**GitHub Tutorials**

*As a Boilermaker pursuing academic excellence, we pledge to be honest and true in all that we do. Accountable together – We are Purdue.*

*(On group submissions, have each team member type their name).*

Type your name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write today’s date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# **Assignment Goal**

The aim of this exercise is to help you understand and analyze the GitHub flow & GitHub project management tools.

# **Resources**

The following resources and links will help you understand and complete this assignment.

1. Setting up GitHub

<https://docs.github.com/en/get-started/quickstart/set-up-git>

1. Creating a Git Repository

<https://docs.github.com/en/get-started/quickstart/create-a-repo>

1. How to Fork or Clone a Repository:

<https://docs.github.com/en/get-started/quickstart/fork-a-repo>

1. GitHub Flow – This includes creating a branch, making changes, commit and push changes, merge using Pull Request

<https://docs.github.com/en/get-started/quickstart/github-flow>

Git issues

<https://docs.github.com/en/issues/tracking-your-work-with-issues/about-issues>

1. GitHub Project Management

<https://docs.github.com/en/issues/planning-and-tracking-with-projects/learning-about-projects/about-projects>

* [GitHub Projects Youtube Link](https://www.youtube.com/watch?v=yFQ-p6wMS_Y)

1. GitHub Token Management

<https://docs.github.com/en/authentication/keeping-your-account-and-data-secure/managing-your-personal-access-tokens>

1. GitHub API Access

* REST: <https://docs.github.com/en/rest/overview/authenticating-to-the-rest-api?apiVersion=2022-11-28#authenticating-with-a-personal-access-token>
* GraphQL: <https://docs.github.com/en/graphql/guides/forming-calls-with-graphql>

# **Additional Resources:**

Here are some more tutorials that will help you complete the assignment. These videos aren’t organized the same way that this assignment is, but the information in them is helpful both for this assignment and for a stronger understanding of GitHub as a whole.

* [Intro to GitHub Repos and Commits](https://www.youtube.com/watch?v=BCQHnlnPusY)
* [Intro to GitHub Branches](https://www.youtube.com/watch?v=oPpnCh7InLY)
* [Intro to GitHub Forks and Pull Requests](https://www.youtube.com/watch?v=_NrSWLQsDL4)
* [Intro to GitHub Issues](https://www.youtube.com/watch?v=WMykv2ZMyEQ)
* [Intro to GitHub Command Line](https://www.youtube.com/watch?v=oK8EvVeVltE)
* [Intro to GitHub Cloning and Push/Pull](https://www.youtube.com/watch?v=yXT1ElMEkW8)

# **Assignment**

Your goal is to get onboarded into GitHub and analyze GitHub flows. This assignment contains some specific tasks building on the tutorials given above.

You would need to work in your project group for a few parts of this assignment. Once everyone has completed a copy of this assignment, submit as a group to GradeScope.

## **Part 1: Set up GitHub (Individual)**

Amongst your group, have each person set up GitHub. (Refer point 1 under resources).

Once your GitHub profile is set up, please upload a screenshot of a picture of your GitHub profile. Make sure you include your username and profile photo, as well as any achievements you’ve earned in the screenshot. The attachment should be named 1\_GitHubProfile\_<name>

## **Part 2: Creating a Git Repository (Group & Individual)**

The group can create a Git repository in one person’s git account and name it as a team’s repository. Please refer to Point 2 under Resources.

Once your GitHub Repository is created, each person in the team should commit any dummy change with commit message “Commit by <name>” and push it. Please upload/attach a screenshot of a picture of your team's repository, containing one commit from each team member. The attachment should be named 2\_GitHubRepository\_Commits

## **Part 3: Fork and Clone (Individual)**

In this task, each team member should fork their team’s repository and clone to your local machines. Please refer to Point 3 under Resources.

Once this is done, provide two screenshots, one of the forked repo, and other, the cloned repo in your documents. These screenshots should be named 3\_GitRepo\_Fork and 4\_GitRepo\_Clone respectively.

## **Part 4: GitHub Flow (Individual)**

Please refer to Point 4 under Resources to understand the GitHub flow, including creating a branch, making changes, commit and push changes, merge using Pull Request and using Git Issues.

As a team, create a README file listing the names of the project members. Each name should be added following the GitHub flow pattern as below:

Create an issue to add your name to the file -> commit your changes -> raise a pull request -> review -> merge

Each member should provide a screenshot of their issue. The screenshot should be named 4\_GitHubFlow\_<name>

## **Part 5: GitHub Project Management (Individual)**

Check tutorial on GitHub project management and the YouTube links regarding it in the Resources section above.

Analyze the following project board - <https://github.com/apache/airflow/projects/9>

Go through issues on the above board and check issues at different stages of completion. Go through their description and list 2 issues which are in Done state and follow the below conditions:

* An issue that has followed the right sequence to completion.
* An issue that has a difficulty

#### Explain why one of the above sequences looks good and one has a difficulty. Discuss below, the difficulty and how the sequence can be improved.

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## **Part 6: GitHub Token Management (Group & Individual)**

Read the tutorial on generating tokens in the Resources section above.

Individually, generate a Personal Access Token (Classic). Notice how once it is generated and you leave the page, you are unable to view it again.

As a team, discuss why it would be problematic if a Token were to be publicly exposed. Write down some of the reasons you come up with.

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## **Part 7: GitHub API Access (Individual)**

Read the tutorials on using tokens to access the GitHub API in the Resources section above.

Find the GraphQL Explorer tool and attach a screenshot of the output from running the default command. Each member should upload a screenshot. The screenshot should be named 7\_GitHub\_GQL\_Explorer\_<name>