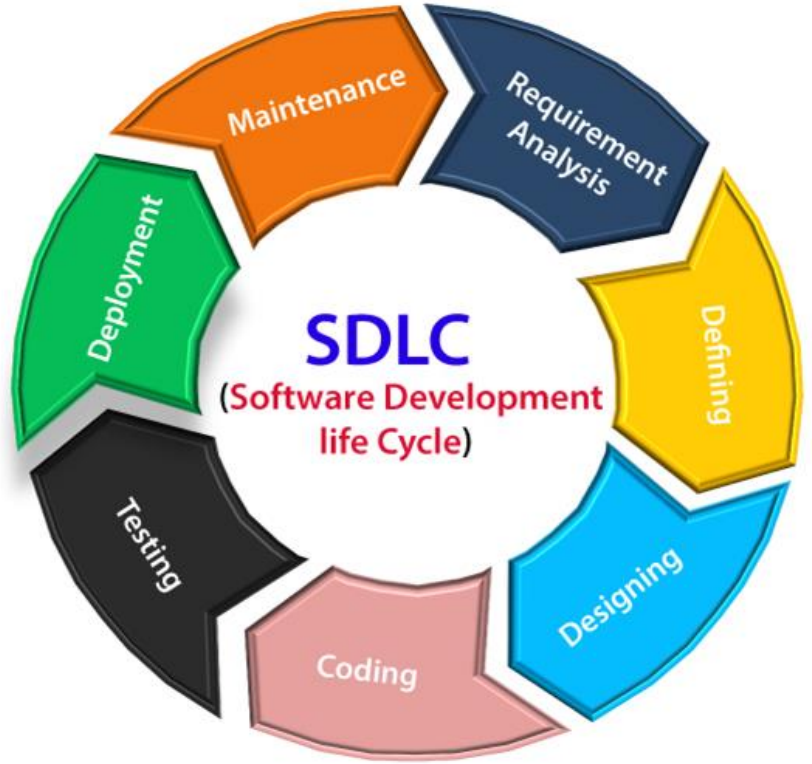
- Session 1:
  - Introduction to Figma
  - Wireframe design of the application.
  - Get Git and GitHub ready
  - Introduction to Web Development
- Session 2- 4
  - Develop the website (HTML CSS)
  - Use Git and GitHub.
  - Database creation (MySQL)
- Session 5
  - Deploy the Website
  - Share on Linkedin Profile

What is design?

Plan or blueprint of a Software system.

Purpose of Design:

- Clarification of Requirements
- Plan and organise software components
- Feedback and communication
- Areas including, UML design, UI design



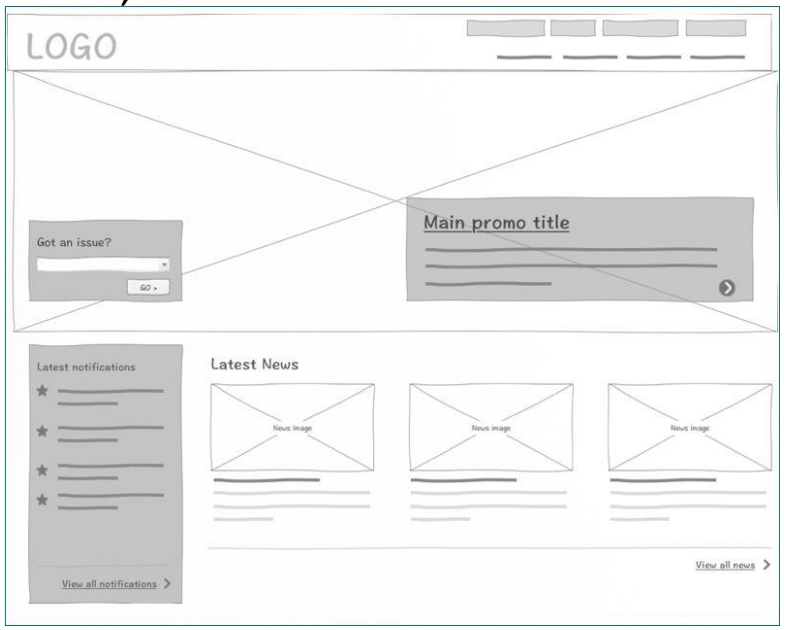
Low Fidelity Design

Sketch:

Tools:

- Pen and Paper
- Apps: Procreate, SketchBook, any applications allows drawing

Wireframe: High-level sketch, no detailed visual elements

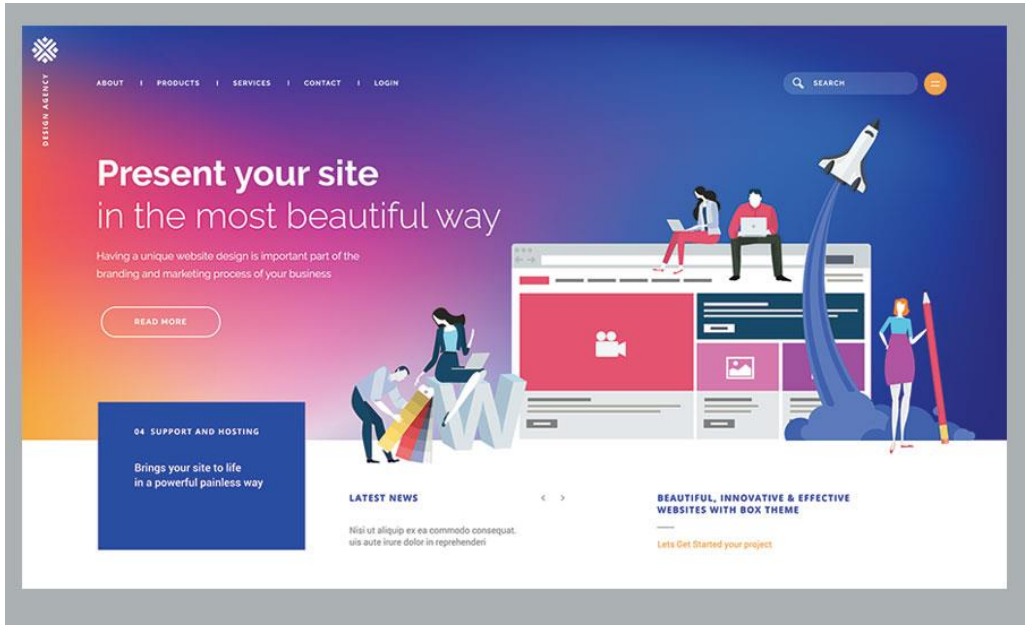


Tools:

- Balsamiq, Figma, Sketch, Mockflow

High Fidelity Design

Mockup: Static visual



Tools:

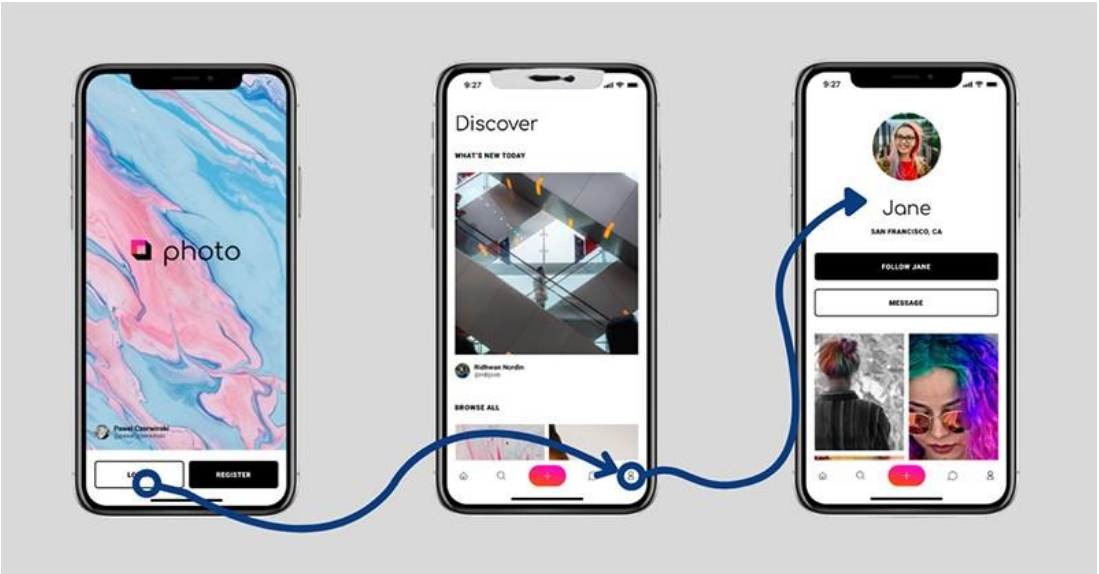
- Balsamiq, Figma, Adobe XD, Sketch, Adobe Photoshop, Zeplin

Prototype

- A dynamic model of the product.
- More interactive with details.

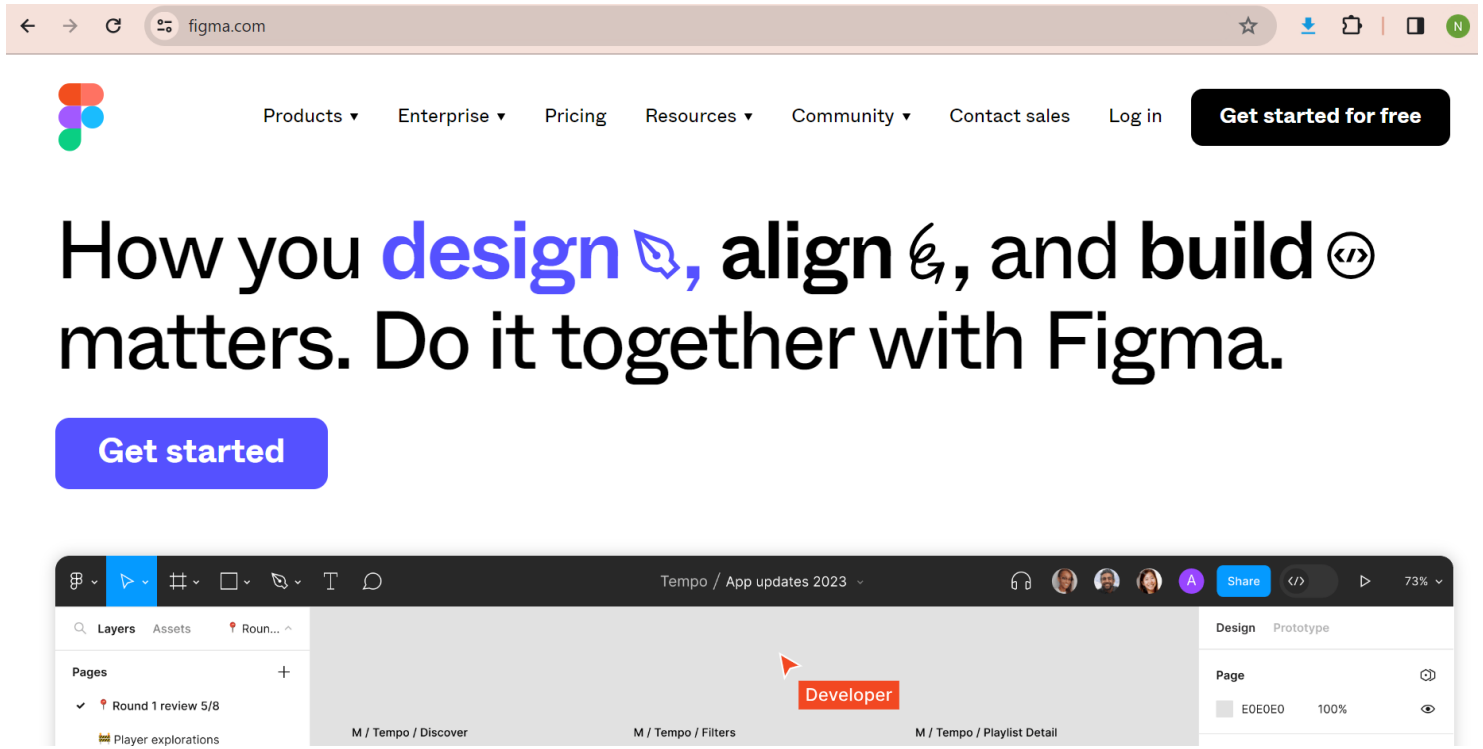
Wireframe/Mockup link of the Quiz App:

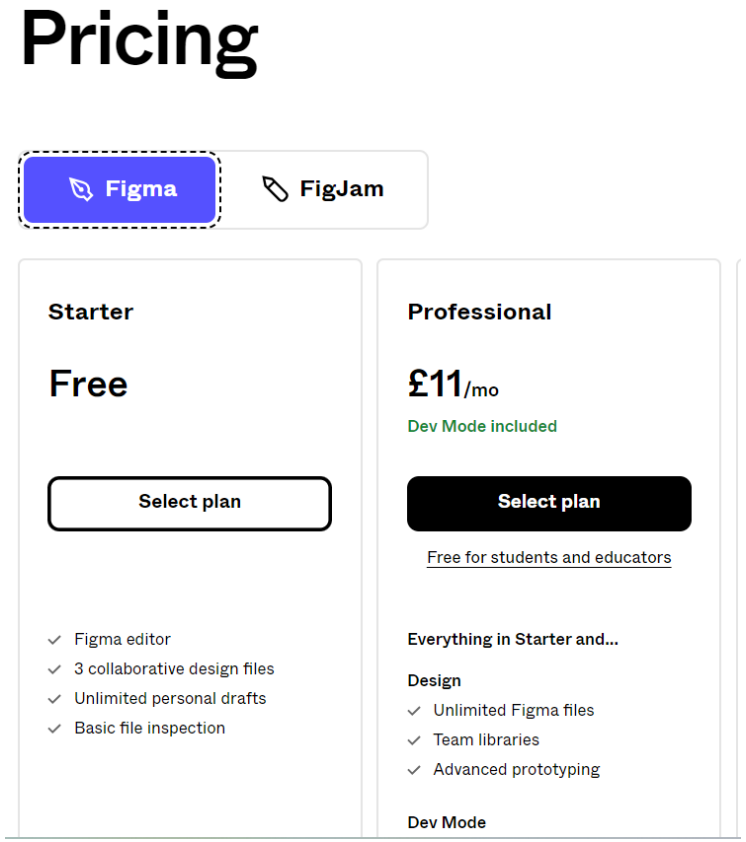
https://www.figma.com/file/tGlAY3WfqdQTTY9TAqfYqC/QuizApp?type=design&node-id=0%3A1&mode=design&t=3H4cGwGWay1mL9l8-1



Introduction to Figma

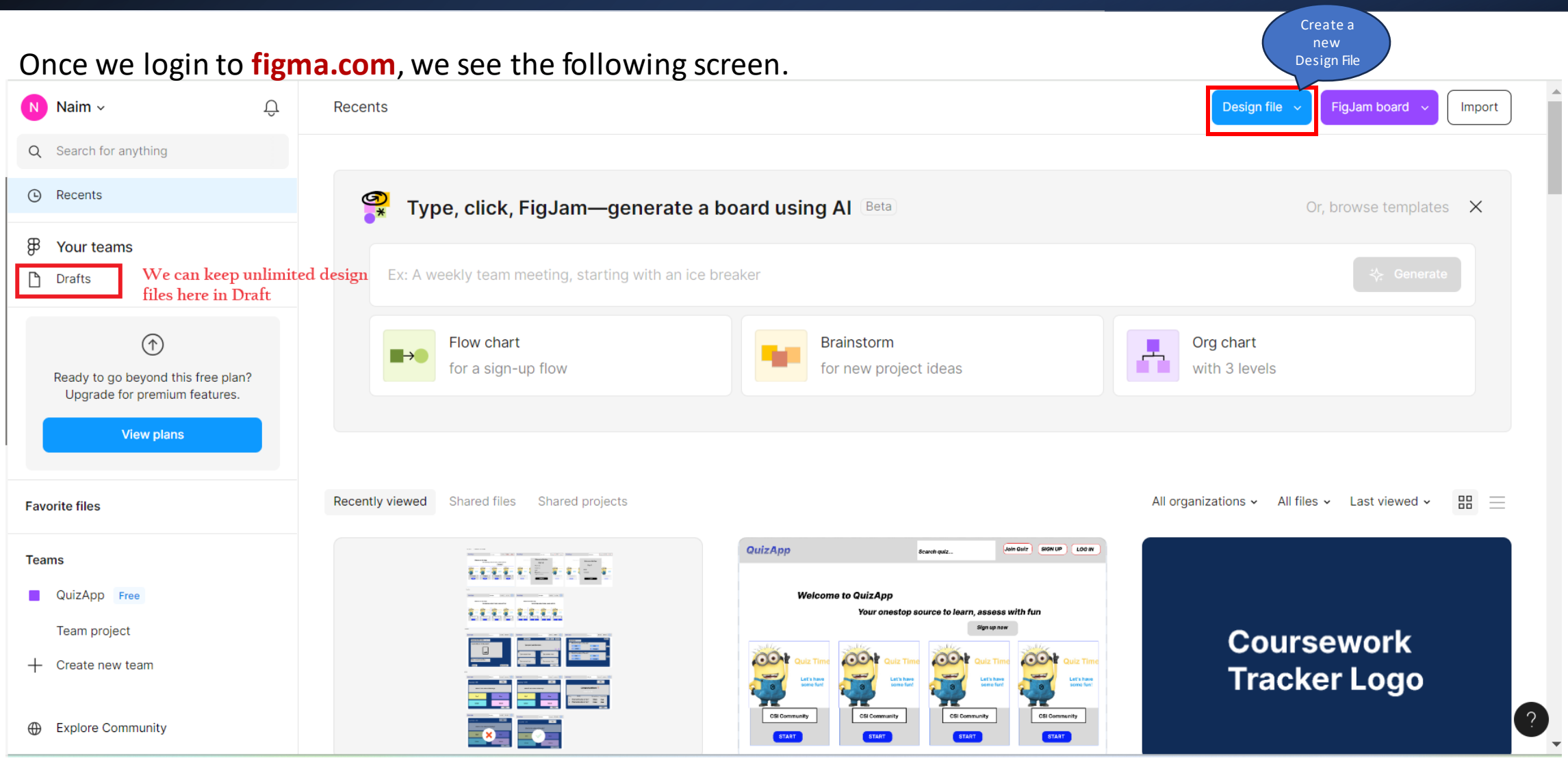
Access from any browser: https://www.figma.com/



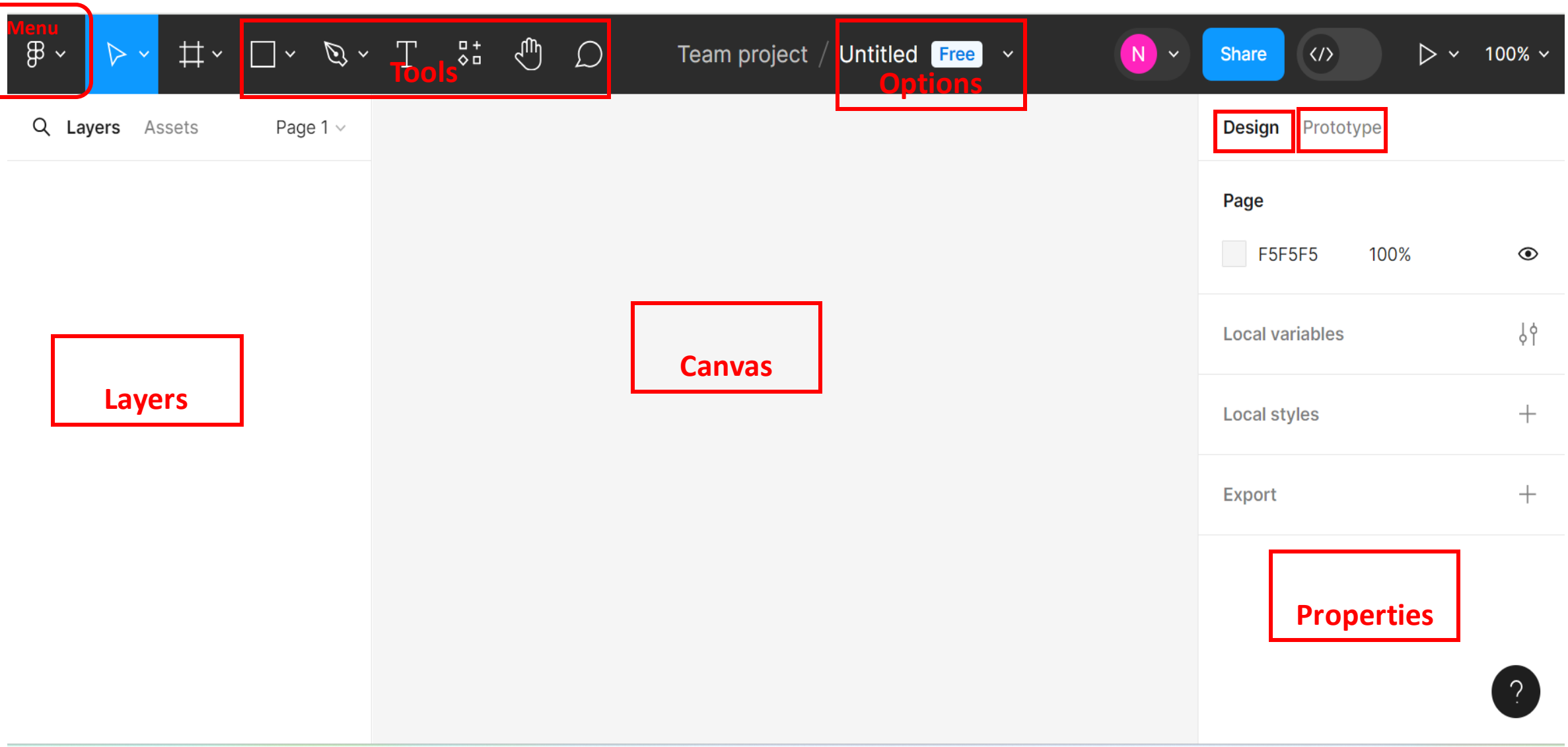


Introduction to Figma

Once we login to **figma.com**, we see the following screen.

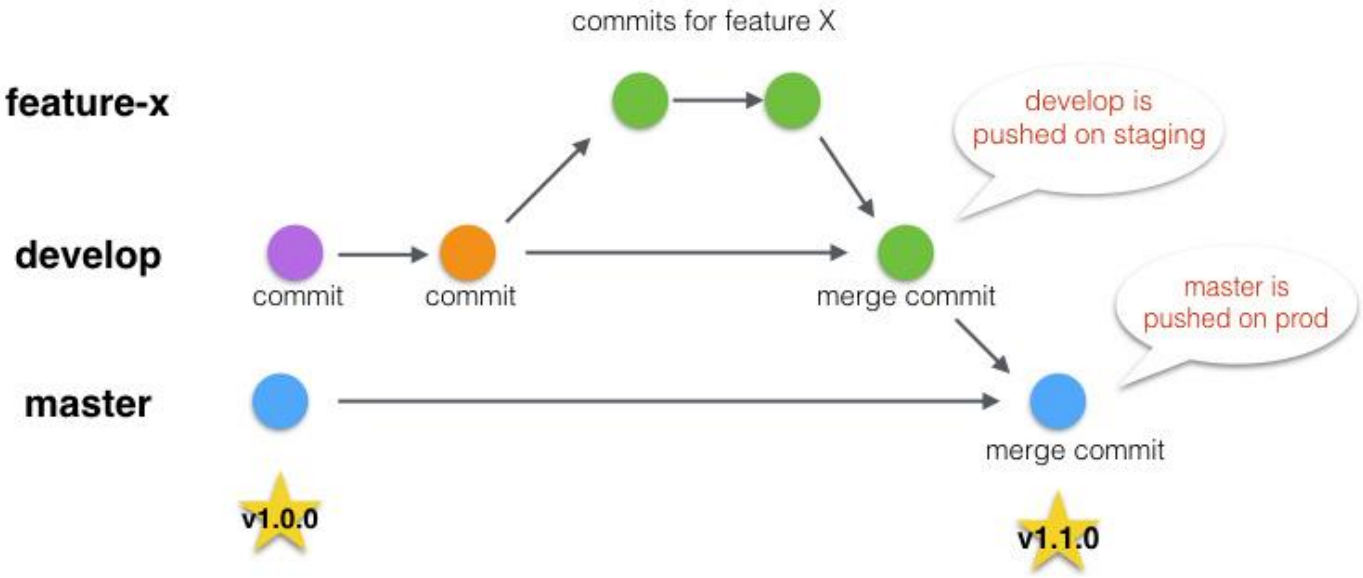


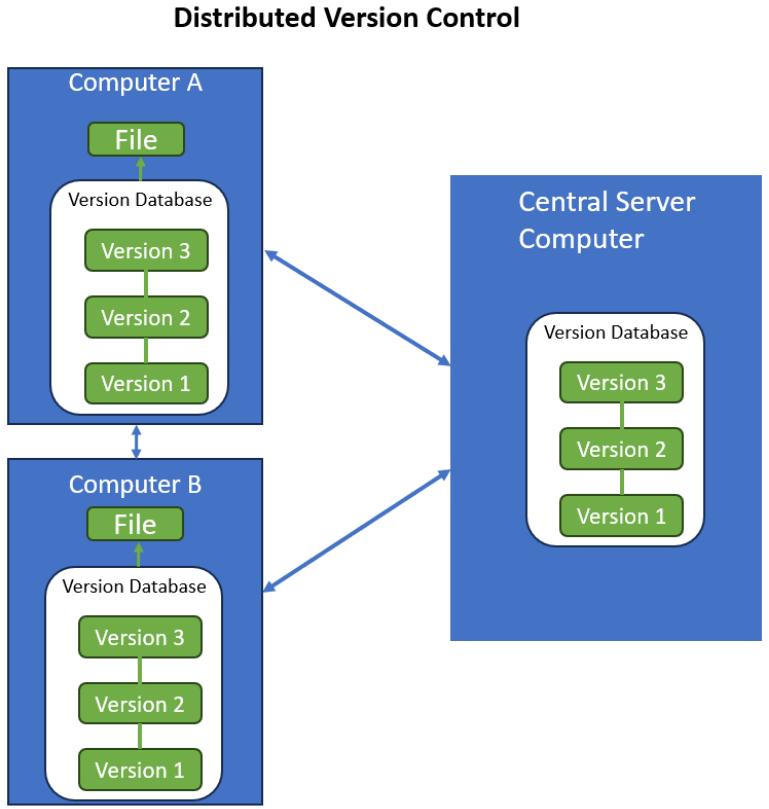
Figma Design Interface



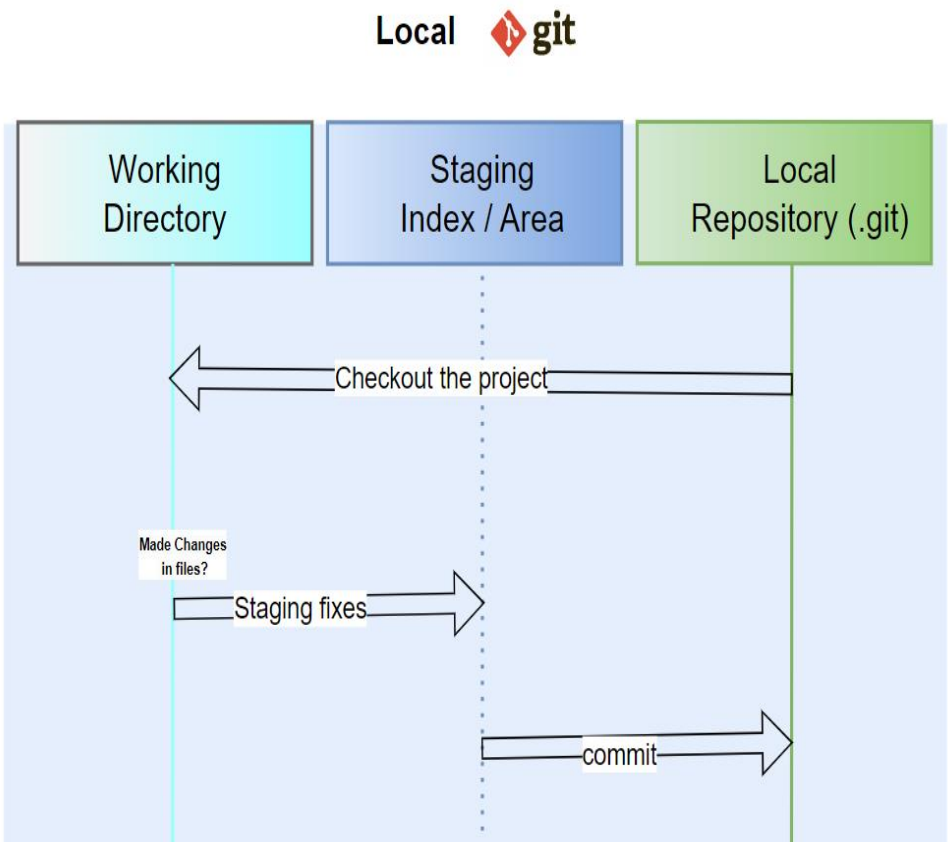
Introduction to Git

- Open-source version control system
- Fast and Distributed
- Easy to learn and team collaboration





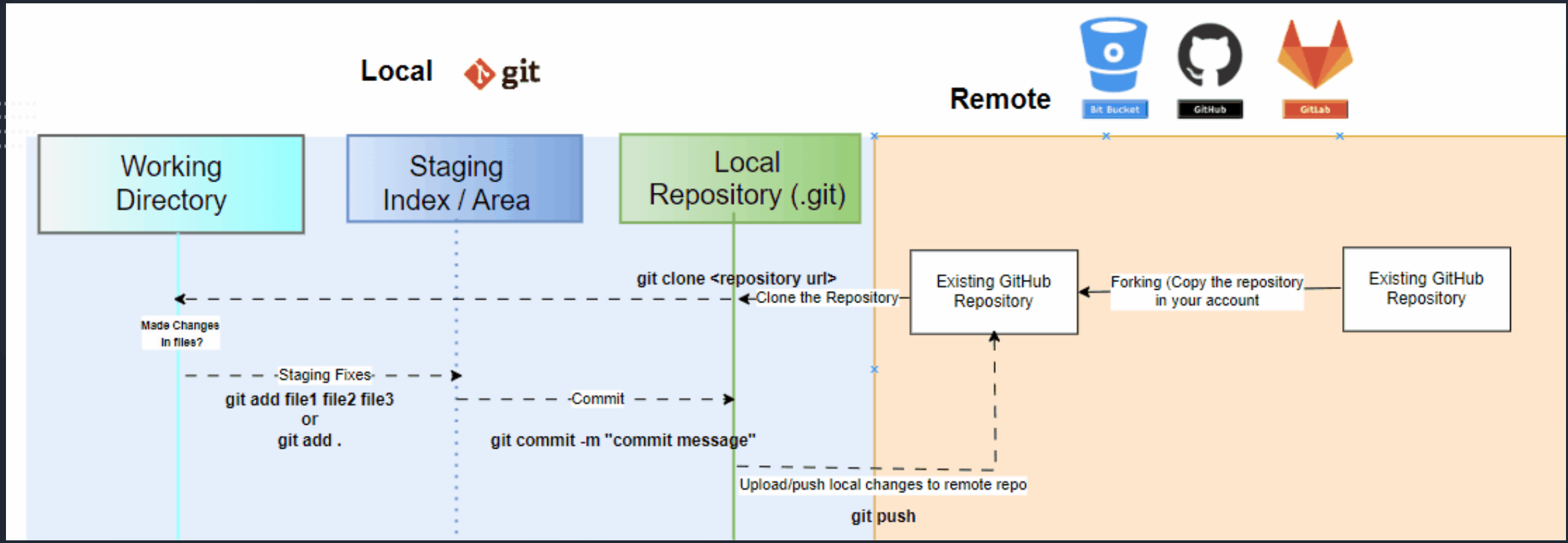
- Git has three states:
  - Modified: File has changed but not committed to the database
  - Staged: Marked a modified file in its current version. Ready to go in the next commit snapshot.
  - Committed: Data is safely stored in the local database.



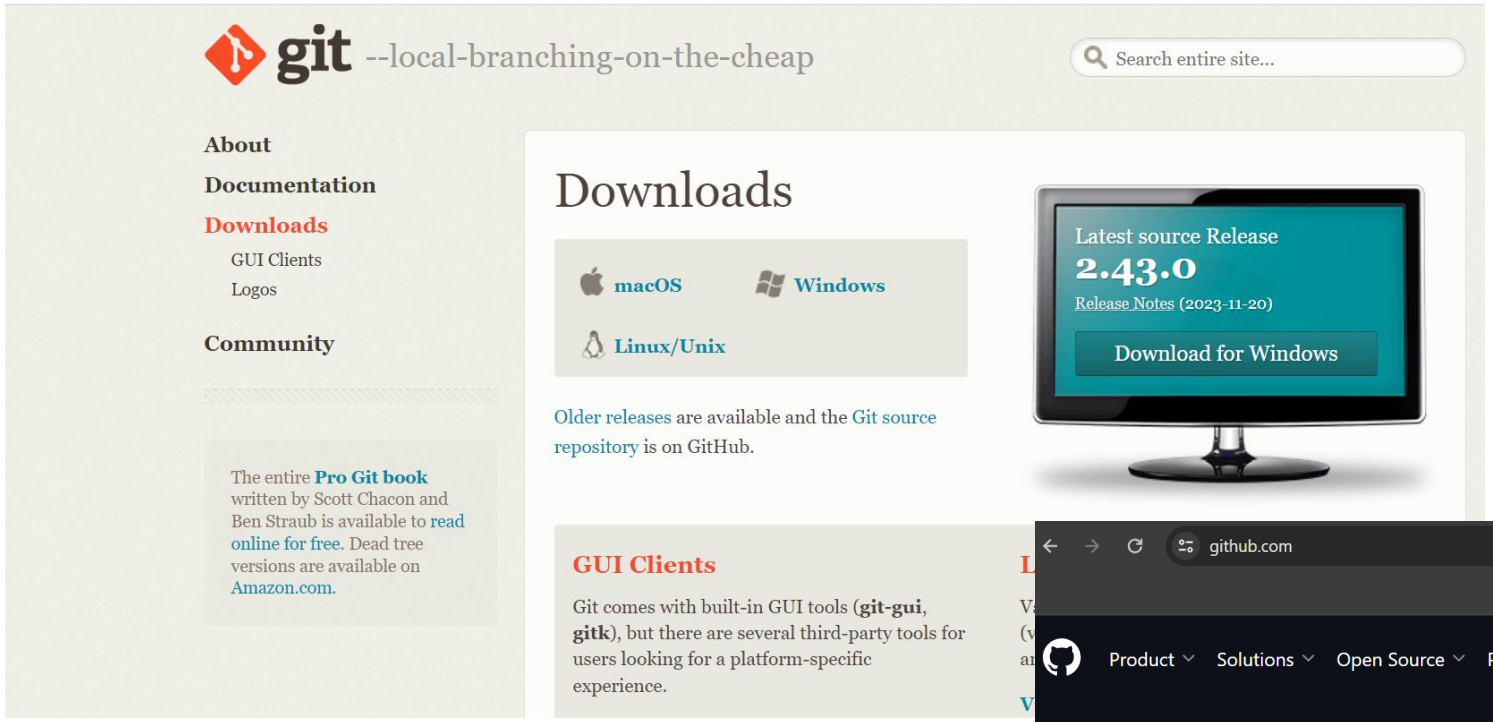
- Git project sections:
  - **Working Directory:** Local directory of our project
  - **Staging area/index:** Stores information on what will go into the next commit.
  - **Git directory:** '.git' directory where Git stores all the information. If we delete this folder, git will lose all the tracking.

Git Flow of the Workshop

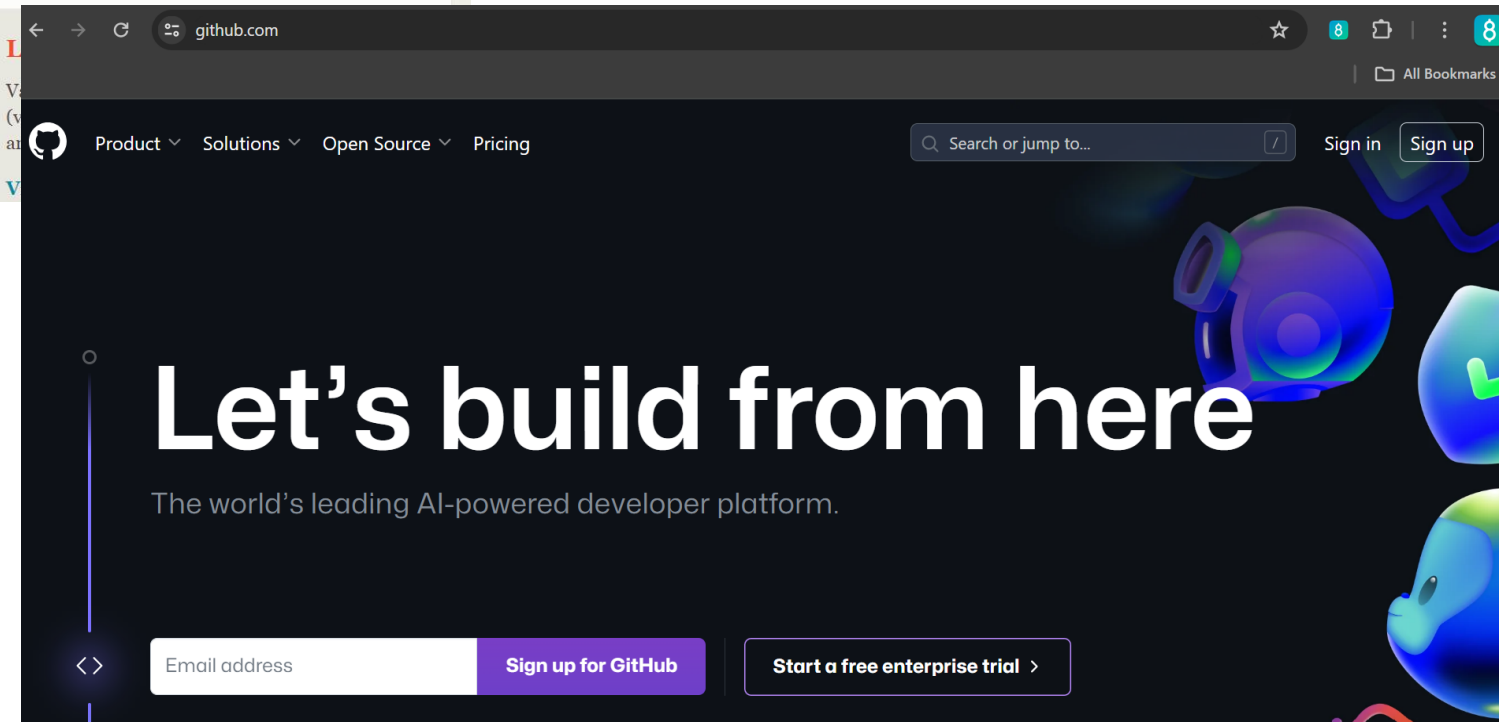
- GitHub Repository: https://github.com/seenaimul/csi-quizapp



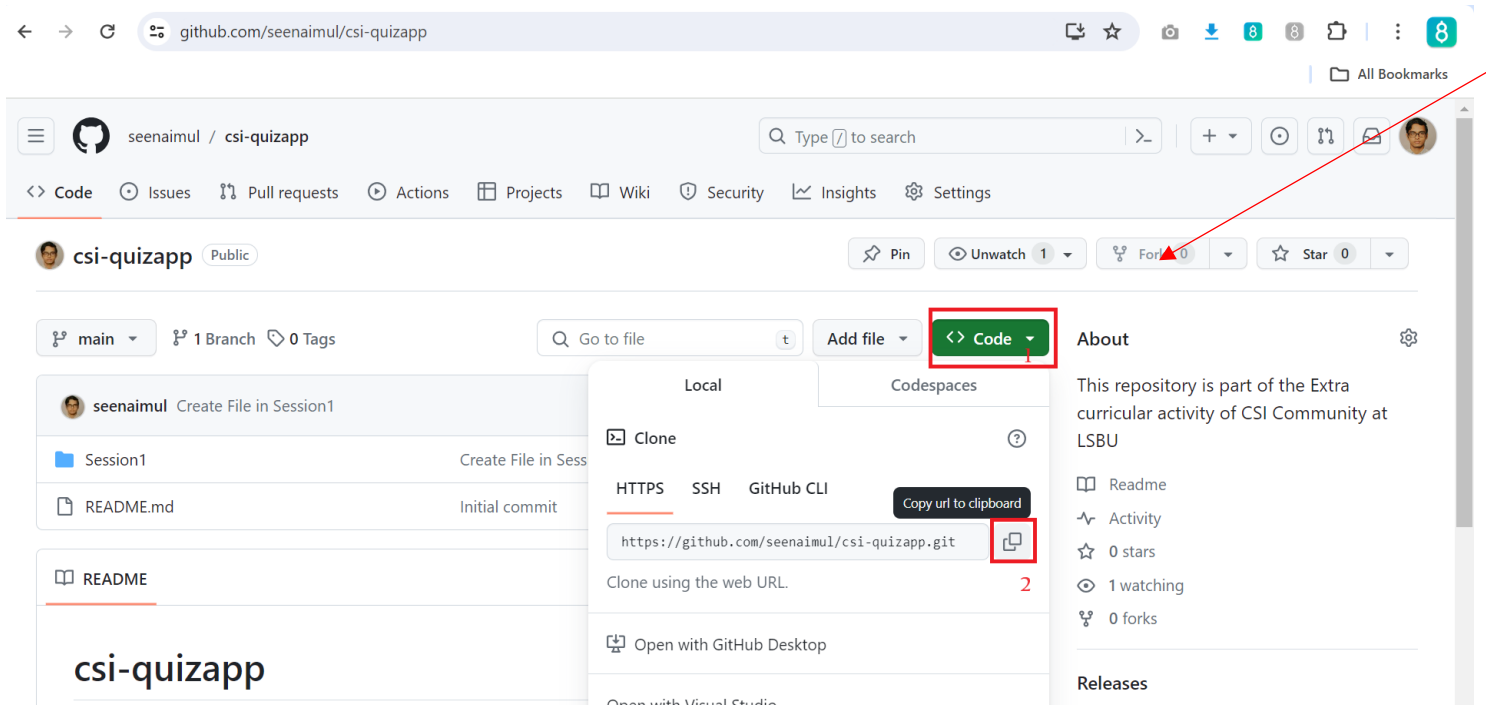
Download git from: https://git-scm.com/downloads



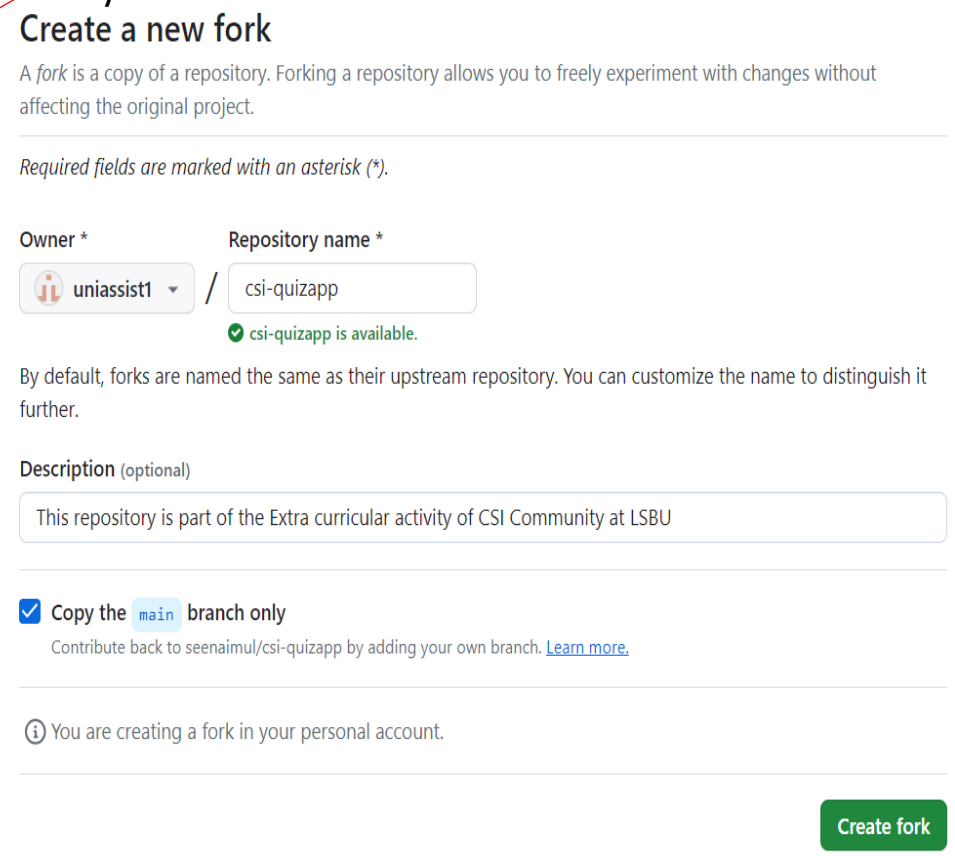
Create GitHub Account: https://github.com/



Copy the GitHub Repo in Your Account



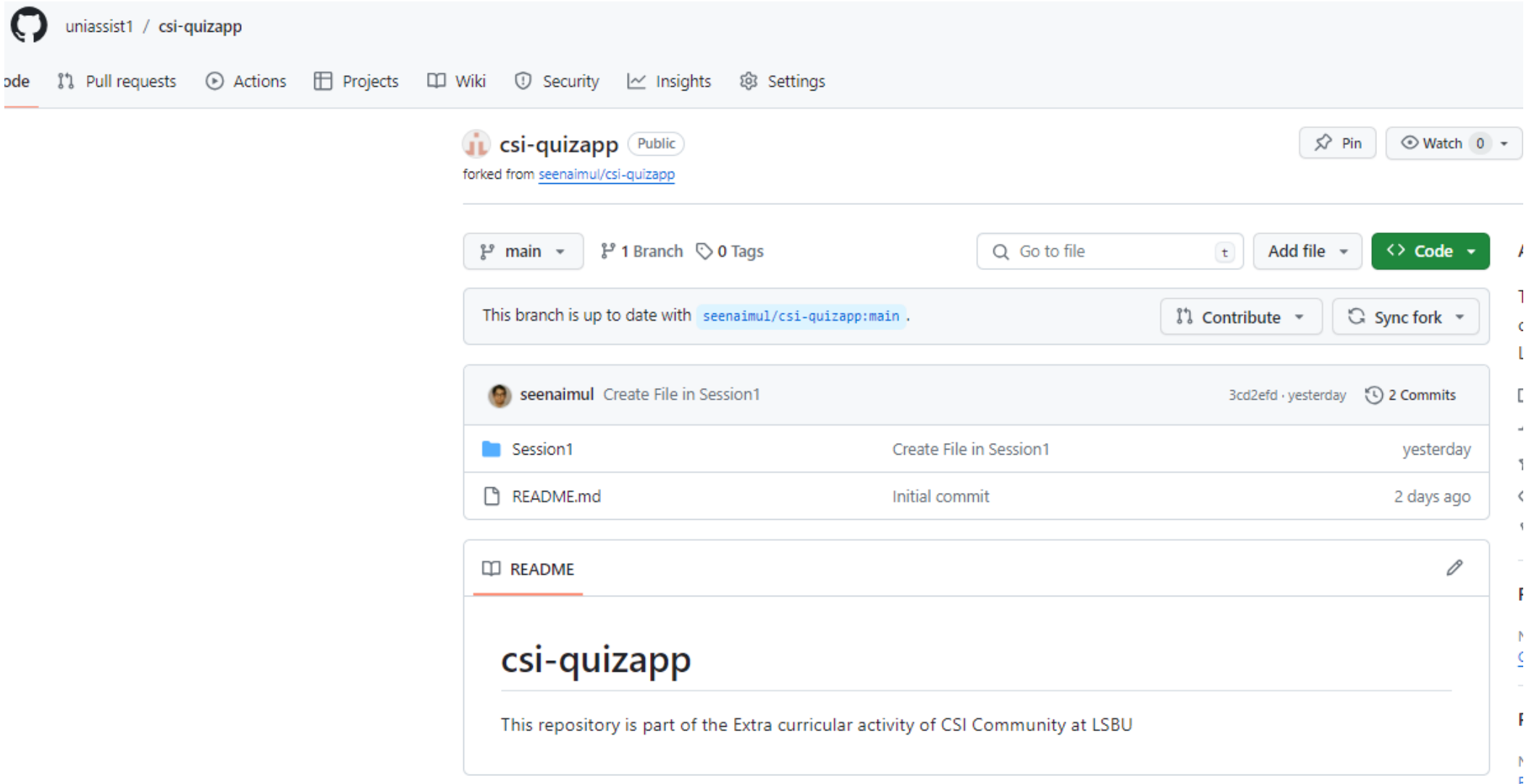
Click on the 'Fork' of the Repo to create a copy in your account.



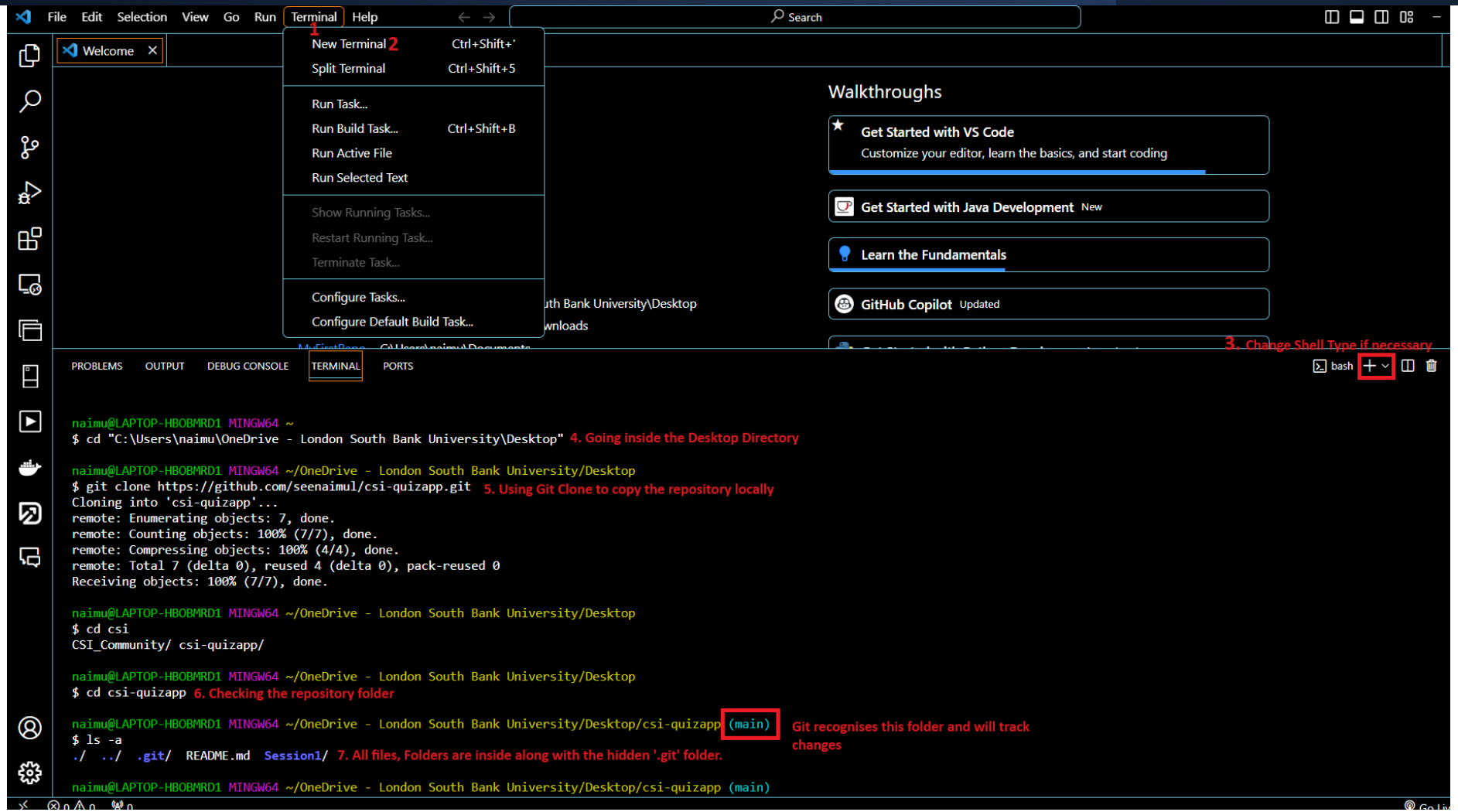
To clone from any public repository:

- Go inside the repository and Click on the Green button 'Code'
- Copy the HTTPS url of the repository
- Once Git is installed, open any terminal/cmd prompt,
  - Go the location to save the project
  - Type the command 'git clone <url>'
  - For example: **git clone https://github.com/seenaimul/csi-quizapp.git**

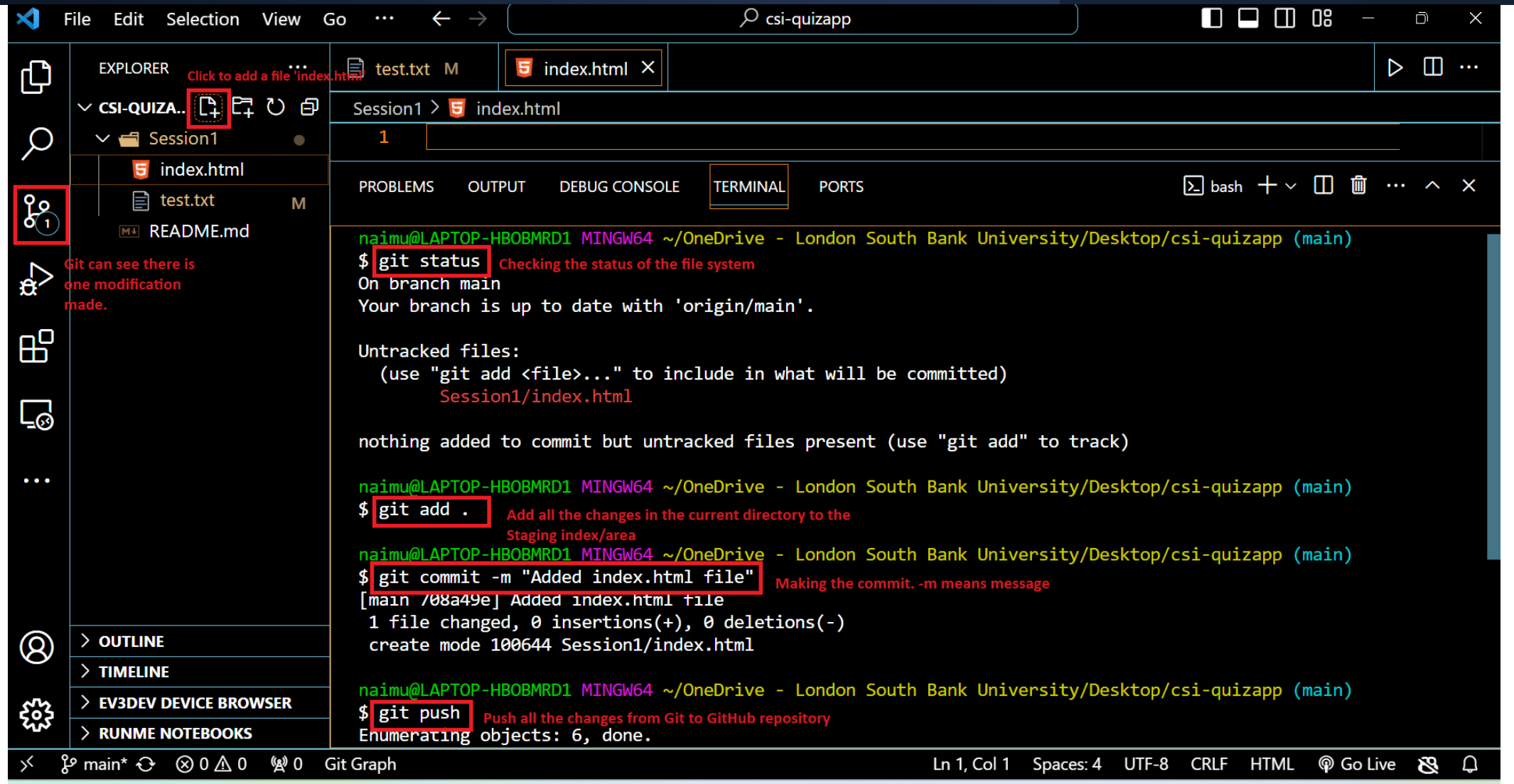
Copy the GitHub Repo in Your Account



Clone the Repo from Your account



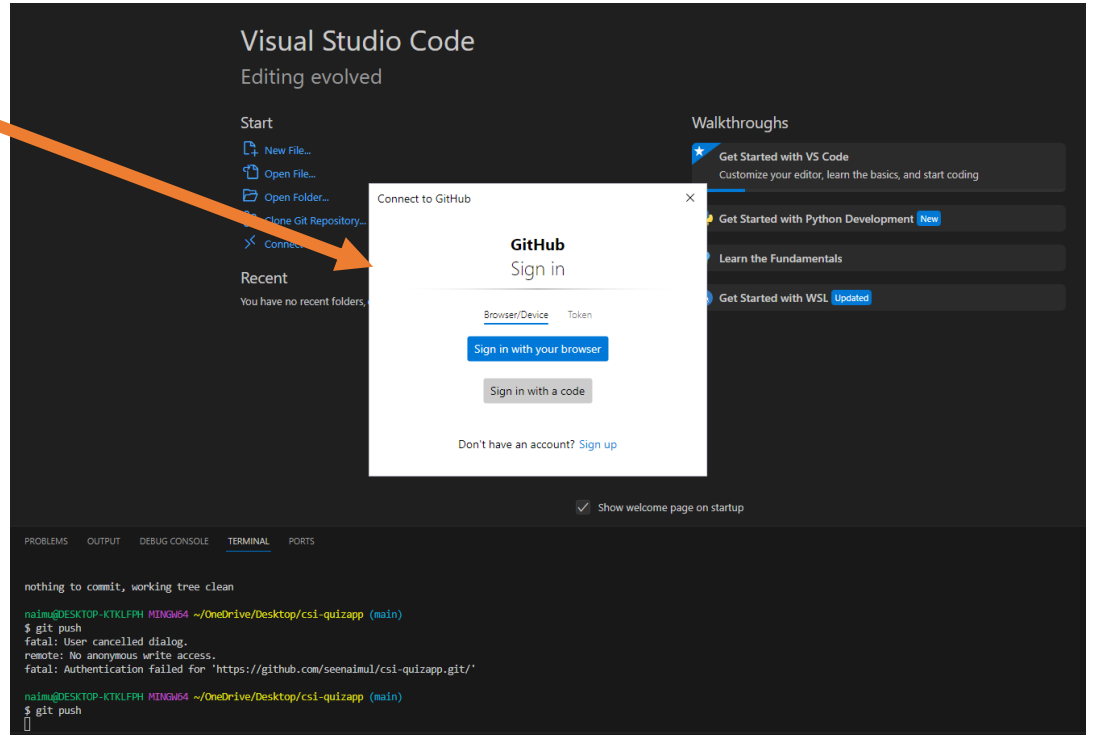
First Commit and Global Configurations



First Commit and Global Configurations

```
naimu@DESKTOP-KTKLFPH MINGW64 ~/OneDrive/Desktop/csi-quizapp (main)
$ git add . && git commit -m "Folder created"
On branch main
Your branch is up to date with 'origin/main'.

nothing to commit, working tree clean

naimu@DESKTOP-KTKLFPH MINGW64 ~/OneDrive/Desktop/csi-quizapp (main)
$ git push
```

In the first ever Git push, GitHub will show the prompt for authentication.



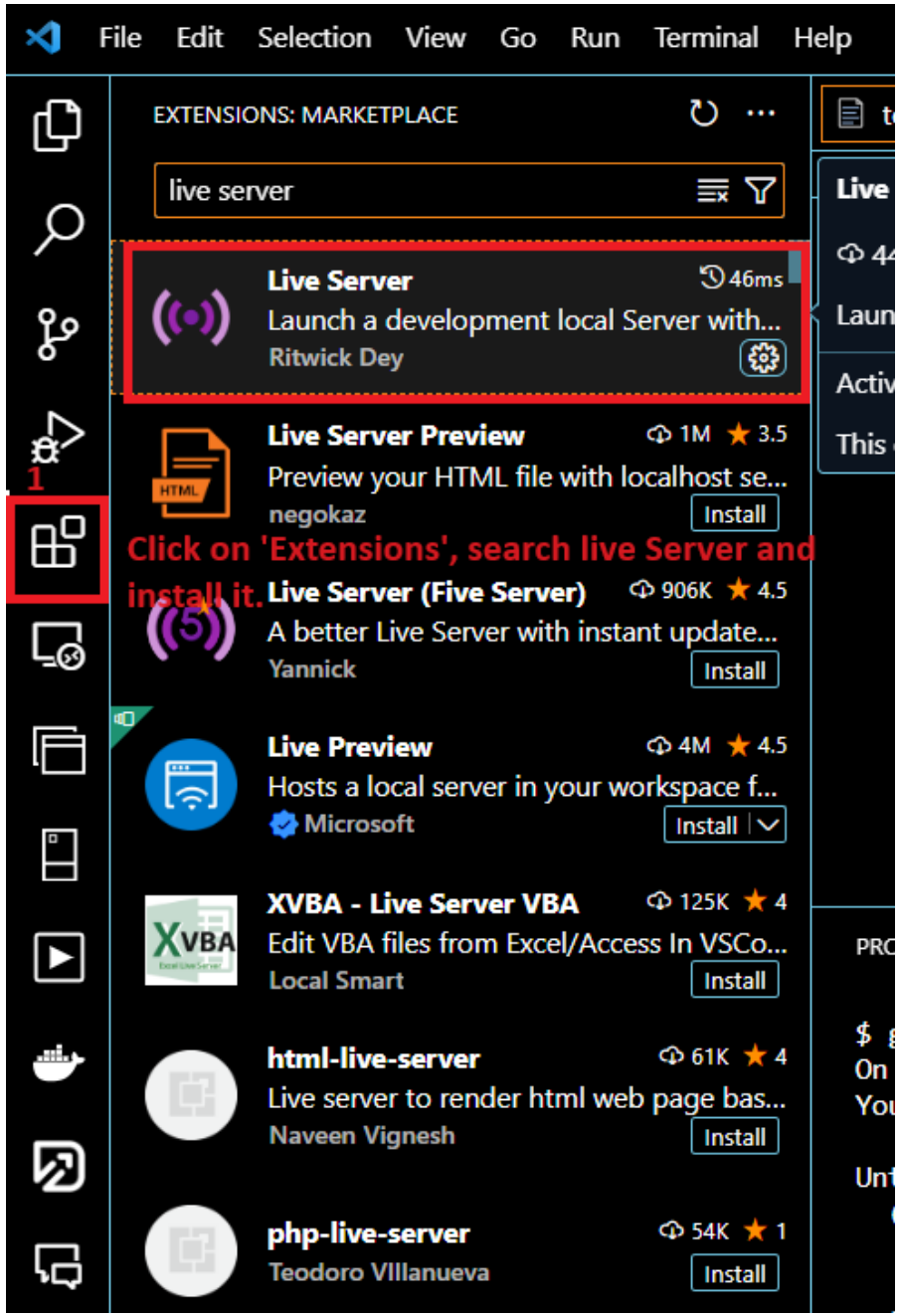

```
naimu@DESKTOP-KTKLFPH MINGW64 ~/OneDrive/Desktop/csi-quizapp (main)
$ git config --global user.email "[redacted]@gmail.com"

naimu@DESKTOP-KTKLFPH MINGW64 ~/OneDrive/Desktop/csi-quizapp (main)
$ git config --global user.name "seenaimul"
```

When using for the first time, we should set these global configuration of user name and email.

'**git config --list**' will list all the configurations

Note: keeping the same username and email of the GitHub account is my personal choice.

Installation of Live Server Extension



What is web development?

- Web Development usually refers to developing the website for the Internet (World Wide Web) or for an Intranet (Private network).
- Also known as Web Programming.
- It is the creation of Dynamic Web Applications.
- Examples of Web Applications are Social networking sites like Facebook or E-commerce sites like Amazon, Flipkart, etc.
- There are two broad division of Web Development.

Front-end Development (also called Client-side Development)

Back-end Development (also called Server-side Development).

Front-End Development

- Front end development refers to producing a web application so that a user can see and interact with them directly.
- It is also known as Client-side development.
- It focuses on the visual elements of a website that a user will interact with.
- A front-end developer has one general responsibility: to ensure that website visitors can easily interact with the page. They do this through the combination of design, technology and programming to code a website's appearance, as well as taking care of debugging.
- The common technologies we can use in front-end development are:

HTML

CSS

JAVASCRIPT

HTML (Hyper Text Markup Language)

- Hypertext means that the document contains links that allow the reader to jump to other places in the document.
- A Markup Language is a way that computers speak to each other to control how text is processed and presented.
- It describes the structure of a web page and consists series of elements. It acts as a skeleton for a website since it is used to make the structure of a website.
- Its elements tells browser how to display the content.
- Its code is written in Notepad or any text editor but save it as .htm or .html extension.

Structure of an HTML program

```
<!DOCTYPE html>
<html>
    <head>
        <title>Title of the Page</title>
    </head>
    <body>
    Tags related to layout and formatting
    </body>
</html>
```

Tells the document type

The Root Element

Contains the header information

Defines Title of the Page

Holds the Content of the Page

Common HTML Tags

Tag	Tag Name	Definition
`<p> </p>`	Paragraph	Define the start and stop of a paragraph.
`<h1> </h1>`	Heading 1	Headings can range from 1 to 6. The higher the number, the smaller the heading.
` `	Line Break	Inserts a single line break. Similar to hitting the carriage return key.
`<div> </div>`	Division	A division is a container that holds other elements. A division is helpful when separating blocks of HTML.
`<em> </em>`	Italic text	*Italic Text*, a.k.a., 'emphasized text'

```
<img src="./porcupine.png">
```

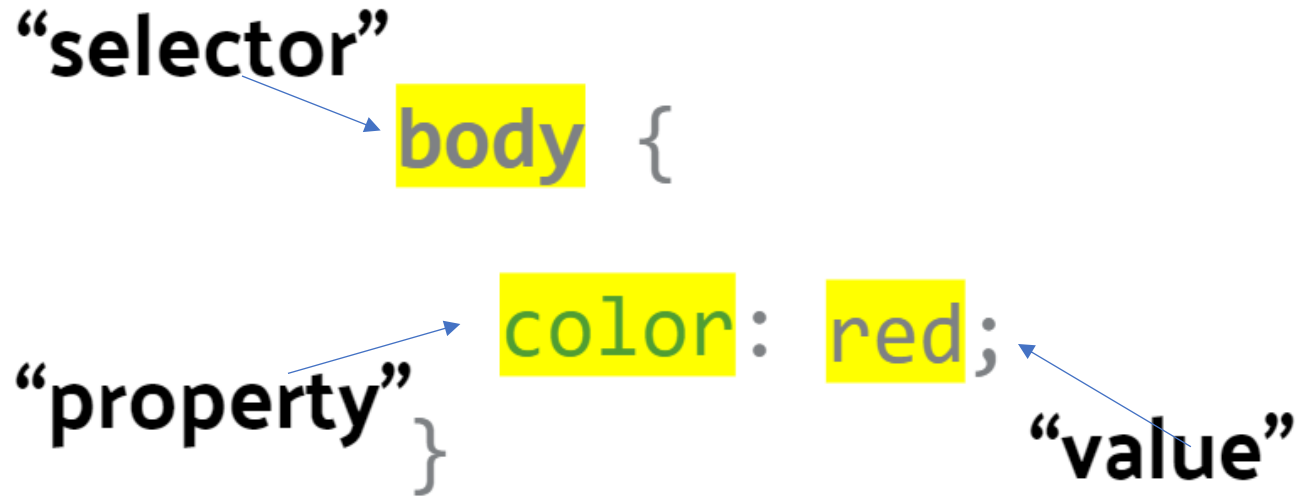
CSS (**Cascading Style Sheets)**

- Cascading Style Sheets (CSS) describes how HTML elements are to be displayed on screen. It is a simply designed language intended to simplify the process of making web pages presentable. It is used to style our website.
- CSS saves a lot of work. It can control the layout of multiple web pages all at once.
- It is also responsible for responsive layouts of a website.
- It is also written in any text editor but save as .css extension.

Let's look at the syntax

- For example: text should be red.

```
body {
    color: red;
}
```



- The **selector** is `body`, which targets all text within the `<body>` element.
- The **property** is `color`, specifying the text color.
- The **value** assigned to the property is `red`.

What do these properties/values do?

```
background-color:
lightblue;
```

```
text-align:
center;
```

```
cursor: pointer;
```

```
background-image:
url("exampleImageName.jpg");
```

```
display: none;
```

```
font-weight: 700;
```

```
text-decoration: line-through;
```

- background-color: light-blue;: This property sets the background color of an element to light blue.
- cursor: pointer;: When applied to an element, it changes the cursor to a pointer (usually a hand) when hovering over that element. This indicates that the element is clickable.
- display: none;: This property hides an element from view. It effectively removes the element from the layout, making it invisible.
- font-weight: 700;: This property makes the text within an element bold. The value 700 corresponds to the bold font weight.
- text-align center;: When applied to a block-level element (like a), it horizontally centers the text content within that element.
- background-image: url("exampleImageName.jpg");: This property sets a background image for an element. The specified image file (in this case, “exampleImageName.jpg”) will be used as the background.
- text-decoration: line-through;: When applied to text, it adds a strike-through line over the text. This is commonly used to indicate deleted or irrelevant content.

JavaScript

- JavaScript is a scripting language used to provide a dynamic behavior to our website.
- JavaScript is the Programming Language for the Web. JavaScript can update and change both HTML and CSS.
- JavaScript Allows web pages to be interactive Web pages can change as the user moves the mouse, clicks or types.
- JavaScript is responsible for the Functioning of the website.
- It is a scripting language that enables us to create dynamically updating content, control multimedia, animate images, and pretty much everything else.
- It is also written in any text editor but add the .js extension.

3 Layers of a Web Page

1. Content/Structure - **HTML**
2. Presentation - **CSS**
3. Action/Behavioral - **JavaScript**

- Think of it like the **skeleton** of a building. Just as a building's structure determines its layout and rooms, HTML organizes the content on a web page

- Imagine the same building from before, but now it's adorned with **aesthetic enhancements**—like paint, windows, and decorative elements. CSS adds visual appeal to the web page.

- Picture an **escalator** in our building. It moves, responds to people stepping on it, and changes direction. Similarly, JavaScript adds functionality and responsiveness to your site.

EXAMPLE:

Back-End Development

- Back-end development controls what goes on behind the scenes of the web applications.
- It is also known as server-side development.
- Back-end usually consists of three parts:

■ **A server**

■ **An Application**

■ **A Database**

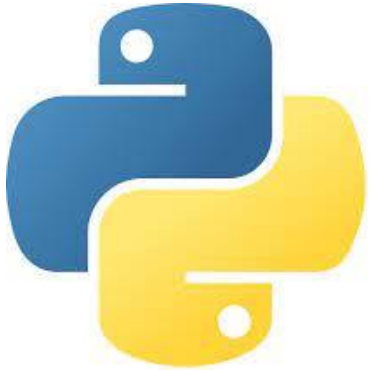
- Users can't see how the backend works but this code is what communicates the database information to the browser.

Common Back-End development technologies

PHP

- **PHP**, which stands for **“PHP: Hypertext Preprocessor”**, is a widely-used, open-source scripting language. It operates on the server side, executing scripts to handle various tasks. Being free to download and use, PHP is a powerful tool for web development. It is embedded within HTML, allowing developers to manage dynamic content, databases, session tracking, and even build entire e-commerce sites.

Python



- Python is a programming language that lets you work quickly and integrate systems more efficiently.

Node.js

- Node.js is an open source and cross- platform runtime environment for executing JavaScript code outside a browser.

Who is a Web Developer?

A web developer is a programmer who specializes in the development of World Wide Web applications using a client-server model.

The applications typically use HTML, CSS and JavaScript in the client, PHP, C#, Python, Node.js or Java in the server, and http for communications between client and server.

There are 3 types of Web Developers -

■Front-End Developer,

■ Back-End Developer,

■Full Stack Developer.

- **Front-End Developer** :-They are responsible for how a website looks. They create the site's layout and integrate graphics, applications (such as a retail checkout tool), and other content. They also write web design programs in a variety of computer languages, such as HTML or JavaScript.
- **Back-End Developer** :- They are responsible for server-side web application logic and integration of the work front-end developers do.
- **Full-Stack Developer** :- A Full-Stack Developer is someone familiar with both front and back-end development. They are generalists, adept at wearing both hats, and familiar with every layer of development. Obviously, employers want to hire Full-Stack Developers - according to an Indeed study, they are the fourth-most in-demand job in tech.

What Does a Web Developer Do?

- **Translating wireframe designs into working code**: Web developers take visual wireframes or design mockups and turn them into functional websites by writing HTML, CSS, and JavaScript code.
- **Creating the architecture and content of a site**: This involves structuring the website, organizing pages, creating navigation menus, and adding textual content.
- **Building in functionality and responsivity**: Web developers implement interactive features, such as forms, buttons, sliders, and responsive layouts that adapt to different screen sizes.
- **Making a site go live**: After development and testing, web developers deploy the site to a live server, making it accessible to users.
- **Updating and renovating sites**: Maintenance is crucial. Developers continuously update content, fix bugs, and improve performance.
- **Troubleshooting, fixing bugs, and glitches**: When issues arise, web developers diagnose problems and apply solutions to ensure smooth functionality.
- **Monitoring website traffic**: Developers track user behavior, analyze metrics, and optimize the site for better performance.

Conclusion

In today's Web development, a good page design is essential. A bad design will lead to the loss of visitors and that can lead to a loss of business. In general, a good page layout must satisfy the basic elements of a good page design.

This includes color contrast, text organization, font selection, style of a page, page size, graphics used, and consistency. In order to create a well-designed page for a specific audience.