

Project Phase 2: OO Analysis and Design

ITCS431 Software Design and Development

Present to

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Use Case Description

Use Case Name: Login	ID: U001	Importance Level: High
Primary Actor: User		Use Case Type: Essential

Stakeholders and Interests: Science observer and astronomer

Brief Description: This use case details how users log in the Gemini website.

Trigger: the user wants to login into the system to review and operate an OCS.

Type: Internal

Relationships:

- Association: User

Include: -Extend: -

- Generalization: -

Normal Flow of Events:

- 1. The astronomer and science observer input email and password.
- 2. The astronomer and science observer clicks the login button to enter the website.

Subflows:

In case of any discrepancies or issues, the users may:

S-1 Users correct their email or password.

Alternate/Exceptional Flow:

If the users' accounts don't exist, they have to inform the support to add their accounts.

Use Case Name: Create a Science Plan	I D: U002	Importance Level: High
Primary Actor: Astronomer		Use Case Type: Essential

Stakeholders and Interests: Astronomers-interested

Brief Description: This use case details how an astronomer creates a plan on OCS.

Trigger: The astronomer decides to create new science plan.

Type: Functional

Relationships:

Association: Astronomer

Include: Log inExtend: -

- Generalization: -

Normal Flow of Events:

- 1. The astronomer logs in to the Gemini website.
- 2. The astronomer selects the science plan session.
- 3. The astronomer selects the "Create Science Plan" option on the interface.
- 4. The astronomer inputs the science plan details, including the creator, submitter, objectives, star system, and other necessary instruments into the form provided on the Gemini website.
- 5. The astronomer clicks a save button to create a science plan.
- 6. The astronomer reviews all the details of the science plan for accuracy.

Subflows:

Invalid Input

- S-1 The system validates inputs and flags any errors or conflicts.
- S-2 Astronomer corrects the details and resubmits the plan.

Alternate/Exceptional Flow: -

Use Case Name: Test a science plan	ID: U003	Importance Level: High
Primary Actor: Astronomer		Use Case Type: Detail, Essential

Stakeholders and Interests: Astronomers-interested

Brief Description: This use case details the process of testing existing science plans on the OCS.

Trigger: The astronomer decides to test a science plan on the OCS for the test result.

Type: Functional

Relationships:

- **Association:** Astronomer

- **Include:** Login,Operate the interactive observing (virtual telescope)

- Extend: -

- Generalization: -

Normal Flow of Events:

- 1. The astronomer logs in to the Gemini website.
- 2. The astronomer selects the science plan session.
- 3. The astronomer selects the science plan on the interface which lists all science plans.
- 4. The astronomer clicks on the test button in the selected science plan's interface.
- 5. The astronomer waits and reviews the result of testing a science plan.

Subflows:

In case of any discrepancies or issues, the astronomer may:

S-1: Send the result which may contain the error to the science observer

Alternate/Exceptional Flow:

If the system cannot process the science plan, an error is logged, and the support staff is notified for further investigation.

Use Case Name: Manage Astronomical Data	ID : U004	Importance Level: High
Primary Actor: Science Observer		Use Case Type: Detail, Essential

Stakeholders and Interests: Science Observer-Require

Brief Description: This use case details the process of managing astronomical data collected through the OCS. It encompasses the storage, organization, retrieval, and maintenance of data integrity.

Trigger: The need to manage existing data, and retrieve data for science plans and an analysis.

Type: Functional

Relationships:

Association: Science Observer

Include: LoginExtend: -

- Generalization: -

Normal Flow of Events:

- 1. The science observer logs in to the Gemini website.
- 2. If the science observer wants to manage all astronomical data in the OCS, the science observer goes to the astronomical data session to manage all astronomical data in the OCS.
- 3. The science observer reviews and selects the astronomical data to show on the website.

Subflows:

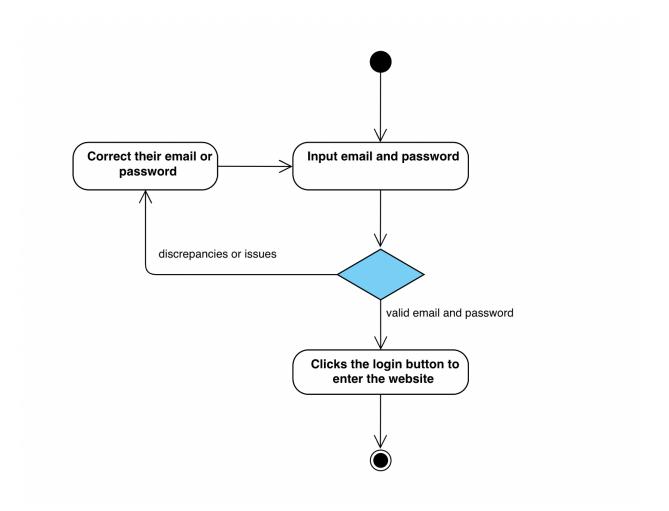
If there is a need to manage existing data, the system provides an interface to modify the astronomical data.

Alternate/Exceptional Flow:

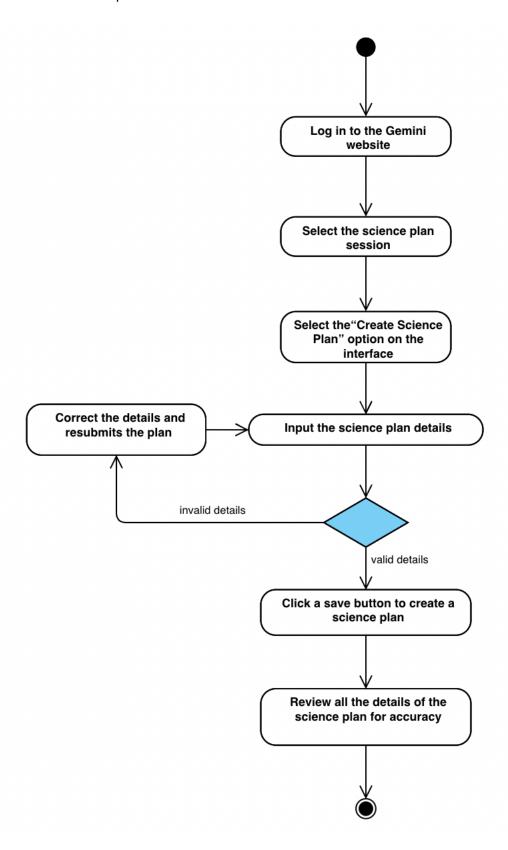
If the system detects inconsistencies or errors during data processing, it alerts the Science Observer, who must then resolve the issues or escalate them as needed.

Activity Diagram

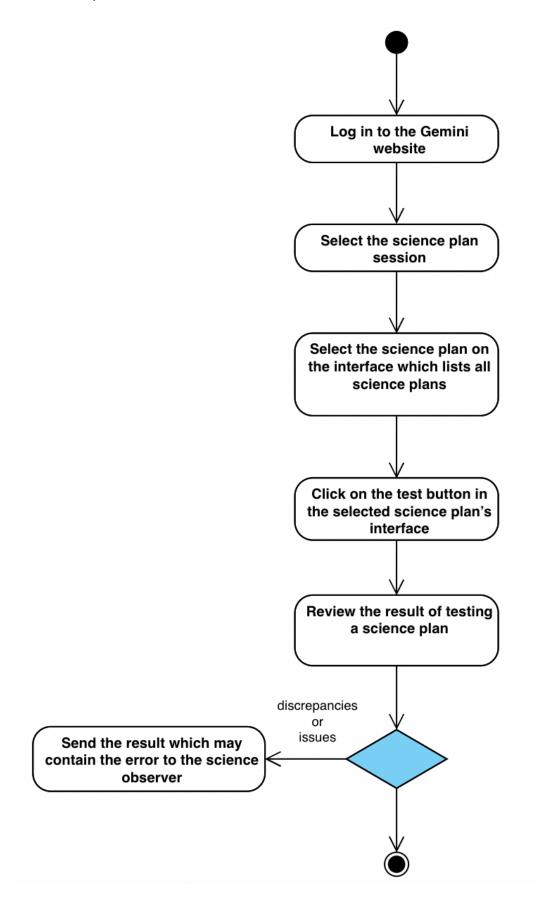
U001: Login



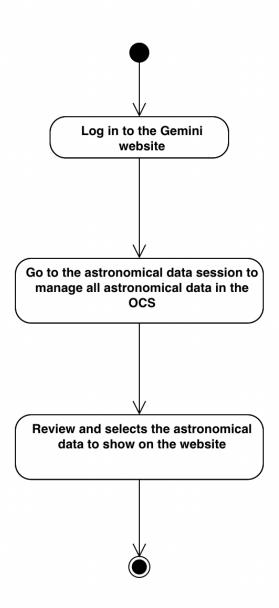
U002: Create a science plan



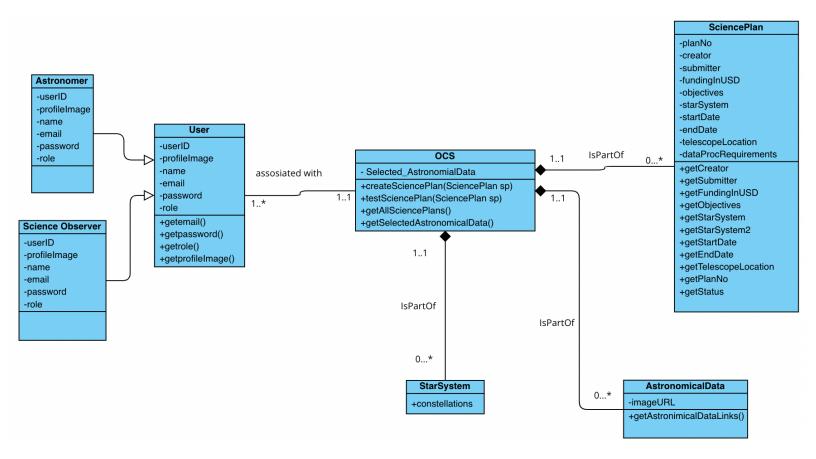
U003: Test a science plan



U004: Manage Astronomical Data

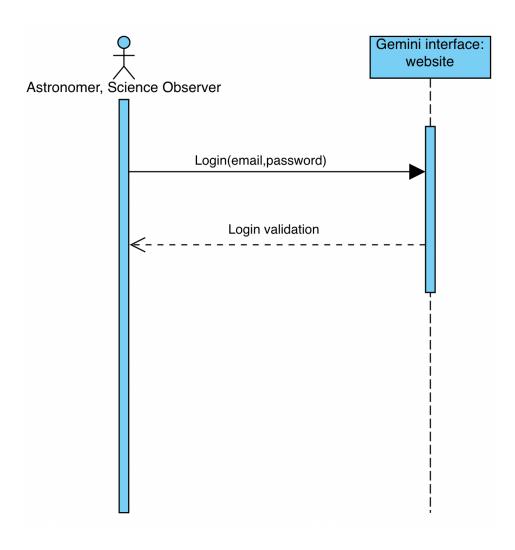


Class Diagram

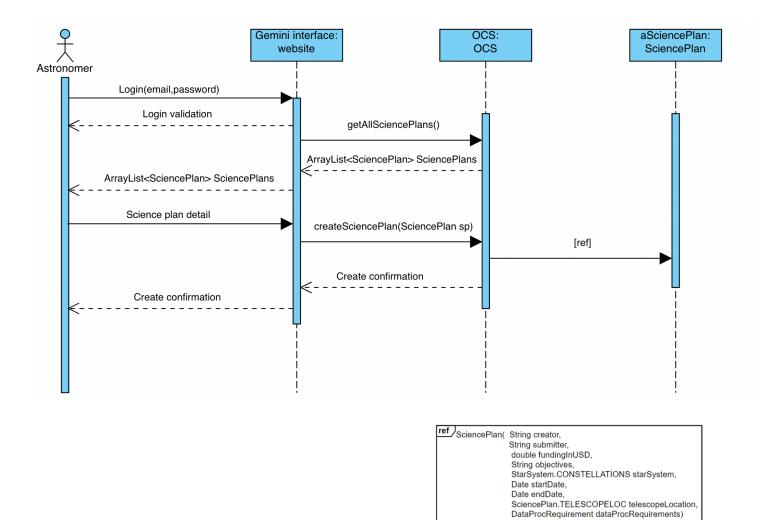


Sequence Diagram

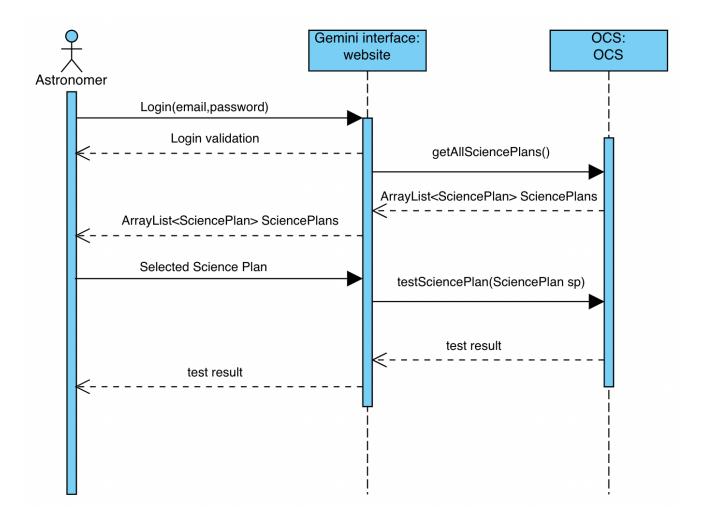
U001: Login



U002: Create a science plan



U003: Test a science plan



U004: Manage Astronomical Data

