Midterm Exam Preparation Guide
OSS, Summer'2023

Chapter 1 (Introduction to OSS and Git)

- Open source software (OSS):
  - Definition
  - Types of licenses
  - Philosophical strains/aspects: idealism and pragmatism
  - OSS Development map
  - Different governance models
- Proprietary/closed source software (CSS)
  - Definition
  - Key differences with OSS
- Version control system (VCS)
  - Definition and usage
  - Three types of VCS and their pros and cons
- Git
  - Difference with other VCS
  - Three file-states and three main sections

Chapter 2 (OSS advantages and Git basics)

- OSS advantages: for individual users; businesses; education; developers
- Git basics
  - Creating/initializing a Git repository
  - Four file states in a Git repository
  - Checking file status
  - Tracking and staging new/modified files
  - Committing changes
  - Viewing log/history: different variations of Git log
  - Undoing things: overwriting the last commit; unstaging a staged file; discard modifications in a file

Chapter 3 (Branching)

- Git-related data structures
  - A commit and its tree
  - Subsequent commits
- Branch
  - Master/main branch; creating a new branch
  - HEAD pointer; switching branch
  - Divergent history
  - Two types of merging
  - merge-conflicts and resolution
  - Basic branch management
  - Progressive-stability branching workflow

Chapter 4 (Git Remote)

- Remote repository (RR) and management
    - Adding/removing a RR
    - Fetching and pulling
    - Inspecting a remote
    - Remote branches
    - Pushing: to a new branch/existing branch, push rejects
    - Newly fetched remote branch
    - Rebasing: two variations

Chapter 5 (Distributed Git)

- Distributed workflows:
    - Three types of workflows
    - Process diagram of a multi-developer workflow
- Rebasing vs Merging