Project Phase 2: OO Analysis and Design

ITCS431 Software Design and Development

Present to

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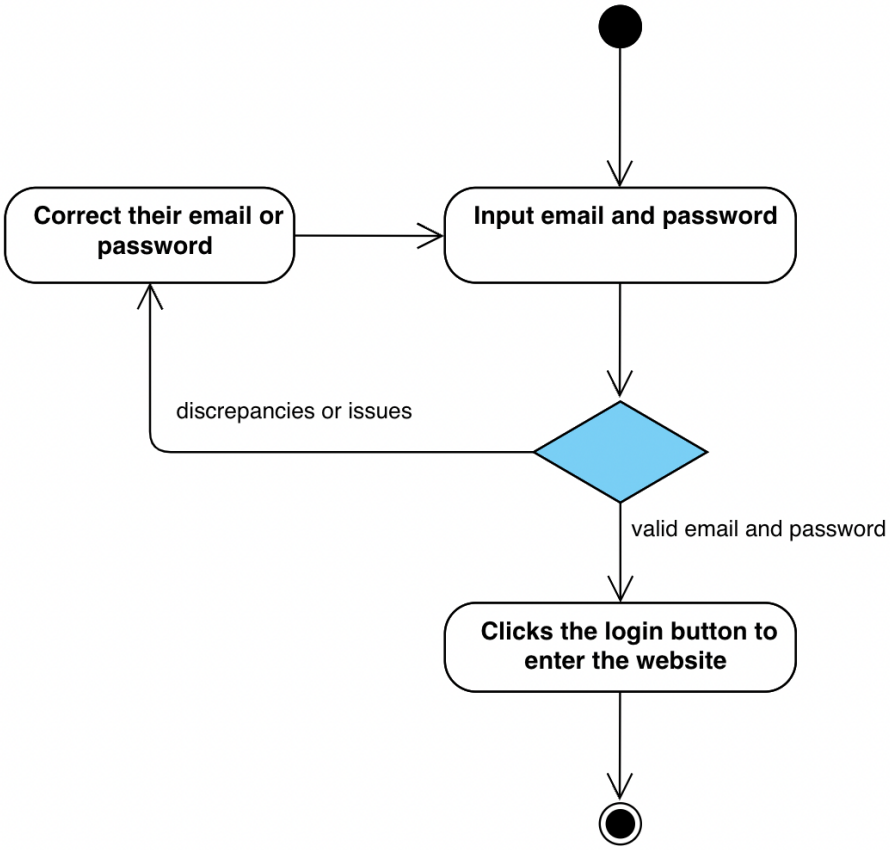
Login

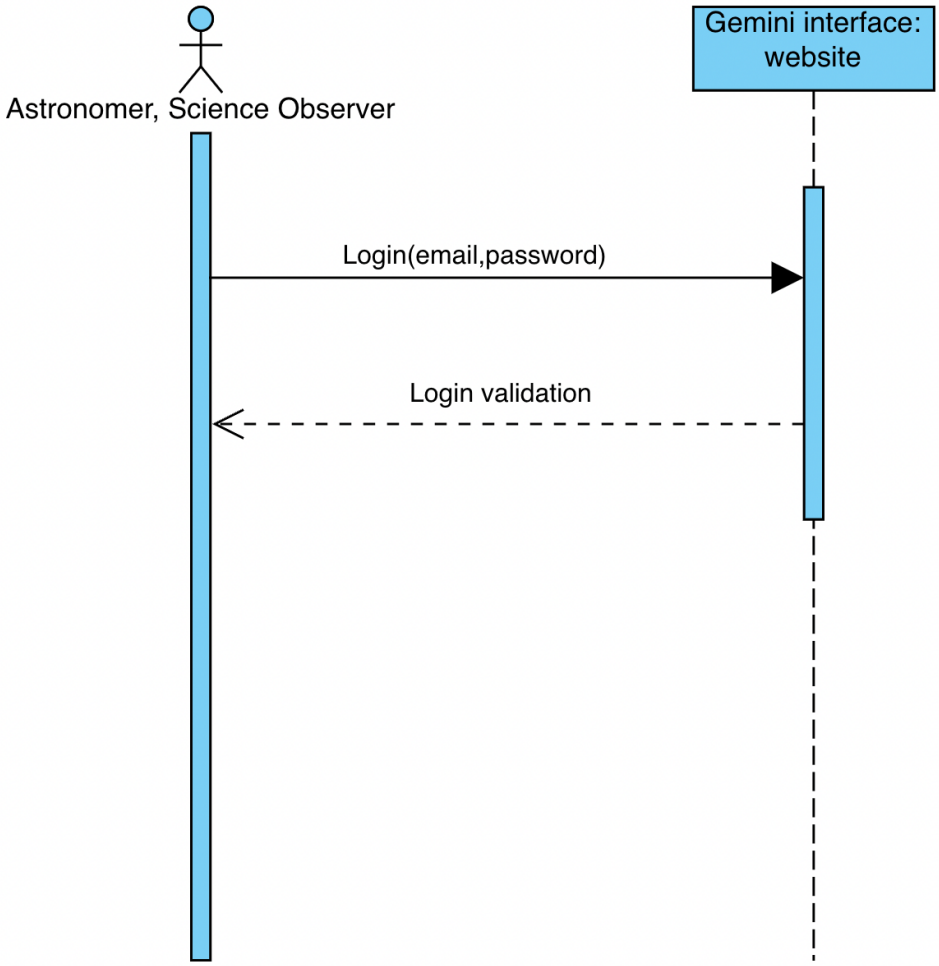
Use case description

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.		

Activity Diagram



Sequence Diagram

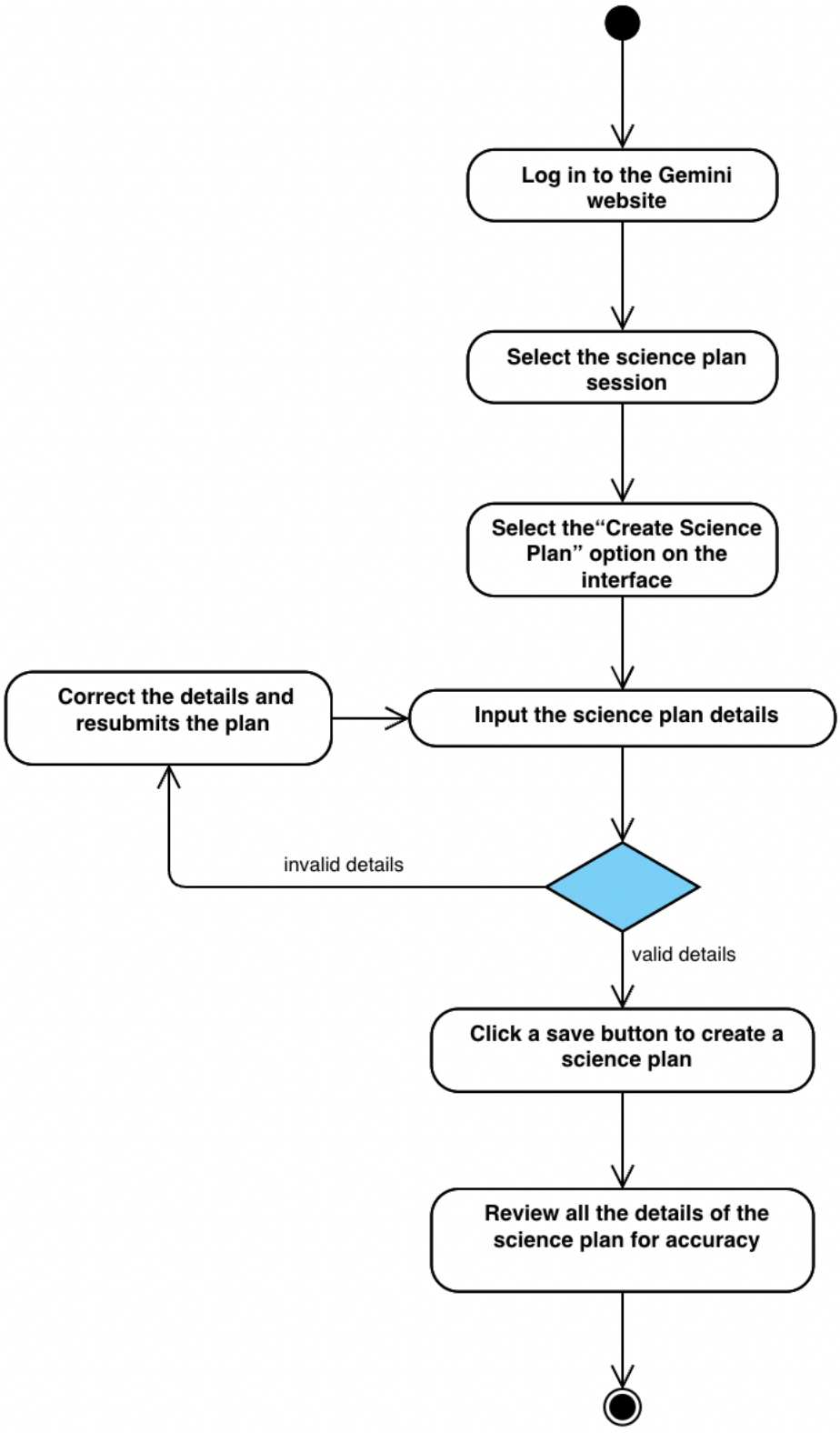


Create a science plan

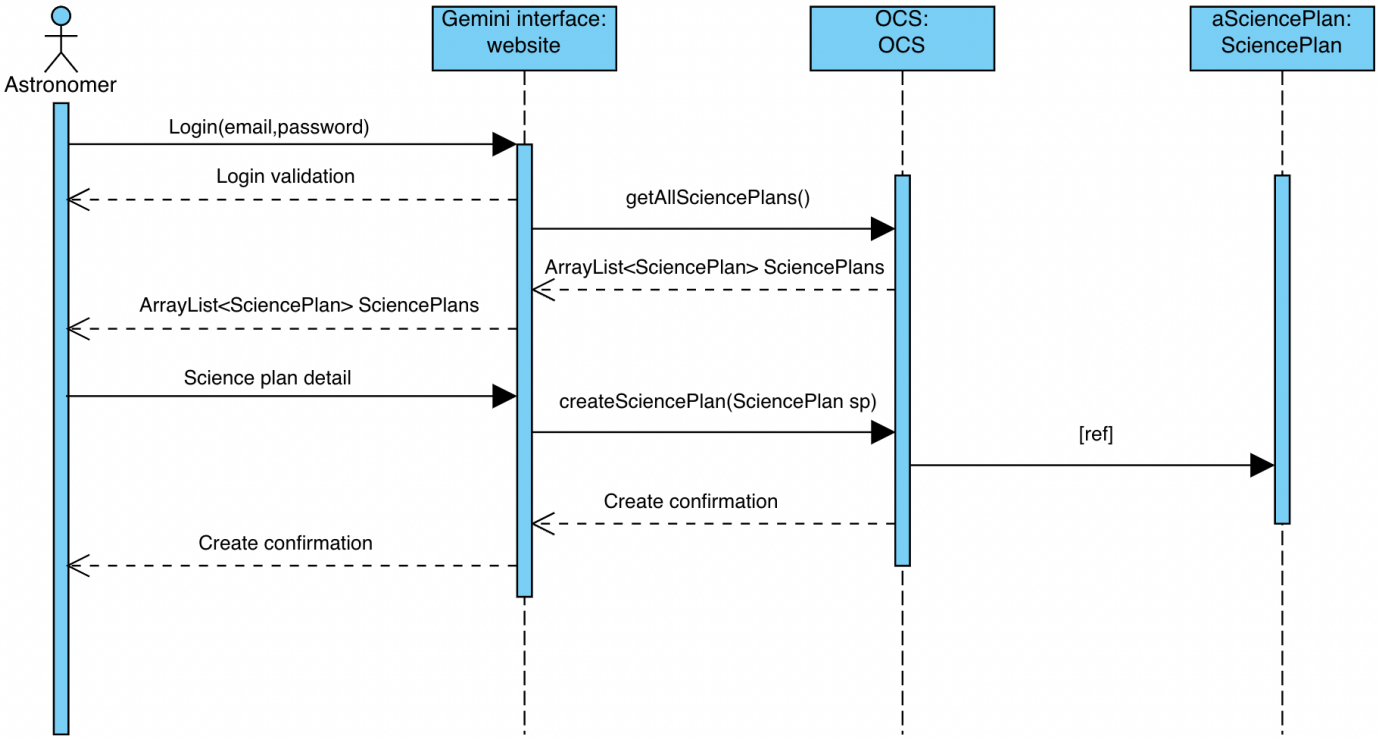
Use case description

Use Case Name: Create a Science Plan	**ID:** 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 in - 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 “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: -		

Activity Diagram



Sequence Diagram



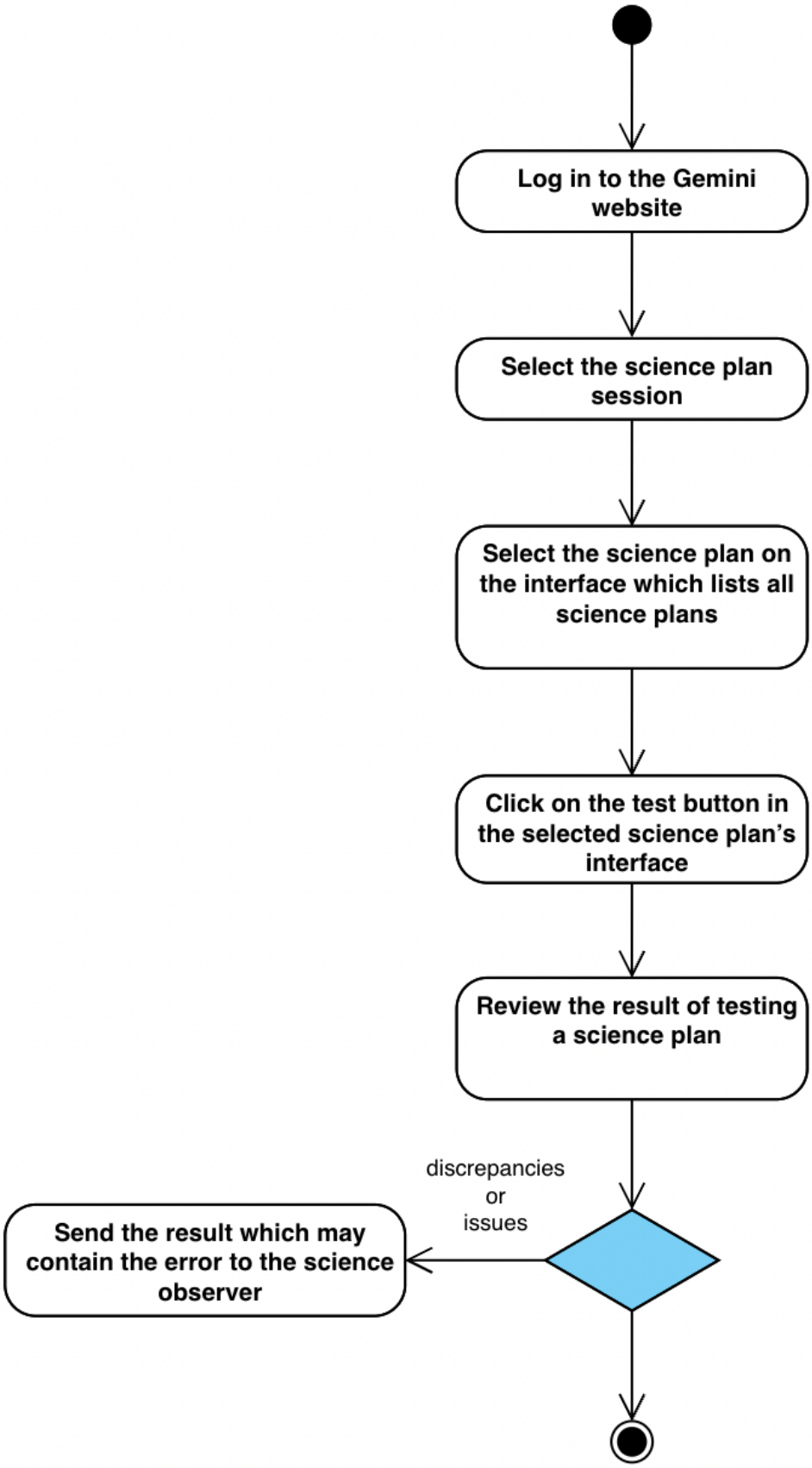
ref SciencePlan(String creator,
String submitter,
double fundingInUSD,
String objectives,
StarSystem.CONSTELLATIONS starSystem,
Date startDate,
Date endDate,
SciencePlan.TELESCOPELOC telescopeLocation,
DataProcRequirement dataProcRequirements)

Test a science plan

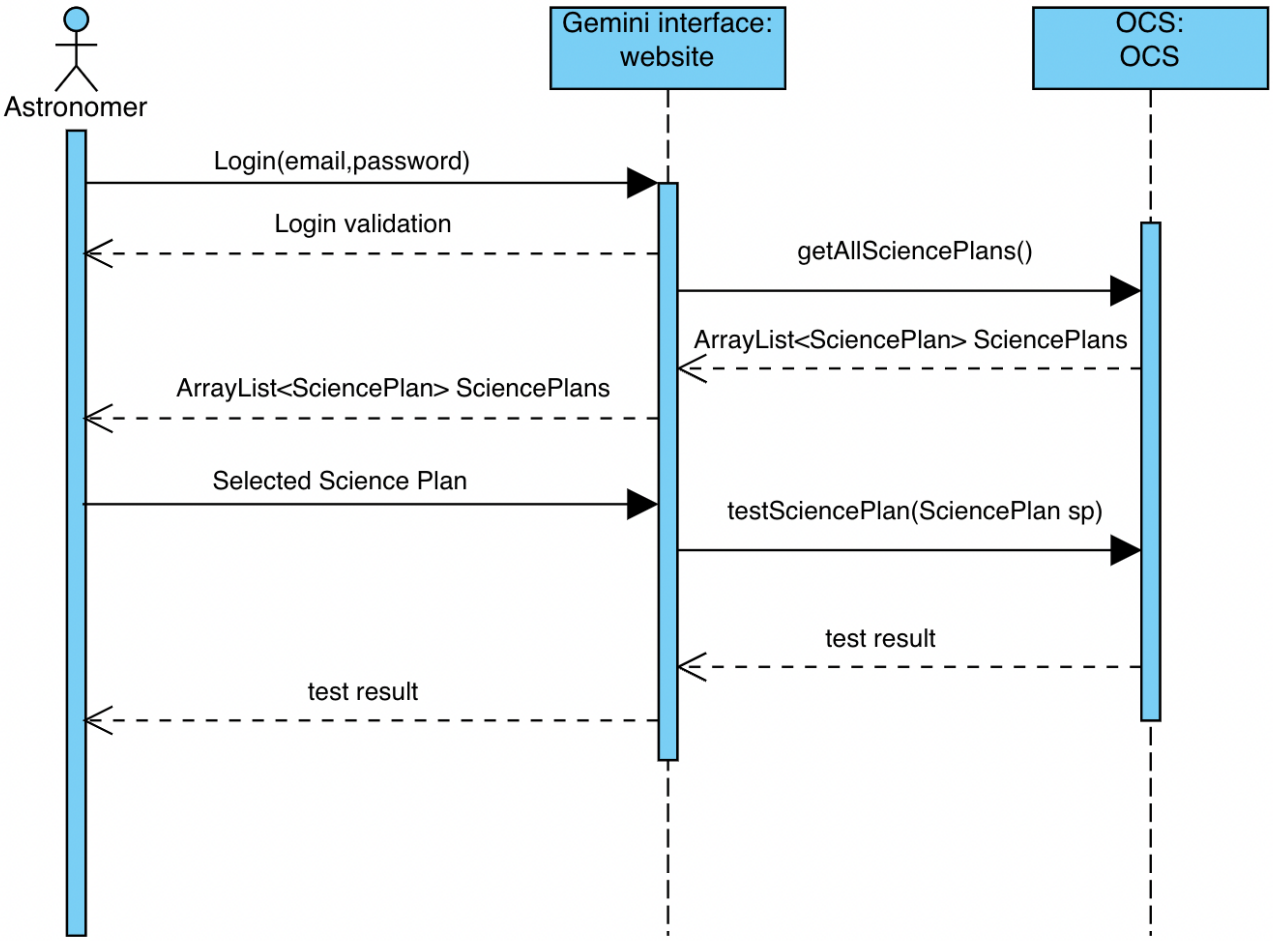
Use case description

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.		

Activity Diagram



Sequence Diagram

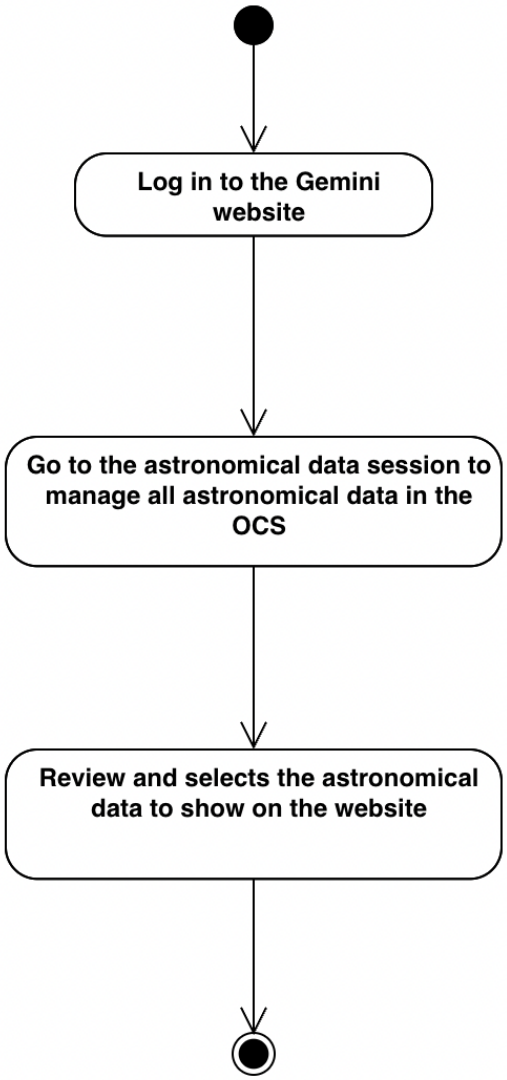


Manage astronomical data

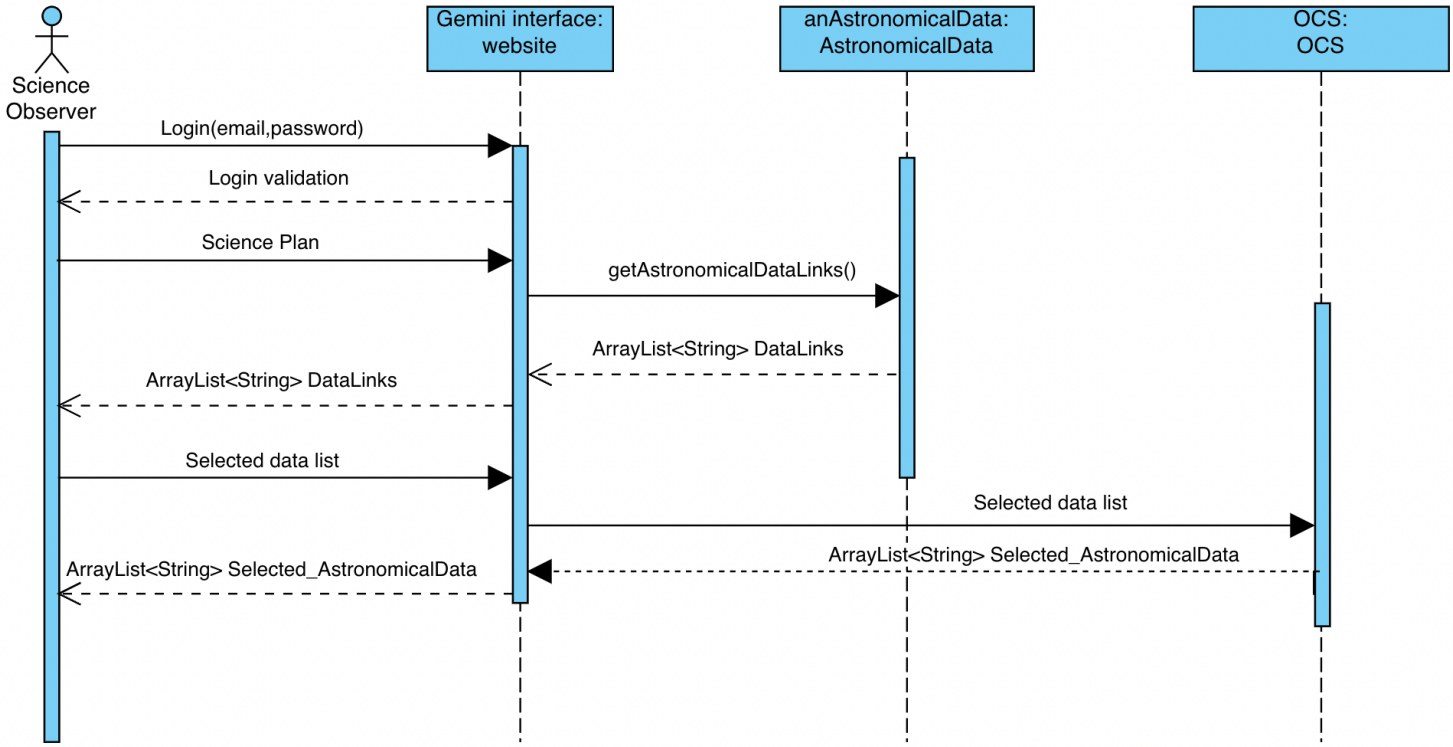
Use case description

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: Login - Extend: - - 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



Sequence Diagram



Class Diagram