Git Learning Journal Noah Staley

0. Initializing a Repository

**Command:** git init

**What it does:** Creates a new, empty Git repository in the current folder (makes a hidden .git folder).

**Example:**git init

Initialized empty Git repository in C:/Users/gladi/Desktop/module 2/.git/

* **Mistakes I made:**
  + Tried adding files before running git init → Git said it wasn’t a repo yet.
* **Reminder:** Always run git init once in a new project before using other Git commands.

1. Checking Status

**Command:** git status

* **What it does:** Shows what branch you’re on, what files are staged, modified, untracked, or deleted.

**Example:** git status

On branch main

nothing to commit, working tree clean

* **Mistakes I made:**
  + Typed status without git → bash: status: command not found.
  + Typed git stauts (spelling error).
* **Reminder:** Always type git status with correct spelling. This should be your “home base.”

2. Listing Files

**Command:** ls

* **What it does:** Shows the files in the current folder.

**Example:** ls

DONE.txt 'IN PROGRESS.txt' PRIVATE.txt TODO.txt

* **Mistakes I made:**
  + Tried cls (Windows habit), but Git Bash uses clear to clear the screen.
* **Reminder:** Use clear instead of cls.

3. Adding Files

**Commands:** git add <file>

git add .

git add -u .

* **What it does:** Stages changes so they’re ready to commit.

**Examples:** git add TODO.txt

git add .

* **Mistakes I made:**
  + Tried git add -m "deleted" → wrong (you can’t add with a message).
  + Tried git add .gotognore (spelling mistake) instead of .gitignore.
* **Reminder:** Use git add <file> for specific files, git add . for everything. Commit messages only go with git commit -m.

4. Committing Changes

**Command:** git commit -m "message"

* **What it does:** Saves a snapshot of staged changes into history.

**Examples:** git commit -m "I added text"

* **Mistakes I made:**
  + Forgot -m → got stuck in commit editor.
  + Used vague commit messages like "idk".
* **Reminder:** Always use clear messages like "Add TODO.txt" or "Ignore PRIVATE.txt".

5. Removing Files from Git (but keeping them locally)

**Command:** git rm --cached <file>

* **What it does:** Stops Git from tracking a file but doesn’t delete it locally.

**Example:** git rm --cached PRIVATE.txt

* **Mistakes I made:**
  + Typed git rm -- cached (extra space).
  + Forgot that .gitignore needs the filename inside to keep ignoring it.
* **Reminder:** No space between -- and cached.

6. Resetting and Restoring

**Commands:** git reset

git restore <file>

git reset --soft HEAD~1

* **What they do:**
  + reset unstages or rewinds commits.
  + restore undoes changes in working directory.

**Examples:** git reset HEAD TODO.txt

git restore TODO.txt

* **Mistakes I made:**
  + Typed git rest instead of restore.
* **Reminder:** Use restore to undo file edits, reset to unstage or undo commits.

7. Looking at History

**Commands:** git log

git show <commit-hash>

* **What it does:** Lets me see what I committed and when.

**Examples:** git log

git show 397c7873486abe727cffcd72585a6b534af8b98b

* **Mistakes I made:**
  + Tried git show Noah Staley (author name doesn’t work). Must use commit hash.
* **Reminder:** Copy the commit hash from git log.

8. Checking Out Old Commits

**Command:** git checkout <commit-hash>

* **What it does:** Lets me “time travel” to an old commit.

**Examples:** git checkout 397c7873486abe727cffcd72585a6b534af8b98b

* **Mistakes I made:**
  + Tried git checkout master but my branch is main.

**Reminder:** To return to latest work, always run:  
  
 git checkout main

9. Connecting to GitHub

A) Linking a local project to a new GitHub repo

1. On GitHub → make a new repo (don’t add README if I already have files).

In Bash:  
  
 git remote add origin https://github.com/USERNAME/REPO-NAME.git

git branch -M main

git push -u origin main

Next pushes can just be:  
  
 git push

B) Cloning an existing GitHub repo

1. Copy the repo’s HTTPS link from GitHub.

In Bash:  
  
 git clone https://github.com/USERNAME/REPO-NAME.git

cd REPO-NAME

1. Run git status to confirm you’re inside the repo.

Mistakes I might make:

* Typing git remote add orgin (spelling mistake → should be origin).
* Forgetting cd into the folder after cloning.
* Mixing up SSH vs HTTPS links.

Reminder:

* Use git remote -v to check what GitHub repo my local project is linked to.
* origin = nickname for the GitHub repo.
* main = my branch name (not master).

## **Key Concepts I Want to Retain**

* **Git** is a **distributed version control system** that runs locally on a machine. It tracks changes to files, allows branching, and maintains a history of project development.
* **GitHub** is a **remote hosting service** that stores Git repositories online, enabling collaboration, sharing, and backup.
* Git can exist **without GitHub**, but GitHub extends Git by providing features like issue tracking, pull requests, code reviews, and centralized collaboration.
* Interaction between Git and GitHub:  
  + git init → starts a local repo.
  + git remote add origin [URL] → links the local repo to GitHub.
  + git push → sends commits to GitHub.
  + git pull → brings updates from GitHub to local repo.

## **Creating and Using a Repository in GitHub**

1. **Create repository on GitHub**:  
   * Choose a name, description, public/private option.
   * Initialize with a README if desired.

**Connect local Git to GitHub repo**:  
  
 git init

git remote add origin https://github.com/[username]/[repo].git

**Stage and commit files locally**:  
  
 git add .

git commit -m "Initial commit"

**Push files to GitHub**:  
  
 git push -u origin main

1. **Ongoing workflow**:  
   * Make edits → git add → git commit → git push.
   * Sync changes with team using git pull.

## **Difficulties Encountered**

* Remembering the difference between **Git (tool)** and **GitHub (platform)** was initially confusing.
* First time linking local repo to GitHub required learning how **remotes** work.
* Conflicts can occur when multiple people push to the same branch — requires using git pull and sometimes resolving merge conflicts.

## **Notes for Future Reference**

* Always check git status to see which files are staged, unstaged, or untracked.
* Use .gitignore to prevent unnecessary files (e.g., large media files, system files) from being tracked.
* Best practice: make frequent commits with clear messages to maintain a clean project history.
* For collaboration, branching is safer than working directly on main.

# **Module 4**

### **Topic: Creating, Managing, and Pushing Repositories with Git and GitHub**

## **Key Concepts and Actions**

* **Creating and Editing Files**
  + Initially tried git add README.md but Git reported the file did not exist.
  + Used echo "# SDEV-143-module-4" >> README.md to create the README file, then successfully added and committed it.
* **Staging and Committing**
  + Added both README.md and index.html.
  + Committed changes with the message *“My HTML FIX fix: #1”*.
* **Setting Branches and Remote**
  + Renamed default branch to main with git branch -M main.

Added the remote repository URL, but initially got an error (remote origin already exists) and had to reset it using:  
  
 git remote set-url origin https://github.com/Gladiator87s/SDEV-143-module-4.git

* **Push Errors and Fix**
  + First push attempt failed with a **non-fast-forward error** because the remote repo already had commits.
  + Tried git pull origin main --rebase but encountered *“couldn’t find remote ref main”* (GitHub repo didn’t have a main branch yet).

Finally succeeded by pushing the local branch to GitHub:  
  
 git push -u origin main

* **Branch Management**
  + Experimented with creating and deleting branches:  
    - git branch Noahsbranch
    - git branch develop
    - git branch improve-readme-description
  + Learned that you cannot delete a branch you are currently on (e.g., Noahsbranch).
  + Deleted other test branches (DeleteMe).
* **Switching and Merging**
  + Checked out Noahsbranch and later switched to develop.
  + Created a feature branch improve-readme-description, edited README, committed, then merged into develop with a **fast-forward merge**.
* **Pushing Branches to GitHub**
  + Successfully pushed multiple branches to GitHub:  
    - git push origin main
    - git push origin Noahsbranch
    - git push origin develop
  + GitHub responded with pull request links for collaborative merging.

## **Difficulties Encountered**

* Confusion between **local and remote branches**. At first, pushing failed because the remote repo had different history than the local repo.
* The error *“couldn’t find remote ref main”* was caused by the remote not having a main branch yet.
* Accidentally attempted to delete a branch currently in use, which Git disallowed.
* The warning *“LF will be replaced by CRLF”* showed up — related to line ending differences between Windows (CRLF) and Linux (LF).

## **Lessons Learned / Future Reference**

* Always check git status and git branch -a to confirm current branch and what will be pushed.

To fix a mismatched remote, use:  
  
 git remote set-url origin [new-URL]

* When encountering push rejections, **pull first** (with rebase if needed) before retrying a push.
* Branching workflow:  
  1. Create a new branch for a feature.
  2. Make commits there.
  3. Merge into develop or main only when ready.
* Deleting branches requires switching to another branch first.
* GitHub automatically provides pull request links after pushing new branches — useful for collaboration.

# **GitHub Issues and Project Management**

### **Topic: Creating and Managing Issues in GitHub**

## **Key Concepts and Actions**

### **1. Creating an Issue**

* Learned how to open a new issue in GitHub.
* Issues act like **tickets** that track bugs, features, or tasks.
* Includes: **title**, **description**, and optional metadata like labels, assignees, and milestones.

### **2. Interacting with an Issue**

* Added **comments** to issues to communicate progress and clarifications.
* Recognized issues as **collaborative discussion threads** where multiple contributors can provide updates.

### **3. Labels**

* Used labels such as *bug*, *enhancement*, or *documentation*.
* Labels are a way to **categorize and prioritize** issues for better project organization.

### **4. Assignees**

* Assigned issues to myself or teammates.
* Helps establish **accountability** and clarity on who is responsible for resolving a task.

### **5. Linking Issues with Commits**

Connected commits to specific issues using references like:  
  
 git commit -m "Fix login bug, see #5"

* GitHub automatically linked the commit to the issue, providing **traceability** between code changes and project tasks.

### **6. Working on the Commit**

* Made changes in a local branch, committed them, and pushed to GitHub.
* Practiced good commit messages to clearly explain what issue was being addressed.

### **7. Referencing an Issue**

* Learned to reference issues in commit messages and pull requests with **#issue-number**.
* Example: *“Added error handling to form submission (ref #7)”*.
* References appear in the issue timeline for context.

### **8. Closing an Issue Using Keywords**

* Used GitHub’s **special keywords** in commit messages or pull requests to automatically close issues.

Example:  
  
 git commit -m "Fix login redirect error. Closes #10"

* After merging, GitHub automatically closes the referenced issue.

### **Journal Entry – Git Practice** **Topic:** Creating a pull request, handling merge conflicts, and branch management in Git

#### **Actions Taken:**

1. **Force Pushed Branches:**
   * Pushed changes to both main and improve-app-style using git push origin <branch> -f.
   * This updated remote branches with local changes.
2. **Branch Switching and Pulling:**
   * Used git switch main and git pull origin main to sync the local main branch with the remote.
   * Switched between branches (main, develop, improve-app-style) to merge changes and keep them updated.
3. **Merging Branches:**
   * Merged main into improve-app-style and develop.
   * Initially mistyped git megre instead of git merge, corrected it.
   * Encountered a merge conflict when merging main into improve-app-style.
4. **Resolving Merge Conflict:**
   * Conflict occurred because working.txt was **deleted in main** but **modified in improve-app-style**.
   * Resolved by re-adding working.txt and writing "hello" into it.
   * Committed the resolution with message: "fixed wotrking text merge fail".
5. **File Deletion Attempt & Correction:**
   * Attempted invalid commands (git -d working.txt, git -rm working.txt).
   * Correct command: git rm working.txt.
   * Successfully committed with: "removed working from master".
6. **Editing Files:**
   * Accidentally tried invalid Git commands (git echo, git append).
   * Correct approach: echo "hello" > working.txt.
   * Added the file, committed with: "added text".
7. **Final Steps:**
   * After resolving conflicts and syncing, pushed branch improve-app-style successfully to GitHub.
   * Confirmed clean working directory with git status.

#### **Lessons Learned:**

* **Force push (-f)** overwrites remote history—should be used carefully.
* Always specify origin main when pulling/pushing to avoid Git misinterpretation.
* Merge conflicts can arise when one branch deletes a file while another modifies it. These must be resolved manually.
* Be precise with Git syntax (git rm, git add ., git commit -m "message").
* Commands like echo are **shell commands**, not Git commands.

#### **Reflection:**

Today’s session was valuable for practicing **pull requests, branch merging, and conflict resolution**. I made mistakes with syntax but learned how to properly delete files, resolve merge conflicts, and push updated branches. This exercise gave me hands-on experience with real-world Git workflows and how to troubleshoot errors effectively.

# **Journal Entry – Resolving Merge Conflicts in Git**

### **Topic: Practical Workflow for Merge Conflicts**

## **Key Concepts and Actions**

### **1. Creating and Working in a Feature Branch**

Created a branch for adding a new habit:  
  
 git checkout -b add-gym

Added a new file and committed changes:  
  
 echo "- Gym" > habits.txt

git add habits.txt

git commit -m "Change to gym habit"

### **2. Making Conflicting Changes on Main Branch**

Switched back to main:  
  
 git checkout main

Edited habits.txt with different content:  
  
 echo "- Sleep more" > habits.txt

git add habits.txt

git commit -m "updated sleep"

### **3. Merging and Resolving Conflicts**

Attempted merge of add-gym into main:  
  
 git merge add-gym

→ Encountered a conflict:  
  
 CONFLICT (add/add): Merge conflict in habits.txt

Resolved conflict manually in habits.txt, then staged and committed:  
  
 git add habits.txt

git commit -m "updated sleep merge conflicts"

git commit -m "updated gym merge conflicts"

git commit -m "updated gym and sleep merge conflicts"

### **4. Pushing Changes and Syncing Branches**

Pushed resolved changes to GitHub:  
  
 git push

git push origin develop

Attempted to check out master, but branch did not exist:  
  
 git checkout master

* → Correct branch was main.

### **5. Merging Development Branches**

Merged develop into main:  
  
 git checkout main

git merge develop

* → Merge completed using the **ORT strategy**.

Attempted to abort merge when no merge was in progress:  
  
 git merge --abort

* → Received fatal: There is no merge to abort (MERGE\_HEAD missing).

## **Difficulties Encountered**

* Merge conflict occurred when changes were made to the same file (habits.txt) on different branches.
* Confusion between branch names (master vs main).
* Learned the importance of committing and merging carefully to avoid losing work.

## **Lessons Learned / Future Reference**

* **Branching** is a safe way to work on features without affecting the main codebase.
* **Merge conflicts** happen when two branches make changes to the same lines in a file; they must be resolved manually.

Always check branch names with:  
  
 git branch

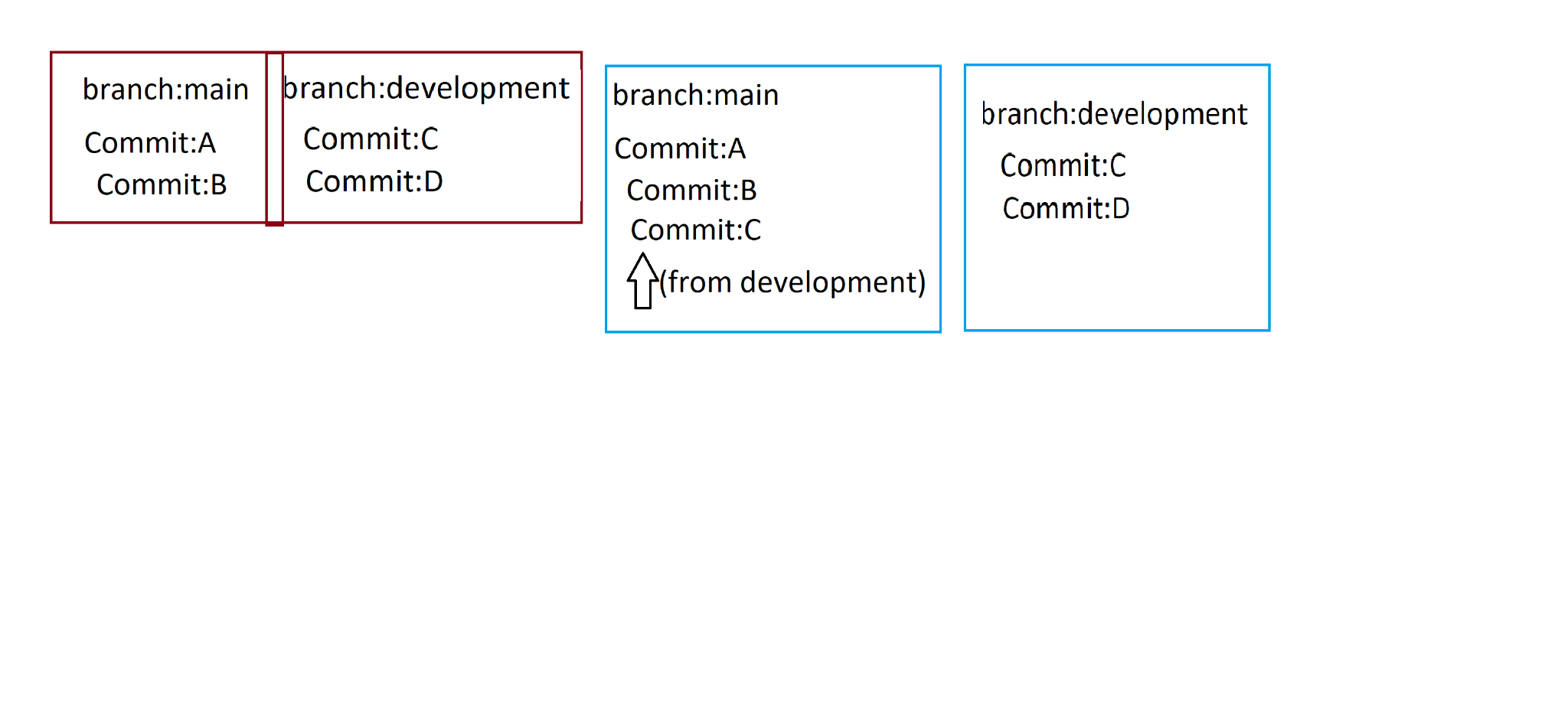
Resolve conflicts by editing the file, then staging the changes:  
  
 git add [file]

git commit -m "resolved conflict"

* Use git status often to track what files are staged or in conflict.
* Pushing changes ensures that your work is backed up remotely.

If you accidentally try to check out a branch that doesn’t exist, verify branch names with:  
  
 git branch -a

* The --abort option only works during an active merge conflict.



Pros:You can use it to test parts of the commits from other branches or even whole features. Like for example if I was developing a whole new section of the website but I don't understand why there is a bug I could pull it to another branch and try to isolate the file to help with bug testing.

Cons: you will now have multiple of the same commit and if you get confused on what you are editing and what is being edited it will be a nightmare to try to fix.

git clean -n or --dry-run Preview the files and directories that would be removed.

git clean -f Remove untracked files in the working directory.

git clean -fd Remove untracked files and directories.

git clean -i Interactively choose files to remove.

git clean -X Remove ignored files only (from .gitignore).

git clean -x Remove all untracked files, including ignored ones.