**Assignment 4: Explain fork and git clone with example**

### **Fork**

**Forking** in Git refers to creating a copy of a repository from one user's GitHub account to another user's GitHub account. This process allows you to freely experiment with changes without affecting the original repository. Forking is commonly used in open-source projects where contributors want to propose changes (via pull requests) to the original project.

#### **How to Fork a Repository:**

1. **Navigate to GitHub:** Go to the GitHub repository you want to fork. For example, let's say you want to fork the repository https://github.com/original-owner/repository.
2. **Fork the Repository:** Click on the "Fork" button in the upper right corner of the repository page. This action will create a copy of the repository under your GitHub account.
3. **Clone the Forked Repository:** After forking, you'll have a copy of the repository under your GitHub account (e.g., https://github.com/your-username/repository). You can now clone this forked repository to your local machine using git clone.

### **Git Clone**

**Git clone** is a Git command used to create a local copy of a remote repository (which could be either the original repository or your forked repository). This local copy allows you to work on the repository's files, track changes, and push your changes back to the remote repository.

#### **How to Clone a Repository:**

1. **Copy the Repository URL:** Get the URL of the repository you want to clone. For example, if you want to clone your forked repository, the URL would be https://github.com/your-username/repository.
2. **Open Terminal (or Git Bash):** Open your terminal or Git Bash if you're on Windows.

**Clone the Repository:** Use the git clone command followed by the repository URL:  
 git clone https://github.com/your-username/repository

1. This command will create a new directory named repository in your current directory and initialize a Git repository inside it. It will also automatically set up the remote repository (origin) to point to your forked repository on GitHub.
2. **Navigate into the Cloned Repository:** Once the cloning process is complete, navigate into the cloned repository:  
   cd repository

### **Example Scenario:**

1. **Fork the Repository:** find a repository https://github.com/original-owner/repository that you want to contribute to. You click on the "Fork" button on GitHub, creating your fork at <https://github.com/your-username/repository>.

**Clone Your Forked Repository:** Open your terminal and clone your forked repository to your local machine:  
git clone https://github.com/your-username/repository

1. This command downloads the repository files to your local machine, creating a directory named repository.

**Make Changes and Push:** You make changes to the codebase, add files, or modify existing ones. After making your changes, you stage and commit your changes:  
git add .

git commit -m "Added feature X"

1. **Push Changes to Your Fork:** Push your changes to your forked repository on GitHub:  
   git push origin main
2. Here, main is the branch you are pushing your changes to (main or master depending on the default branch name).
3. **Create a Pull Request:** Finally, on GitHub, navigate to your forked repository and create a pull request (PR) to propose your changes to the original repository. The project maintainers can review your changes and decide whether to merge them into the main project.