

Software Design for Data Science

Team Collaboration

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Standups

- What is a standup?
 - 1-2 minutes per person
- Why standups?
 - Communicate status and actions within and between teams
- What do I say in a standup?
 - Progress you've made since the last standup
 - How it compares with the plan
 - If behind plan, how to compensate to make plan end date
 - Deliverables for next period
 - Challenges to making next deliverables
 - Technology uncertainties and blockers
 - Team issues

Standups

In class!

GitHub Issues

The screenshot shows a GitHub repository page for 'UWDATA515 / lecture6-demo'. The 'Issues' tab is highlighted with a red box. The page displays a commit history from 'mwinstanley' against branch 'main'. The commit details are as follows:

File	Commit Message	Time
.gitignore	Initial commit	16 minutes ago
LICENSE	Initial commit	1 hour ago
README.md	against	16 minutes ago

GitHub Issues

- Good way to keep track of
 - Milestones
 - Tasks
 - Bugs
- If you link to an issue in a PR, it will auto-link the two
- Use it if you like!

GitHub Pull Requests

- Pull Request = “PR”
 - Yeah, it’s a confusing name: “hey repo owners, please PULL my change into main”
- What’s in the description of a PR?
 - Background
 - Describe what change you are making
 - Describe how that change affects the application
 - Test plan
 - How did you test the code?
 - Include specific commands that you ran, and the output
- ALWAYS!
- Only push directly to main in a true emergency (not in this class!)

Good option: draft pull requests

If you're not fully ready to submit it for code review

The screenshot shows a GitHub pull request interface. At the top, there's a text input field with "Another update" and a checkmark icon. Below it are "Write" and "Preview" buttons. To the right are various rich text editing icons. A large text area labeled "Leave a comment" is below. At the bottom, there's a file attachment section with "Attach files by dragging & dropping, selecting or pasting them." On the far right is a green "Create pull request" button with a dropdown arrow. A tooltip for this button contains two options: "Create pull request" (marked with a checkmark) and "Create draft pull request".

ⓘ Remember, contributions to this repository should follow our [GitHub Community Guidelines](#).

✓ **Create pull request**
Open a pull request that is ready for review

Create draft pull request
Cannot be merged until marked ready for review

Code Reviews

- What is code review?
 - Someone looks at, comments on, and approves a PR - NOT one person
- Why code review?
 - To find bugs
 - To improve code quality
- What do you comment on in a code review?
 - Bugs or missing pieces
 - Style
 - Choice of variable and function names
 - Code readability
 - If the PR doesn't have a test plan
 - How to improve reuse and efficiency
 - How to use existing Python packages

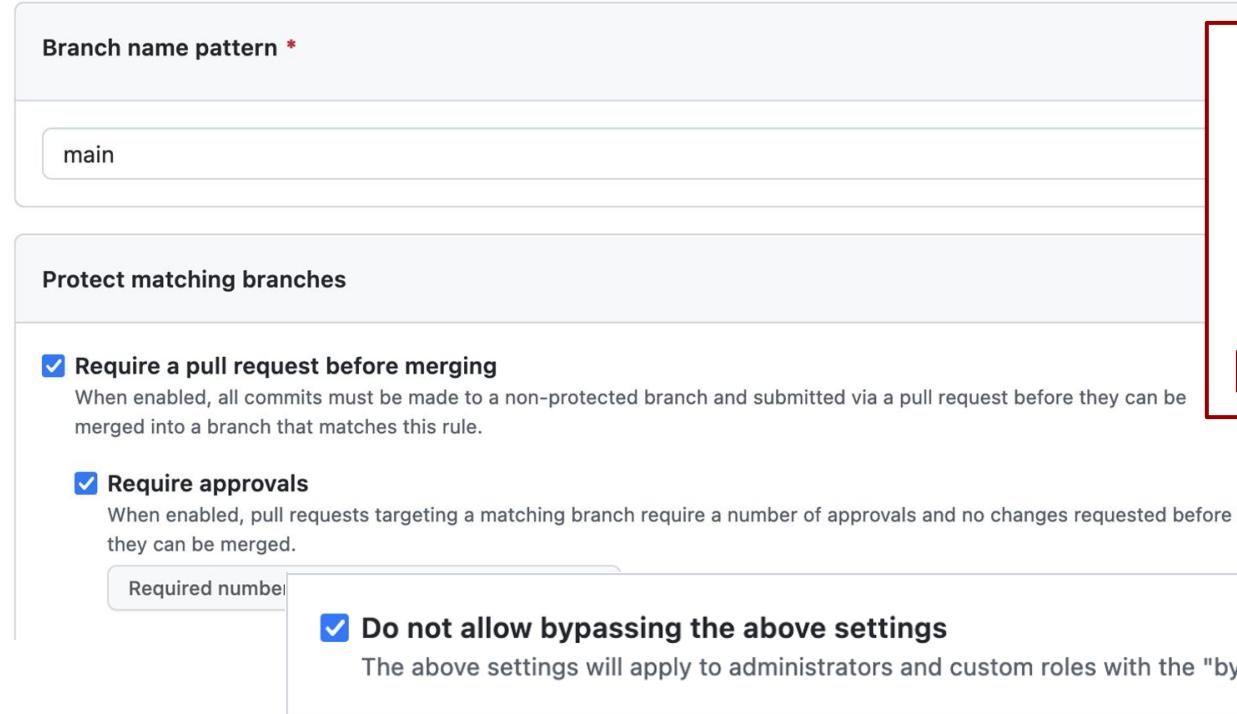
Branch Protection

- Protect `main` against accidents!
- Require pull requests and code reviews
- Common in the real world

```
remote: error: GH006: Protected branch update failed for refs/heads/main.  
remote: error: At least 1 approving review is required by reviewers with write access.  
To https://github.com/UWDATA515/lecture6-demo.git  
! [remote rejected] main -> main (protected branch hook declined)  
error: failed to push some refs to 'https://github.com/UWDATA515/lecture6-demo.git'
```

Branch Protection

GitHub Repository Page > Settings > Branches > Add branch protection rule



The screenshot shows the 'Add branch protection rule' page on GitHub. It includes fields for 'Branch name pattern *' (containing 'main'), 'Protect matching branches' (checkboxes for 'Require a pull request before merging' and 'Require approvals'), and a section for 'Do not allow bypassing the above settings' (checkbox checked). A red callout box on the right side encourages users to apply these settings to their exercise and project repositories.

Branch name pattern *

main

Protect matching branches

Require a pull request before merging
When enabled, all commits must be made to a non-protected branch and submitted via a pull request before they can be merged into a branch that matches this rule.

Require approvals
When enabled, pull requests targeting a matching branch require a number of approvals and no changes requested before they can be merged.

Required number:

Do not allow bypassing the above settings
The above settings will apply to administrators and custom roles with the "bypass branch protections" permission.

Do this now for
your exercise
repository!
Do this on your
project repository!

Communication strategies

- Use a chat mechanism for informal, quick communication
 - Email doesn't really work
 - Slack
 - Microsoft Teams
 - Discord
 - Google Chat
- Don't hesitate to hop on a Zoom to follow-up
- Documentation as communication
 - Code documentation
 - Pull request description

Pair programming

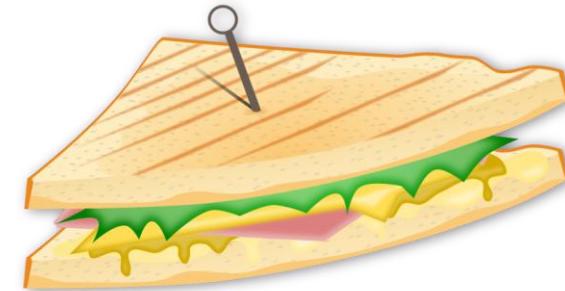
- Two people, one keyboard
- Fewer mistakes with more eyes
- Learning for both people

Consider trying it for difficult tasks!

- Swap who has hands on keyboard at least every 30 minutes
- Keep talking

Fast feedback

- Quick responses to communication
 - Code reviews
 - Emails
 - Chat
- Constructive criticism
 - Consider (gently) giving teammates feedback
 - Make observations, not generalization
 - Sandwich approach
 - Listen to the response!
 - Don't wait until the survey at the end of the quarter!



Collaboration Summary

- Standups
- GitHub issues
- Pull requests
- Code reviews
- Chat
- Pair programming
- Fast feedback