Design Requirement Document

Prepared by

Jasmine So Yee CHEUNG

PhD Chemistry Student, Massachusetts Institute of Technology

Email: [jasminesyc2000@gmail.com](mailto:jasminesyc2000@gmail.com)

LinkedIn: <https://www.linkedin.com/in/so-yee-cheung/>

# Version History

|  |  |  |
| --- | --- | --- |
| Date | Version # | Changes |
| June 8th, 2023 | 0.1 | Initial document |

# Summary

At the 242nd Meeting of the American Astronomical Society, I joined the hack day on June 8th, 2023 where I met Dr. Kelly Lepo, education and outreach scientist at the Space Telescope Science Institute, which is the science operations center for the Hubble Space Telescope, James Webb Space Telescope and the Nancy Grace Roman Space Telescope.

Dr. Lepo had an idea for public outreach, which is to create a game for people to learn about telescopes by “building” one themselves. After discussion, we decided we can first try building a prototype website. On the website, the user should be able to select desirable properties of the telescope while taking into account the cost of the features and the budget available for building the telescope.

# Project Objectives

1. To create a UI design of the application.
2. To create the web application in Python using the Flask framework.

# Project Scope

1. **UI design**
   1. Wireframe
   2. Prototype
2. **Development**
   1. Signup, login and logout
   2. Create telescope
   3. Edit telescope
   4. Delete telescope
   5. Inventory of all telescopes created
3. **Testing**

# Design Requirements

1. **Signup**
   1. To allow creation of user account
   2. Credential fields:
      1. Username (unique)
      2. Email
      3. Password
2. **Login**
   1. To allow users to login with pre-created login credentials
   2. Credential fields:
      1. Email
      2. Password
3. **Logout**
   1. To allow users to logout the logged in accounts
4. **Navigation bar**
   1. Create telescope
   2. Inventory (showing all the telescopes that the logged in user created)
   3. User greetings (show the username of logged in user)
   4. Logout
5. **Create telescope**
   1. Instructions for users to create telescope, specifying mandatory fields
   2. Fields:
      1. Telescope name
      2. Class
      3. Location
      4. Wavelength range (multiple allowed)
      5. Operating temperature (multiple allowed)
      6. Design
      7. Optics
      8. Field of view (multiple allowed)
      9. Instrument (multiple allowed)
      10. Add-ons (optional, multiple allowed)
   3. Button to submit the telescope for creation
   4. Ensure the cost of telescope does not exceed the budget
   5. Make sure the budget changes depending on the class of telescope selected.
6. **Inventory of all telescopes**
   1. Show all telescopes created by the logged in user
   2. Show edit and delete buttons for every telescope
   3. Only logged in user can edit or delete the telescopes that they created
   4. Show all properties of the telescopes according to the ones created or edited.
7. **Edit telescope**
   1. The edit fields are the same as the create telescope fields. The edit fields are pre-populated with the existing data
   2. Upon changing the edit fields and clicking the update button, the app makes sure to check that all fields are valid and cost does not exceed budget.
8. **Delete telescope**
   1. Upon clicking the delete button in the inventory, ask the user to confirm before actually deleting the telescope.

Figma design link: <https://www.figma.com/file/hPHpn9HBrmu5F9uhcalZZe/telescopes?type=design&node-id=0%3A1&mode=design&t=SSOZiY3Z2OCCLuZt-1>