

CS304

Software Engineering

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Welcome to the first lab!

Objective today:

- Get to know your classmates for the class project
- Learn about roles in software development teams
- Play a game on Flame of Open Source (useful intro to the project)

Let's play a game

- Many roles exist in a software development team
- How to play?
 1. Learn about the responsibilities for each role
 2. Decide which role you want to play
 3. Answer interview question about each role
 1. **Do not search online for answer!**
 4. Decide which role you want to play based on your suitability

Which roles do you want to be?

- Software Engineer
- Software Engineer in Test
- Technical Project Manager

What do Software Engineer do?

- Responsibilities:
 - Designing and coding tools.
 - A team player who works well in a collaborative environment with peers in other development disciplines, Quality and Program Management.

What do Software Engineer in Test do?

- Responsibilities:
 - Build advanced automated test suites to exercise our applications.
 - Work with the development and test engineering teams to automate testing.
 - Conduct research on emerging technologies.
 - Analyze and decompose a complicated software system and design a strategy to test this system.

What do Technical Project Manager do?

- Responsibilities:
 - Lead project as technical architect in initiation phase to conclude right approach with several team
 - Work as project manager to make project through collaboration with development manager and product manager
 - Involve in multiple project executions simultaneously

Which role you want to be?

Discuss with your classmates sitting around you

- Why you want to be ...?
- Do your classmate think that you are suitable?

Discuss around ~5 minutes

Which role you want to be?

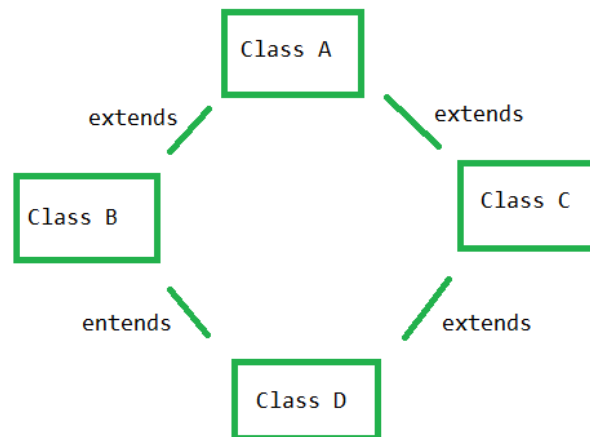
- How many of you want to be a Software Engineer?
- How many of you want to be a Software Engineer in Test?
- How many of you want to be a Technical Project Manager?

Now try answering interview questions for all roles..

Software Engineer

A real interview quick question I get when I was a student:

- Does Java support **Multiple inheritance**?



Discuss around
~2 minutes

Software Engineer In Test

Interview Question:

- Write test cases for adobe reader

Discuss around
~10 minutes

Technical Project Manager

Interview Question:

- Choose a Google/Microsoft/Tencent/Apple product and talk about it, what do you like about it, what would you improve.

Discuss around
~10 minutes

Which role you want to be now?

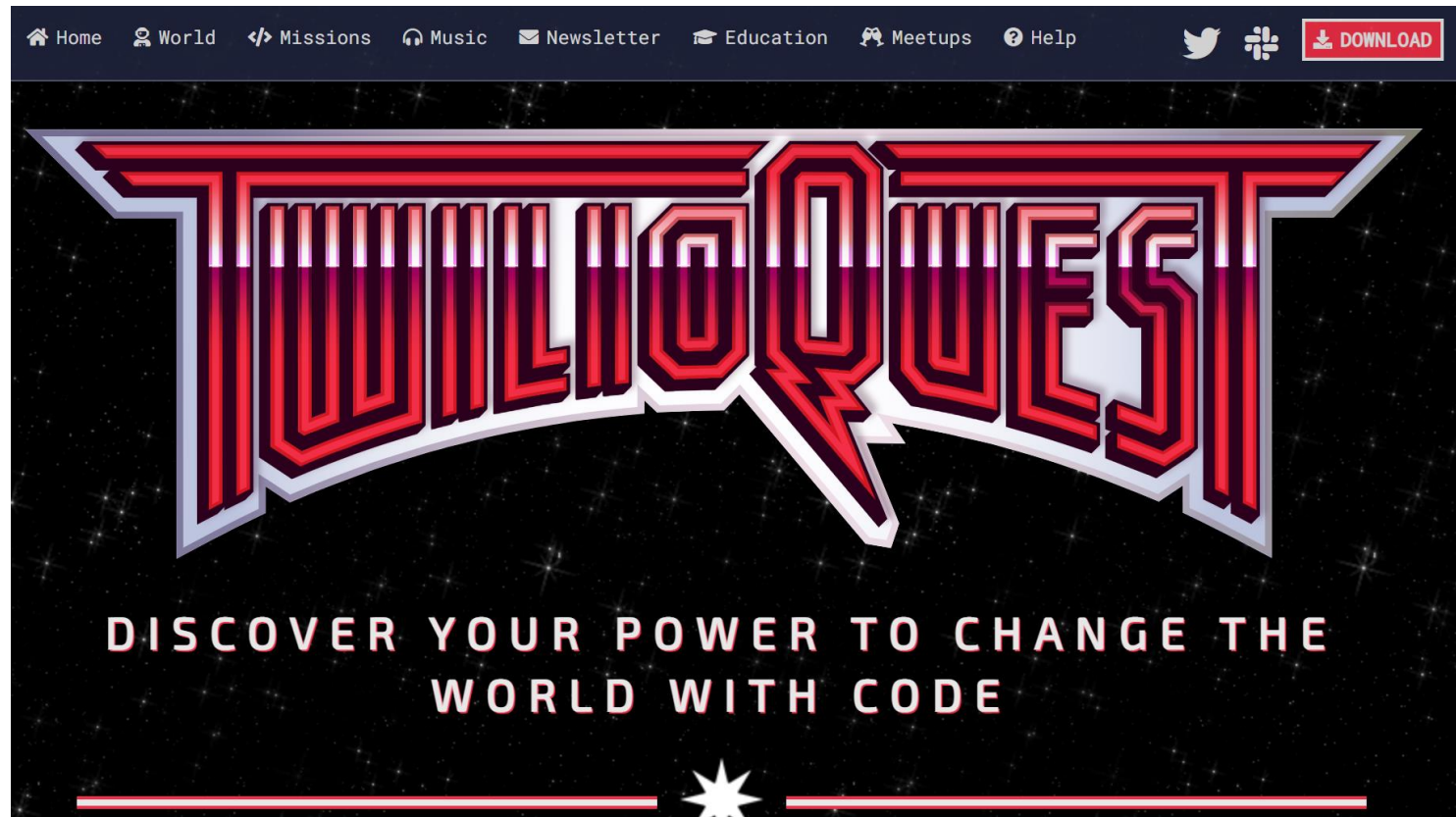
Discuss with your classmates sitting around you

- How many of you want to be a Software Engineer?
- How many of you want to be a Software Engineer in Test?
- How many of you want to be a Technical Project Manager?

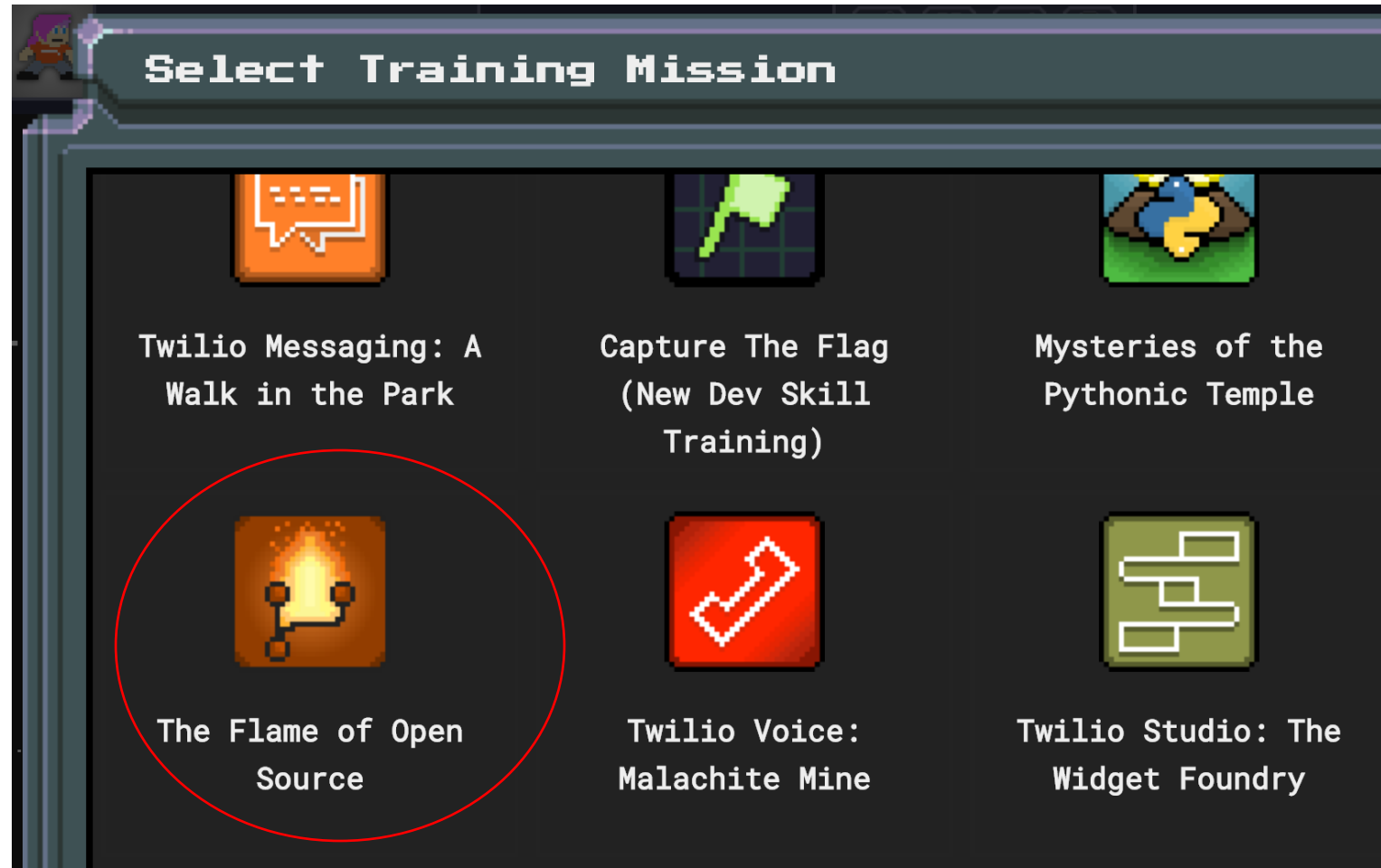
Part 2 – Flame of Open Source Game

TwilioQuest Game

- Download the twilioQuest game! (Need VPN)
- <https://www.twilio.com/quest>



Select The Flame of Open Source



First Step

- Create a GitHub account



Second Step

- Create a fork

The screenshot shows the GitHub interface for the repository 'stan6 / open-pixel-art', which is a fork of 'twilio-labs/open-pixel-art'. The repository has 0 stars and 2.3k forks. The main content area displays a list of files and their commit history:

File	Commit Message	Time
.github	chore: update bots	10 months ago
.vscode	feat: initial commit	14 months ago
__tests__	fix(danger): update dangerfile script to check before/after (twilio-l...	4 months ago
_data	feat(pixels): add my new pixel please (twilio-labs#2963)	8 hours ago
assets	fix(party): adjust canvas size for party mode (twilio-labs#1937)	9 months ago
docs	docs: add dutch translation for CONTRIBUTING.md (twilio-labs#1778)	12 months ago
scripts	chore: add merge driver (twilio-labs#991)	13 months ago
styles	feat: add Avatar Toggle (twilio-labs#1081)	13 months ago

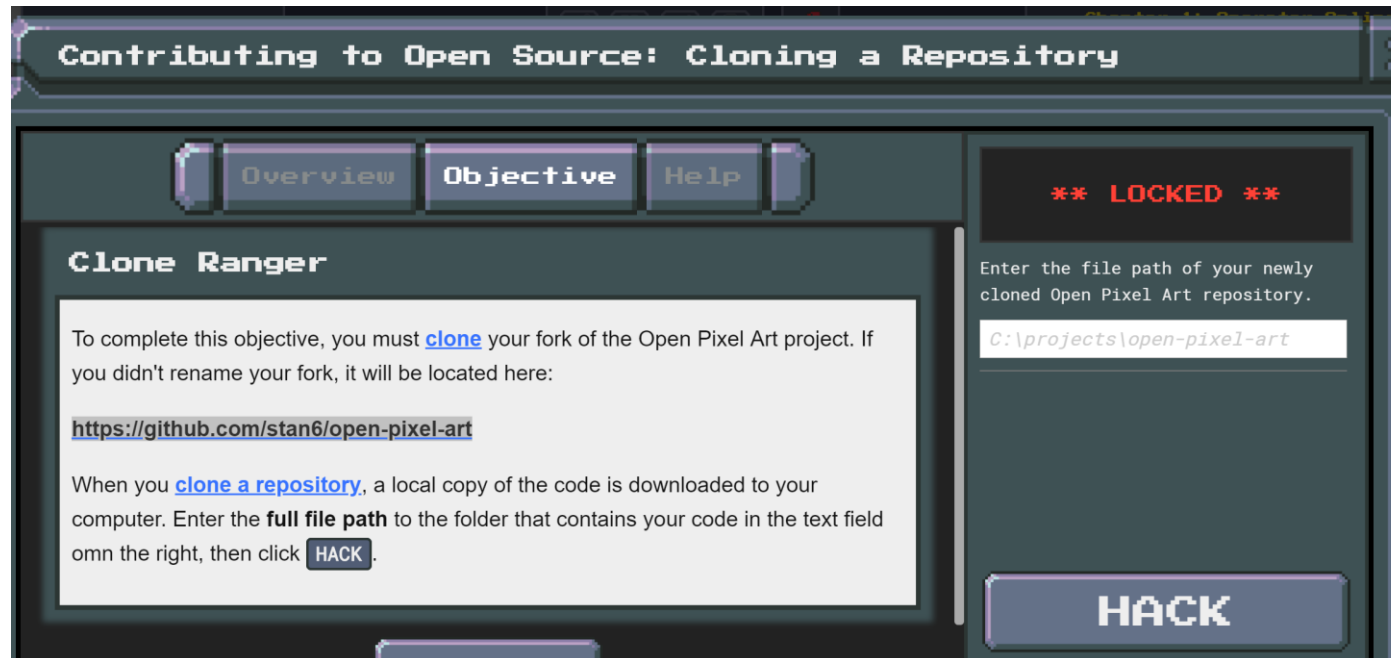
The right sidebar contains sections for 'About' (describing the project as a collaborative pixel art project), 'Releases' (no releases published), and 'Packages' (no packages published).

Third Step

- **Install git**
 - <https://git-scm.com/book/en/v2/Getting-Started-Installing-Git/>

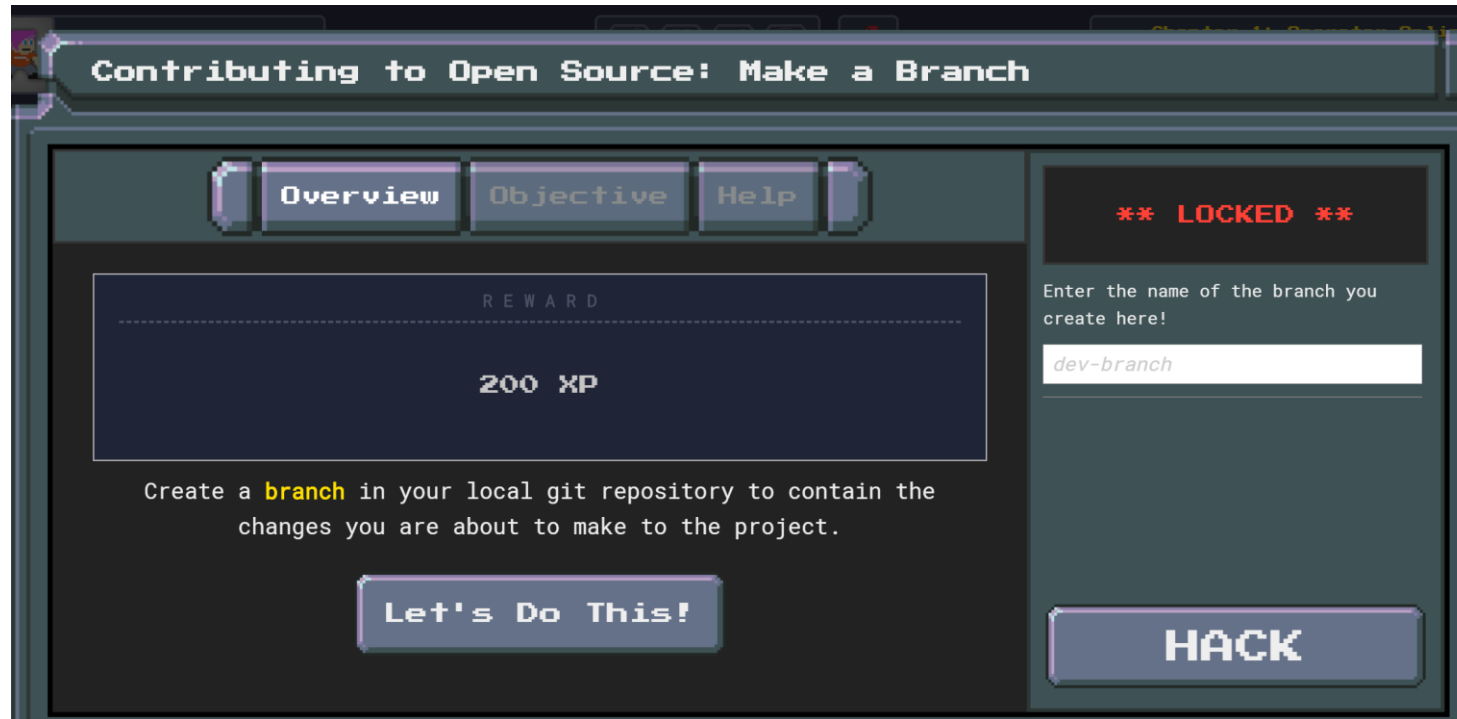
4th Step

- Clone the open-pixel-art repository according to the game



Fifth Step

- Make a branch according to the game



Sixth Step

- Make your first contribution!



Without VPN

Two ways

1. Use this link: <http://10.20.71.79:10086/lab1/>
2. Or follow the offline instruction in the following slides

Screen 1



Screen 2



Screen 3



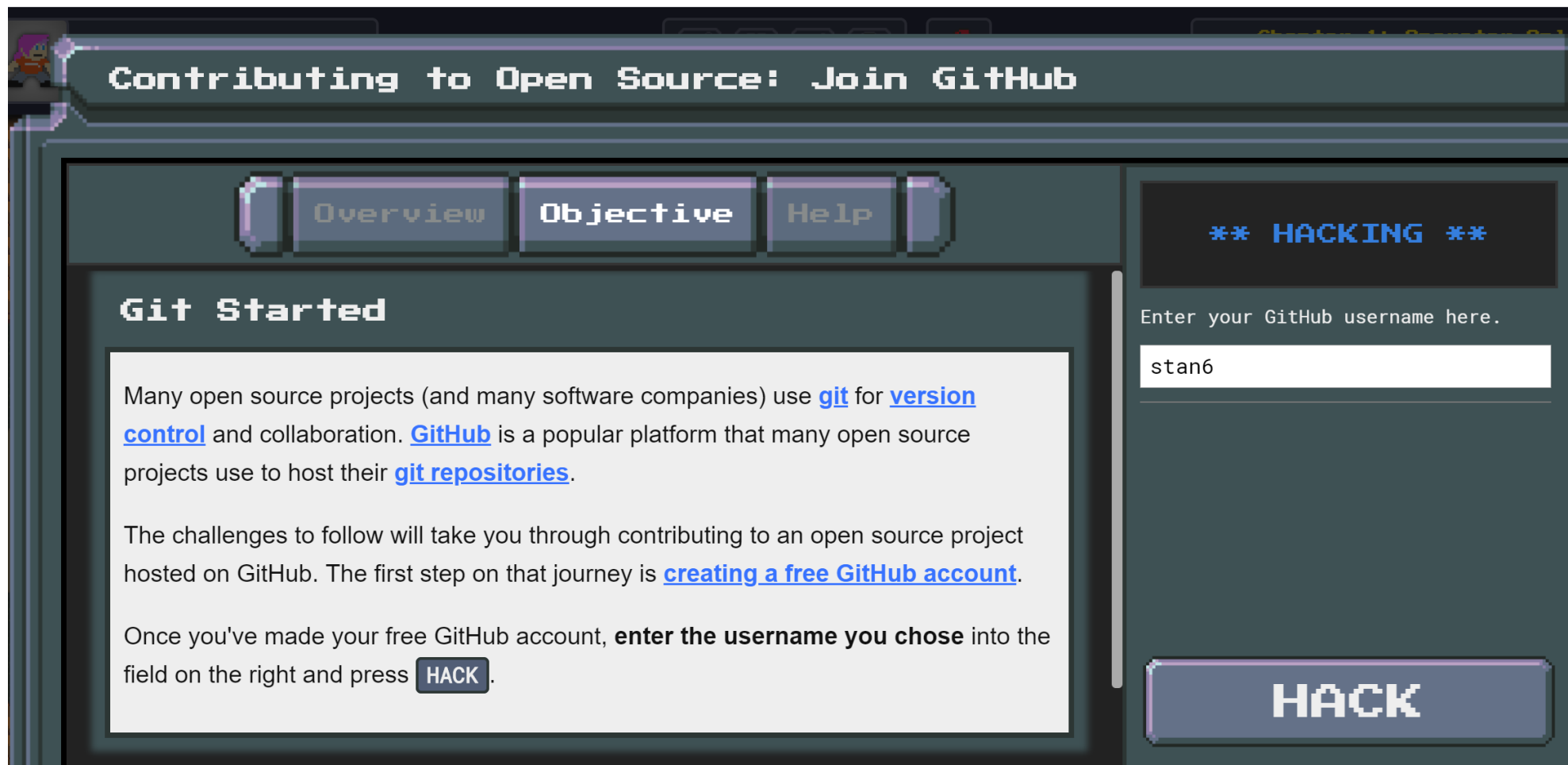
Screen 4



Screen 5



Screen 6



Contributing to Open Source: Join GitHub

Overview Objective Help

Git Started

Many open source projects (and many software companies) use [git](#) for [version control](#) and collaboration. [GitHub](#) is a popular platform that many open source projects use to host their [git repositories](#).

The challenges to follow will take you through contributing to an open source project hosted on GitHub. The first step on that journey is [creating a free GitHub account](#).

Once you've made your free GitHub account, **enter the username you chose** into the field on the right and press **HACK**.

**** HACKING ****

Enter your GitHub username here.

stan6

HACK

Screen 7

Contributing to Open Source: Join GitHub

OverviewObjectiveHelp

Lets Make a GitHub Account

What is GitHub?

GitHub is a website that hosts open source code on the internet so that developers around the world can collaborate on it remotely. It runs on a technology for code sharing called `git` that we will learn a little about in later objectives.

GitHub Signup Process

Follow the GitHub sign up process to [create a new user account](https://github.com/join). You will only need a free plan to complete this objective, and as long as you're working on open source software you'll only ever need the free plan!

**** HACKING ****

Enter your GitHub username here.

stan6

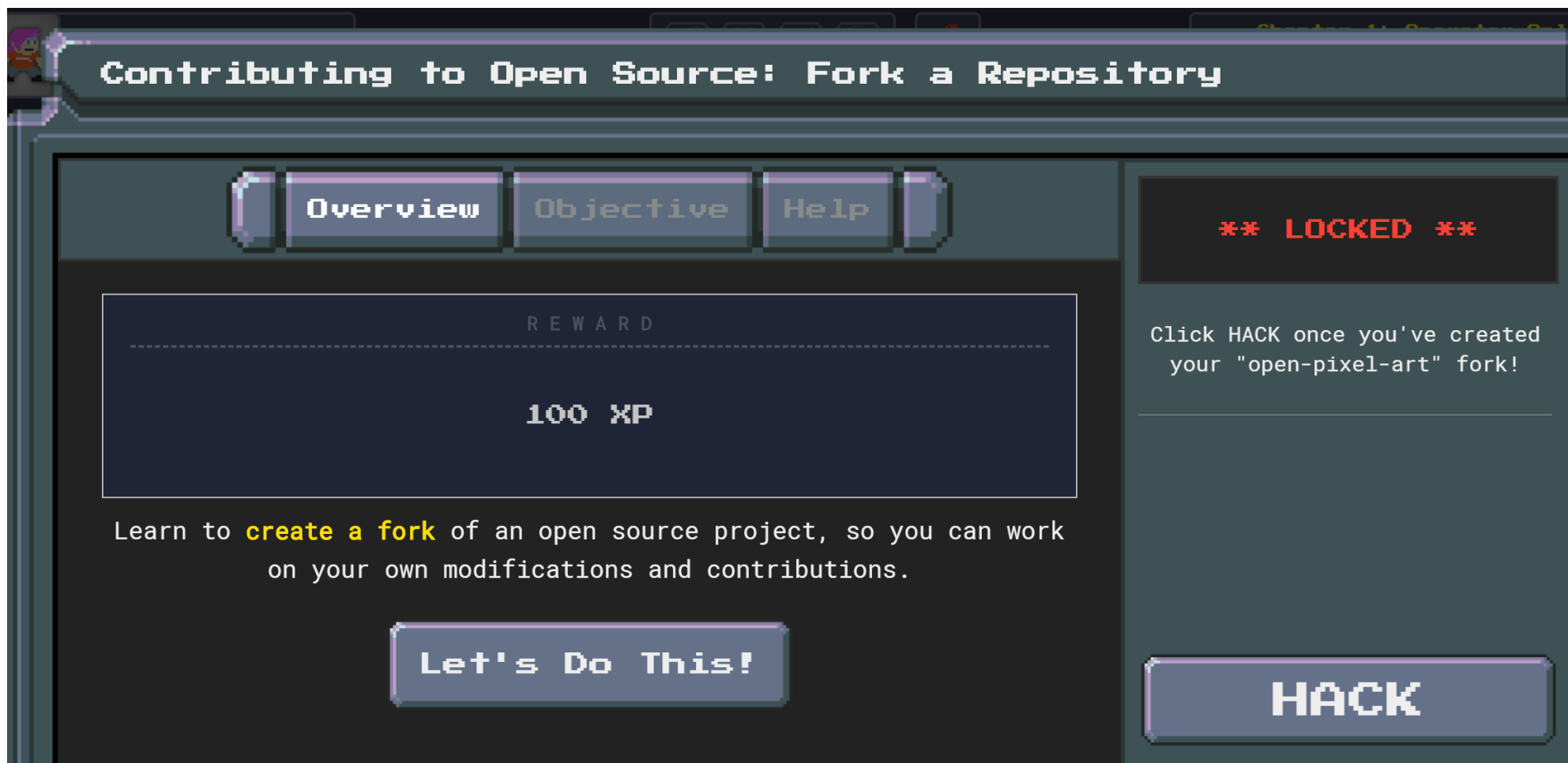
HACK

<https://github.com/join>

Screen 8



Screen 9



Screen 10



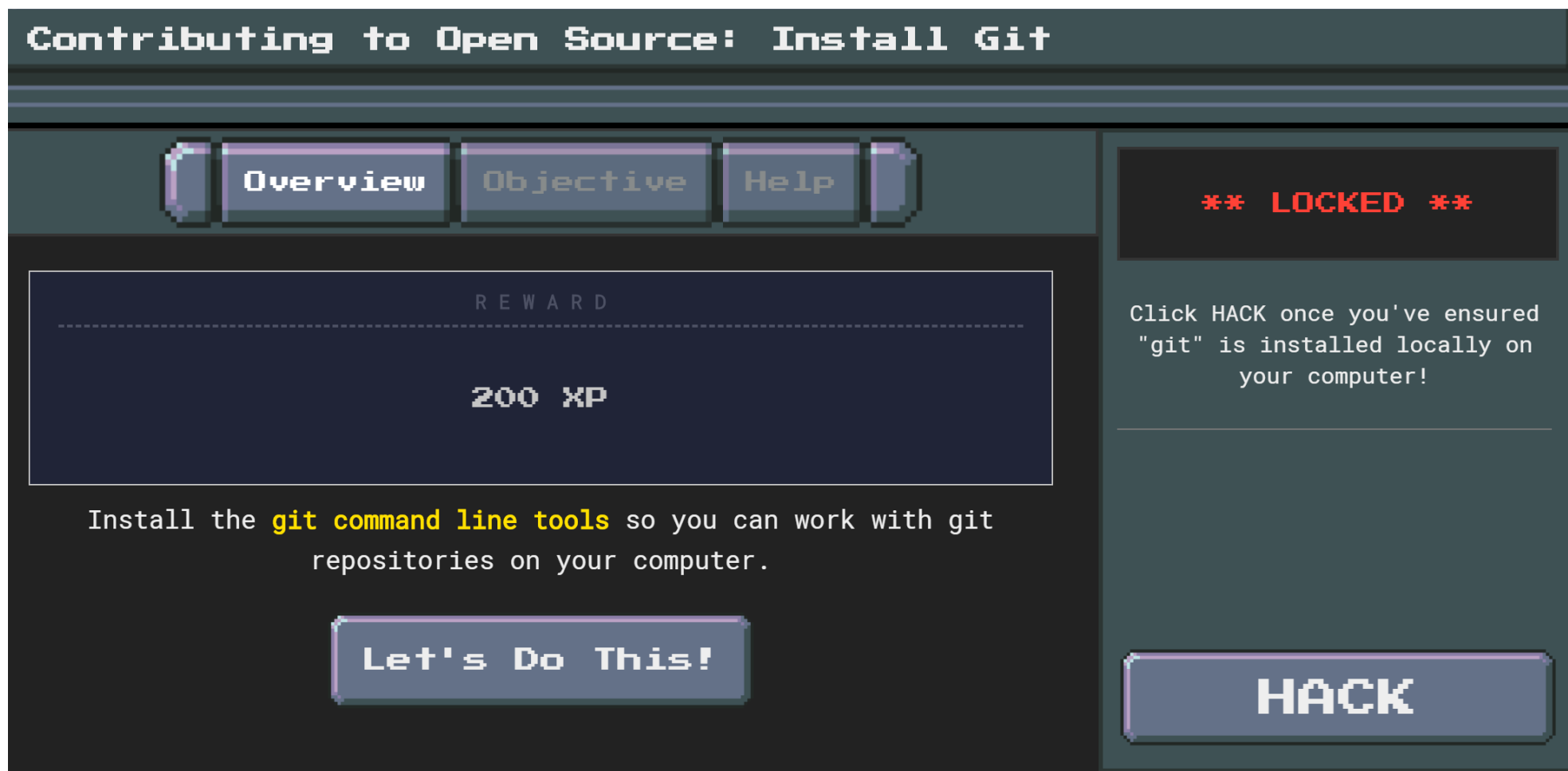
create a fork: <https://help.github.com/en/articles/fork-a-repo>

Open Pixel Art: <https://github.com/twilio-labs/open-pixel-art>

Screen 10



Screen 11



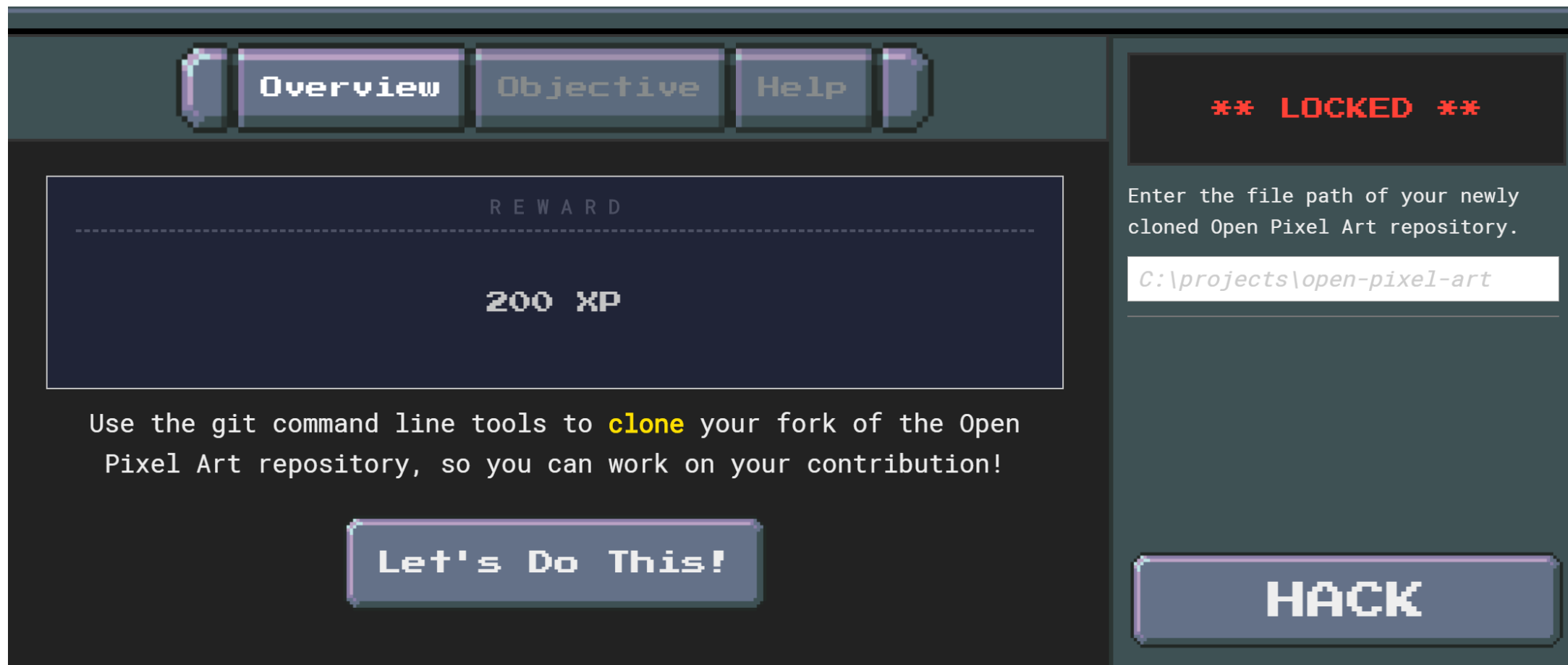
Screen 12



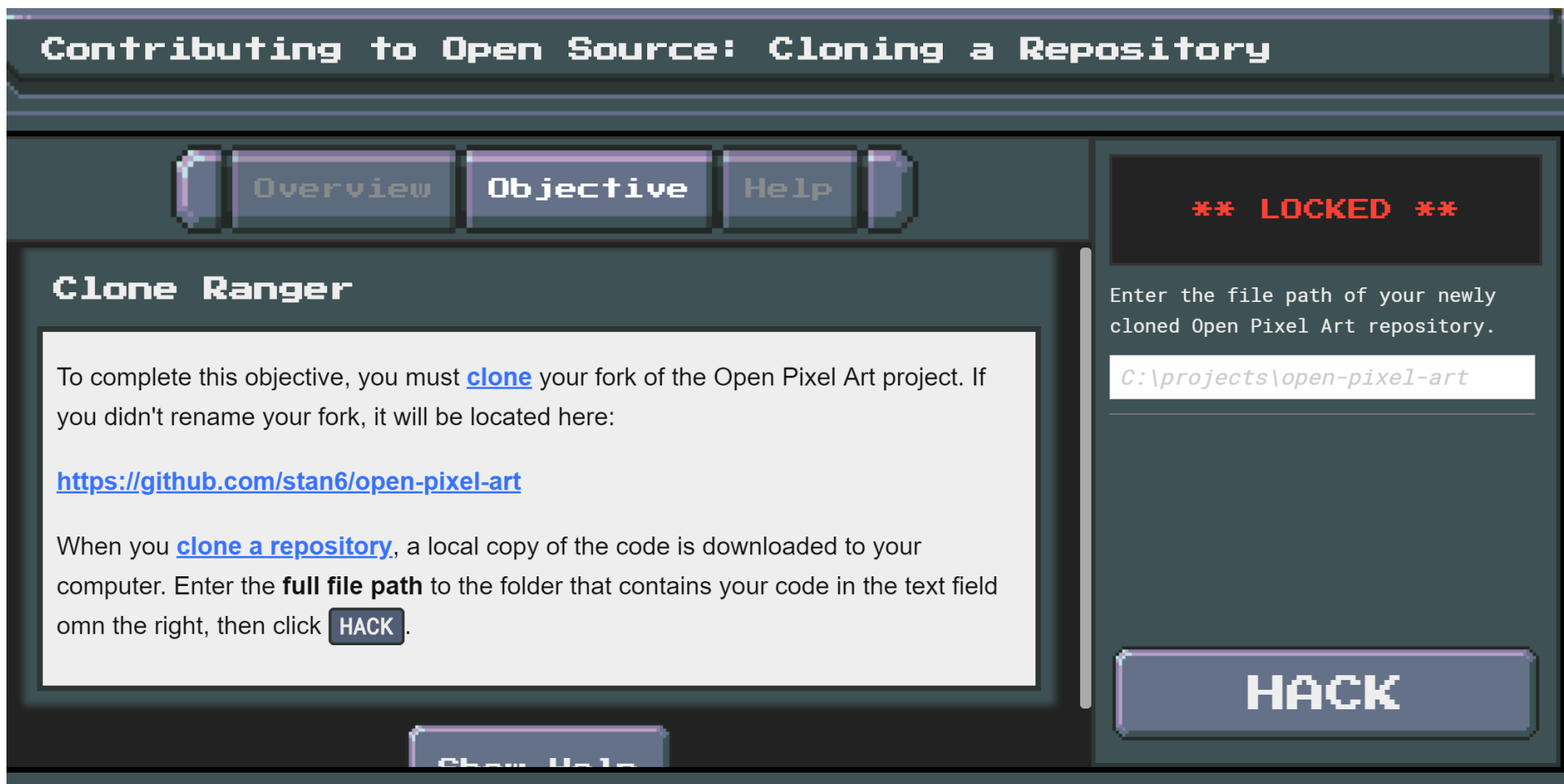
Screen 13



Screen 14



Screen 15

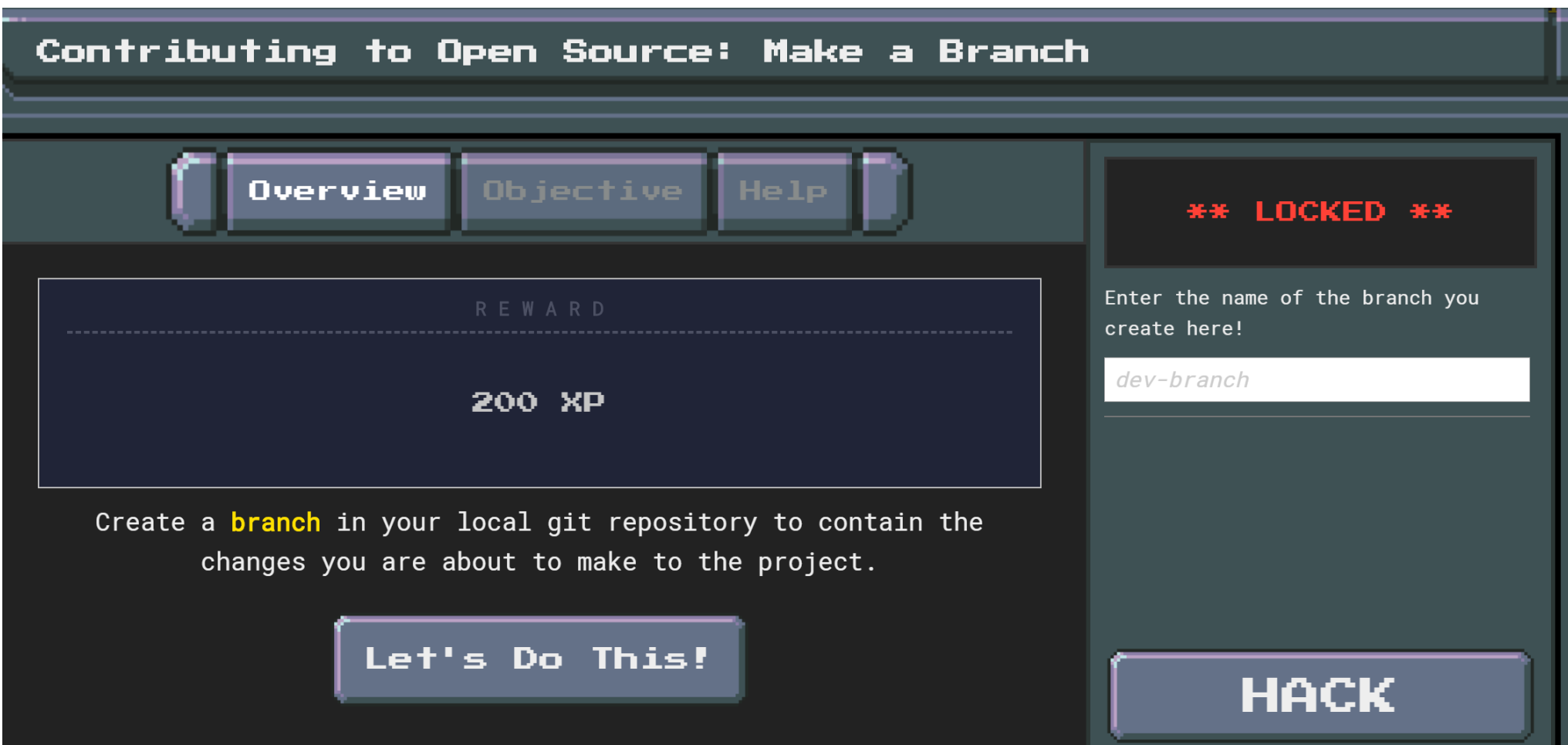


clone: <https://git-scm.com/docs/git-clone>

Screen 16



Screen 17



Screen 18



Create a branch: <https://git-scm.com/book/en/v2/Git-Branching-Basic-Branching-and-Merging>

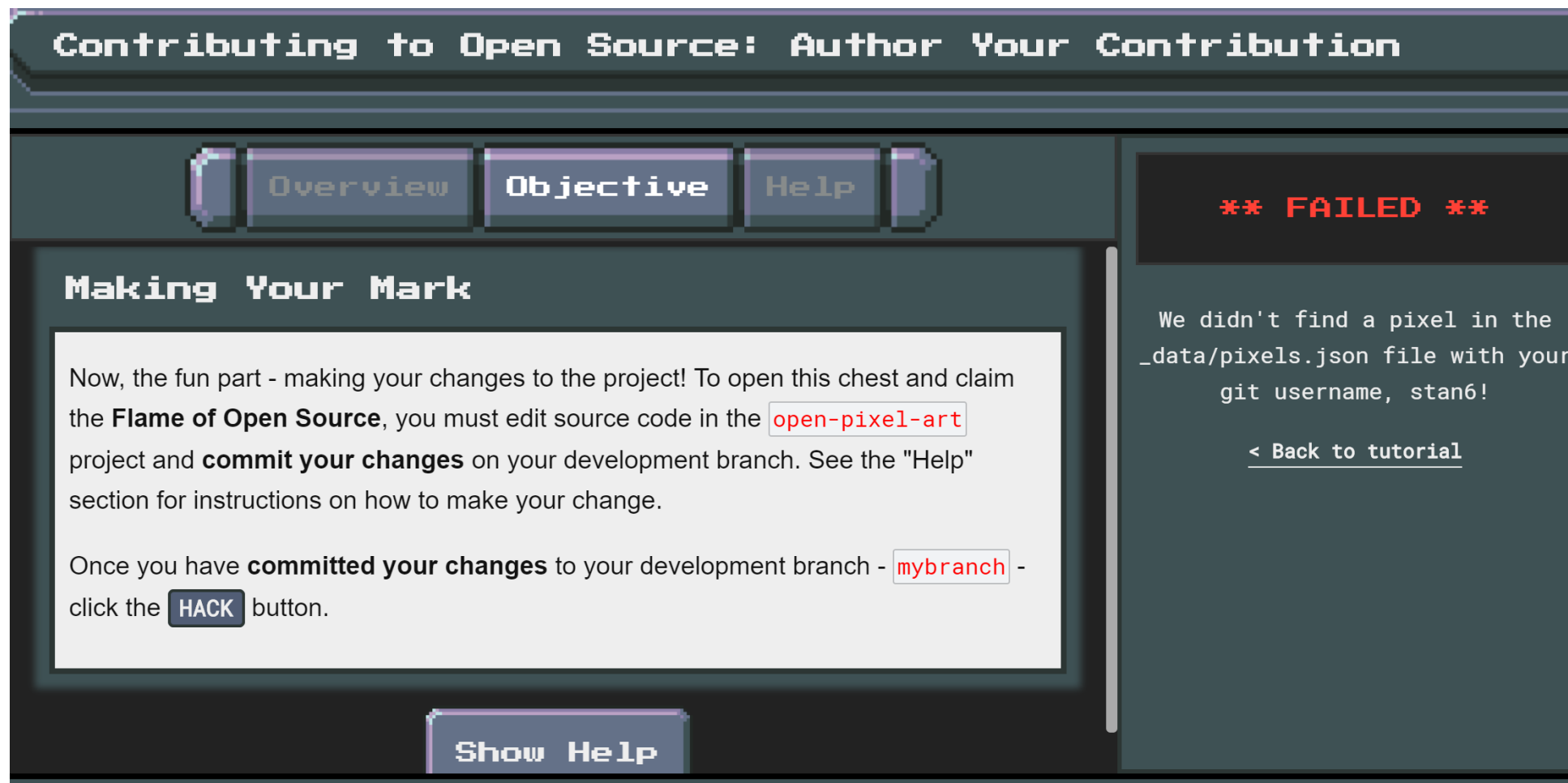
Screen 19



Screen 20



Screen 21



Screen 22

Contributing to Open Source: Author Your Contribution

Pixel Time

Now that we have our project copied locally, and a development branch created, we are ready to make our contribution. But before that can happen, we need to set up the project and get it running! This way we can check out our changes on our own computer before pushing them back up to GitHub for everyone else to see.

Node.js and NPM

The Open Pixel Art project is build on top of Node.js and will use npm as well. This objective assumes you understand how npm works and have it installed.

If you're unfamiliar with these tools, follow this installation guide to get Node.js installed. After you have Node.js installed, you should be able to blindly copy and paste the npm commands in this objective.

Install the project dependencies

Now that you have Node.js and npm installed, in the main folder of your Open Pixel Art project run the following command:

```
npm install
```

This will download all of the code dependencies this project needs to run onto your computer. You should now see status messages as the dependenices install.

This process can take some time!

Screen 23

Boot it up

Now that our project is installed and configured, lets start it up locally. Run the following command in the root directory of your repository:

npm start

This will start a local web server on your computer that is running your own personal version of the Open Pixel Project. In the terminal, after the server has started you should see a URL printed that will usually be:

http://localhost:8080

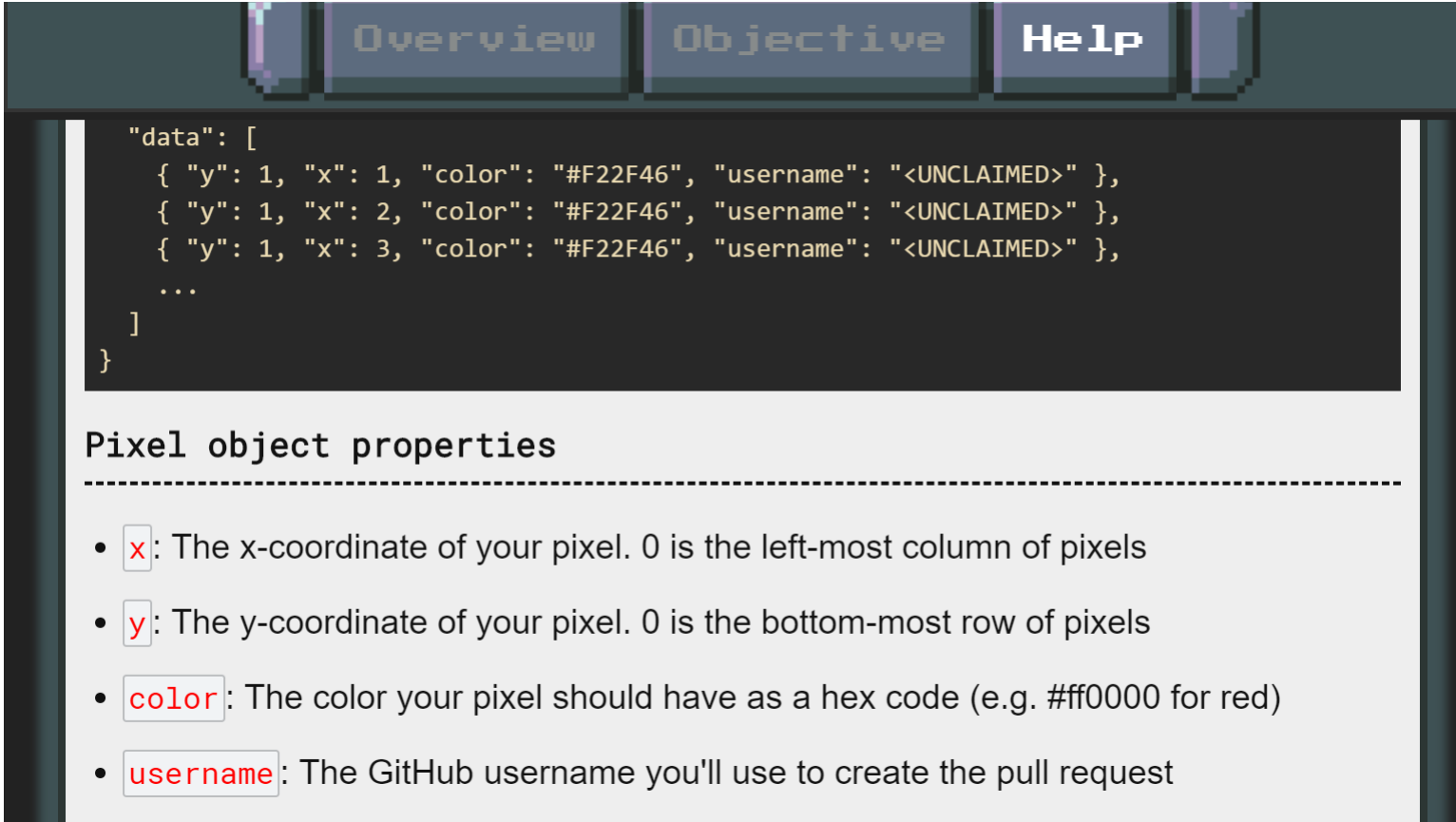
Open this page in your web browser to see your own local Open Pixel Art project page live!

Pixels.json

Now that we can see our pixels locally, let's learn how to change them! Open the Open Pixel Art project in a text editor of your choice! Now, open up the file located at `_data/pixels.json`.

Screen 24

Inside Pixel.json file you'll find a JSON array of pixel objects that look like this:



```
"data": [  
  { "y": 1, "x": 1, "color": "#F22F46", "username": "<UNCLAIMED>" },  
  { "y": 1, "x": 2, "color": "#F22F46", "username": "<UNCLAIMED>" },  
  { "y": 1, "x": 3, "color": "#F22F46", "username": "<UNCLAIMED>" },  
  ...  
]
```

Pixel object properties

- **x**: The x-coordinate of your pixel. 0 is the left-most column of pixels
- **y**: The y-coordinate of your pixel. 0 is the bottom-most row of pixels
- **color**: The color your pixel should have as a hex code (e.g. #ff0000 for red)
- **username**: The GitHub username you'll use to create the pull request

Screen 25

Commit



Screen 26

```
git commit -m "feat(pixels): add my new pixel"
```



Screen 26



Final Screen

