AMS 550.400 HW SET 1 Due Date: Oct 8

Last Compiled on October 8, 2012

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

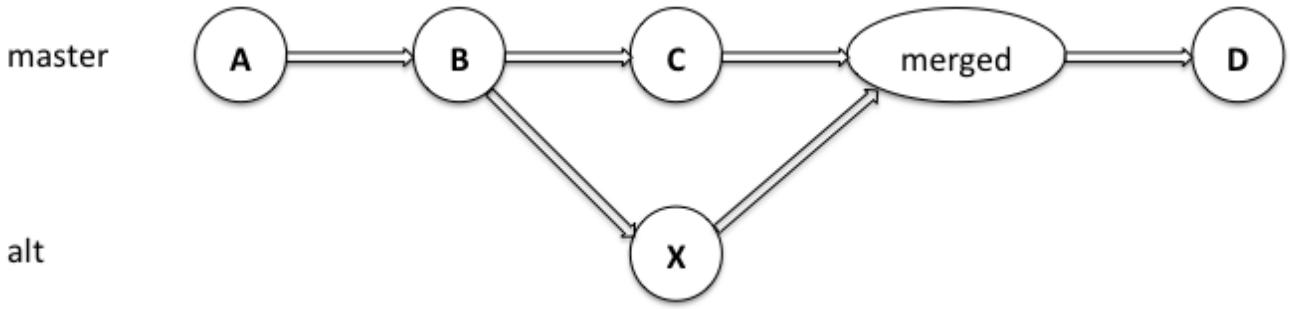

Figure 1: Master Commit Graph

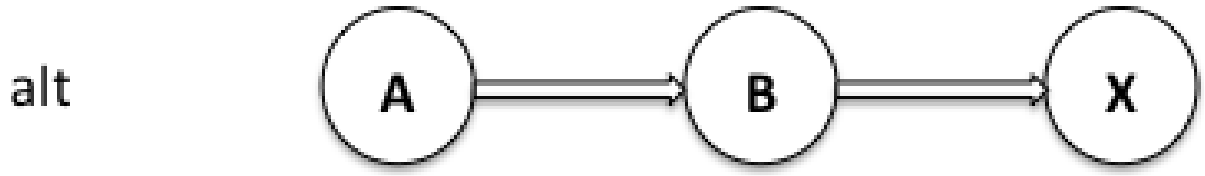

Figure 2: Alt Commit Graph

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*.

For this exercise, we wish to build a cooperative strategy for a team of four students who have split up the presentation into four parts. Since they do not wish to work concurrently, we must develop two different work flow strategies for the team to merge all four parts together without the need for a group meeting using git. One work flow strategy for this team is to for the team members to merge their presentation consecutively; i.e.: B merge with A, then B merge with C, and lastly, D merge with C. The endogenous variable of this model is

---

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.