

Lab 2 - Agile Software Development

Coffee Maker Project

The School of Computing and Mathematical Sciences at Leicester is purchasing a smart coffee maker. Unfortunately, the department budget is not sufficient to also purchase the software needed to make the coffee maker work. In this lab, your task is to adopt an agile approach to conduct a small software development project that will build the necessary software to provide the much-needed coffee to the department.

Project description

The coffee maker is very simple. It has internal containers for coffee and milk. It has two buttons, one to make an espresso and another one to make a latte. An espresso is just one unit of coffee without milk. A latte takes two units of coffee and one unit of milk. The department cannot afford to buy coffee for everyone, so they bought a coffee maker with a coin slot to receive payments for the coffees it makes. An espresso costs 1 pound and a latte costs 2 pounds. There are two additional buttons in the machine, one to display the current content of the containers (how much coffee and milk is left) and another one to do a cleanup of the machine (it should dispose of all the ingredients left in the container). To be able to dispense any beverage, the machine needs ingredients in its containers, therefore it also allows the office administrator to add the necessary ingredients (coffee and milk).

Task 1 - Identify user stories

First, read and understand the CoffeeMaker project description. Discuss within your group if there is anything unclear. Once everything is clear, create user stories in a document for each of the expected features of the system you are going to implement.

The way in which user stories are phrased is subjective and may vary a lot from one person or team to another. Suppose we have the following five user stories:

- As a coffee drinker, I want to make an espresso.
- As a coffee drinker, I want to make a latte.
- As an office administrator, I want to clean up the machine.
- As an office administrator, I want to refill the machine.
- As an office administrator, I want to check how much the ingredients the machine has.

Task 2 - Build a GitHub repository

In this module, Git will be used in your group coursework. It is a distributed version control system that tracks changes in any set of computer files, usually used for coordinating work among programmers who are collaboratively developing source code during software development.

Please follow the provided Git tutorial to become familiar with some of the most used operations.

Now, create a GitHub repository to work on this project.

- If you do not have a GitHub account, create one at <https://github.com/join>. Everybody will need a Github account!
- Next, one of you should create a new repository: <https://github.com/new> (only one repository for each group). Suggestion: consider using an appropriate `.gitignore` file.
- Open the command line and execute the following:

```
git clone https://github.com/<your_username>/CoffeeMaker.git,
```

 where `<your_username>` is your Github username and `CoffeeMaker` is the name of your repository. You should see an output like this:

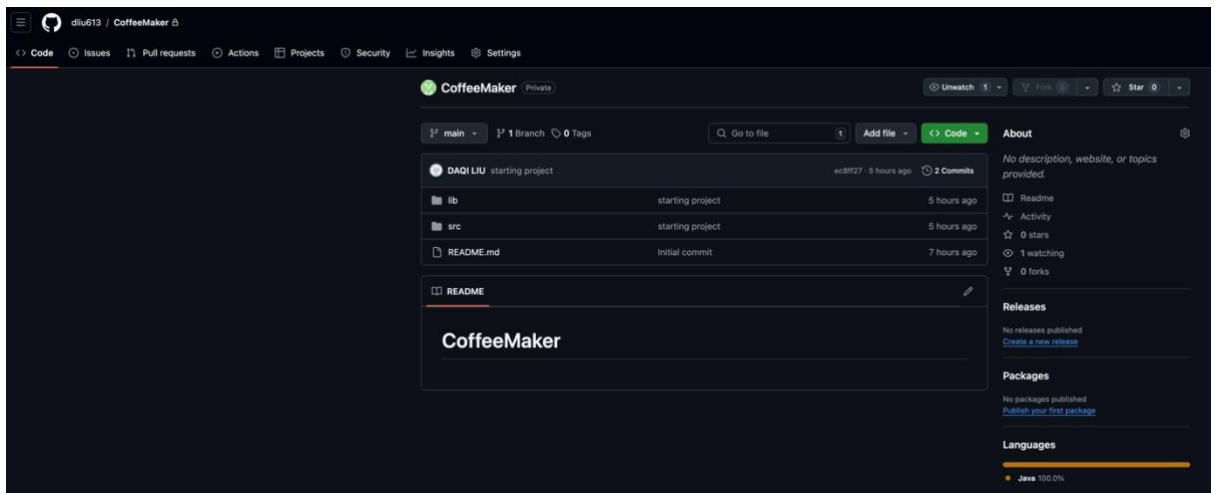
```
1 $ git clone https://github.com/{your_username}/CoffeeMaker.git
2 Cloning into 'CoffeeMaker'...
3 remote: Enumerating objects: 3, done.
4 remote: Counting objects: 100% (3/3), done.
5 remote: Compressing objects: 100% (2/2), done.
6 remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
7 Unpacking objects: 100% (3/3), done.
```
- Follow [this tutorial](#) to create a personal access token and then use this token as your password when pushing your changes to your GitHub repository.
- Add all the CoffeeMaker project code to the repository by moving the content of the CoffeeMaker directory into the newly cloned repository and executing the following:

```
git add .; git commit -m "starting project"; git push;
```

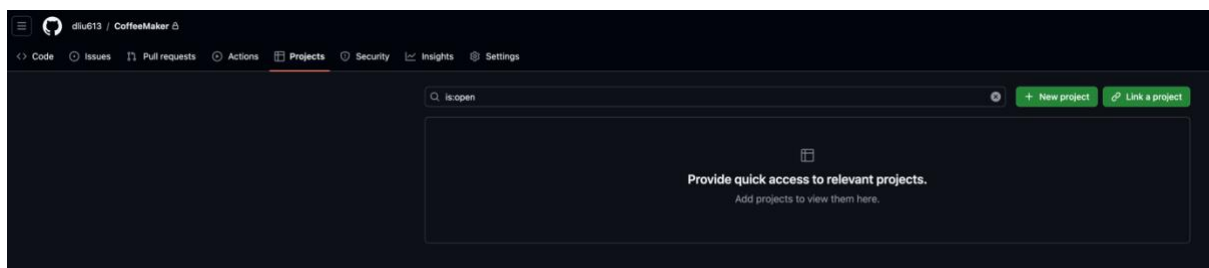
Task 3 - Create a scrum board

Create your scrum board within your Github repository as follows:

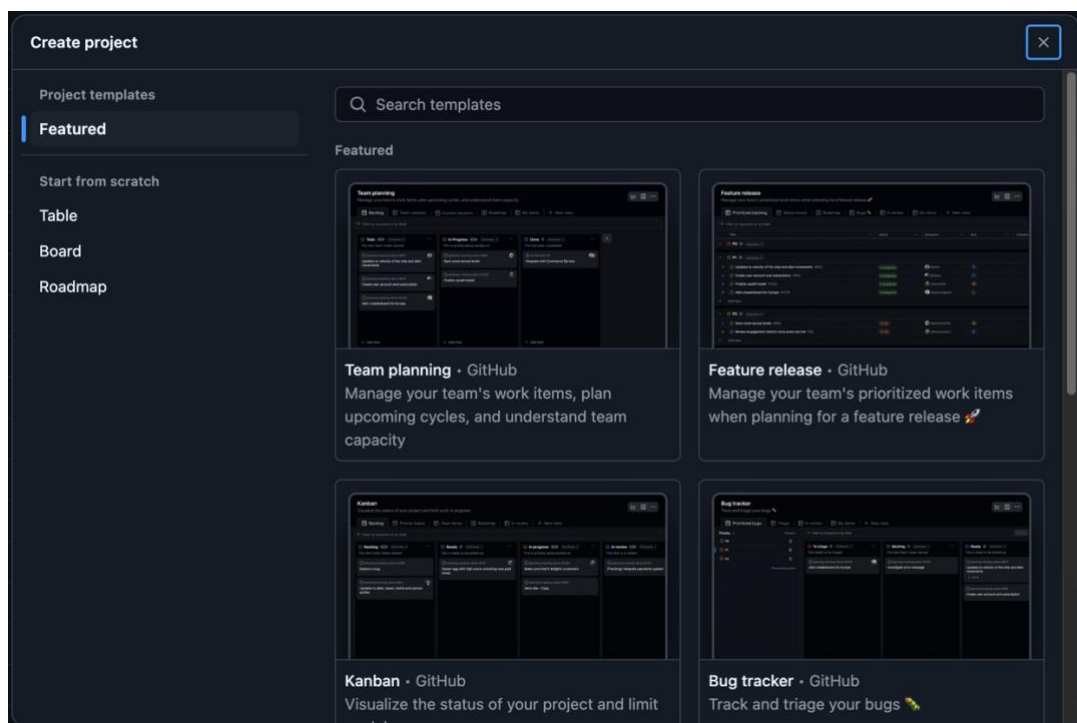
- Clicking `Projects` tab in your repo.



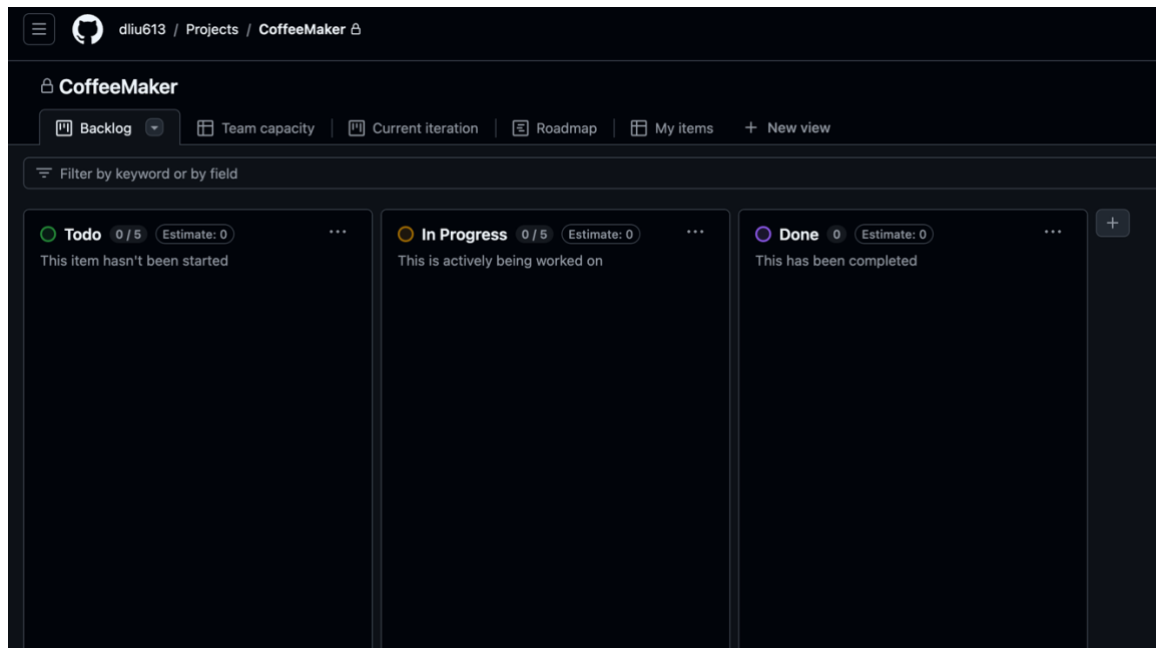
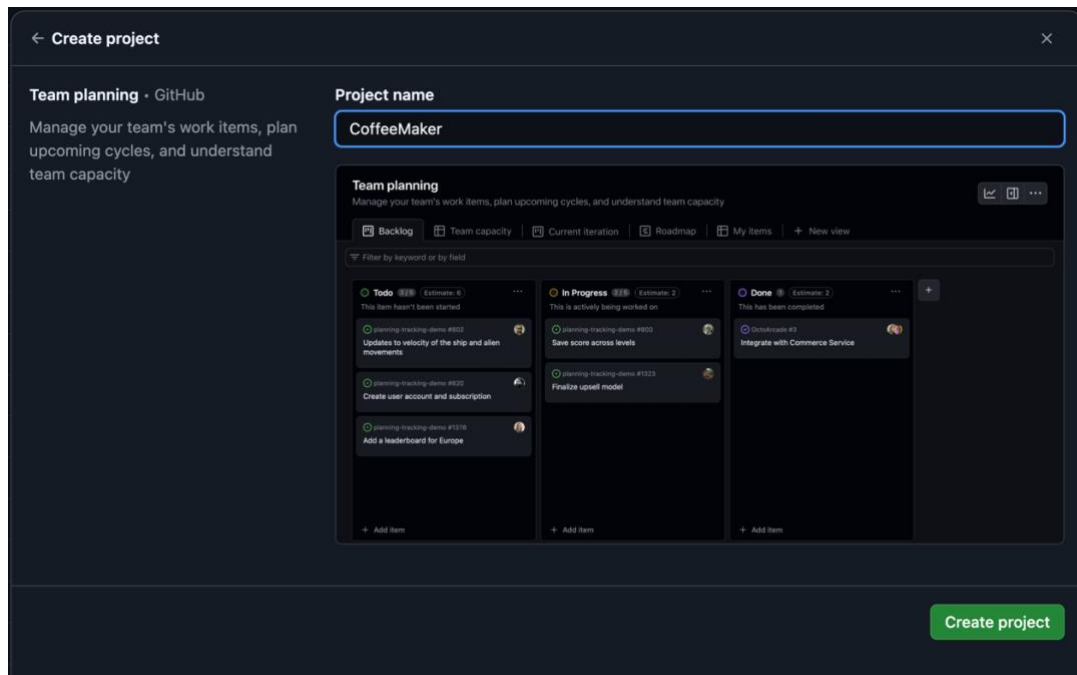
- Clicking **New project** button to create a new project.



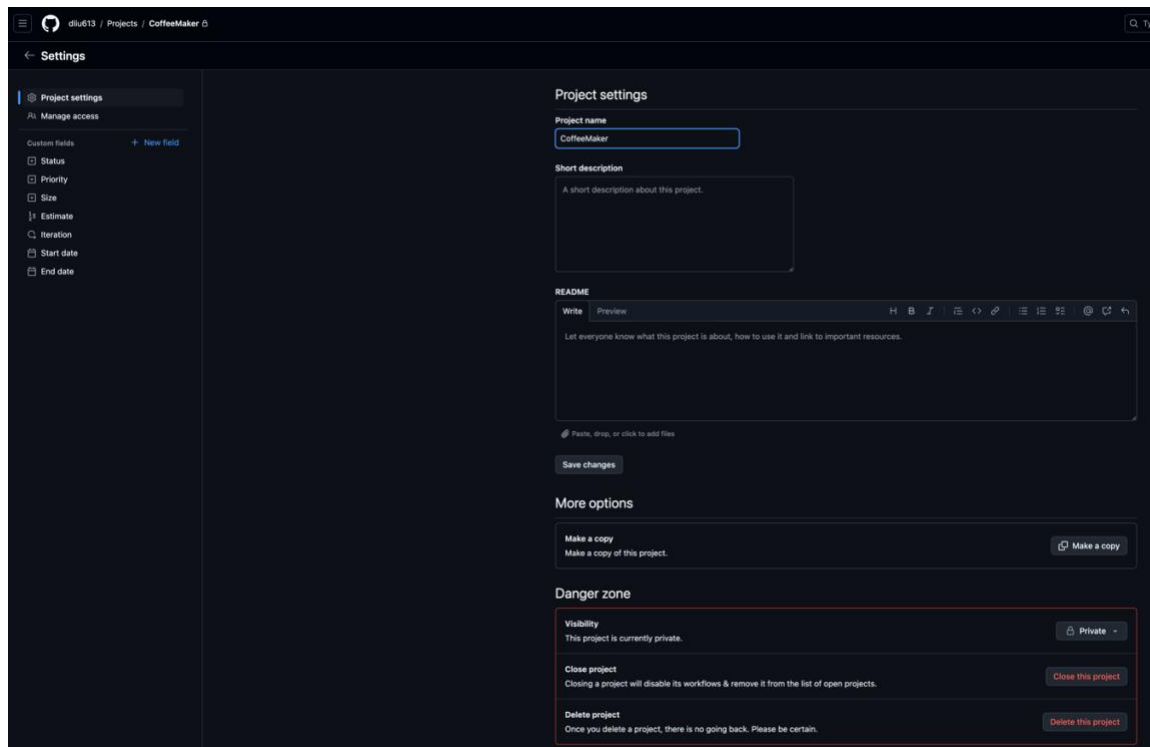
- Choose the **Team planning** template.



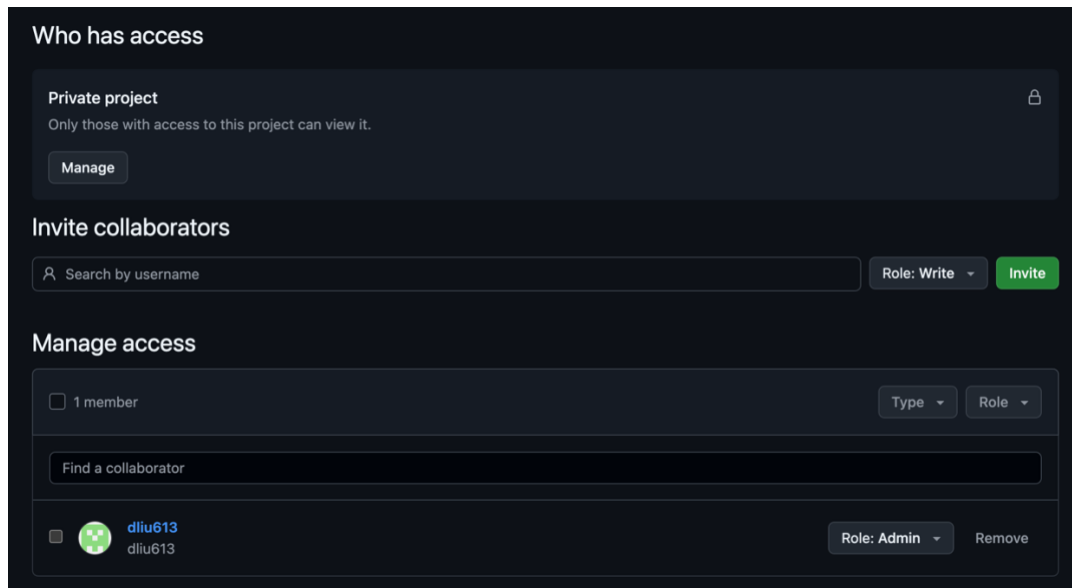
- Change the project name to CoffeeMaker and then click **Create project**.



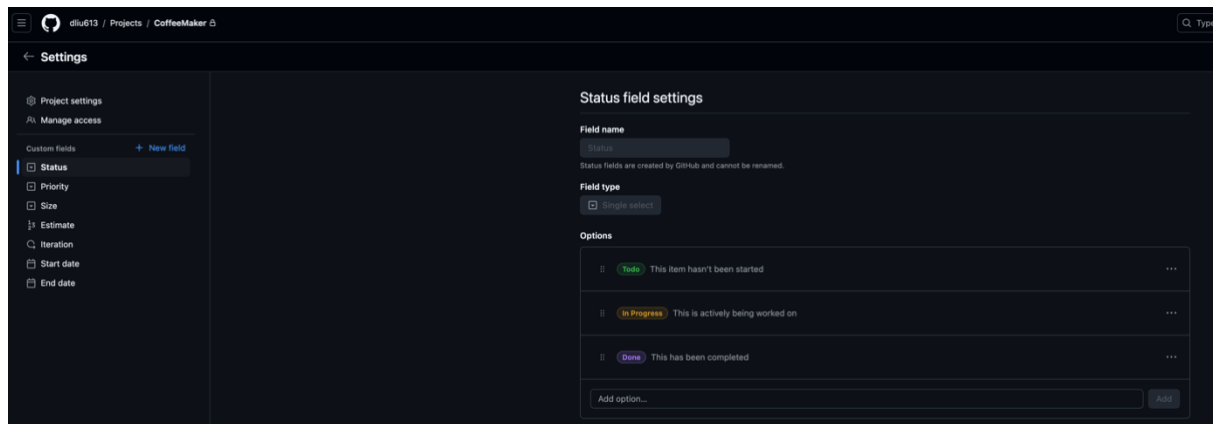
- Now, you need to change some settings to create the desired scrum board. Clicking the project name **CoffeeMaker** above Backlog and you will see:



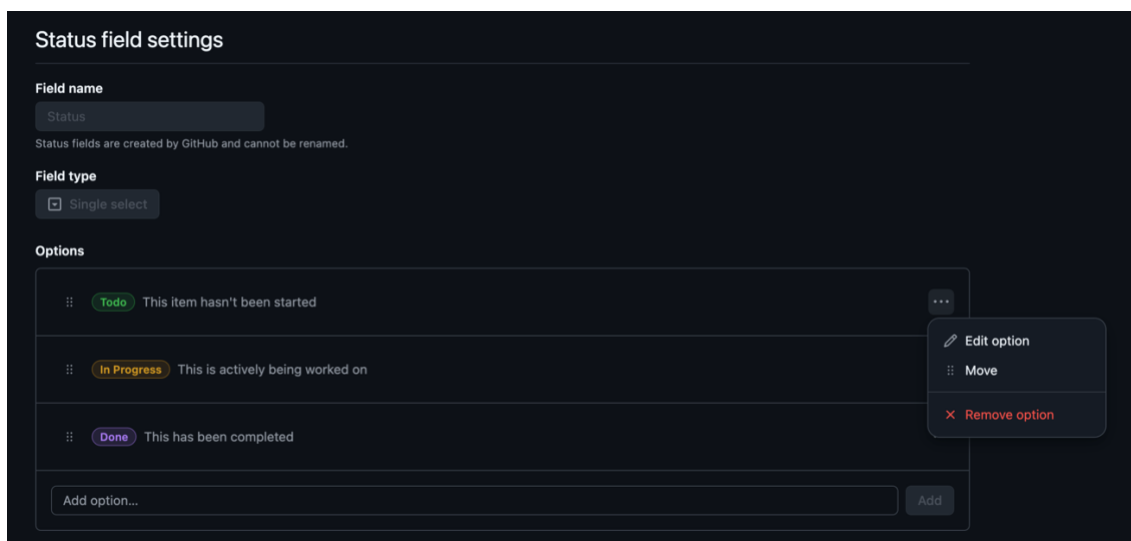
- Choose **Manage access** tab from left panel. Here, you must invite collaborators (team members) by searching their usernames. You could also assign them different roles. The administrator in your project will be able to assign different user stories to different assignees.



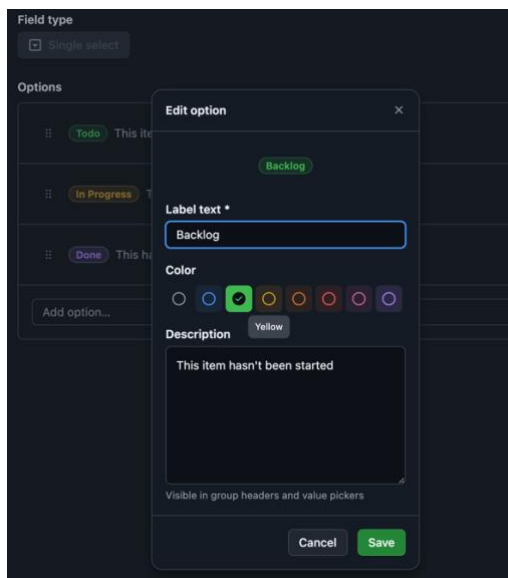
- Choose the **status** tab from left panel.



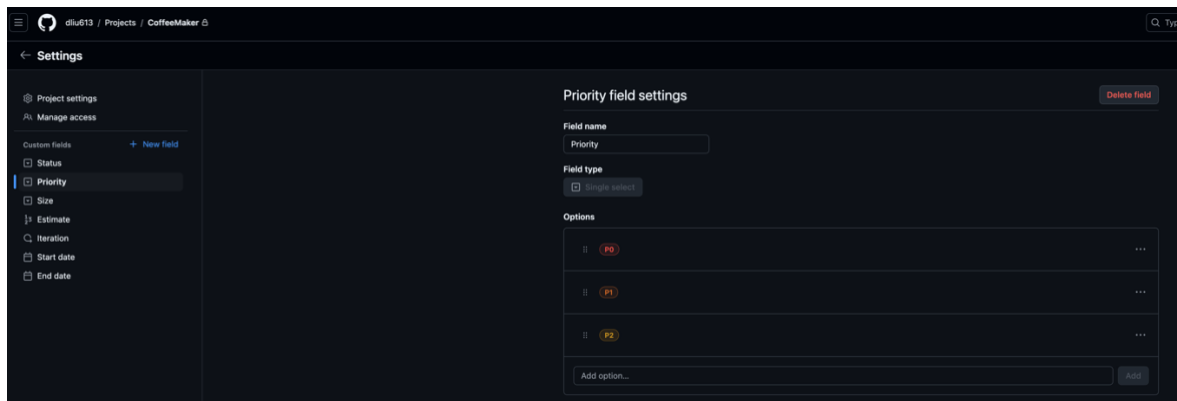
- Click ... next to Todo and choose Edit option.



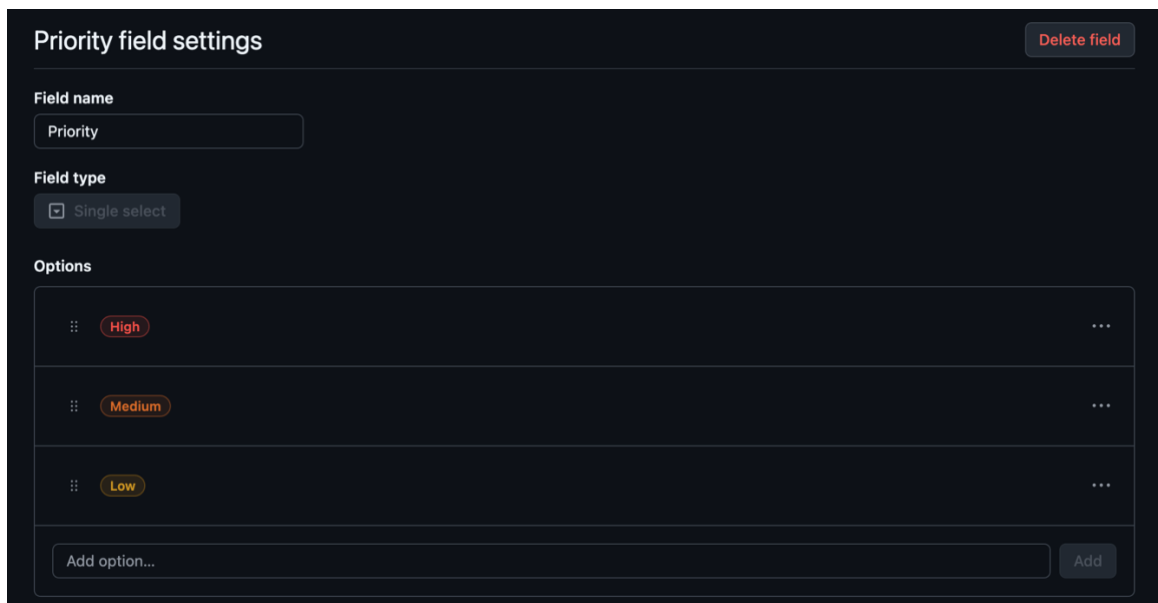
- Change Label text from Todo to Backlog and then Save.



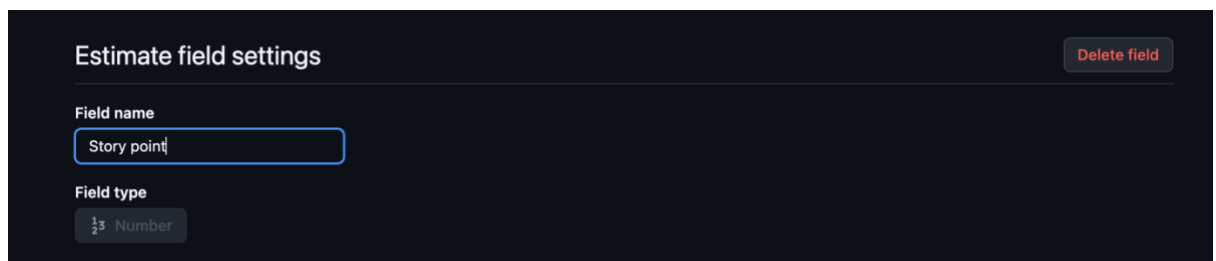
- Next, click Priority tab from left panel.



- Under **Options** tab, click **...** next to P0 and choose **Edit option**. Change **Label** text from P0 to High and then hit **Save**. Similarly, change P1 and P2 to Medium and Low, respectively.



- Next, click **Estimate** tab from the left panel and change the **Field name** from Estimate to Story point and hit Enter to save the change.



- Next, click **Iteration** tab from the left panel and change the **Field name** from Iteration to Sprint and hit Enter to save the change.

Sprint field settings

Delete field

Field name

Sprint

Field type

Iteration

3 Active

0 Completed

+ Add iteration

More options

| | | |
|---------|---|--|
| Current | <div>Iteration</div> <div>2 weeks Sep 17 - Sep 30</div> | |
| Planned | <div>Iteration 2</div> <div>2 weeks Oct 01 - Oct 14</div> | |
| Planned | <div>Iteration 3</div> <div>2 weeks Oct 15 - Oct 28</div> | |

Save

Reset

- Click the current iteration name **Iteration** and change it to Sprint 1. Similarly, change **Iteration 2** to Sprint 2 and **Iteration 3** to Sprint 3. Finally, hit Save to save the changes. Here, you can also create or delete sprint or change its duration.

Sprint field settings

Delete field

Field name

Sprint

Field type

Iteration

3 Active

0 Completed

+ Add iteration

More options

| | | |
|---------|---|--|
| Current | <div>Iteration Sprint 1</div> <div>2 weeks Sep 17 - Sep 30</div> | |
| Planned | <div>Iteration-2 Sprint 2</div> <div>2 weeks Oct 01 - Oct 14</div> | |
| Planned | <div>Iteration-3 Sprint 3</div> <div>2 weeks Oct 15 - Oct 28</div> | |

Save

Reset

Sprint field settings

Delete field

Field name

Sprint

Field type

Iteration

3 Active

0 Completed

+ Add iteration

More options

| | | |
|---------|---|--|
| Current | <div>Sprint 1</div> <div>2 weeks Sep 17 - Sep 30</div> | |
| Planned | <div>Sprint 2</div> <div>2 weeks Oct 01 - Oct 14</div> | |
| Planned | <div>Sprint 3</div> <div>2 weeks Oct 15 - Oct 28</div> | |

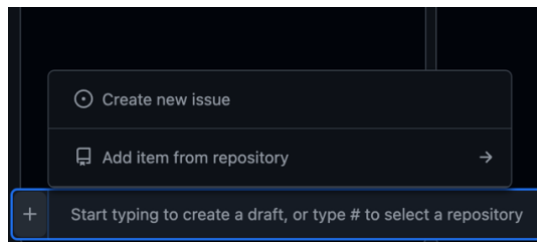
Save

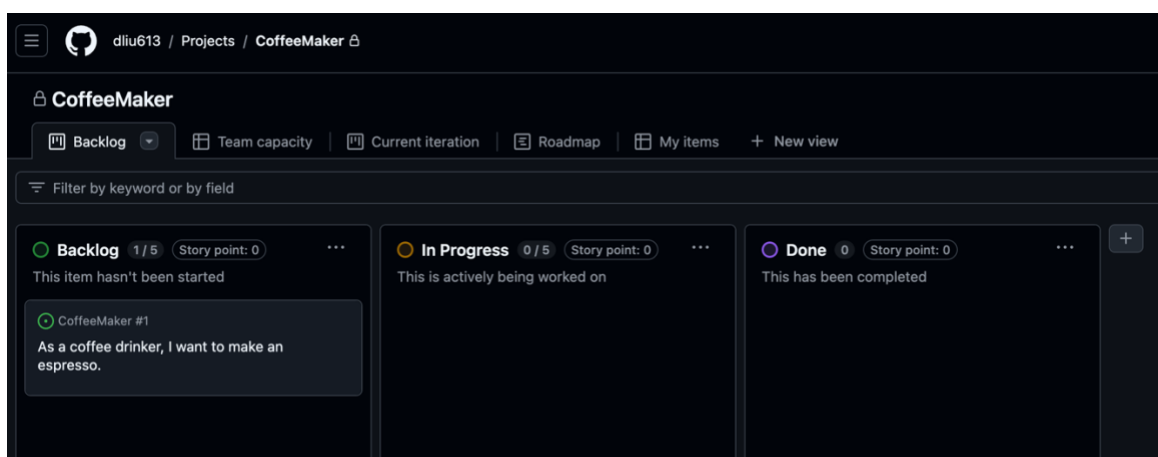
Reset

✓

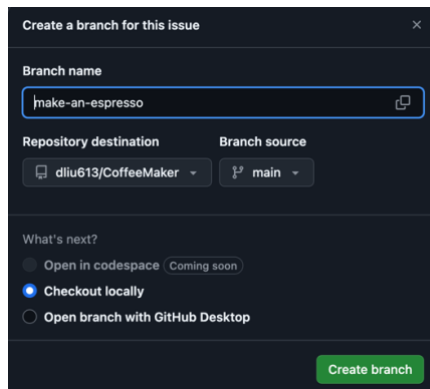
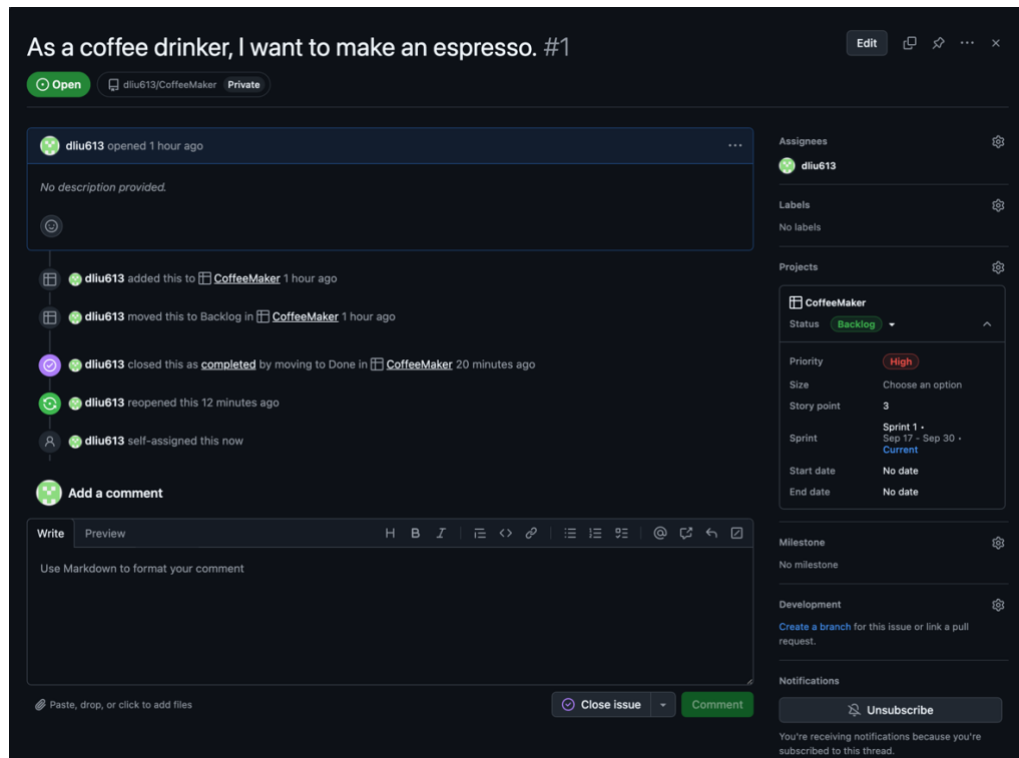
Changes saved. Return to [CoffeeMaker](#).

- Click **+ Add item** on the bottom of the Backlog column and then click **+** button and choose **Create new issue** to input the first user story you identified in the previous step into **Add a title** box and then hit **Create**.

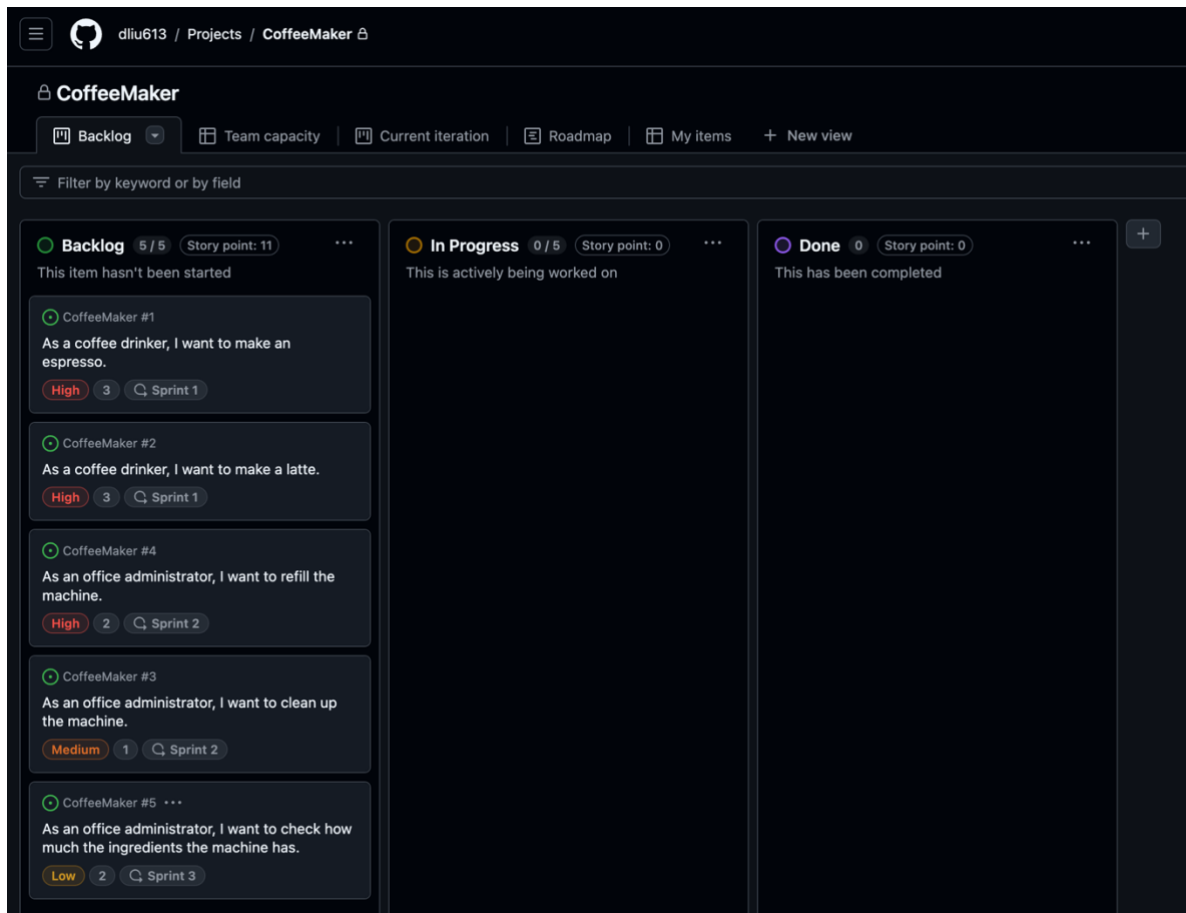


 A screenshot of the 'Create new issue' dialog box in Jira. The title bar says 'Create new issue in dliu613/CoffeeMaker'. Inside the dialog, there's a 'Blank issue in dliu613/CoffeeMaker' button. Below it, the 'Add a title' section has a text box containing 'As a coffee drinker, I want to make an espresso.'. The 'Add a description' section has a rich text editor with a 'Write' tab selected and a placeholder text 'Type your description here...'. At the bottom, there are buttons for 'Assignee', 'Label', 'CoffeeMaker', and 'Milestone'. At the very bottom right, there are buttons for 'Create more', 'Cancel', and 'Create' (in green).


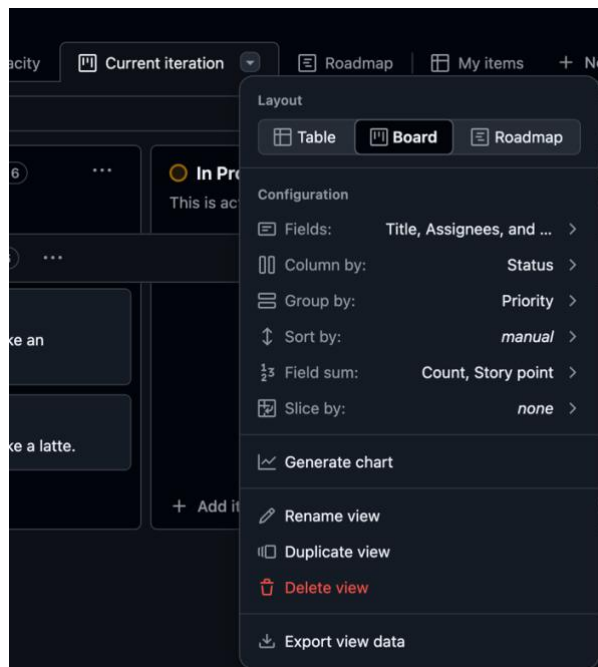
- Click the user story you just created within the Backlog column and enter the **Assignees**, **Priority**, **Story point**, and **Sprint** information. The person working on each user story should click **Create a branch** under **Development** to build a specific branch for this user story.



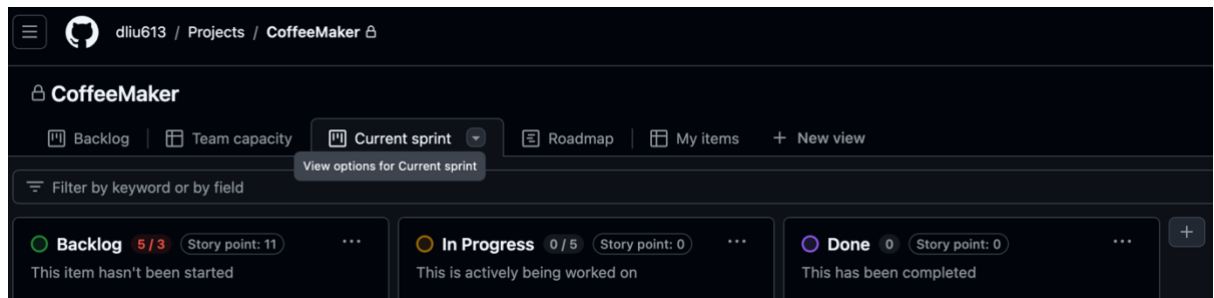
- Now, input all the user stories you identified in the previous step into the Backlog column. Below is an example, in which 3 sprints are created.



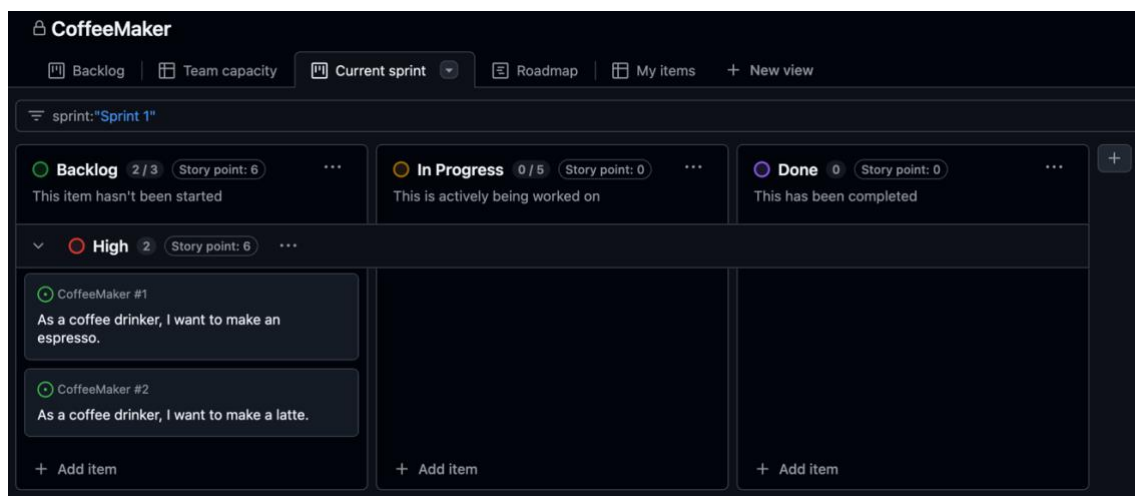
- Click **Current iteration** and then click the downwards triangle.



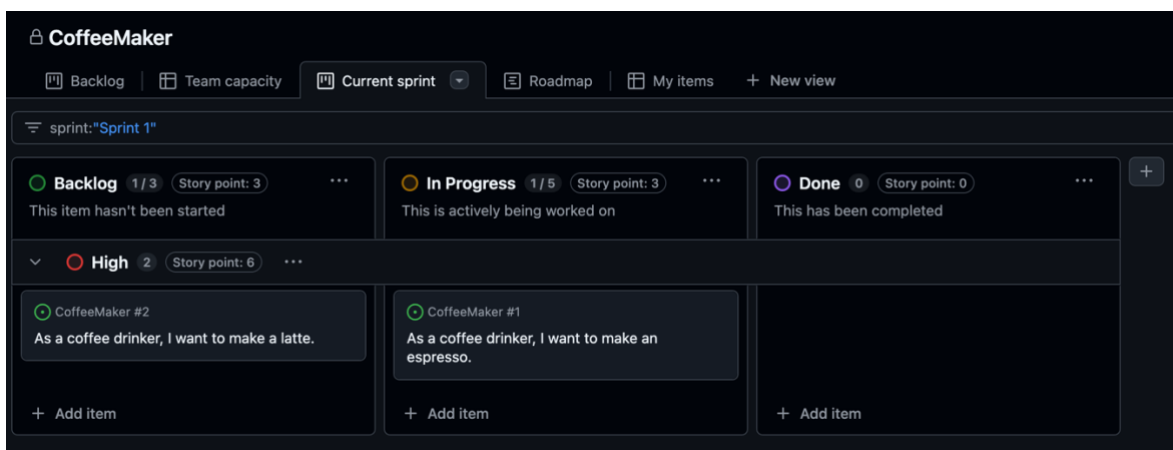
- Choose **Rename view** and change the **view name** from Current iteration to Current sprint and hit **Save** button.



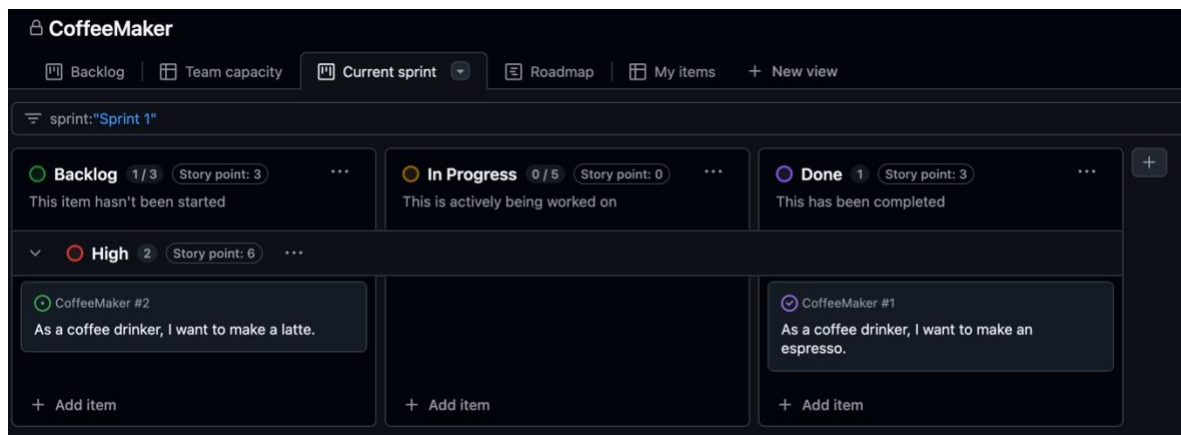
- Now, click the **Filter by keyword or by field** search bar and enter `sprint:"Sprint 1"` and then hit **Save** on the right side of the search bar, you will see all the user stories in Sprint 1. You can also check other sprints by changing field names, e.g., enter `sprint:"Sprint 2"` will show you all the user stories in Sprint 2.



- When you want to implement the first user story, drag it into **In Progress** column.



- If you finish this user story, drag it into **Done** column.



Finally, for more information about managing projects in Github, you could refer to this [online tutorial](#).