

SC2002

Internship Portal Presentation

NEO YAN SIONG

DASMOND TAN WEI JIE

AARON SOH JUN QI

GUAN YIBIN

LEE WEI JIE

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Design Considerations



OOP Principles

Encapsulation
Inheritance
Polymorphism
Abstraction
Composition
Aggregation



SOLID Design Principles

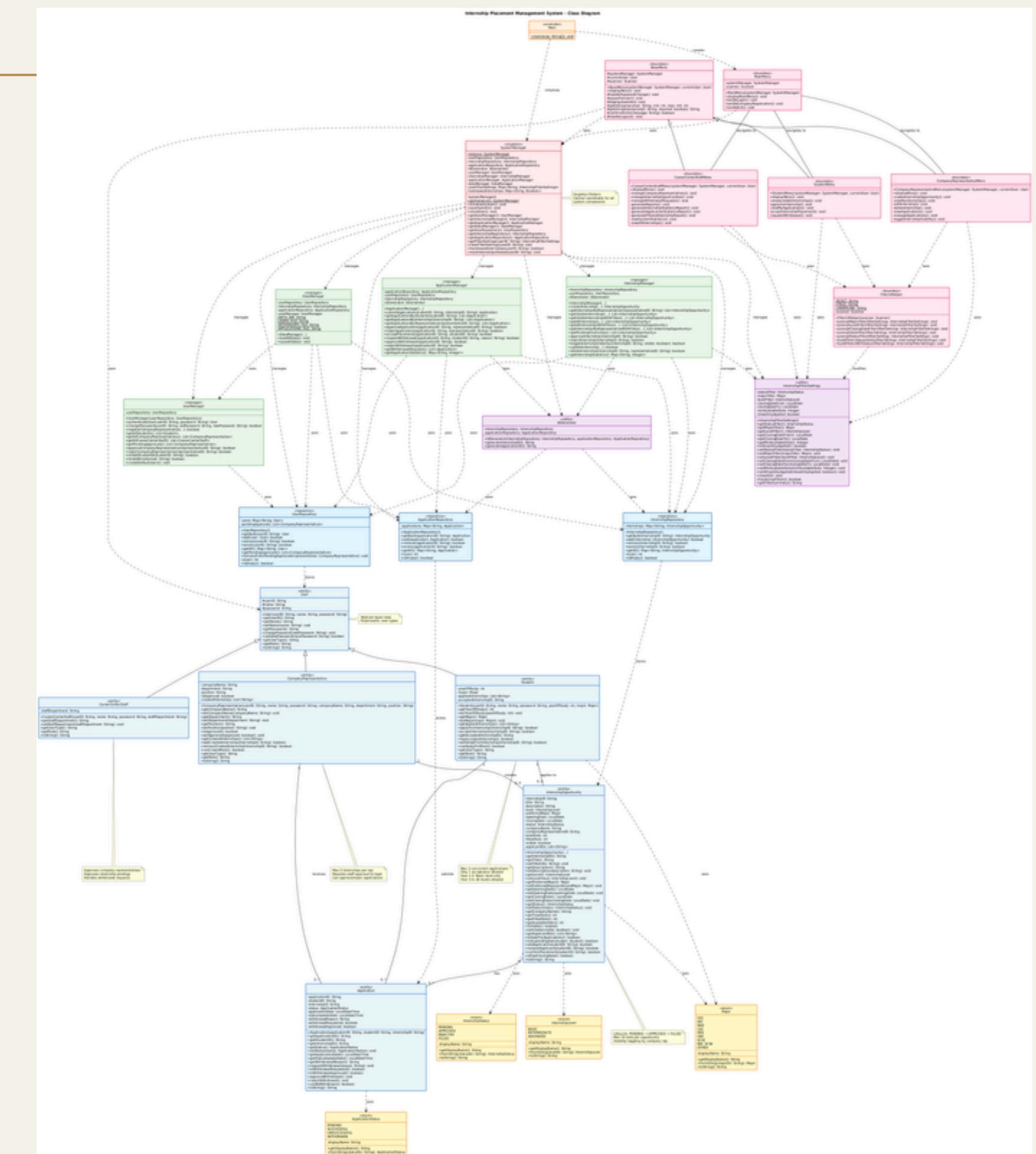
Single Responsibility Principle (SRP)
Open/Closed Principle (OCP)
Liskov Substitution Principle (LSP)
Interface Segregation Principle (ISP)
Dependency Inversion Principle (DIP)



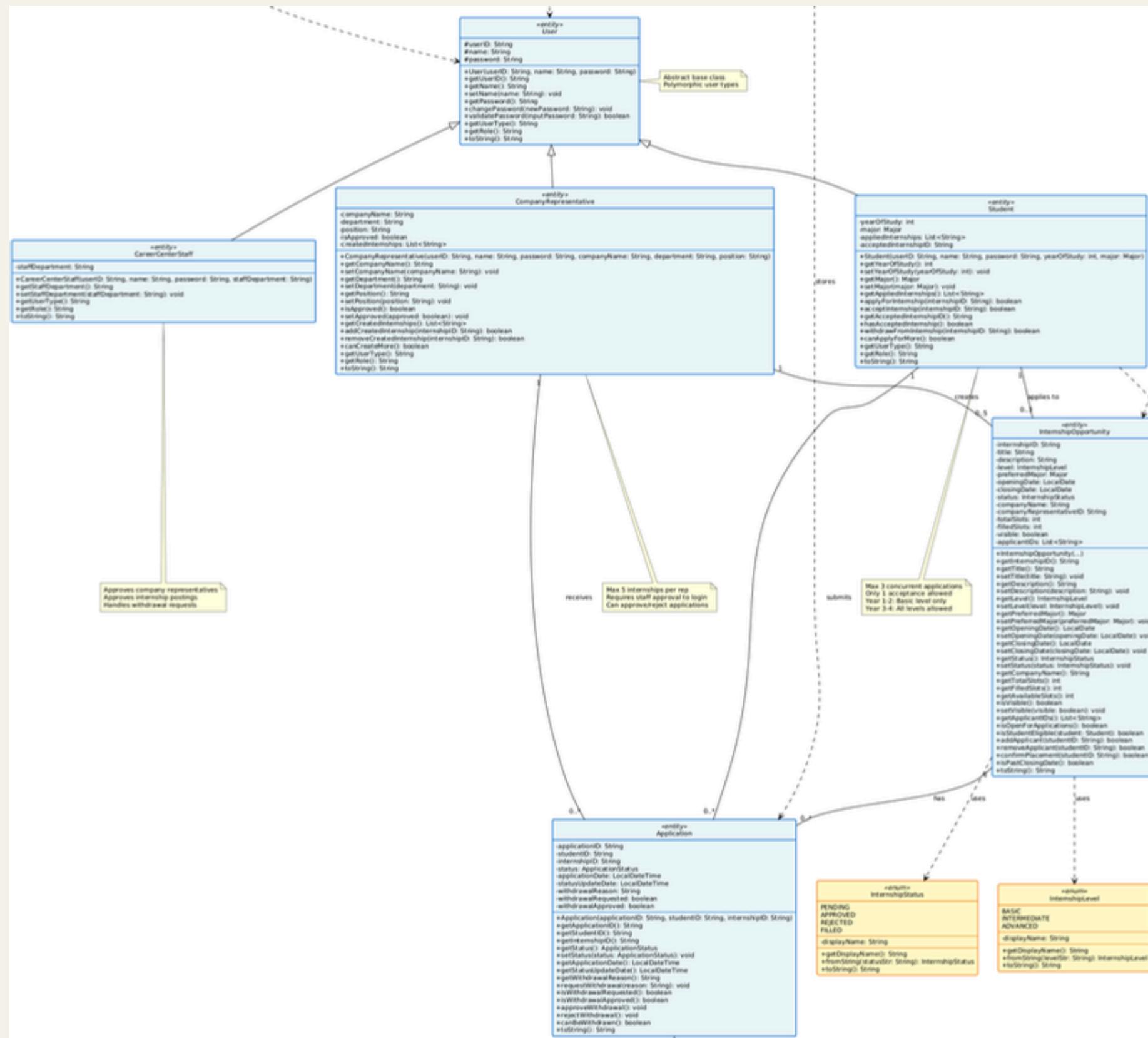
Model-View-Controller

Entity
Control
Boundary

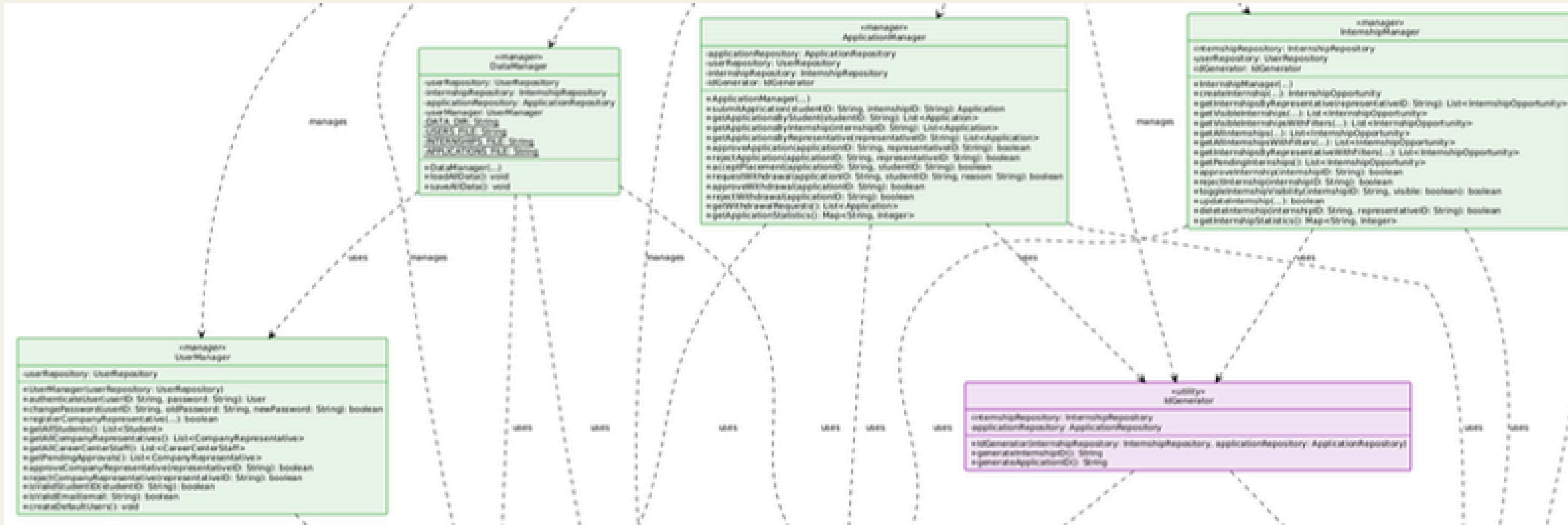
Class Diagram



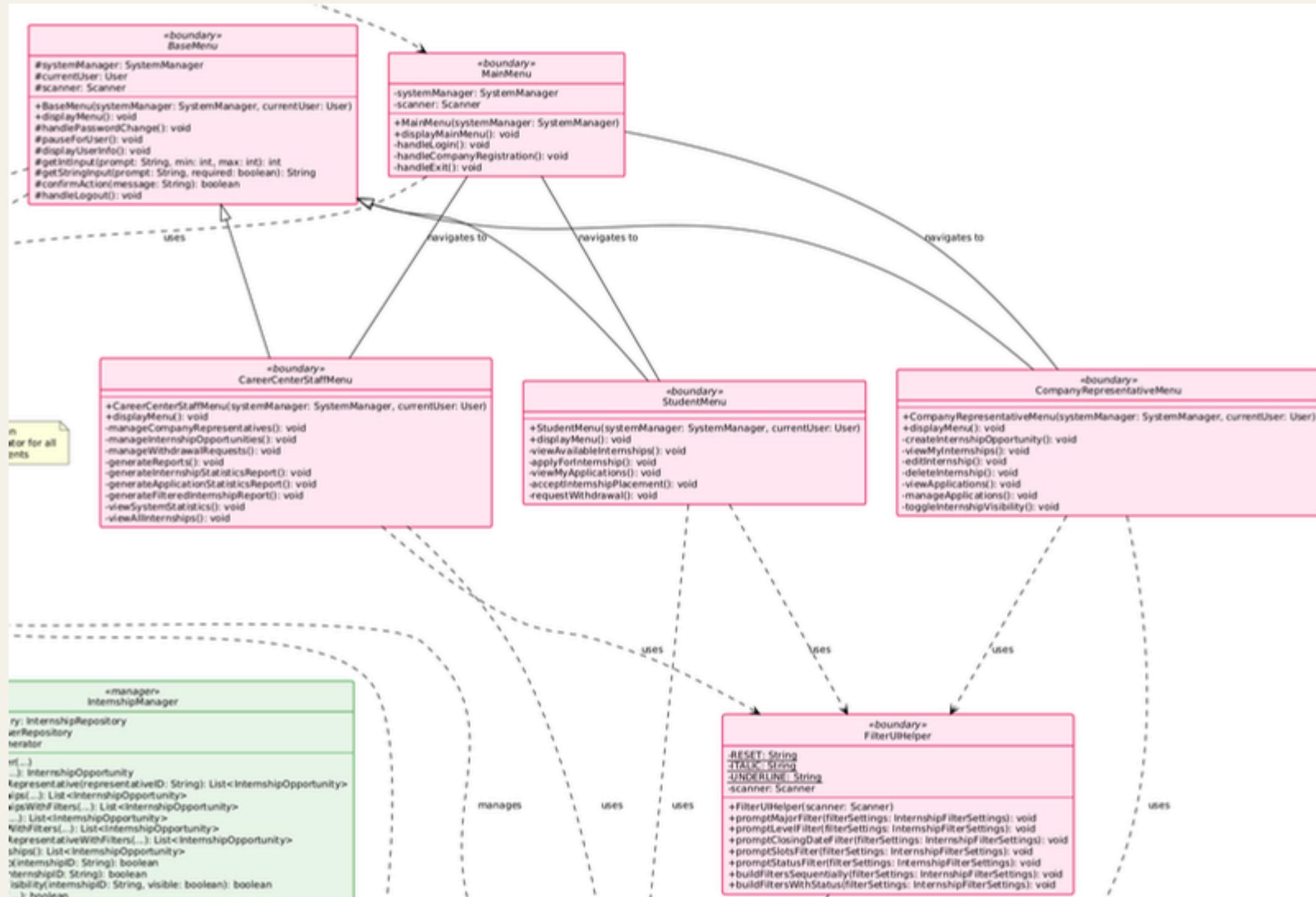
Entity Layer



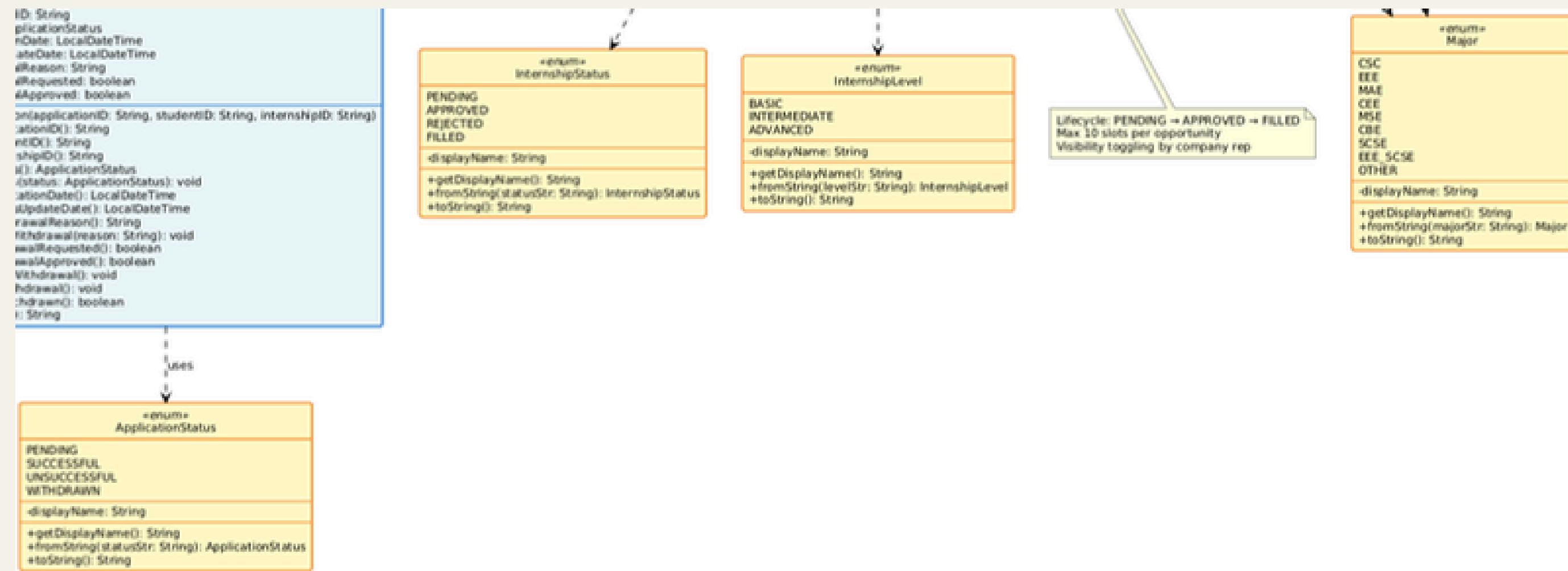
Control Layer



Boundary Layer



Enum Layer



- *Major*
- *InternshipLevel*
- *InternshipStatus*
- *ApplicationStatus*

Application of Object-Oriented Principles

Encapsulation

Example (Student class):

- appliedInternships
- acceptedInternshipID
- +canApplyForMore ()

Benefits: Data integrity maintained through controlled access, implementation details are hidden allowing future changes

Polymorphism

Example:

- Abstract User class: getUserType() and getRole()
- MainMenu.handleLogin(): routes to menu based on runtime type without knowing concrete type

Benefits: Code reusability through common interfaces, flexibility in adding new user types without modifying code

Application of Object-Oriented Principles

Inheritance

Example (User Hierarchy):

```
User (abstract)
  Student
  CompanyRepresentative
  CareerCenterStaff
```

Benefits: Elimination of code duplication, establishment of clear hierarchical relationships (is-a)

Abstraction

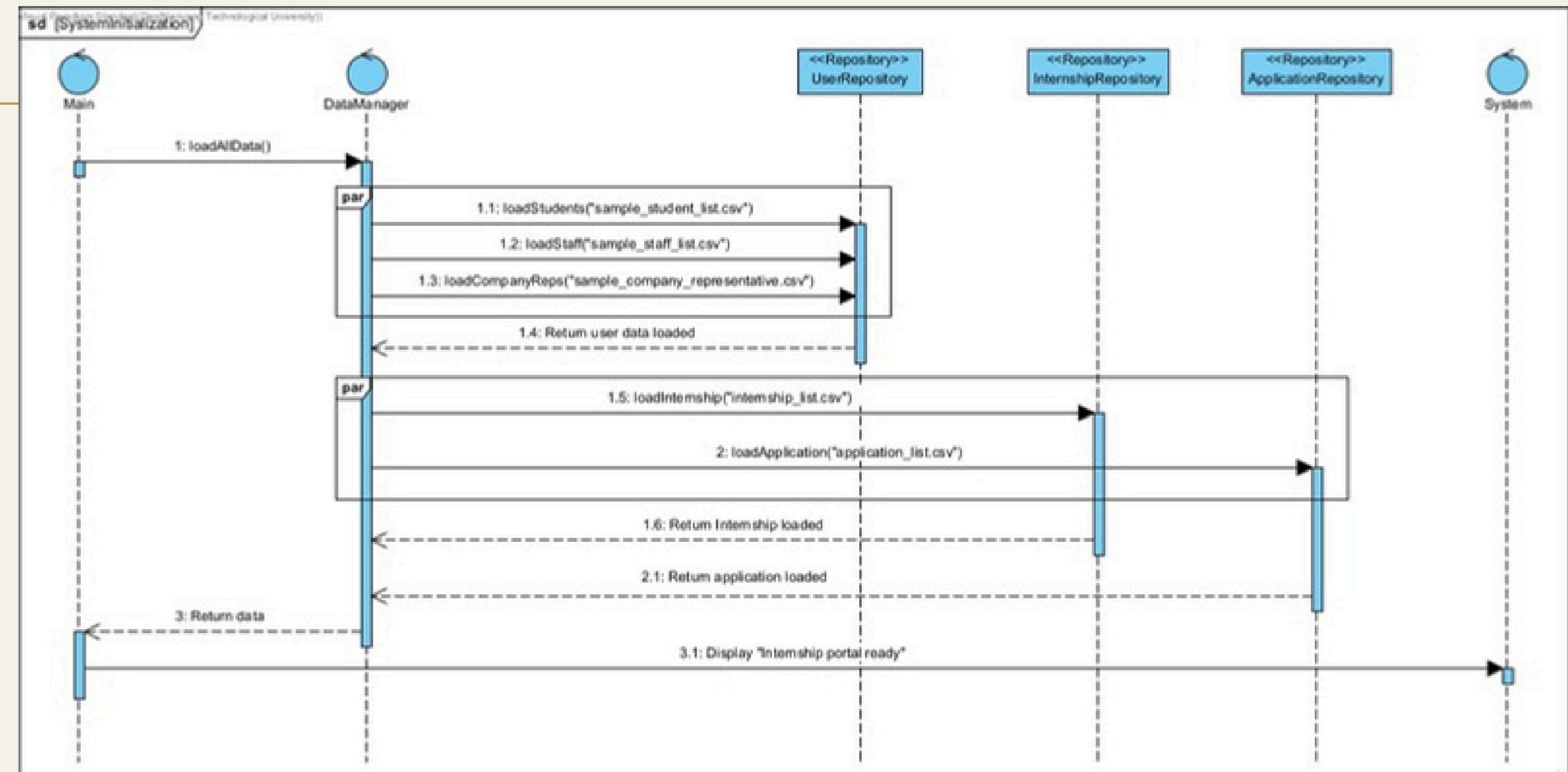
Example (Abstract User Class):

```
+ getUserType(): String // Abstract - must be implemented by subclasses
+ getRole(): String // Abstract - must be implemented by subclasses
```

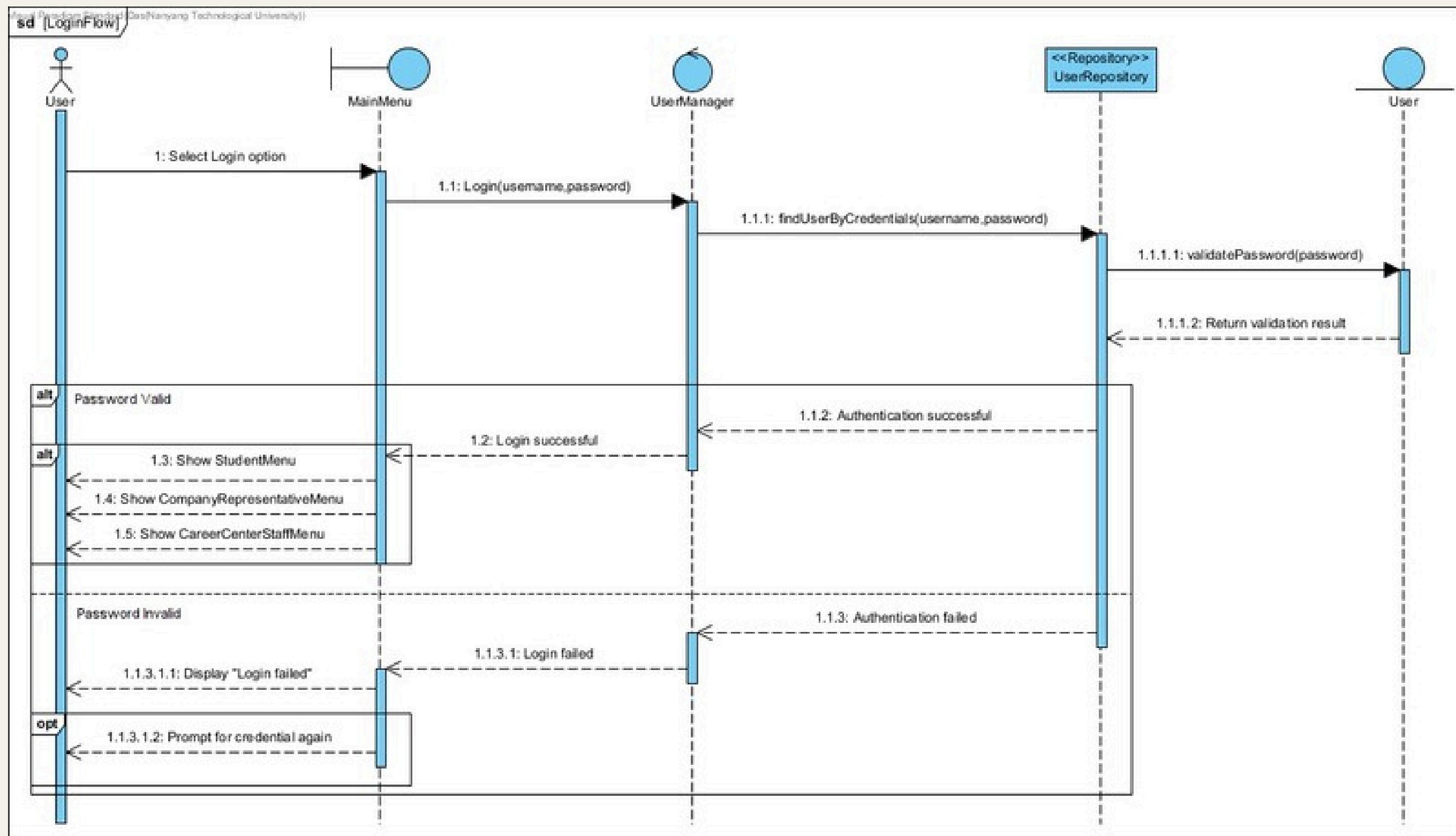
Benefits: Simplified interfaces for complex operations

Sequence Diagram

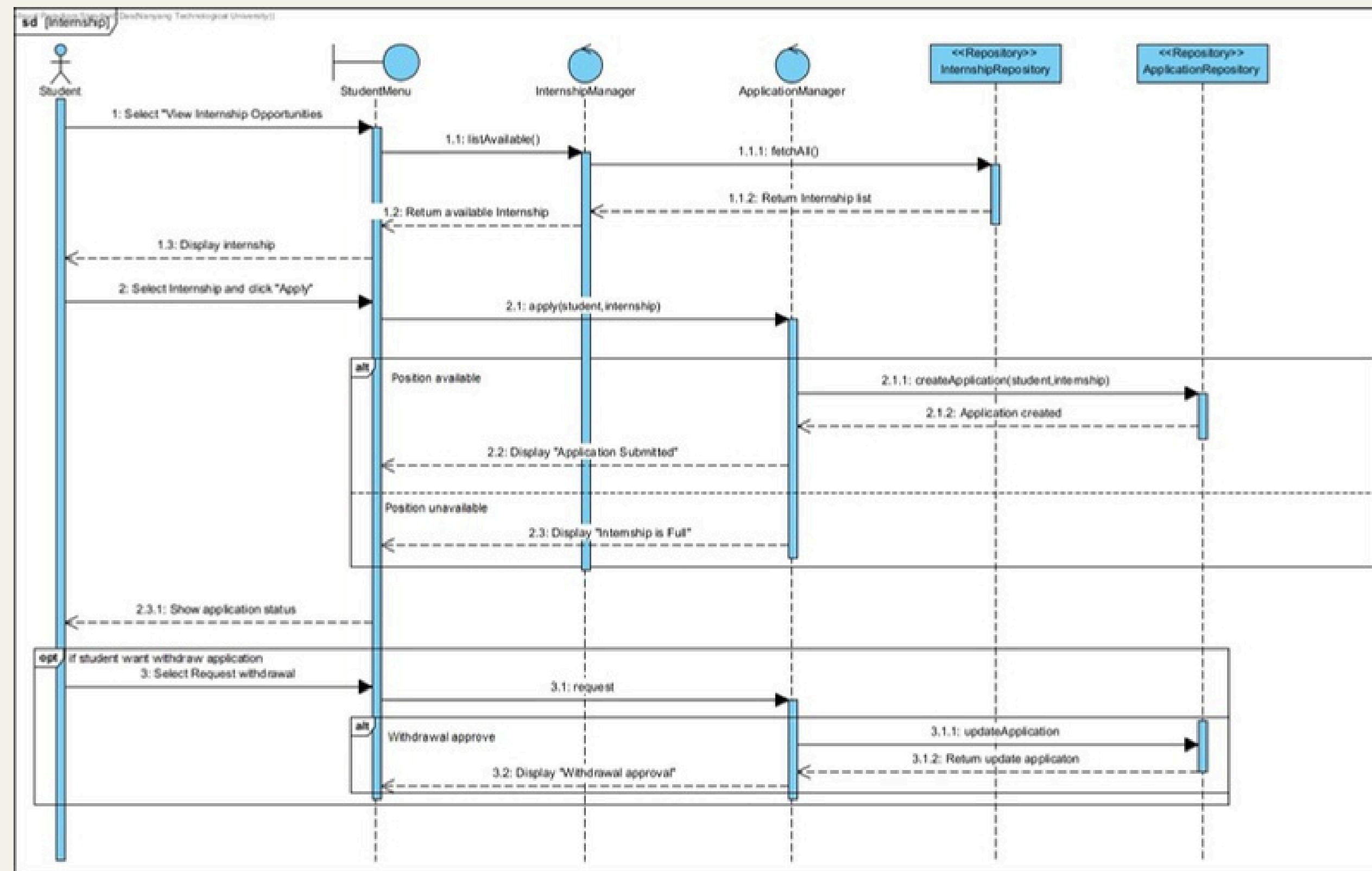
System SD



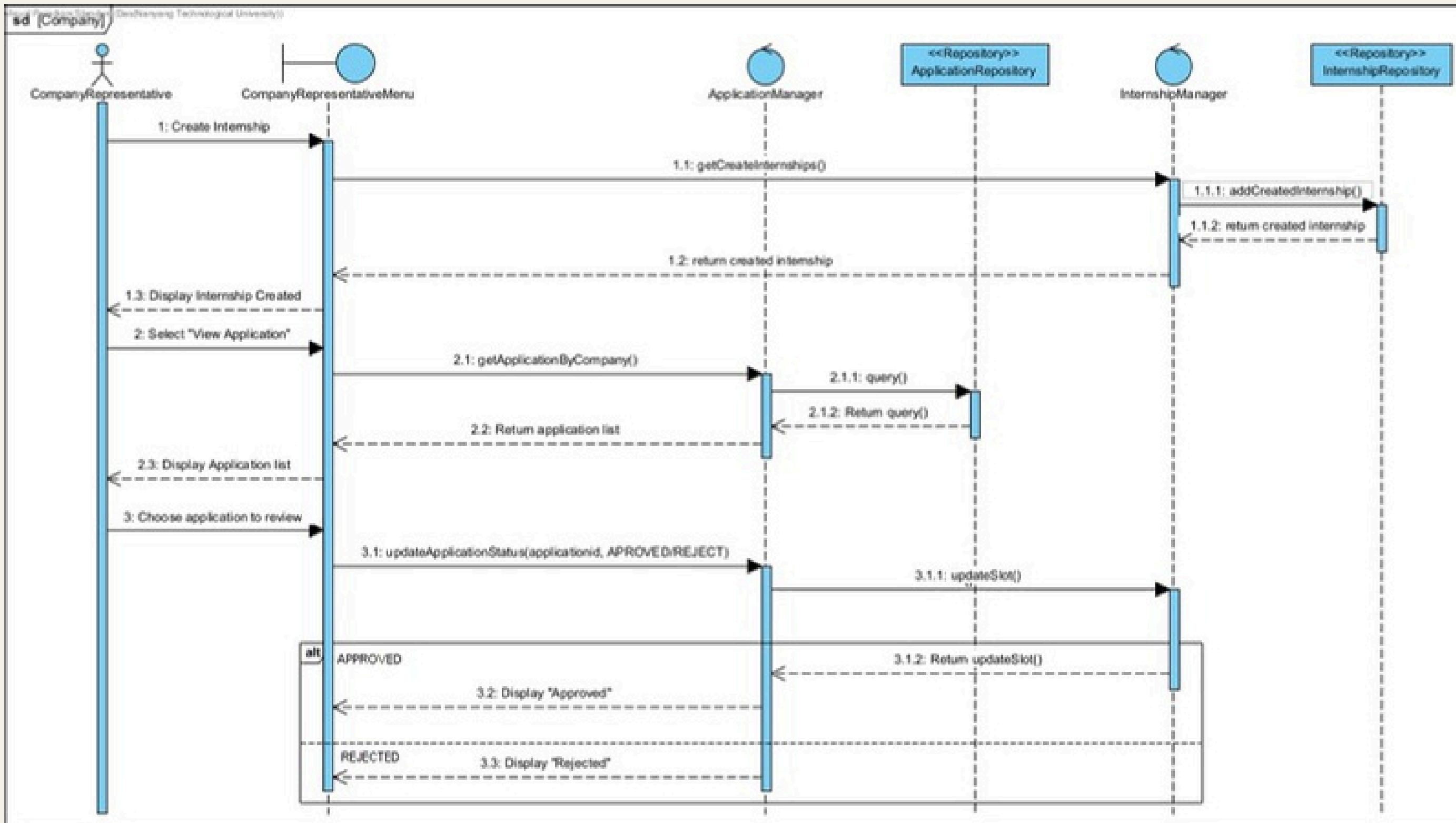
Login SD



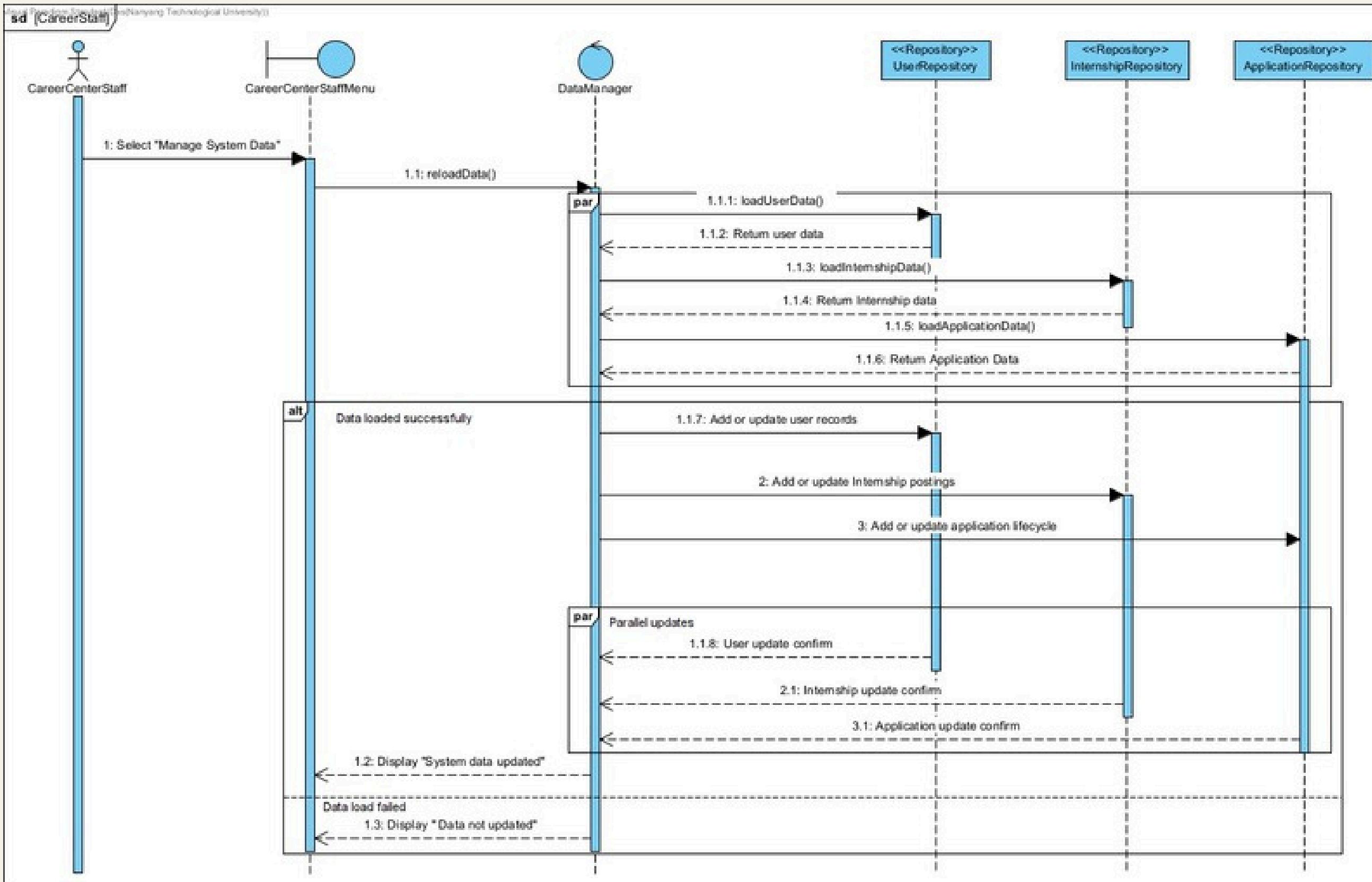
Internship SD



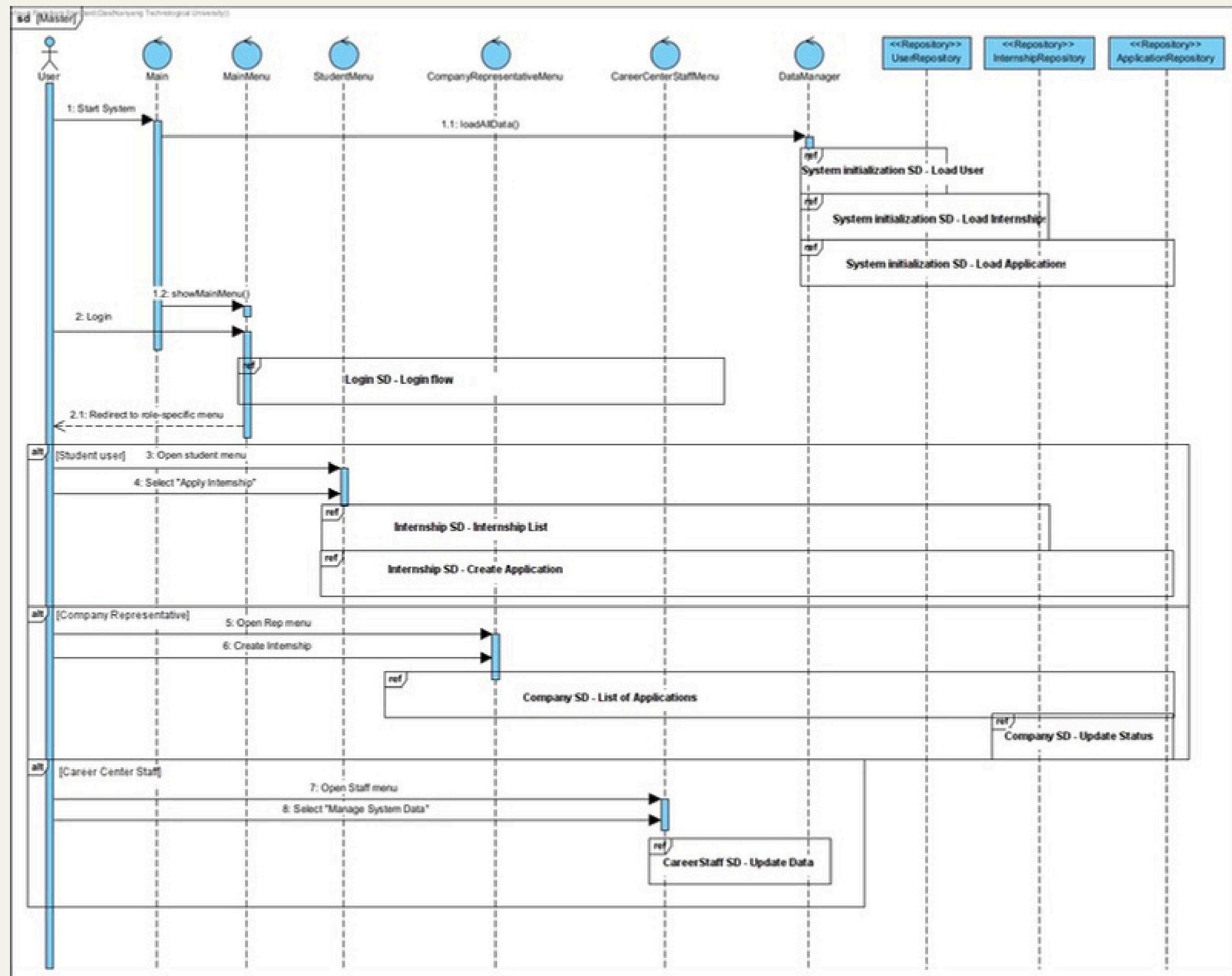
Company Representative SD



Career Center Staff SD



Master SD



Test cases/Program Flow

Test cases/Program Flow

Test Case	Expected Behaviour	Failure Indicators	Pass/Fail
Company rep registers	Company representative registers with the desired password (password123), pending career staff approval	Registration not saved or not visible in career staff approval queue	Pass
Career staff logs in	Career staff can log in using auto-registered credentials from txt file	Login fails or txt auto-registration missing	Pass
Career staff changes default password	“password” successfully updates to “password1”	Old password still works or update not saved	Pass
Career staff approves company rep (option 1)	Option 1 displays pending reps and approval marks rep as approved	Rep still cannot log in or approval not reflected	Pass
Career staff logs out	Career staff session ends and returns to main menu	Still logged in or cannot return to login screen	Pass
Company rep logs in with the password created	Company rep can log in using password created (password123)	Login denied or wrong default password	Pass
Company rep changes password	password123 successfully updates to “password1”	Old password still works or update not saved	Pass

Test cases/Program Flow

Test Cases	Expected Behavior	Failure Indicators	Pass/Fail
Company rep creates internship opportunity (option 1)	Internship entered and marked as “Pending approval from Career Center Staff”	Internship not saved or missing in approval list	Pass
Company rep logs out	Session ends and returns to main menu	Session persists or cannot navigate back	Pass
Career staff logs in	Career staff login successful	Login fails	Pass
Career staff selects option 6 (view internships) (SELECT FILTER FUNCTION) (PENDING)	All internships displayed with functioning filter options	Internships missing or filters faulty	Pass
Career staff selects option 2 (internship opportunity)	Pending internship opportunities are displayed	Pending internships missing	Pass
Career staff approves internship	Internship becomes active and visible to students	Internship remains pending or does not appear to students	Pass
Career staff selects option 6 (view internships) (SELECT FILTER FUNCTION) (APPROVAL)	All internships displayed with functioning filter options	Internships missing or filters faulty	Pass
Career staff logs out	Session ends normally	Logout malfunction	Pass

Test cases/Program Flow

Test Cases	Expected Behavior	Failure Indicators	Pass/Fail
Student logs in with default password	Student auto-registered with default password, "password"	Cannot log in or student not auto-registered	Pass
Student changes default password	"password" updates correctly to "password1"	Old password works or update not saved	Pass
Student selects option 1 (view internships)	Student sees only internships matching profile	Internships missing or incorrect matches	Pass
Student applies filters (enter for ALL)	Filtered internship list displayed correctly	Filters return incorrect or no results	Pass
Student applies for internship (3 applications)	System accepts up to 3 active applications pending company approval	More than 3 allowed or applications not submitted	Pass
Student requests withdrawal for one application before accepting internship placement	Withdrawal request appears in career staff queue	Request not created or not visible to staff	Pass
Student logs out	Session ends normally	Logout fails	Pass

Test cases/Program Flow

Test Cases	Expected Behavior	Failure Indicators	Pass/Fail
Career staff logs in	Career staff login successful	Login blocked	Pass
Career staff selects option 3 (manage withdrawal requests)	Pending withdrawal request shown	Request missing	Pass
Career staff approves withdrawal	Application removed and student updated with withdrawn status	Status unchanged or still appears active	Pass
Career staff logs out	Session ends normally	Logout fails	Pass
Company rep logs in	Rep login successful	Login fails	Pass
Company rep selects option 2 (view my internships)	Rep sees only their own internships and filters work	Internships missing or incorrect	Pass
Company rep selects option 6 (manage applications)	Pending student applications are displayed	Applications missing	Pass

Test cases/Program Flow

Test Cases	Expected Behavior	Failure Indicators	Pass/Fail
Company rep approves application	Application status updated to Approved by Company	Status unchanged or error thrown	Pass
Company rep logs out	Session ends normally	Logout fail	Pass
Student logs in checks menu (option 3) (application status)	Student sees updated application statuses	Statuses unchanged or missing	Pass
Student accepts internship placement (option 4) and checks status (option 3)	Student selects one successful application; system auto-withdraws other applications	Other applications not auto-withdrawn	Pass
Student requests withdrawal after accepting (menu option 5)	Withdrawal request created and pending staff approval	Request missing or blocked incorrectly	Pass
Student logs out	Session ends normally	Logout fails	Pass

Test cases/Program Flow

Test Cases	Expected Behavior	Failure Indicators	Pass/Fail
Career staff logs in	Login successful	Failure to log in	Pass
Career staff approves withdrawal request (option 3)	Internship placement removed and student eligible to apply again	Status not updated	Pass
Career staff logs out	Logout successful	Logout failure	Pass
Student logs in and checks status (option 3)	Student sees updated status and allowed to apply again	Status unchanged or blocked	Pass
Student applies for internship again (option 2)	System allows new applications	Unable to apply again	Pass
Save current state to files (Exiting Program) (TXT FILE CHANGES BEFORE AFTER)	Exiting program saves all student status , internships status, applications status.	text file not updated	Pass

Reflection



What went well

- MVC Architecture
- Manager Classes (Facade)
- Inheritance Hierarchy
- Enum-based Type Safety



Challenges and Improvement

- Testing Support
- Error Handling
- Data Consistency
- Validation Duplication



Key Lesson Learnt

- Design Patterns Should Solve Problems
- Separation of Concerns is Critical
- Extensibility Requires Planning
- SOLID principle