

Problem 1 (10 pts): Assume that you are starting from “scratch” at the directory `~/`. Provide a sequence of `git`/`bash` commands that yields a `git` folder with a commit history such that:

- the *master* branch has commits *A*, *B*, *C*, *X* and *D*,
- the *alt* branch has commits *A*, *B*, *X*,

Suppose that you are currently working on `master` branch. Draw its commit history graph (i.e., the graph portion of the output of `git log --graph --oneline`). Next, assume that you are on `alt` branch. Draw its commit history graph.

1. `mkdir hw1p1.git`
2. `cd hw1p1.git`
3. `git init .`
4. `vi main.txt`
5. `git add .`
6. `git commit -m "A added to master"`
7. `vi main.txt`
8. `git add .`
9. `git commit -m "B added to master branch"`
10. `git branch alt`
11. `git branch`
12. `vi main.txt`
13. `git add .`
14. `git commit -m "C added to master branch"`
15. `git checkout alt`
16. `vi main.txt`
17. `git add .`
18. `git commit -m "X added to alt branch"`
19. `git checkout master`

20. `git merge alt`
21. `vi main.txt`
22. `git add .`
23. `git commit -m "Alt merged to master branch"`
24. `git branch`
25. `vi main.txt`
26. `git add .`
27. `git commit -m "D added to master branch"`
28. `git log --graph --oneline`
29. `git checkout alt`
30. `git log --graph --oneline`

Problem 2 (10 pts): Assume that you are starting from “scratch” at the directory `~/`. Provide a sequence of `git/bash` commands that yields a `git` folder and

- configure your `git` with your name and your email address,
- set up an alias for each of the `git` remotes listed below:

```
git://github.com/nhlee/550400.stanza1.git
git://github.com/nhlee/550400.stanza2.git
git://github.com/nhlee/550400.stanza3.git
```

Assume that each remote contains exactly single commit with a `txt` file for a single (different) stanza,

- pull to combine three stanzas of a poem,
- after the first pull, add the title of the poem,
- after the second and third pull, resolve the merge conflict,
- after resolving the third pull merge conflict, push the result to your (newly created) remote repository.

1. `mkdir hw1p2.git`
2. `cd hw1p2.git`
3. `git init .`
4. `git remote add s1 git://github.com/nhlee/550400.stanza1.git`

5. `git pull s1 master`
6. `vi main.txt`
7. `git add .`
8. `git commit -m "Title added"`
9. `git remote add s2 git://github.com/nhlee/550400.stanza2.git`
10. `git pull s2 master`
11. `vi main.txt`
12. `git add .`
13. `git commit -m "2nd stanza merged"`
14. `git remote add s3 git://github.com/nhlee/550400.stanza3.git`
15. `git pull s3 master`
16. `vi main.txt`
17. `git add .`
18. `git commit -m "3rd stanza merged"`
19. `git remote add origin https://github.com/tangdnn/550400.homeworkset.1.git`
20. `git push origin master`
21. `git remote rm origin`

Problem 3 (40 pts): Consider a team of four students, say, A , B , C and D , who just started working on writing a `latex/beamer` file, say `main.tex`, for a class presentation of their work statement. Assume that they do not wish to coordinate their schedules for a concurrent group meeting (both virtually and physically). Assume that:

- A is in charge of *Introduction*,
- B is of *Problem Statement*,
- C is of *Timeline*,
- D is of *Deliverable* part of the presentation.

In other words, their contributions to `main.tex` do not overlap. Then,

- first, devise a work flow strategy for the team so that they can collaborate asynchronously using `git`,
- next, devise yet another `git` strategy different from your earlier proposal.

Finally,

- discuss the strength and weakness of each of your proposed strategies in terms of merge conflicts resolution,
- make the final recommendation.

In order to answer this question, *build* a mathematical model, *following* the guideline from IMM. Use Section 1.4 and Section 1.5 of IMM as *role models*. For example, you are to identify which variables are exogenous and which are endogenous. More specifically, among other things, in your model, is the preamble part of `main.tex` an endogenous or exogenous variable? Note also that in addition to this issue, there are other issues that you are to consider. So, *be sure to consult IMM*.

Problem 4 (aka. Fair Play, 40 pts): Answer the following question:

Is the tennis game fair?

Note that unlike Problem 3, this question is vaguely stated. This is intensional, whence to begin, you will first need to clarify what exactly your question is. You may use the class discussion on this particular problem, but you *may not* directly refer to our discussion. Instead, formulate the model carefully but concisely in your own words.

Final Remarks about Problem 3 & Problem 4: They are open-ended problems. However, your scores will be determined by how well do you follow the exposition style outlined by IMM and WMA. For both problems, your write-up should be

- self-contained,
- covering all four parts of Section 1.3 of IMM,
- paying a particular attention to any causal relation that you might be investigating, following Chapter 3 of WMA,
- answering questions that are explicitly asked in the problem statements.

For Problem 3, focus mostly on Step 2 and Step 3 of Section 1.3 of IMM. For Problem 4, focus mostly on Step 1 and Step 2. For each problem, minimum 1 pages and maximum 2 pages.