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Connecting Remote GitHub Repository to Local Git and Pushing Changes: Detailed Guide

# Step 1: Install Git on Your Local Machine

Before you can start using Git, you need to install it on your machine.  
  
For macOS: `brew install git`  
  
For Ubuntu/Linux: `sudo apt-get update` and `sudo apt-get install git`  
  
For Windows: Download the Git installer from the official website and follow the instructions.  
Once installed, verify the installation with `git --version`.  
  
Diagram: Local Git Repository <--------> Remote GitHub Repository

# Step 2: Configure Git

After installing Git, configure your username and email:  
  
1. `git config --global user.name 'Your Name'`  
2. `git config --global user.email 'your.email@example.com'`  
  
This associates your commits with your identity.

# Step 3: Create a New Repository on GitHub

Go to GitHub, log in, and create a new repository:  
  
1. Click on 'New' to create a repository.  
2. Provide a name and description.  
3. Do not initialize the repository with a README if you have existing code.  
  
Diagram: GitHub New Repository Creation.

# Step 4: Initialize Git in Your Local Directory

Navigate to your project folder and initialize Git:  
  
1. `cd /path/to/your/project`  
2. `git init`  
  
This creates a .git folder in your directory, marking it as a Git repository.

# Step 5: Connect Local Repository to Remote GitHub Repository

Connect your local repository to the remote GitHub repository:  
  
1. Add the GitHub remote: `git remote add origin https://github.com/yourusername/your-repo-name.git`  
2. Verify the remote: `git remote -v`  
  
Diagram: Local Repository connected to GitHub.

# Step 6: Stage and Commit Your Changes

Stage your files:  
  
`git add .`  
  
Commit your changes:  
  
`git commit -m 'Initial commit'`

# Step 7: Push Local Repository to GitHub

Push your changes to GitHub:  
  
`git push -u origin master` or `git push -u origin main`.

# Step 8: Pulling Changes from the Remote Repository

Pull the changes from GitHub to your local repository:  
  
`git pull origin master`

# Step 9: Set up SSH Key for Password-less Authentication

Set up SSH key for authentication:  
  
1. Generate SSH key: `ssh-keygen -t rsa -b 4096 -C 'your.email@example.com'`  
2. Add the SSH key to GitHub under SSH and GPG keys.  
3. Set the SSH URL for the repository: `git remote set-url origin git@github.com:yourusername/your-repo-name.git`