Lab Manual for Cloud Computing

Lab No. 12

Employing GitHub for version control

LAB 12: EMPLOYING GITHUB FOR VERSION CONTROL

1. INTRODUCTION:

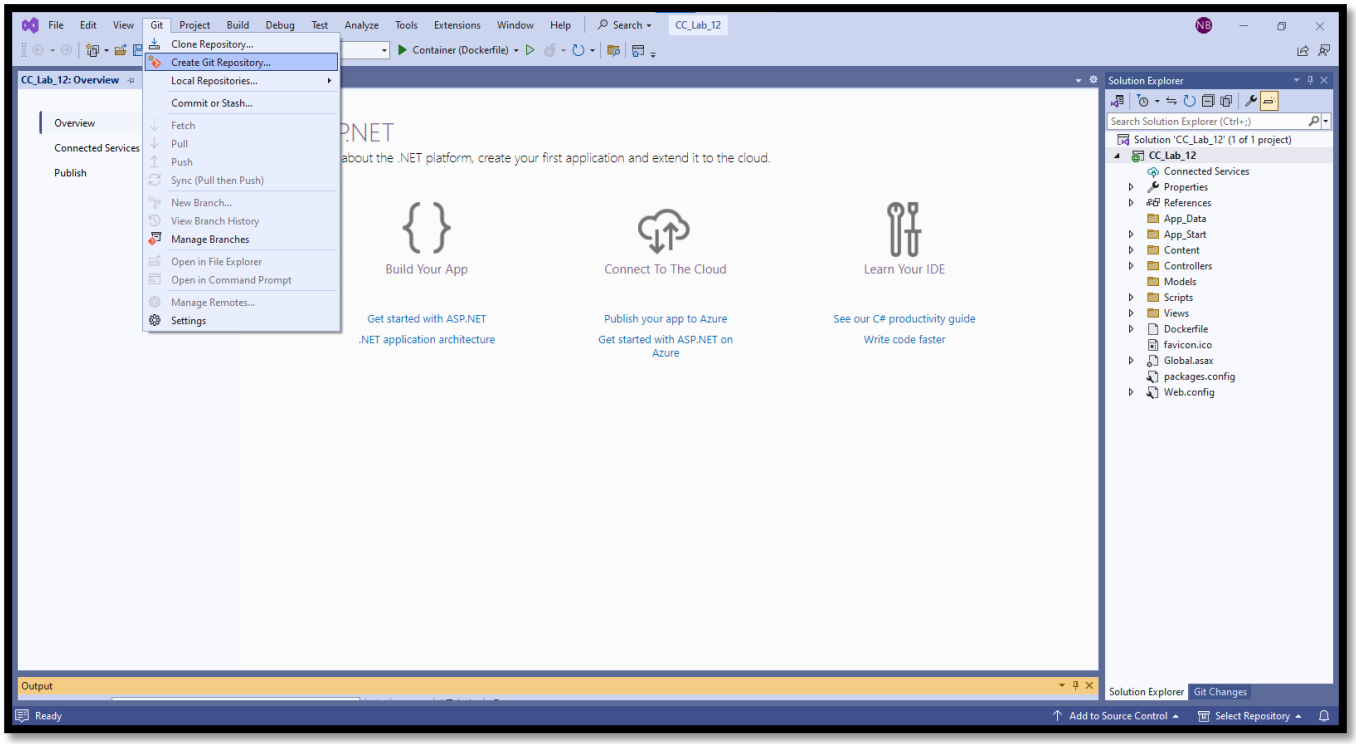
GIT:

GitHub is a widely-used open-source code hosting platform with a robust version control system that facilitates seamless collaboration among development teams. Utilizing Git, it allows multiple developers to work on the same project without overwriting each other's work, supports branching and merging, and includes features like pull requests and code reviews to improve code quality. GitHub also offers comprehensive documentation tools and integrates with project management systems like Trello and Jira, enhancing team coordination and project organization.

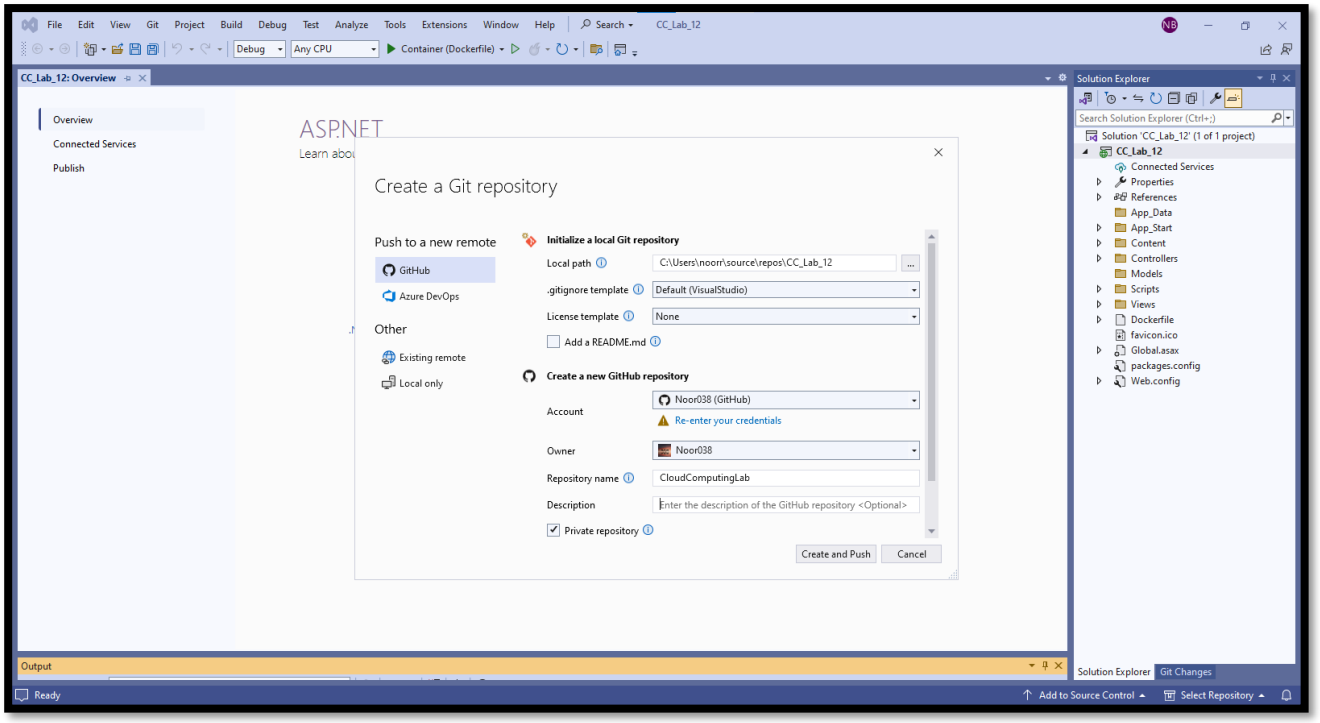
In the context of cloud computing, GitHub's advantages are significant. Its scalable infrastructure accommodates projects of all sizes and integrates seamlessly with major cloud service providers such as AWS, Azure, and Google Cloud Platform, enabling direct deployment from repositories. This cloud-based setup supports real-time collaboration among geographically dispersed teams and provides built-in redundancy and backups, reducing the risk of data loss. By leveraging these features, development teams can enhance their workflows, achieve greater efficiency, and maintain high levels of security and reliability.

Below are the steps to add your Visual Studio project to Git and upload it to GitHub:

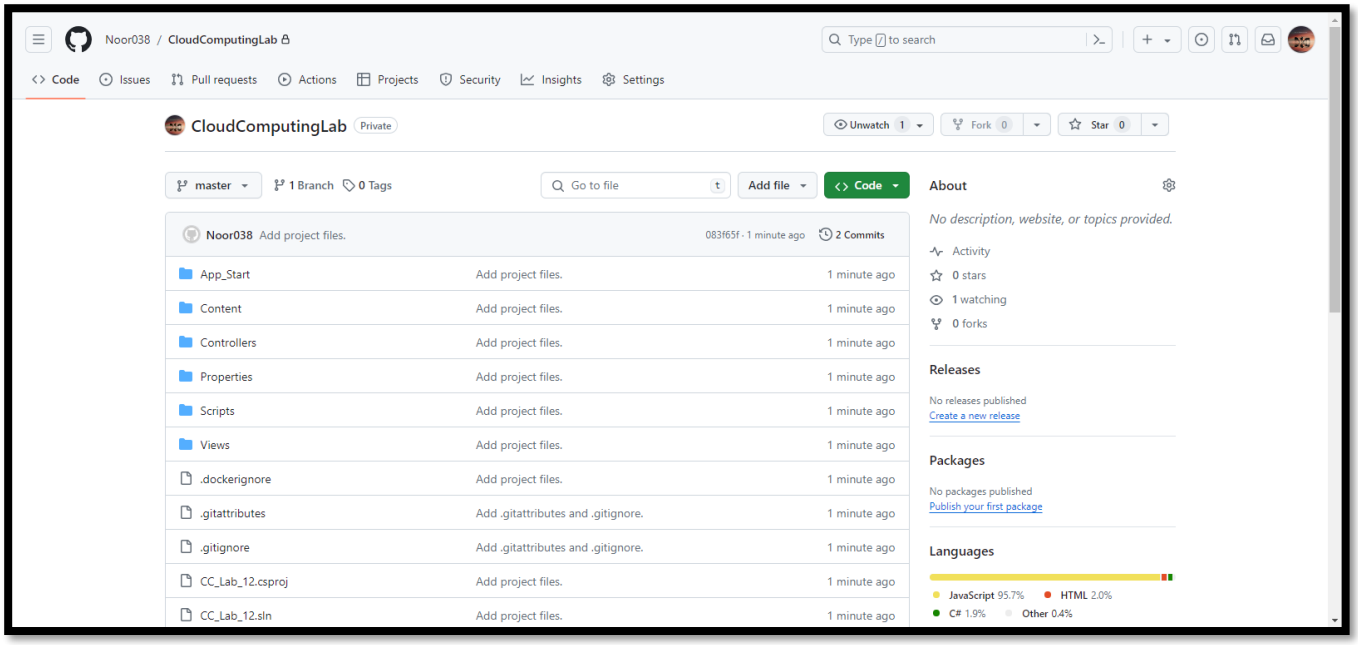
- **Step 01:** Open your project in Visual Studio. In the top left corner of the window, open the drop down Git and click on "Create Git Repository". This initiates the process of integrating version control into your project.



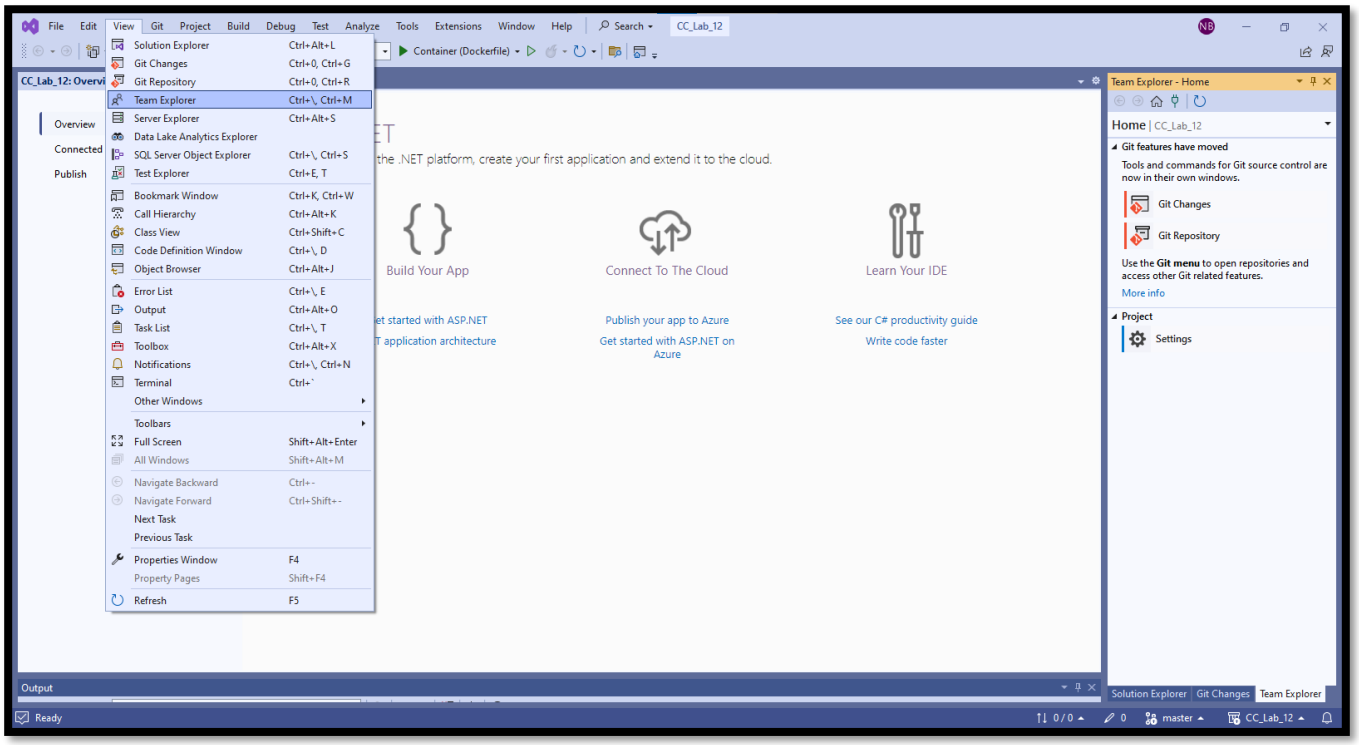
- **Step 02:** Select the "Github" option and you will see the below-given window. Now you need to fill in the details of your Github **Account,** Github **Owner** username, **Repository name** according to your need and **Description** input. You need to uncheck the **Private repository** option if you want to make your repository public and click on **Create and Push.**

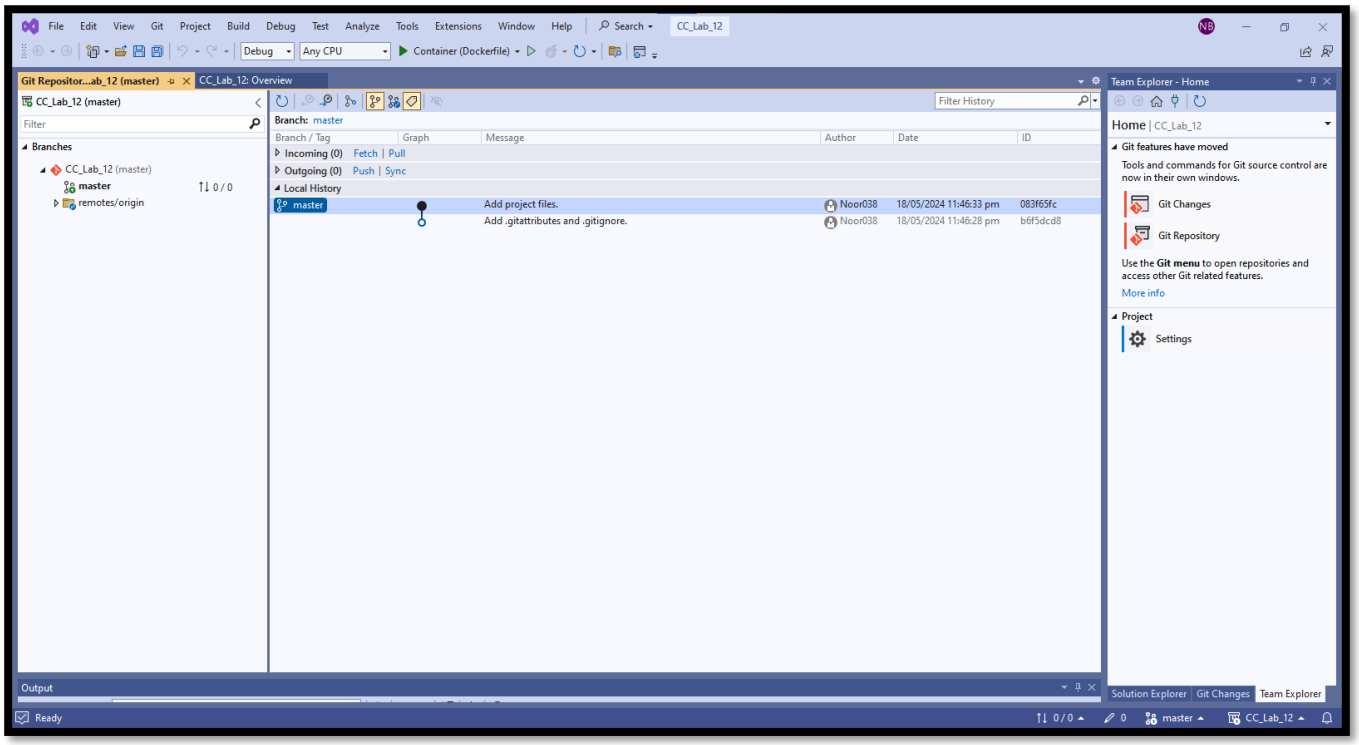


- **Step 03:** Now to confirm whether the repo is created or not go to your Github account in the browser and you will find a repo over there as given in the below image.



In Visual Studio's Team Explorer, you'll find various options such as Changes, Branches, Sync, and Settings. These options allow you to manage your Git repository directly from within Visual Studio, providing a seamless integration experience.





2. Time Boxing

Activity Name	Activity Time	Total Time
Login Systems + Setting up Visual studio Environment	3 mints + 5 mints	8 mints
Walk through Theory & Tasks	60 mints	60 mints
Implement Tasks	80 mints	80 mints
Evaluation Time	30 mints	30 mints
	Total Duration	178 mints

3. Objectives

After completing this lab the student should be able to:

a. *Understand and effectively use GitHub for version control, including repository management, branching, merging, and implementing continuous integration (CI) workflows with GitHub Actions.*

b. *Deploy both static websites from GitHub to Vercel, leveraging Vercel's serverless functions, performance optimization features, and seamless integration for continuous deployment.*

4. Lab Tasks/Practical Work

1. Integrate a Visual Studio project with Git for version control.