

Report

1. What I Learned from Lesson 1

In Lesson 1, I learned the fundamentals of Git, GitHub, group collaboration, and modular programming, which are essential skills for any software or data science project. The lesson helped me understand how to work efficiently in a team, organize my code, and maintain version control for projects.

2. Git and GitHub Overview

Git is a version control system that helps developers keep track of changes in their code. Key points include:

- Git tracks all changes made to files
- It allows restoring previous versions at any time
- It provides structured project development
- Git supports team collaboration

GitHub is a platform built on top of Git that allows users to work online, share code, and manage repositories in a user-friendly way.

Key Difference Between Git and GitHub:

- **Git:** Installed locally, handles version control
- **GitHub:** Online platform, facilitates collaboration

Importance of Git and GitHub:

- Keep a full history of all changes
- Restore previous versions if necessary
- Maintain organized projects
- Collaborate efficiently with team members

3. Group Collaboration on GitHub

GitHub provides tools for **team management** and setting permissions for different roles.

- Repository setup: Team leaders create repositories

Settings → Collaborators → Add People

Permission Levels:

- ✓ **Read:** New members can only view the repository
- ✓ **Write:** Members can push and create changes
- ✓ **Admin:** Full access, including repository settings
- ✓ **Manager:** Can be assigned from a dropdown menu after confirmation

4. Modular Programming

Modular Programming is a technique that organizes a project into smaller, reusable, and manageable units.

- **Module:** A single file containing classes and functions
- **Package:** A folder containing multiple modules

Without Modular Programming:

- All code is in a single file (e.g., one Jupyter notebook)
- Difficult to debug, test, and maintain
- Hard to reuse code

With Modular Programming:

- Code is organized into independent, reusable units
- Easier to test and maintain
- Example in a data science project:
 - Data Preprocessing (DP)
 - Data Analysis (DA)
 - Feature Engineering (FE)
 - Model Training and Testing

Summary

From Lesson 1, I have gained a comprehensive understanding of version control, collaborative development, and modular programming, which are essential skills for professional software

and AI projects. I learned how to effectively use Git to track and manage changes, ensuring project integrity and easy restoration of previous versions.

Through GitHub, I now understand how to facilitate structured team collaboration, assign appropriate permission levels, and manage repositories efficiently. I also learned the importance of modular programming, which allows the creation of reusable, maintainable, and testable code units, improving both project clarity and scalability