Week 6 Lecture Notes: Git #1

1) Installing Git

- Supported platforms: Linux, macOS, Windows (check if pre-installed first).
- Recommended steps:
    - Windows: Install and use “Git Bash.”
    - macOS: Use the official installer.
    - Linux (Debian-based): Install via package manager.
- Verify installation: git --version

2) Core Concept: Three States in Git

- Modified: You changed files in the working directory.
- Staged: You selected changes for the next commit (index).
- Committed: A snapshot is recorded in the local repository.
- Flow summary: Working Directory (Modified) → git add → Staging (Staged) → git commit → Repository (Committed)

3) Essential Workflow and Commands

- Initialize a repository
    - git init
- Check status and differences
    - git status
    - git diff
- Stage changes
    - git add
    - git add . (stage all changes in current directory)
- Commit changes
    - git commit -m "meaningful message"
    - Commit message tip: Use concise, action-focused summaries (e.g., “feat: add login validation”)
- Review history

  - git log --oneline --graph --decorate
- Remote basics (preview for next session)
  - git remote add origin
  - git push -u origin main

4) Ignoring Files with .gitignore

- Purpose: Prevent build outputs, secrets, and local configs from being tracked.
- Typical rules:
  - node_modules/
  - .env
  - *.log
  - dist/
- Important: If a file is already tracked, add rules to .gitignore and then run git rm --cached to untrack it.