Course Registration

https://github.com/TianyiLutl3551/CS470_Final_Project

Group#
Student1: Steven Liu N10331719

Student 2 Tianyi Lu N12829433

2023.8.14

Table of Work

(Please write x in the boxes to mention what each student achieved in this project)

	Steven Liu	Tianyi Lu	
Project Description	x	x	
Uses Cases Diagram(s)	x	x	
Sequence Diagrams	x	x	
Class diagram(s)	x	x	
Implementation	x	x	
Conclusion	x		

Table of Contents

- Terminology Glossary (If needed)
- System Analysis
    - Project Description (One Page)
        - General Description, Goals and Benefits

We have built a student course registration system.
Students can log into the system, view their registered and available courses, and modify them accordingly.
Administrators can log into the system, add or modify courses, and generate reports.
Student information, course information can be saved on the disk.
The goal is to practice object-oriented design and to practice using design patterns. This system uses singleton pattern and Builder pattern.

        - System input(s) and output(s)

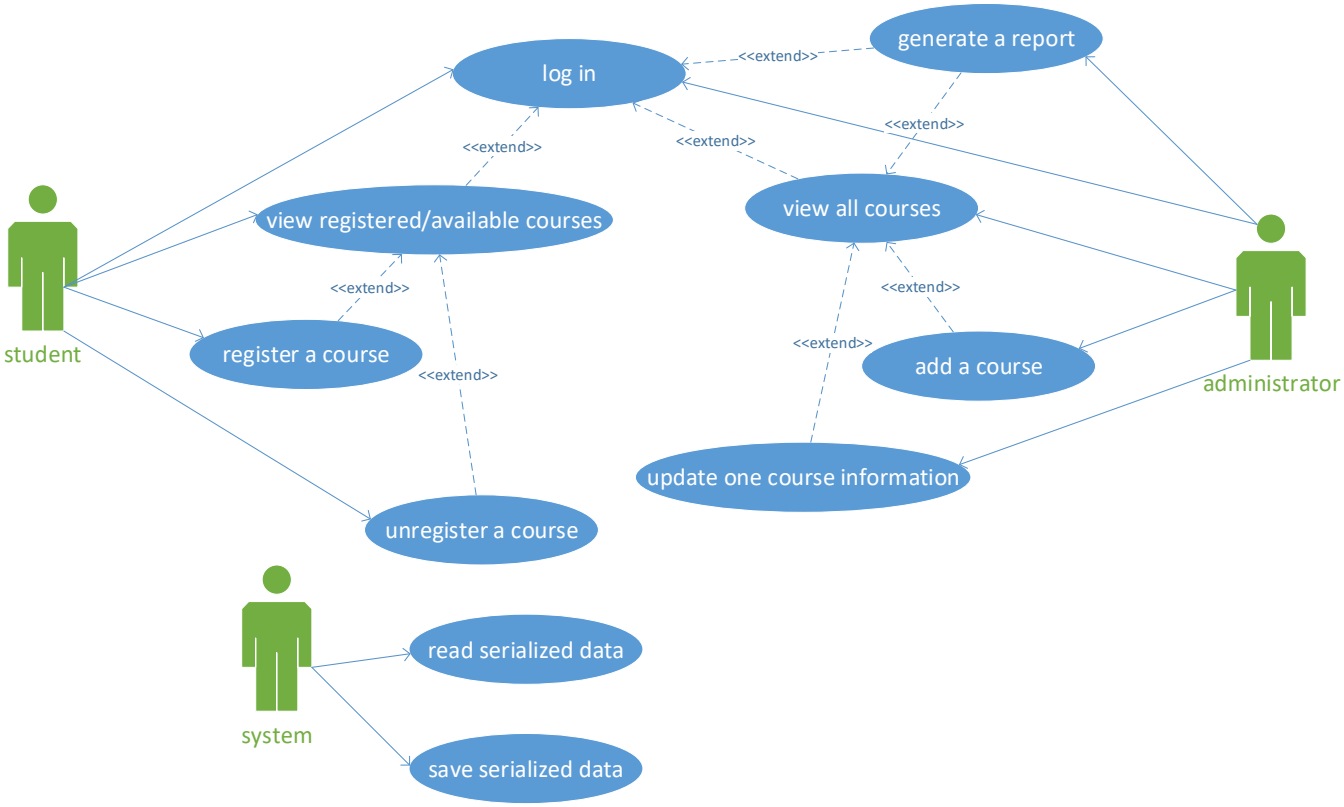
System inputs: student id and student, administrator id and password
System outputs: Students' course selection information is saved on disk.

        - Special requirements (Performance, Interfaces, Constraints, Reliability, if any)

This system contains 1 administrator and 2 students by default. Administrators can add courses and modify course information. Students can view courses and register or unregister courses. This system cannot add administrators or students.
In order to facilitate the test, the system will generate administrator and student information when it is started for the first time, and save it in the disk. At the next startup, various information in the disk is automatically read.

In the real world, the personnel management function and the course registration function are usually separate systems, and the personnel information may also be stored in the database. The personnel management function content is not included in this assignment.

- Uses Cases Diagram(s) and use cases description.



Use case for Student:

UC Reference Name/Number: 1. student login	
Overview	The user starts the system, input id/password, then click “Student Login” Button. The system checks the id/password, if valid, the student logins successfully. Otherwise, it fails and exits.
Related user cases	view registered/available courses
Actors	student
Pre Conditions(Optional)	--
Post Conditions(Optional)	If success, the student can see her/his registered and available courses list which she/he can choose to unregister or register.

UC Reference Name/Number: 2. view registered and available courses	
Overview	A student logins successfully.
Related user cases	log in register a course unregister a course
Actors	student
Pre Conditions(Optional)	A student logins successfully. The registered and available courses lists are shown to the student.
Post Conditions(Optional)	The student can choose a course in the available list to register it. The course will

	be moved into the registered list. The student can choose a course in the registered list to unregister it. The course will be moved into the available list.

UC Reference Name/Number: 3. register a course	
Overview	The student can choose a course in the available list to register it. The course will be moved into the registered list.
Related user cases	view registered and available courses
Actors	student
Pre Conditions(Optional)	A student logins successfully. The registered and available courses lists are shown to the student.
Post Conditions(Optional)	The chosen course will be moved into the registered list. The course selection situation will be saved into disk.

UC Reference Name/Number: 4. unregister a course	
Overview	The student can choose a course in the registered list to unregister it. The course will be moved into the available list.
Related user cases	view registered and available courses
Actors	student
Pre Conditions(Optional)	A student logins successfully. The registered and available courses lists are shown to the student.
Post Conditions(Optional)	The chosen course will be moved into the available list. The course selection situation will be saved into disk.

Use case for Administrator

UC Reference Name/Number: 5. administrator login	
Overview	The user starts the system, input id/password, then click "Administrator Login" Button. The system checks the id/password, if valid, the user logins successfully. Otherwise, it fails and exits.
Related user cases	view all courses
Actors	administrator
Pre Conditions(Optional)	--
Post Conditions(Optional)	If success, the administrator can see all courses list. He/She can add a course or change the course information.

UC Reference Name/Number: 6. view all courses

Overview	The administrator can view the courses list with course basic information and the current registered student count..
Related user cases	administrator login add a course update one course information get a report
Actors	administrator
Pre Conditions(Optional)	The administrator logins successfully.
Post Conditions(Optional)	The administrator can view courses abstract information. He/she can generate a detailed report.

UC Reference Name/Number: 7. add a courses	
Overview	The administrator can view the courses list. Then he/she can add a new course with id/name/instructor. There are two kinds of course: normal course with 20 default max student, one-to-one course with default 1 max student and the instructor is head teacher.
Related user cases	administrator login view all course update one course information
Actors	administrator
Pre Conditions(Optional)	The administrator logins successfully.
Post Conditions(Optional)	If the administrator input a course with “a new course id”, a new course will be added into the courses list. If the administrator input a course with “an old course id”, the information of that course will be updated. The course information will be saved into disk.

UC Reference Name/Number: 8. update one course information	
Overview	The administrator can view the courses list. Then he/she can update any course information except for the course id.
Related user cases	administrator login view all course
Actors	administrator
Pre Conditions(Optional)	The administrator logins successfully.
Post Conditions(Optional)	If the administrator input a course with “an old course id”, the information of that course will be updated. The course information will be saved into disk.

UC Reference Name/Number: 9. generate a report	
Overview	The administrator can generate a report

	for detailed information for students, courses and the selection situation.
Related user cases	administrator login view all courses
Actors	administrator
Pre Conditions(Optional)	The administrator logins successfully.
Post Conditions(Optional)	If the administrator can generation a report.

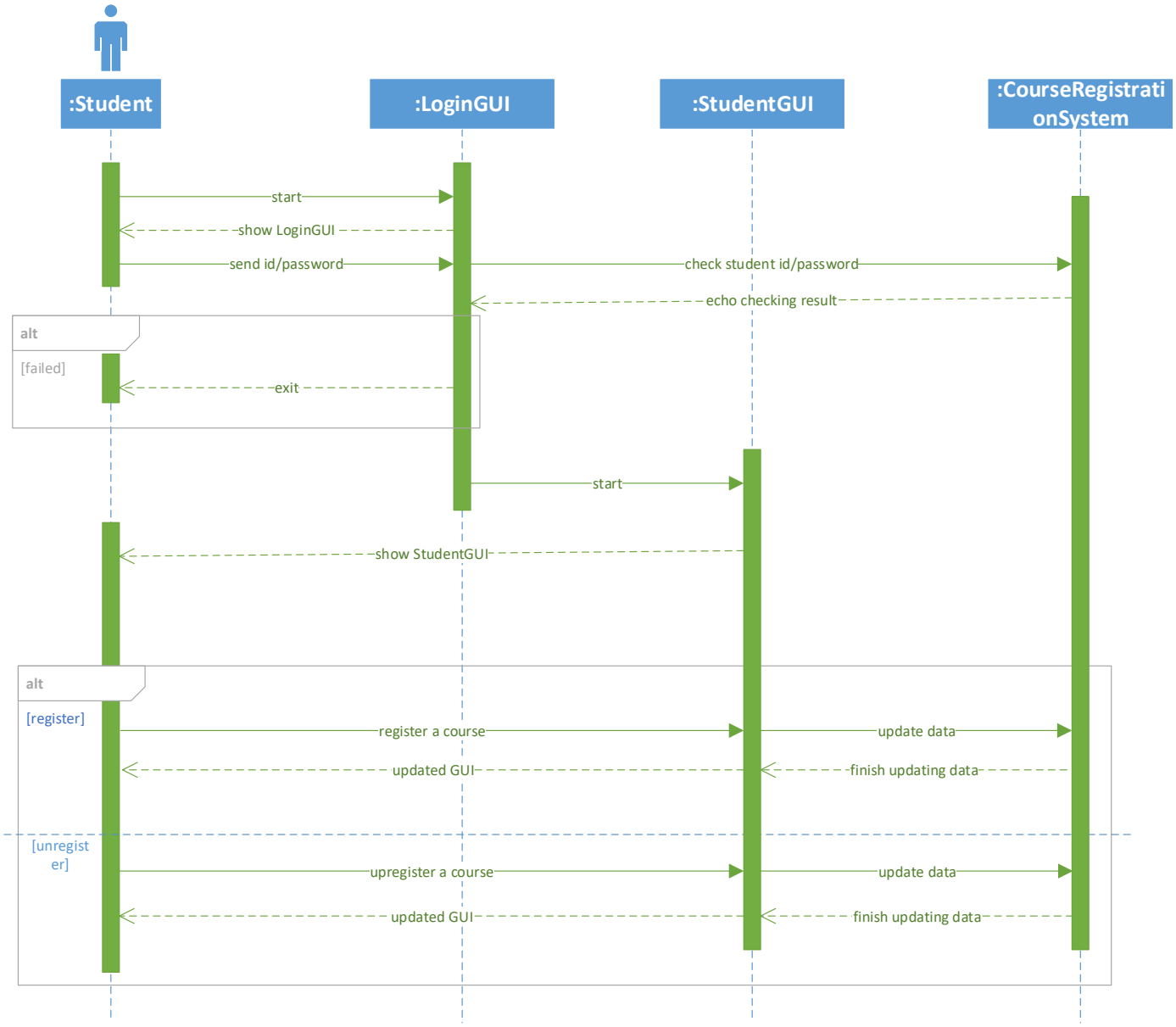
Use case for System

UC Reference Name/Number: 10. read serialized data	
Overview	The user(student or administrator) starts the system, then all serialized data in the disk will be read in.
Related user cases	-
Actors	system
Pre Conditions(Optional)	The students, courses, selection situation information will be read in. For testing, if there are not any information in the disk, the system will generate a few default students, administrators and courses.
Post Conditions(Optional)	The user can try to login the system and do actions.

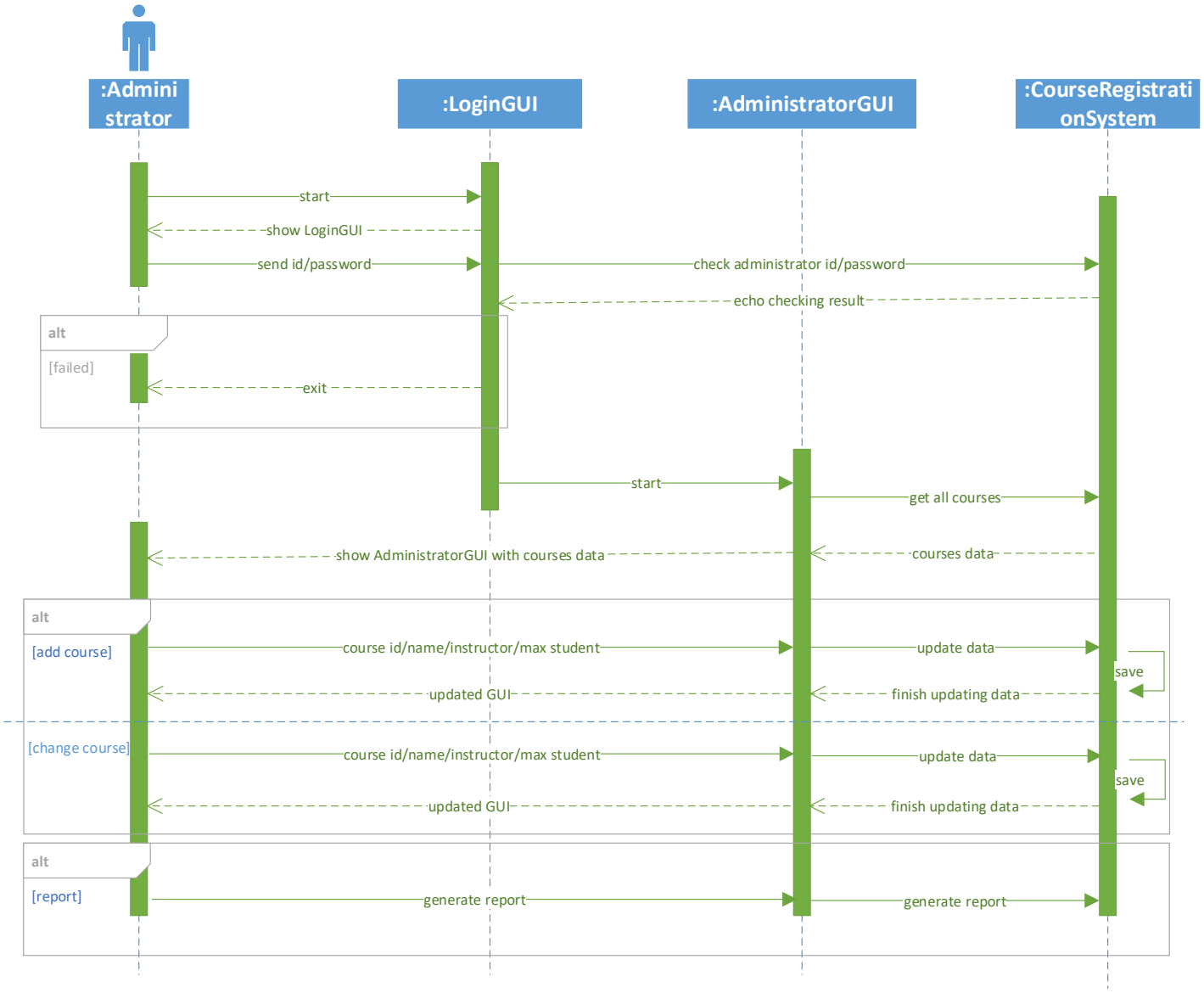
UC Reference Name/Number: 11. save serialized data	
Overview	The user(student or administrator) starts the system, do some changing actions, then the updated information will be serialized into disk.
Related user cases	A student registers a course A student unregisters a course. An administrator adds a course. An administrator updates course information.
Actors	system
Pre Conditions(Optional)	A student or administrator does some changing action.
Post Conditions(Optional)	The updated be serialized into disk.

- System Design
    - Sequence Diagrams

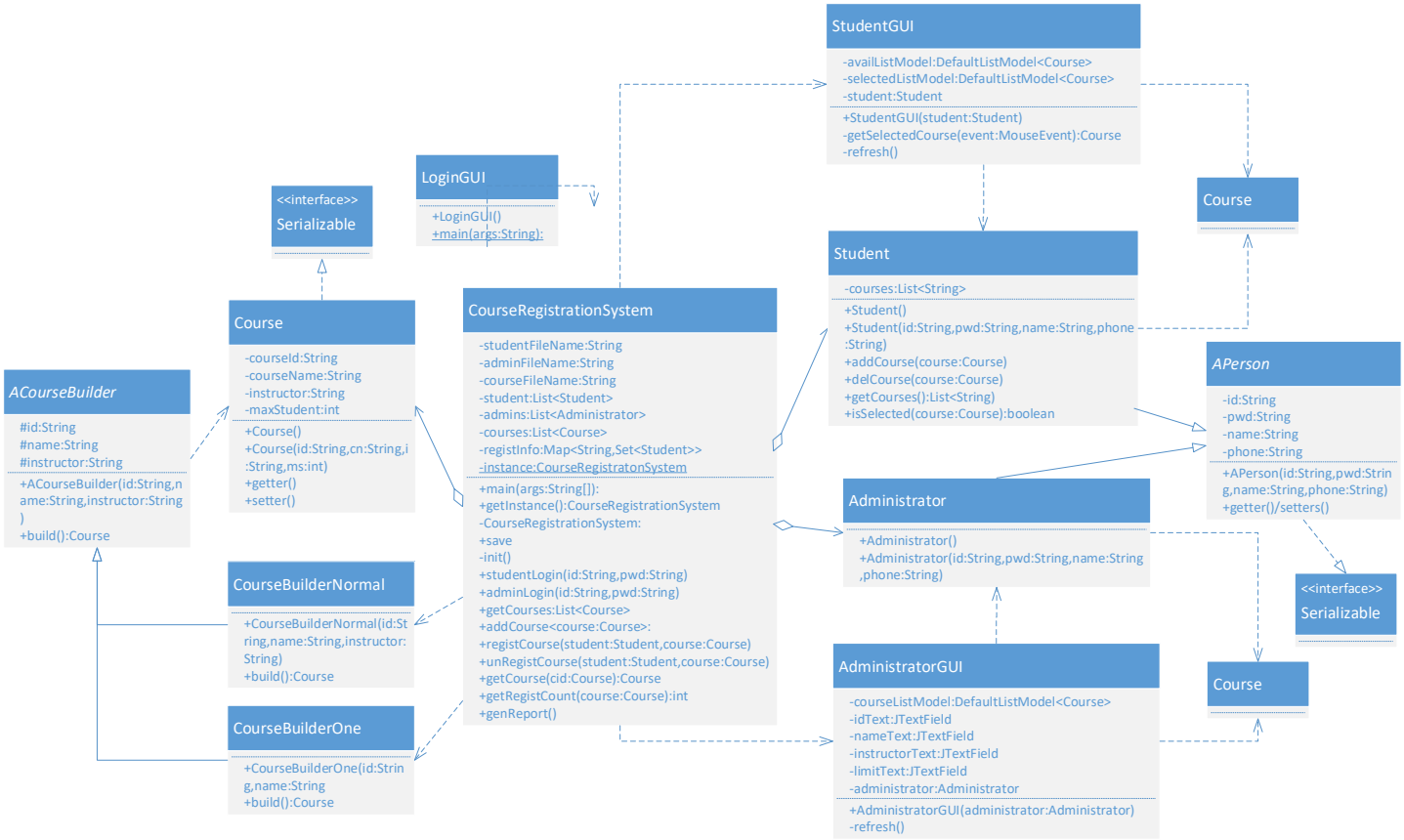
Student:



Administrator:



- Class diagram(s)



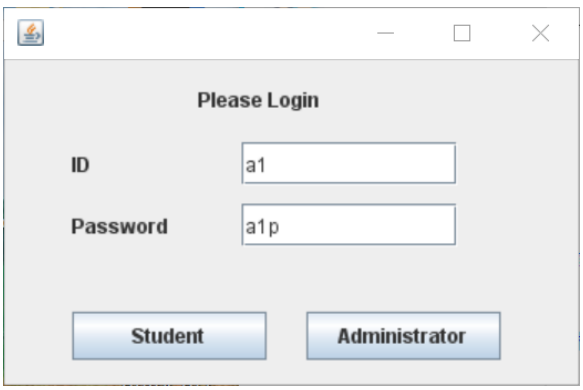
- Conclusion

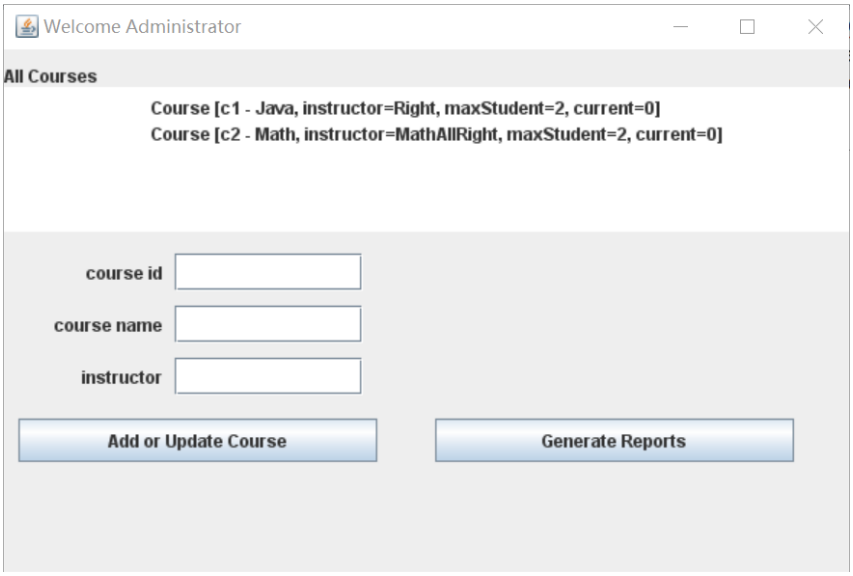
1 We use Singleton Pattern for CourseRegistrationSystem.
2 We use Builder Pattern for ACourseBuilder, CourseBuilderNormal, CourseBuilderOne to build Course.
The course demonstrated by this system is relatively simple, but the course in the real world will be more complex, and the Builder Pattern can be personalized to generate the required course.

The Course Registration Program is envisioned to enhance the efficiency and user experience of the course registration process. By providing an easy-to-use platform for both students and administrators, the system will contribute to a smoother registration process, reduce administrative overhead, and ultimately improve the educational institution's overall course management.

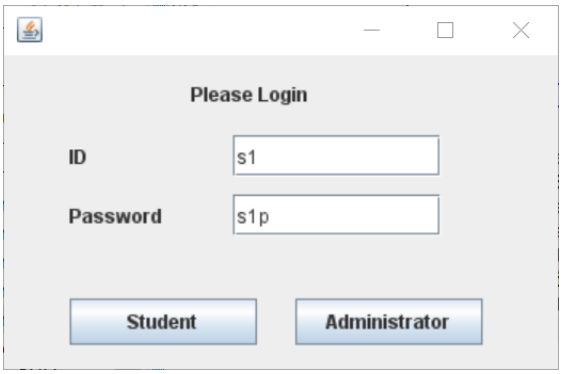
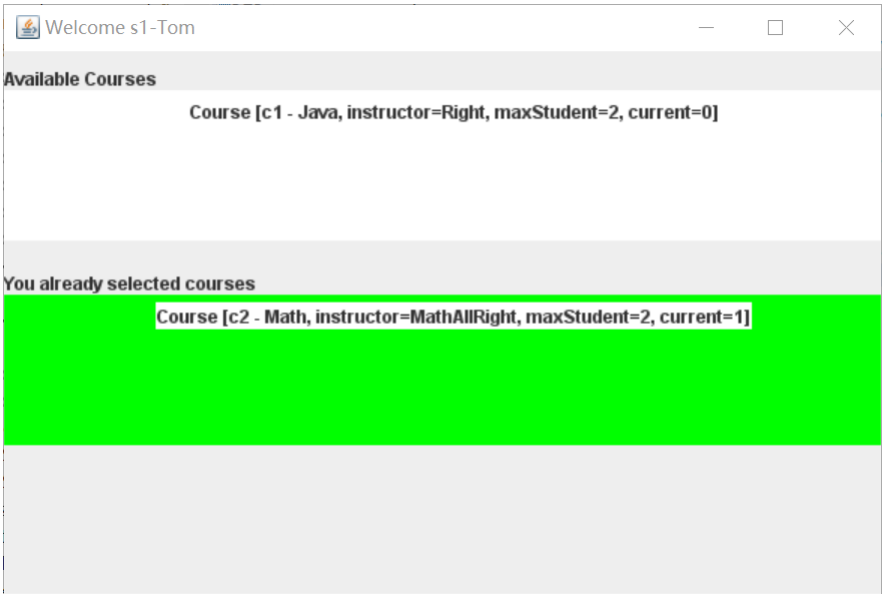
- Appendix (any related reports, questionnaires, docs.. If any).

  Administrator Login GUI





Student Login GUI



Mouse Double click for register or unregister a Course.