



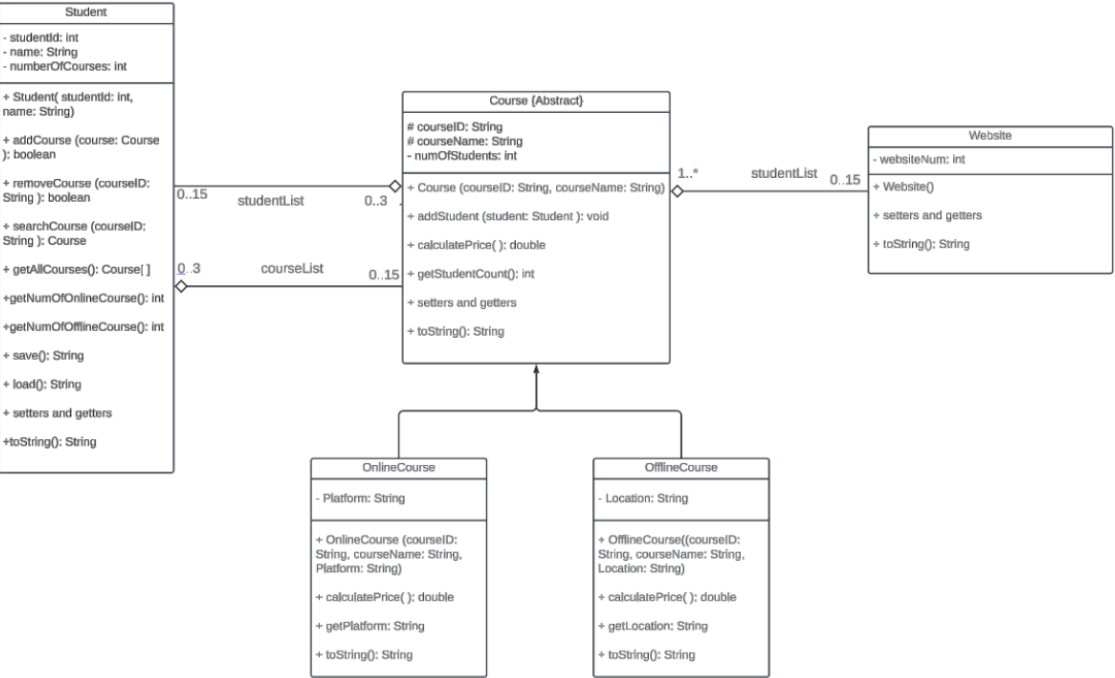
## **Course Management System**

Introduction:

The Course Management System manages online and offline courses. It now includes exception handling, file operations, and a GUI. Exception handling ensures smooth error management, file operations provide data storage, and the GUI enhances user interaction.

UML:

In Phase 2, we faced challenges that required modifications to our initial design, especially the UML diagram. Key adjustments included refining exception handling and enhancing the GUI to support dynamic interactions. These changes were essential to improve functionality and user experience.



## Exception Handling:

The project uses **NumberFormatException** for invalid inputs and **CourseLimitExceededException** for course limits. These exceptions are handled in methods like adding courses and input parsing using `try-catch` blocks to maintain stability.

## File managing:

The system reads and saves data using **binary** and **serialized object files**. Save operations write data with ObjectOutputStream, and load operations use ObjectInputStream. Exceptions like IOException and ClassNotFoundException are handled to manage file errors.

## GUI :

The GUI has three frames to enhance user interaction: adding students, adding courses, and displaying course info.

- **First Frame:** Adding student information.
- **Second Frame:** Adding course details.
- **Third Frame:** Displaying and managing courses.

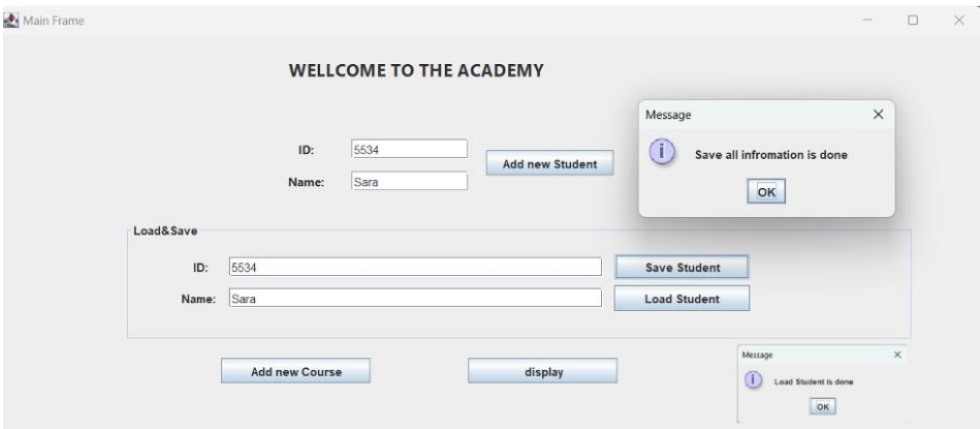
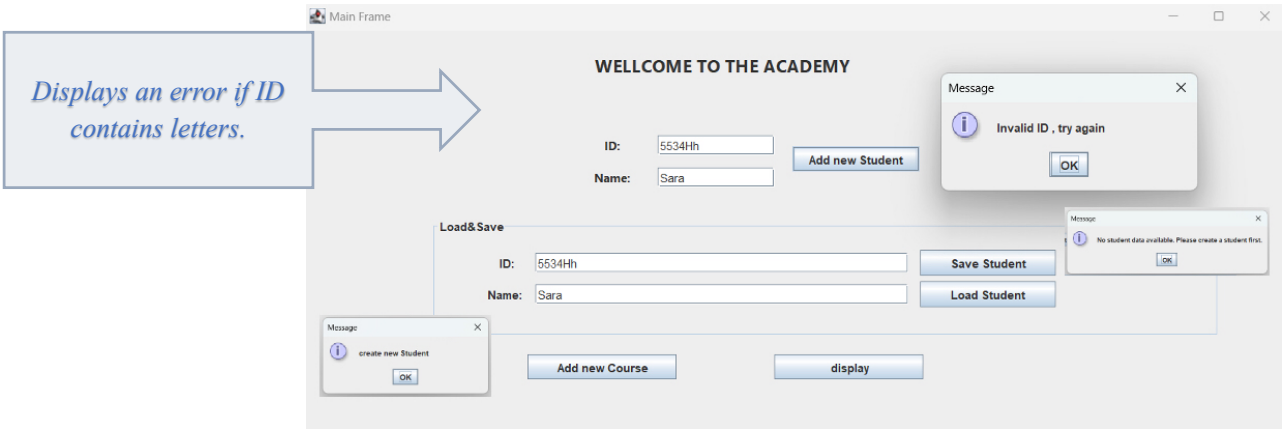
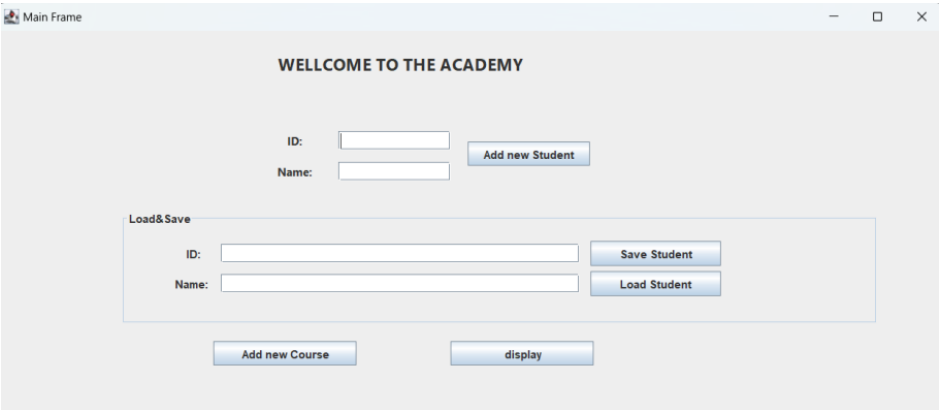
### ○ **Components**

The GUI includes Buttons, Labels, TextFields, RadioButtons, TextArea, Panel, Group buttons.

○ GUI Screenshots

Frame 1 : Add New Student

Allows adding student information and saving/loading data.



**Frame 2 : Add New Course**

Facilitates adding new course details.

To Add Course...

Available courses to add n...

Online

Math:1111

Offline

Math:1112

What course would you like to register in?

Math

Science

English

How would you like to attend?

Online

Offline

Platform

Microsoft Teams or Zoom

Location

Home or Academy

Add new Course

To Add Course...

Available courses to add n...

Online

Math:1111

Offline

Math:1112

What course would you like to register in?

Math

Science

English

How would you like to attend?

Online

Offline

Platform

Zoom

Microsoft Teams or Zoom

Location

Home or Academy

Add new Course

Message

adding new Course is done

OK

Enables only relevant fields based on course type (online/offline).

Frame 3: display

Manages course information with options to search, remove, and display courses.

Shows "Course not found" message for invalid IDs

