Git Fundamentals Lab

BME554L - Fall 2025 - Palmeri

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Git Practice

This week we will go through a very simple git workflow to get you familiar with the process and to confirm that your toolchain works for future assignments.

Initial `main` Branch Development

1. Make sure that you have git installed, ssh keys configured, and your Duke GitLab account is setup, as detailed in the Software Installation Lab.
2. Create a **fork**–*not a* ***clone***–of this project on GitLab in your userspace.
3. Clone your forked repository to your laptop, which contains the default `README.md` file to your laptop.

> ⚠ Warning
>
> You want to clone your forked repository, not the parent repository you forked from!

Working on a Branch (Local)

1. Switch to the `about_me` branch.
2. Edit `AboutMe.md` to replace all of the `FILL_ME_IN` placeholders with your own information.
3. Add and commit these text changes with a meaningful commit message.
4. Add and commit a new image file named `fun_picture.png` in a directory called `images/` to complete that section of the `AboutMe.md` file.
5. Push this updated branch to the remote of your GitLab repository.

6. Confirm that you can see your latest commit on this branch on the GitLab website.

Merge Request Time!

1. Create a new Merge Request on the GitLab to merge the `about_me` branch into the `main` branch.

   - Assign the Merge Request to yourself.
   - You do not need a Reviewer.
   - You do **not** want to *squash* or *rebase* your branch commits
   - You do not want to delete the source branch.

2. Check that the `check_image` and `check_about_me` pipline jobs have passed.

   - `Build -> Pipelines`
   - Click on the latest pipeline
   - Click on the `check_image` or `check_about_me` job to see the output of the test if it `Failed`.

3. If the pipeline jobs for this branch have failed, you will need to fix the issue(s) and push the changes to your `about_me` branch.

   - If you are not sure what the issue is, click on the failed job to see the output of the test.
   - If you are not sure how to fix it, ask for help!

4. Once your CI jobs pass, approve your Merge Request on the GitLab website and `Merge` your `about_me` branch into `main`.
5. Checkout the `main` branch on your laptop and pull the latest changes from the GitLab server.
6. Confirm that you can see the updated `AboutMe.md` file in your `main` branch, along with its associated commit in your git commit history.

Create an Annotated Tag

1. On `main`, create an annotated tag for this commit associated with your merged `about_me` branch called `v1.0.0`, with the message `"include the about me info"`.
2. Push this annotated tag to the GitLab server (`origin`).
3. Confirm that you can see your latest commit and tag on the GitLab website.
4. You should see that the `check_v1_0_0_tag` pipeline job has passed if this was successful.

Fix a Merge Conflict (Locally)

1. Inspect the contents of `AboutDrPalmeri.md` in `main`.
2. Switch to the `about_dr_p` branch, and look at the content (slightly different) of `AboutDrPalmeri.md`.
3. Switch back to the `main` branch, and merge the `about_dr_p` branch into `main`.

   - You will be told that there is a `Merge Conflict`:

   ```
   $ git merge about_dr_p
   CONFLICT (content): Merge conflict in AboutDrPalmeri.md
   Automatic merge failed; fix conflicts and then commit the result.
   ```

   - `git status` will show you the files that are in conflict, and what your next likely steps will be to resolve this conflict:

   ```
   $ git status
   Your branch is up to date with 'origin/main'.

   You have unmerged paths.
   (fix conflicts and run "git commit")
   (use "git merge --abort" to abort the merge)

   Unmerged paths:
   (use "git add <file>..." to mark resolution)
           both modified:   AboutDrPalmeri.md

   no changes added to commit (use "git add" and/or "git commit -a")
   ```

4. Staying on the `main` branch, open `AboutDrPalmeri.md` in your text editor, and inspect the `<<<<<<<`, `=======`, and `>>>>>>>` markers that indicate the conflicting lines.
5. Keep the version of the conflicting line that is in `main`, and delete the line that was incoming from `about_dr_p`.
6. Be sure to delete the `<<<<<<<`, `=======`, and `>>>>>>>` markers (lines).
7. Add and commit this merge conflict resolution.

8. Create an annotated tag called `v1.0.1` with the message `"fix Dr. P's age"`.
9. Push your latest commits and tags to `main` on the GitLab server (`origin`).
10. All of your CI jobs should pass if everything was successful.

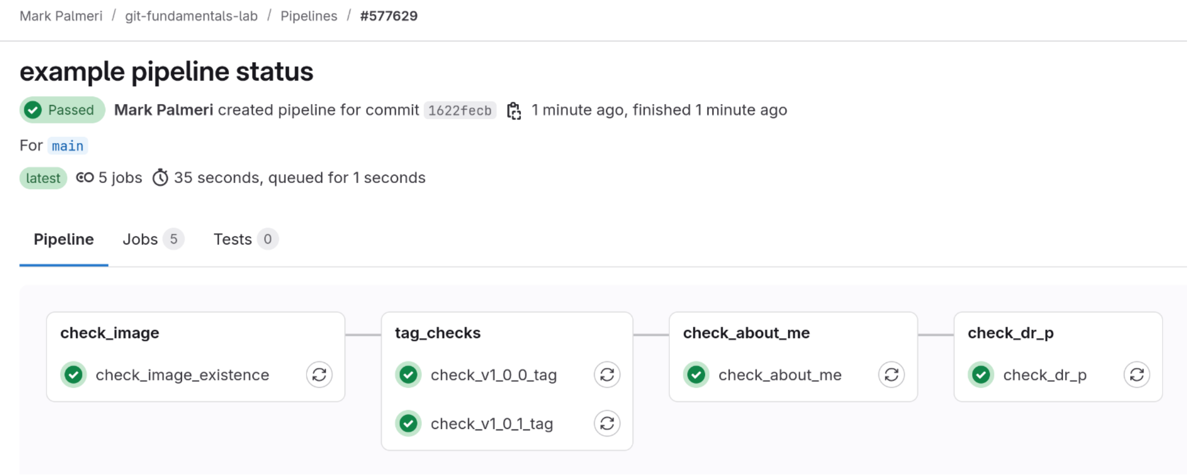
How to Ask for Help

1. If you have a general / non-coding question, you should ask your TAs / Dr. Palmeri on Ed to allow any of them to respond in a timely manner.
2. Push you code to your GitLab repository, ideally with your active development on a non-`main` branch.
3. Create an Issue in your repository.
    - Add as much detail as possible as to your problem, and add links to specific lines / section of code when possible.
    - Assign the label "Bug" or "Question", as appropriate.
    - Be sure to specify what branch you are working on.
    - Assign the Issue to one of the TAs.
    - If your TA cannot solve your Issue, they can escalate the Issue to Dr. Palmeri.
4. You will get a response to your Issue, and maybe a new branch of code will be pushed to help you with some example syntax that you can use `git diff` to visualize.

What to Submit

Your fork of this GitLab repository will be running this CI script: `.gitlab-ci.yml`

1. Go to the `Build -> Pipelines` page of your GitLab repository.
2. Take a screenshot of the latest pipeline that shows all of the tests passing, along with your repository information, as shown below (except all of those `Failed` tests should report `Passed`).



Mark Palmeri / git-fundamentals-lab / Pipelines / #577629

example pipeline status

Passed **Mark Palmeri** created pipeline for commit `1622fecb` 1 minute ago, finished 1 minute ago

For `main`

latest 5 jobs 35 seconds, queued for 1 seconds

check_image
- ✓ check_image_existence

tag_checks
- ✓ check_v1_0_0_tag
- ✓ check_v1_0_1_tag

check_about_me
- ✓ check_about_me

check_dr_p
- ✓ check_dr_p

Figure 1: ci_pipeline

1. Submit this screenshot to Gradescope assignment, along with completing the prompted questions.