



TCP1201 Object Oriented Programming and Data Structures

TT01

Group Assignment

Student Management System

by

| Name | ID | Email | Position |
|------------------------------|------------|-----------------------------------|----------------|
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PROBLEM DEFINITION:

The student management system is designed for resources and routine of the university during the trimester. The users are the admin, academicians and the students in the university. Every user has to login with their ID and a password. But, in the system the three group of users have different access and authorization.

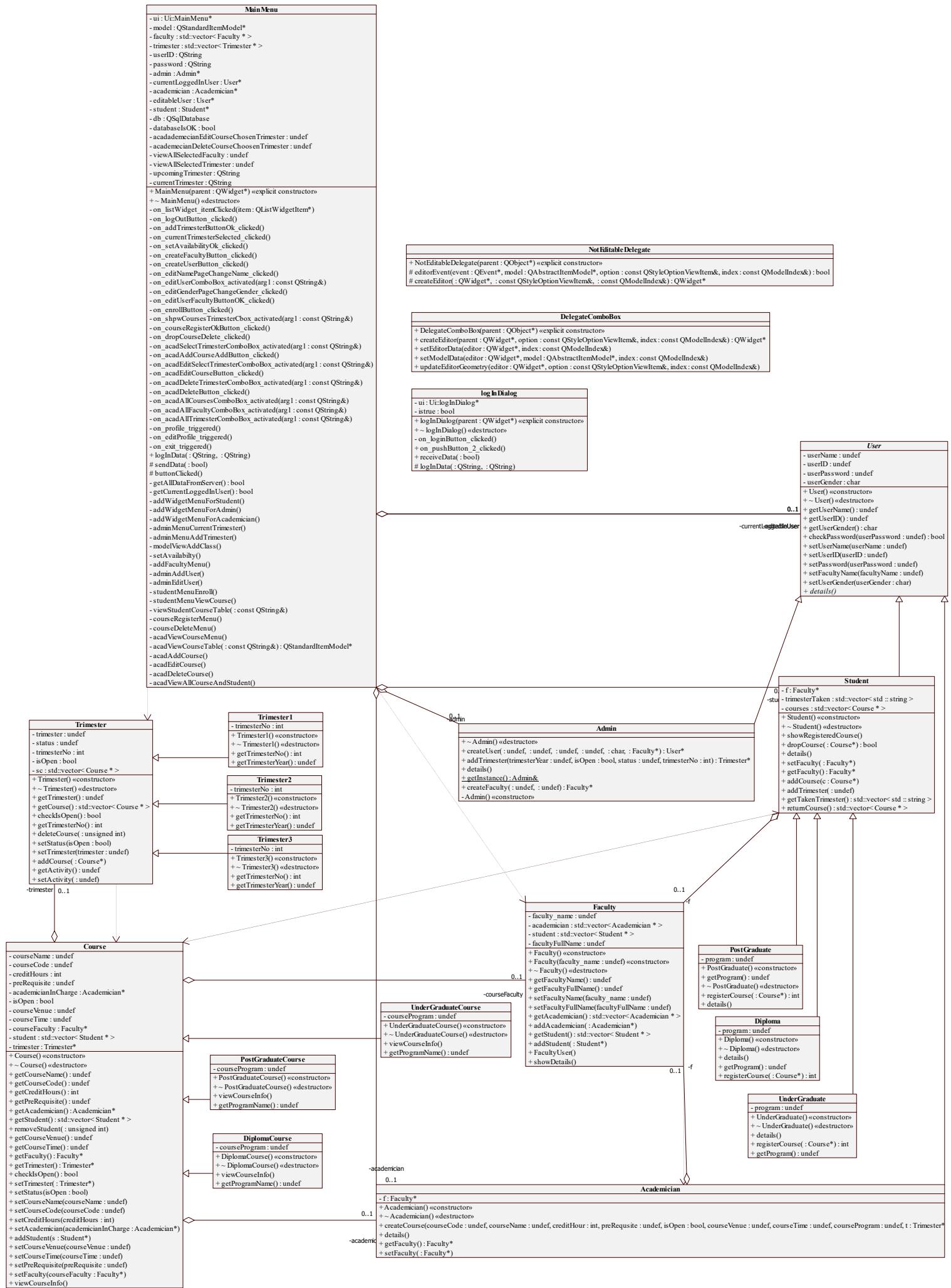
Every student in either program Diploma or undergraduate or postgraduate can enroll at the starting of each trimester. Every year university offers three trimester. Through the system student can register to the course offered in that particular trimester. According to the program the courses information such as course name and code, credit hours, prerequisite, academician in charge, venue and time. A student of a specific program can view his/her specific program courses. For example, diploma students can view only the courses offered to the diploma program. At the same time student can view the course only for his/her particular faculty. One student can register maximum of 22 credit hours/trimester. Student cannot register a course if that course has a prerequisite and that student didn't take the prerequisite course in any trimester. After registration, the student can view the list of courses has registered in the main page every time they login to the system throughout the rest of the trimester.

The academician will upload the courses to be taught before the starting of the trimester and they can able to add and delete new courses, change the course information in the system that are handled by them. They are able to view other courses offered in the trimester by other academicians but unable to change them. They can also view the list of students registered under their courses throughout the trimester. The academician in charge can made the course open or closed for registration to allow student register or stop the registration process. One academician can teach up to 3 courses per trimester.

Admin can add new and edit user such as academician and student for each faculty. He/she can also view the students from each course in a specific trimester for a specific faculty. He/she can add trimester. Set current or upcoming trimester. And set availability for them. The admin can also create faculty.

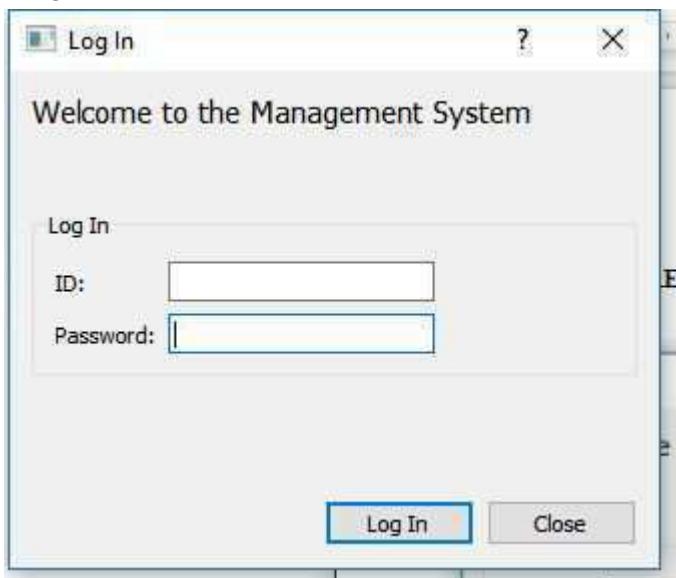
This problem is completed by QT gui and PostgreSQL.

System Design(UML Diagram)



APPENDIX A (SCREEN SHOTS) :

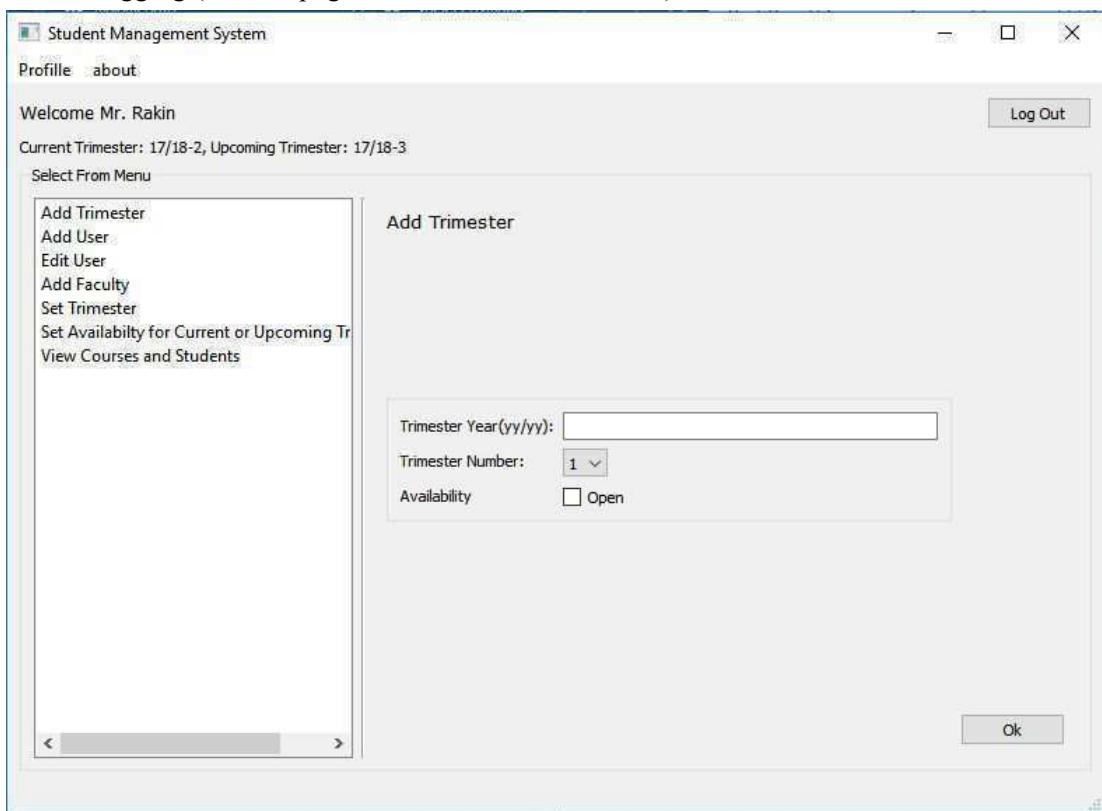
+Login menu.



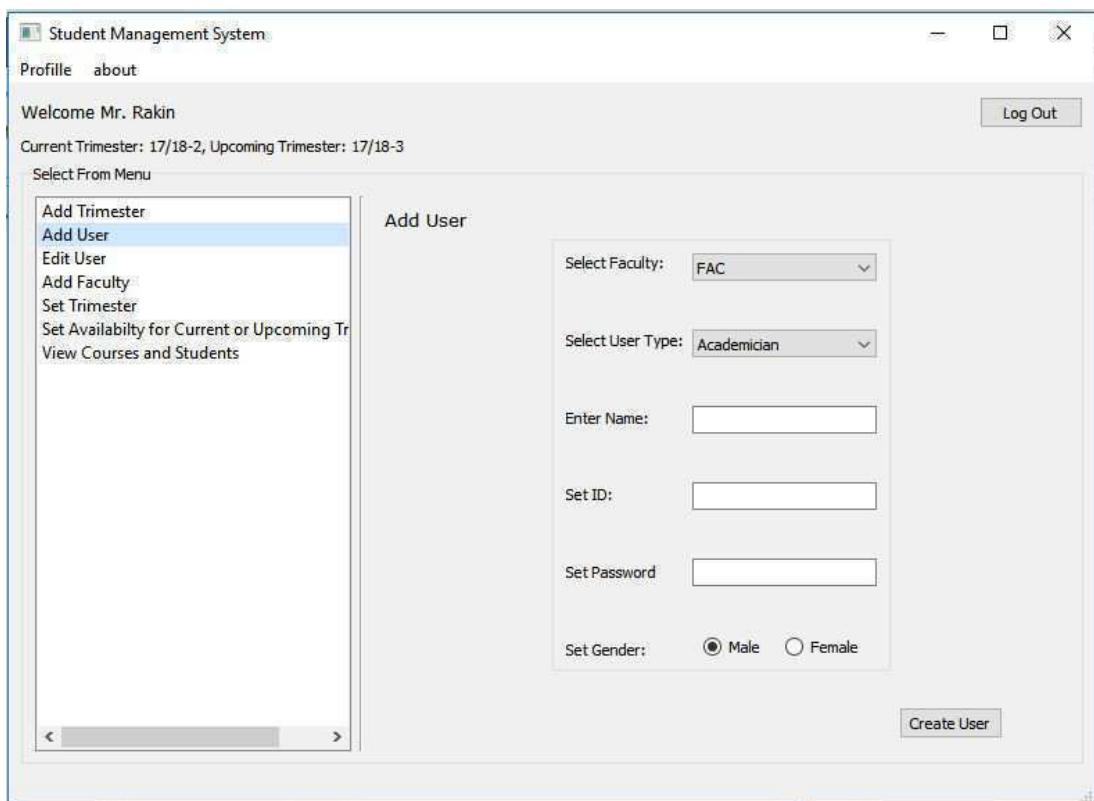
+Logging in as admin.(password 1234)



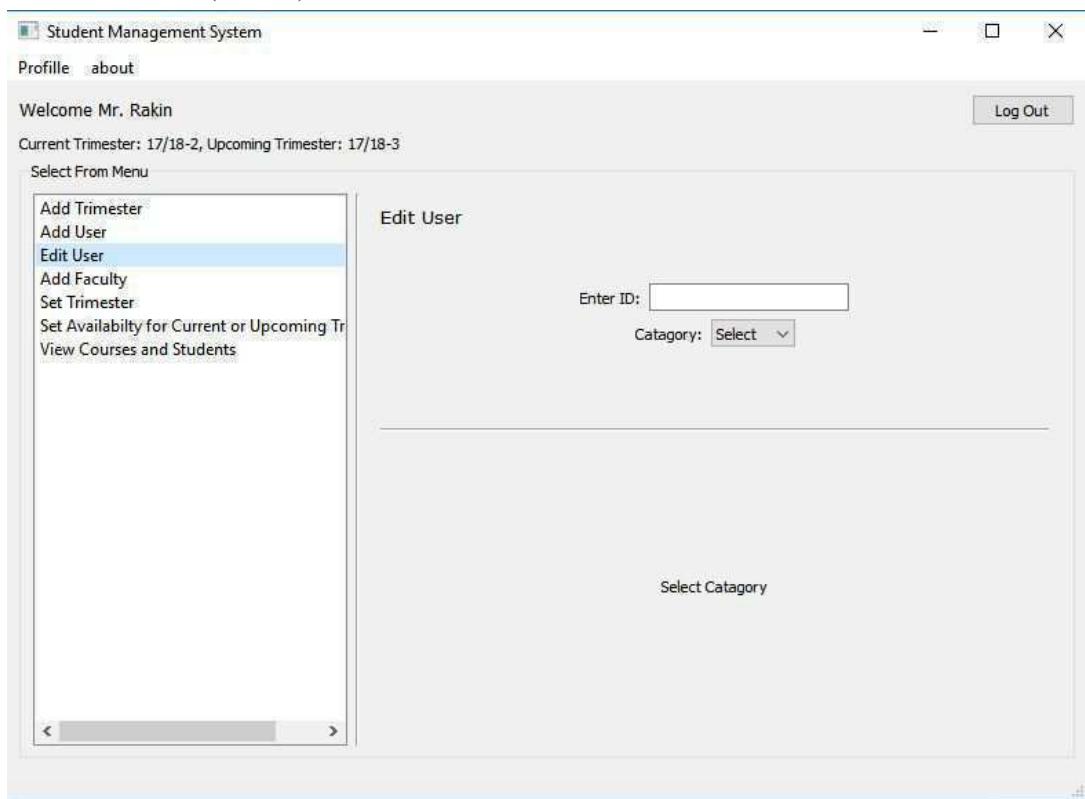
+After Logging (Default page for admin is add trimester)



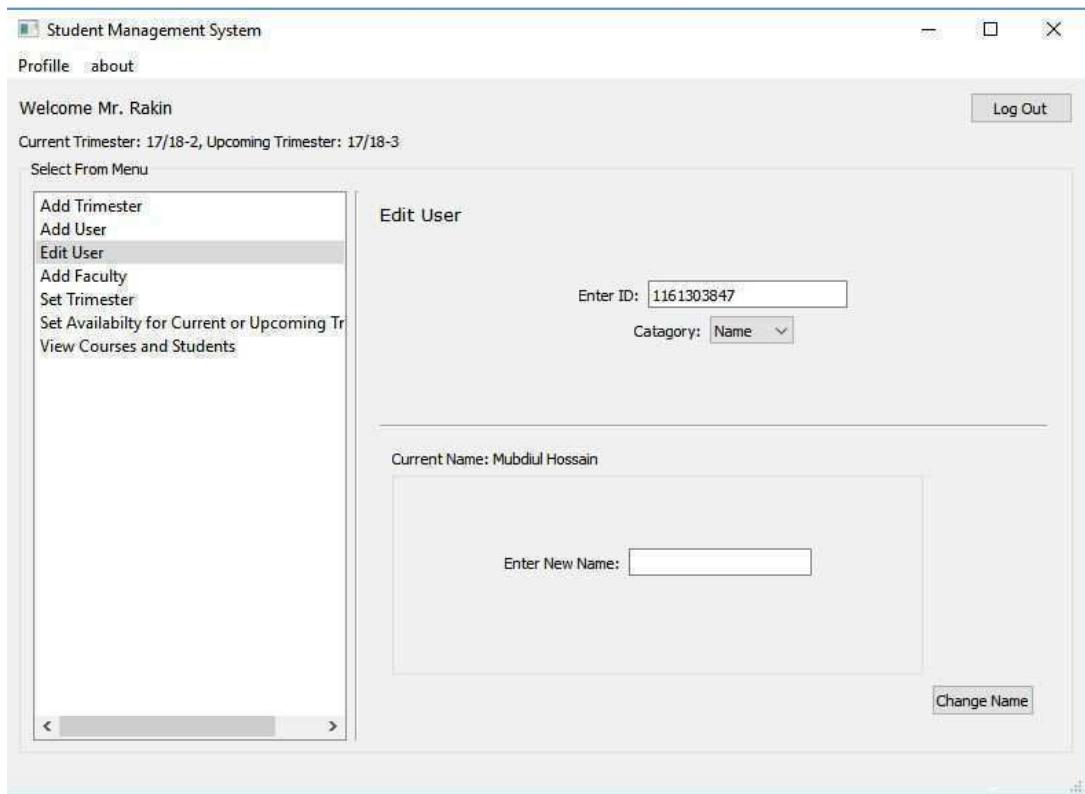
+Add User Menu (Admin)



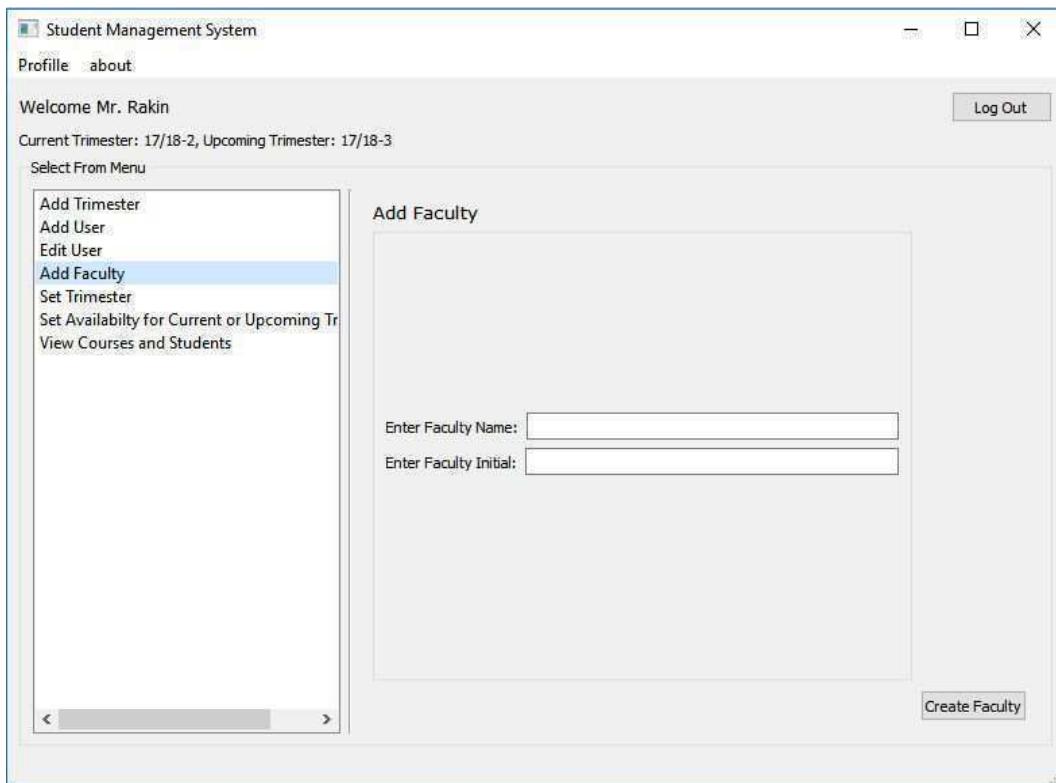
+Edit User Menu(Admin)



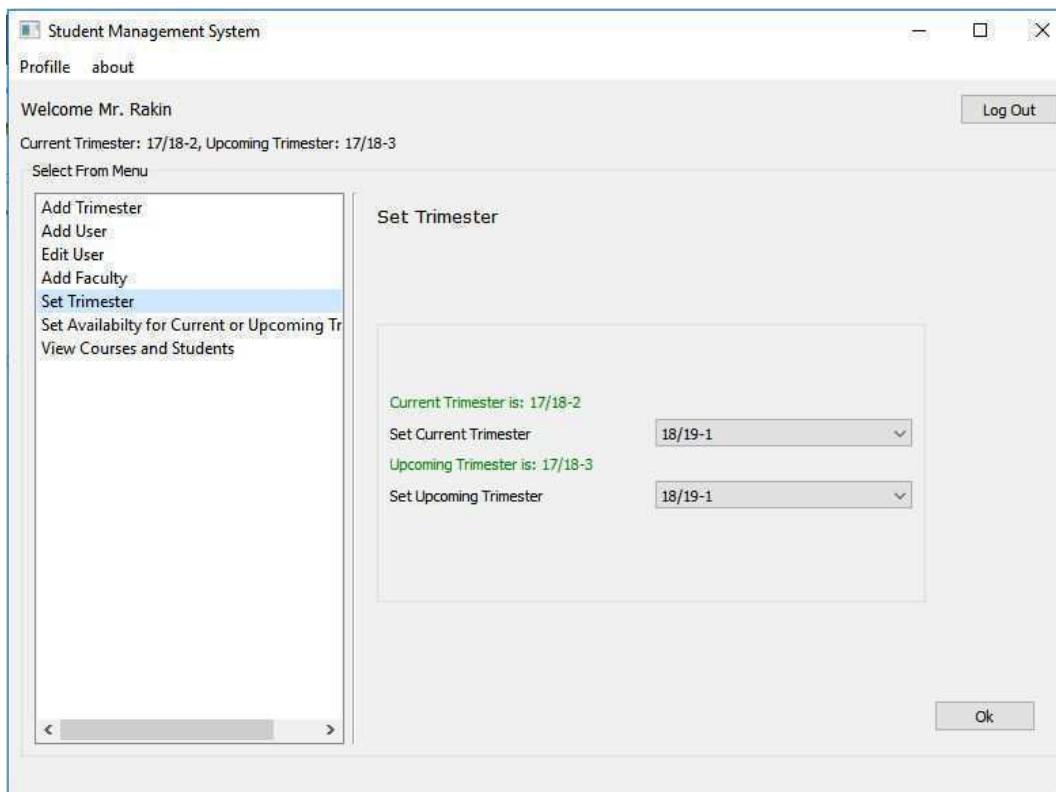
+Edit User (Admin) Submenu: Name.(Other Menus: Gender, Faculty)



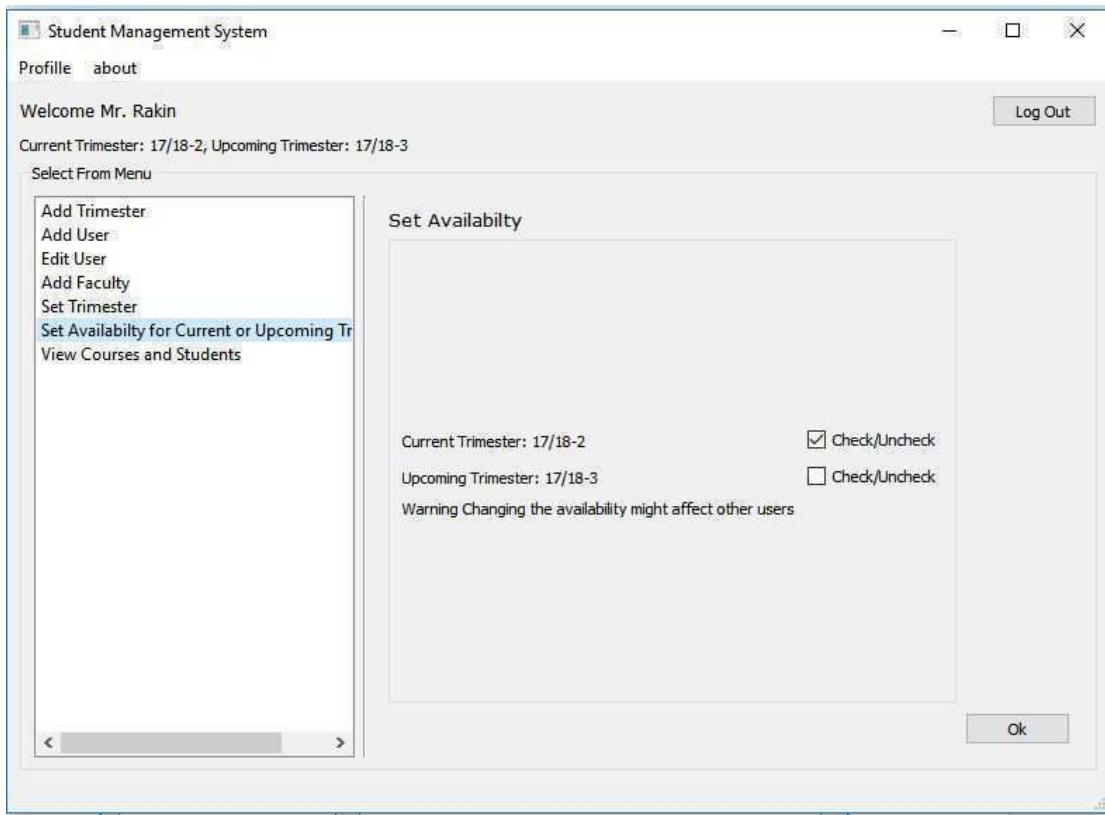
+Add Faculty (Admin Menu)



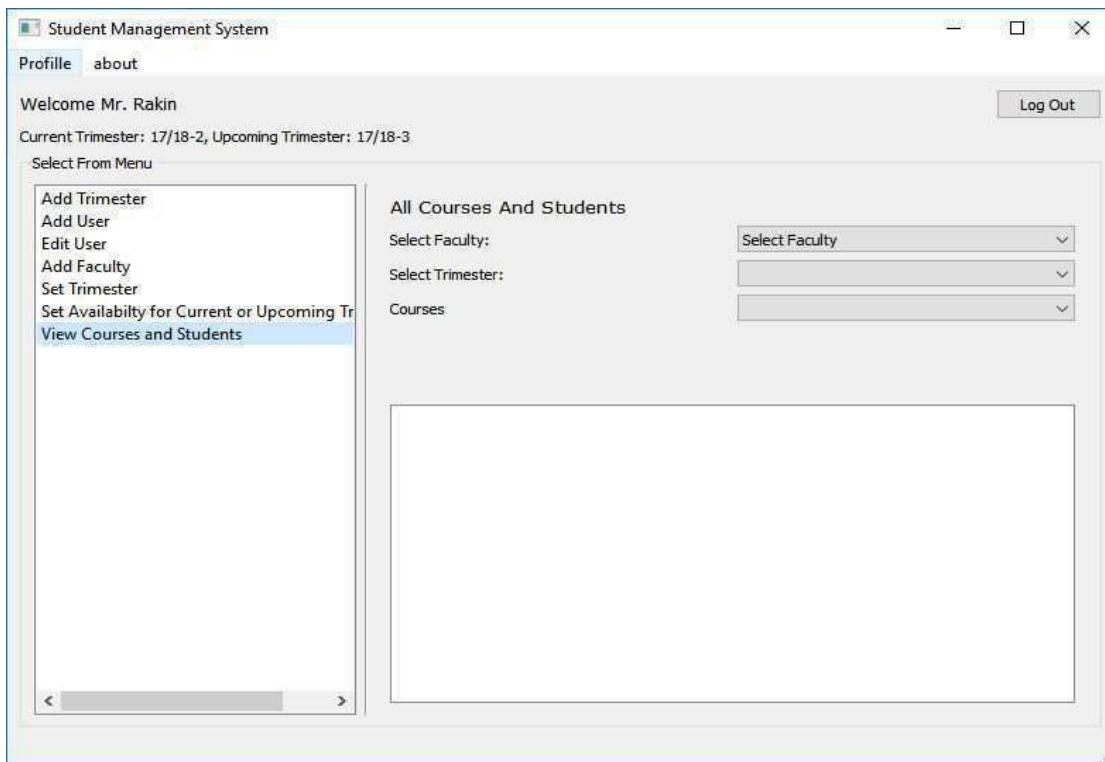
+Set Trimester (Admin Menu)



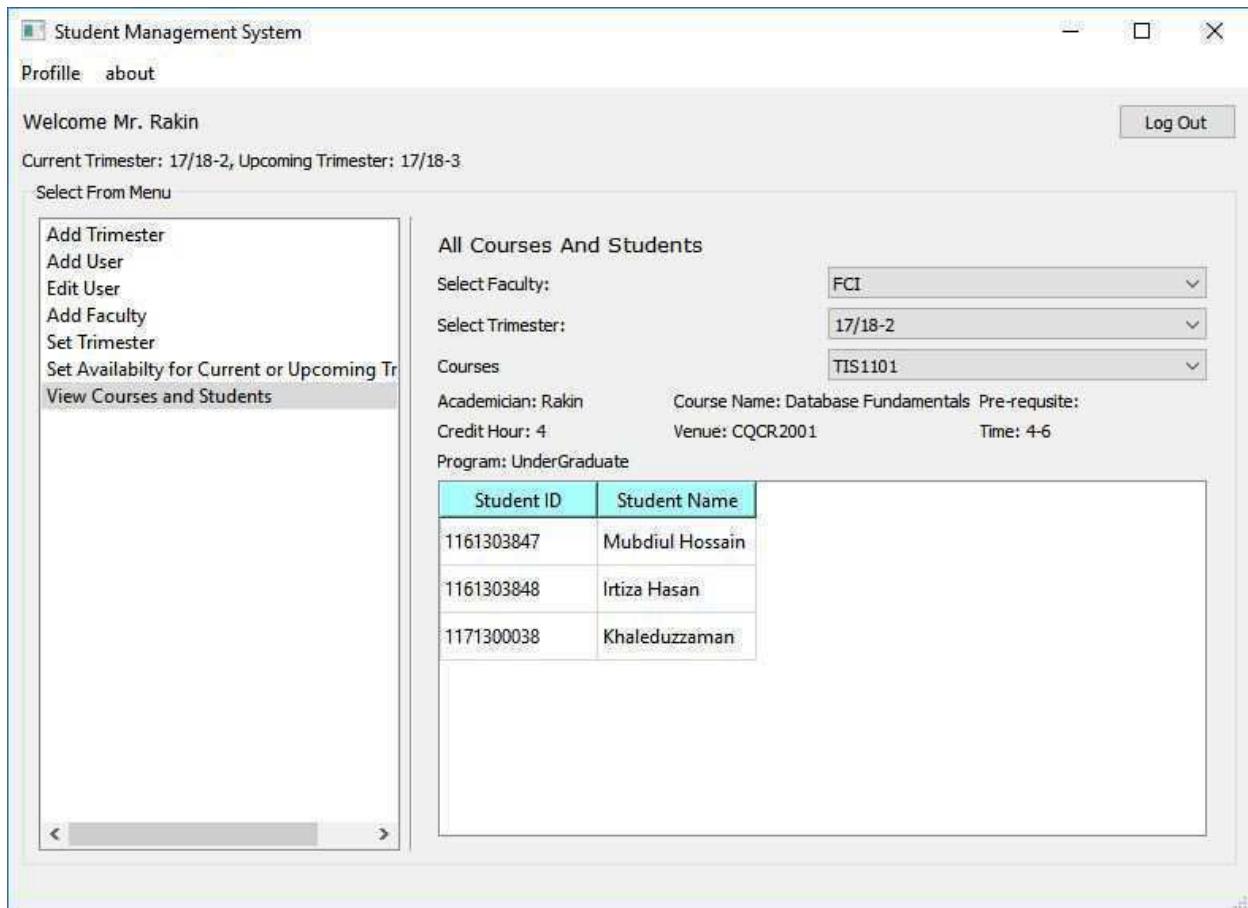
+Set Availability for Current or Upcoming Trimester(Admin User)



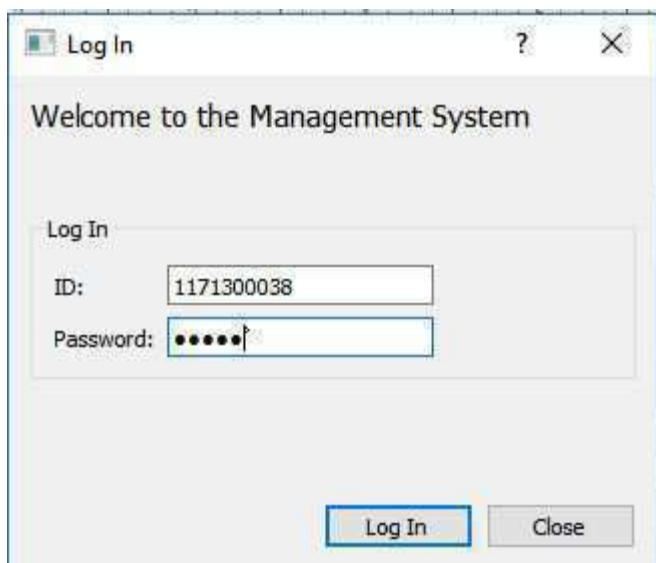
+View Courses and Students (Admin and Academician menu)



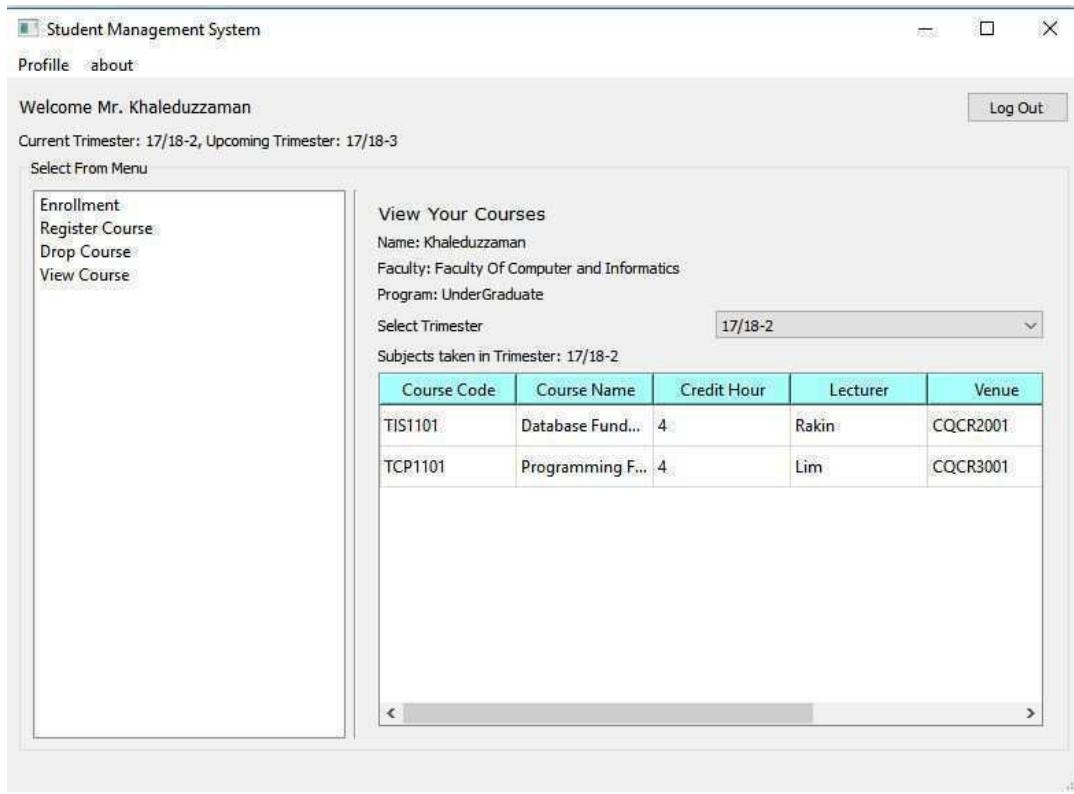
+Sample Operation for View Course and Students(Admin Menu)



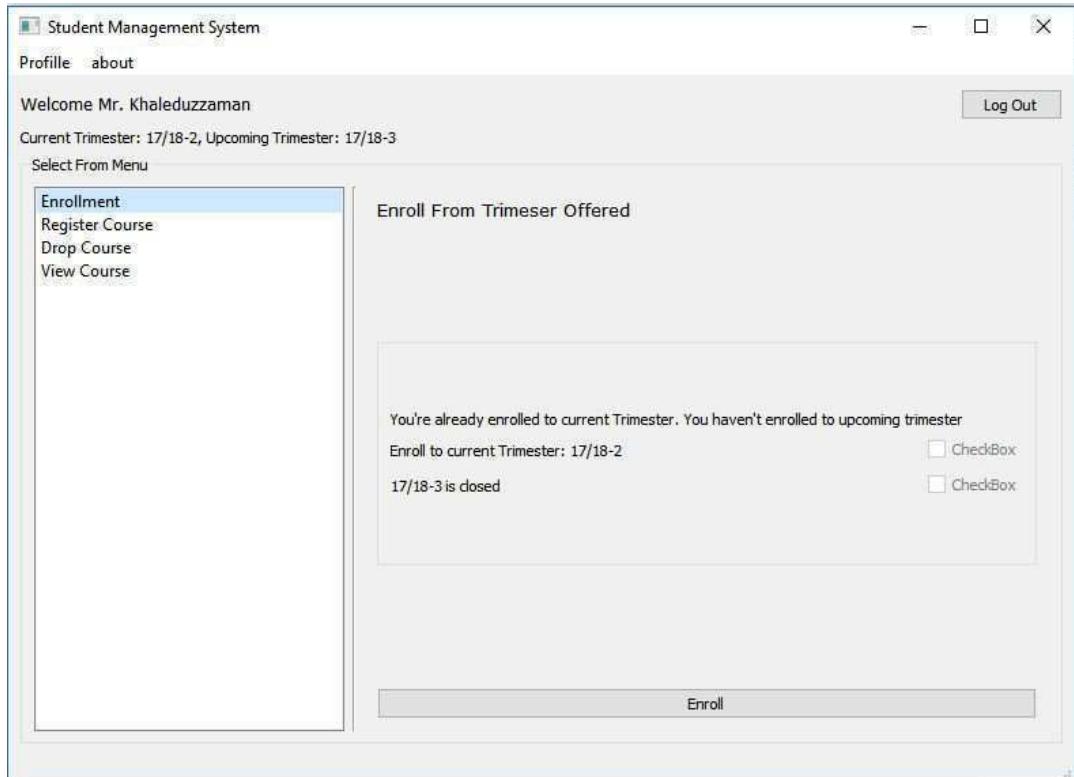
+Logging in as Student.(password 12345)



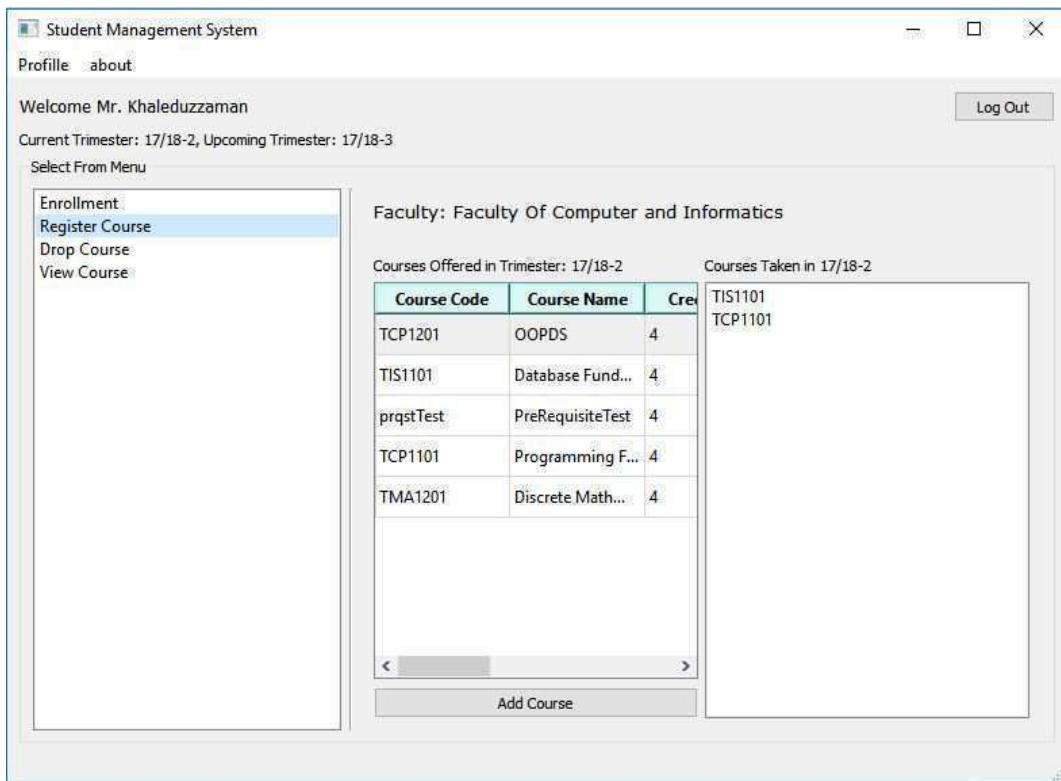
+Default View for Student Menu



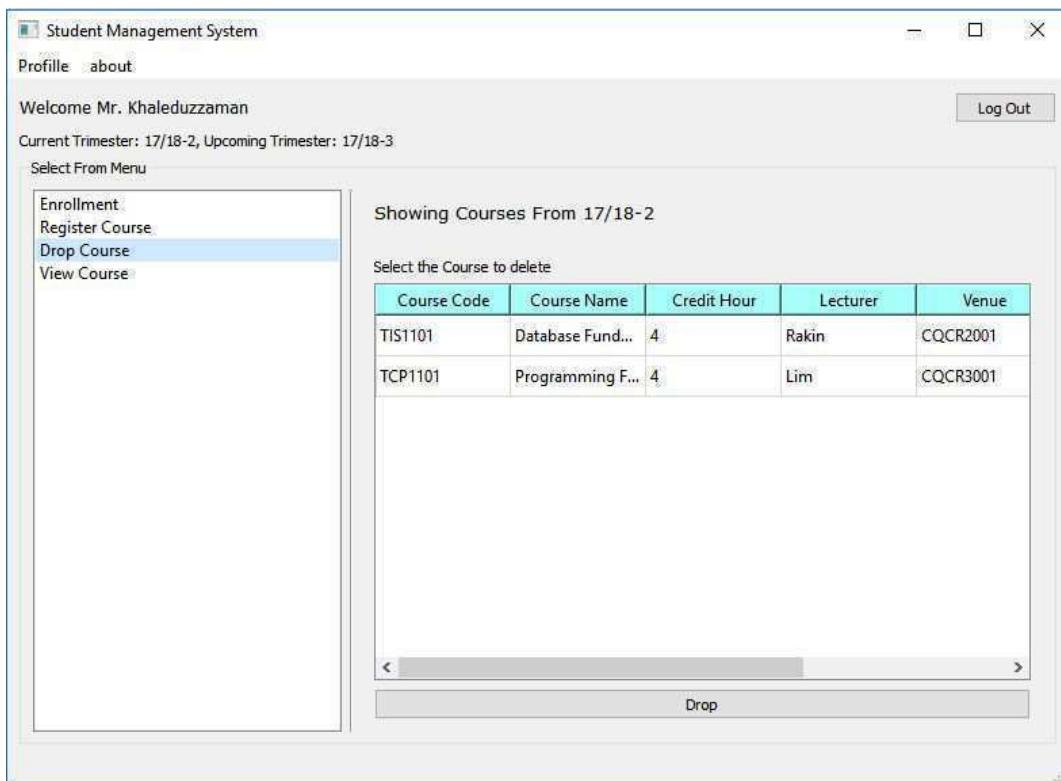
+Enrollment(Student Menu)



+Reister Course (Student Menu)



+Drop Course (Student Menu)



+View Course(Student Menu)

The screenshot shows the 'View Your Courses' section. On the left, a sidebar menu includes 'Enrollment', 'Register Course', 'Drop Course', and 'View Course', with 'View Course' being the active option. The main area displays student information: Name: Khaleduzzaman, Faculty: Faculty Of Computer and Informatics, Program: UnderGraduate. A dropdown menu for 'Select Trimester' shows '17/18-2'. Below it, a table lists subjects taken in the current trimester:

| Course Code | Course Name | Credit Hour | Lecturer | Venue |
|-------------|------------------|-------------|----------|----------|
| TIS1101 | Database Fund... | 4 | Rakin | CQCR2001 |
| TCP1101 | Programming F... | 4 | Lim | CQCR3001 |

+Register Course Operations(Student User)

The screenshot shows the 'Faculty: Faculty Of Computer and Informatics' section. On the left, a sidebar menu includes 'Enrollment', 'Register Course', 'Drop Course', and 'View Course', with 'Register Course' being the active option. The main area displays course offerings for the current trimester:

| Course Code | Course Name | Credit Hour | Lecturer | Venue | Time |
|-------------|--------------------|-------------|----------|----------|-------|
| TCP1201 | OOPDS | 4 | Lim | CQCR2001 | 11-13 |
| TIS1101 | Database Fund... | 4 | Rakin | CQCR2001 | 4-6 |
| prqtText | PrerequisiteText | 4 | Lim | CQCR2005 | 1-2 |
| TCP1101 | Programming F... | 4 | Lim | CQCR3001 | 2-4 |
| TMA1201 | Discrete Math... | 4 | Rakin | CQCR2004 | 2-4 |
| TPT1101 | Professional De... | 4 | Rakin | CQCR3002 | 4-6 |

Below the table, there is a button labeled 'Add Course'. To the right, a separate box shows courses taken in the current trimester:

| Course Taken in 17/18-2 |
|-------------------------|
| TIS1101 |
| TCP1101 |

+Registering selected Course(Student Menu)

The screenshot shows the Student Management System interface. On the left, a sidebar menu includes 'Enrollment', 'Register Course' (which is highlighted), 'Drop Course', and 'View Course'. The main content area displays the Faculty of Computer and Informatics. A message at the top says 'TPT1101 added!'. Below it, a table lists courses offered in the current trimester:

| Course Code | Course Name | Credit Hour | Lecturer | Venue | Time |
|-------------|--------------------|-------------|----------|----------|-------|
| TCP1201 | OOPDS | 4 | Lim | CQCR2001 | 11-13 |
| TIS1101 | Database Fund... | 4 | Rakin | CQCR2001 | 4-6 |
| prqtTest | PreRequisiteTest | 4 | Lim | CQCR2005 | 1-2 |
| TCP1101 | Programming F... | 4 | Lim | CQCR3001 | 2-4 |
| TMA1201 | Discrete Math... | 4 | Rakin | CQCR2004 | 2-4 |
| TPT1101 | Professional De... | 4 | Rakin | CQCR3002 | 4-6 |

On the right, a section titled 'Courses Taken in 17/18-2' lists three courses:

| |
|---------|
| TIS1101 |
| TCP1101 |
| TPT1101 |

A blue button at the bottom of the main content area says 'Add Course'.

+After Registration View Course(Student Menu)

The screenshot shows the Student Management System interface after course registration. The sidebar menu remains the same. The main content area now displays 'View Your Courses' for the user 'Khaleduzzaman'. It shows his name, faculty, program, and the selected trimester ('17/18-2'). Below this, a table lists the subjects he is taking:

| Course Code | Course Name | Credit Hour | Lecturer | Venue | Time |
|-------------|--------------------|-------------|----------|----------|------|
| TIS1101 | Database Fund... | 4 | Rakin | CQCR2001 | 4-6 |
| TCP1101 | Programming F... | 4 | Lim | CQCR3001 | 2-4 |
| TPT1101 | Professional De... | 4 | Rakin | CQCR3002 | 4-6 |

+Logging in as Academician.(password 1234)



+Default Menu View Course(Academician Menu)

The screenshot shows the main application window for the 'Student Management System'. The top navigation bar includes links for 'Student Management System', 'Profile', 'about', 'Log Out', and a 'Select From Menu' button. The main content area has a sidebar on the left with options like 'View Your Courses', 'Add Course', 'Delete Course', 'Edit Course', and 'All Courses And Students'. The right side displays a 'View You Courses' section with a dropdown for 'Select Trimester' set to '17/18-2'. Below it is a table titled 'Faculty: Faculty Of Computer and Informatics' showing course details:

| Course Code | Course Name | Credit Hour | Pre-requisite | Status | Venue | Time | Program |
|-------------|--------------------|-------------|---------------|--------|----------|------|---------------|
| TIS1101 | Database Fund... | 4 | | Open | CQCR2001 | 4-6 | UnderGraduate |
| TMA1201 | Discrete Math... | 4 | TMA1101 | Closed | CQCR2004 | 2-4 | UnderGraduate |
| TPT1101 | Professional De... | 4 | | Open | CQCR3002 | 4-6 | UnderGraduate |

+Add Course(Academician Menu)

The screenshot shows the 'Student Management System' window. In the top left, there's a sidebar menu with options: View Your Courses, Add Course (which is selected), Delete Course, Edit Course, and All Courses And Students. The main area has a title 'Add Course:' and a sub-section 'Faculty: Faculty Of Computer and Informatics'. It includes dropdown menus for 'Select Trimester' (set to 'Select') and 'Select Program' (set to 'PostGraduate'). Below these are input fields for Course Code, Course Name, Course Credit, Pre-Requisite, Course Venue, and Course Time. There's also a checkbox for 'Availability' with the label 'Open'. At the bottom right of the main area is a large 'Add Course' button.

+Edit Course(Academician Menu)

The screenshot shows the 'Student Management System' window. The sidebar menu is identical to the previous screenshot. The main area has a title 'Edit Course' and a sub-section 'Select Trimester: 17/18-2' and 'Faculty: Faculty Of Computer and Informatics'. Below these are instructions 'Double Click the box to edit'. A table displays course information:

| Course Code | Course Name | Credit Hour | Pre-requisite | Status |
|-------------|--------------------|-------------|---------------|--------|
| TIS1101 | Database Fund... | 4 | | Open |
| TMA1201 | Discrete Math... | 4 | TMA1101 | Closed |
| TPT1101 | Professional De... | 4 | | Open |

At the bottom of the main area is a 'Save' button.

+Delete Course(Academician Menu)

Delete Course

Faculty: Faculty Of Computer and Informatics

Select Trimester: 17/18-2

| Course Code | Course Name | Credit Hour | Pre-requisite | Status |
|-------------|--------------------|-------------|---------------|--------|
| TIS1101 | Database Fund... | 4 | | Open |
| TMA1201 | Discrete Math... | 4 | TMA1101 | Closed |
| TPT1101 | Professional De... | 4 | | Open |

Delete

+Add Course Operation(Academician Menu)

Add Course:

Faculty: Faculty Of Computer and Informatics

Select Trimester: 17/18-2

Select Program: Diploma

| | |
|---------------|--------------|
| Course Code | DIPLOMATEST |
| Course Name | Diploma Test |
| Course Credit | 4 |
| Pre-Requisite | |
| Course Venue | Test |
| Course Time | Test |

Availability Open

Course Added

Add Course

+Newly created course is now ready to register if set to open(Diploma Student Menu)

The screenshot shows a Windows desktop environment with a student management application window open. The window title is "Student Management System". Inside, it displays a welcome message for "Mr. Imtiaz Sheikh" and the current/next trimester: "Current Trimester: 17/18-2, Upcoming Trimester: 17/18-3". A sidebar on the left lists "Enrollment", "Register Course" (which is selected), "Drop Course", and "View Course". The main content area has a header "Faculty: Faculty Of Computer and Informatics". Below it, a table titled "Courses Offered in Trimester: 17/18-2" shows one row:

| Course Code | Course Name | Credit Hour | Lecturer | Venue | Time |
|-------------|--------------|-------------|----------|-------|------|
| DIPLOMATEST | Diploma Test | 4 | Rakin | Test | Test |

Below the table is a button labeled "Add Course". To the right of the table, a section titled "Courses Taken in 17/18-2" is visible but empty. The system tray at the bottom shows standard icons and the date/time: "6:46 AM 30-Sep-18".

APPENDIX B (SOURCE CODE):

The source code is around 4000 line. The whole code is attached with the report.

- a. OOP concept covered
 - i. Class relationship '
 - 1. Composition
 - 2. Aggregation
 - 3. Inheritance
 - ii. Dynamic Casting
 - iii. Exception handling
 - iv. STL
 - v. Prebuilt template classes from library
 - vi. Uses **default** constructor, destructor, overloading constructor, move constructor etc. Uses virtual destructor in subclasses.
- b. Consists of function manageable size in each class.
- c. Well documented. Same indentation and style used everywhere.
- d. Commented
- e. User-friendly
- f. Built with qt graphical interface
- g. The project is already huge. Huge project contains many error. Tried to make as error free as possible.

LIMITATIONS OF YOUR PROGRAM:

1. This project is mostly based on dynamic memory allocation for low memory use. Although most of the feature uses dynamic allocation, program is smart enough to clean memory when required (Such as during Log Out). But program may take time in some cases as dynamic allocation is slow.
2. In some cases specially during fetching all data from server, creating data etc. program requires database connection. At this moment if database connection is lost it'll show user an error and will try to rollback. The solution is to restart the program and try to login again.
3. During fetching data from or saving to server/database it may take some time to load/save all data as it's the most time consuming process in the whole program.
4. We wanted to add more feature such as calculate CGPA, Mark student, Attendance feature, Teaching evaluation and many more. But each menu costed us exactly one day each to make. So due to time shortage these were not accomplished.

CONCLUSION:

This project is a result of extreme hard work and dedication by G1 - Group 8 (Hossain, Mohammad Mubdiul and Khaleduzzaman). This project consists mostly everything that was required in Software Functional Requirement. It was intended to make user friendly to user and at the same time can handle loads of data. QT and PostgreSQL made it quite easy to break the problem in several parts like using the data structure algorithm in GUI and database to work together. Program has the necessary error check during runtime to prevent crash or wrong decision. All the source code is appropriately indented and self documented to simplify complexity.

TCP1201 OOP&DS

Project Submission Sheet

To be Filled by Each Student

| | |
|---|--|
| ID | 1161303847 |
| Name | Hossain, Mohammad Mubdiul |
| Trimester / Session | 18/19-1 |
| Lecture Section | TC01 |
| Tutorial Section | TT01 |
| Date submitted | 30-sept-2018 |
| Deadline of the project | 01-Oct-2018 |
| My contribution in doing this project (in percentage) in the group | 60% |
| Description of my contribution in this project in the group | Class: Faculty, User, Admin, Academician, Student, UnderGraduate, PostGraduate, Diploma, MainMenu, LogInDialog, Main and Documentations QT and PostgreSQL |
| Number of hours I spent in doing this project | 361 hours |

I hereby certify that this project represents the work done by all my group members with my contribution clearly stated above without copying from any other resources. I declare that no part of our work has been copied from or by other groups, and that no collusion has taken place with any other persons or groups.

I certify that any disks submitted with this project have been virus checked and have no viruses on them.

Signature: Rakin Date: 30-sept-2018

Note: No coursework will be accepted unless it is accompanied by this submission sheet with all sections completed and it has been signed and dated.

TCP1201 OOP&DS

Project Submission Sheet

To be Filled by Each Student

| | |
|---|--|
| ID | 1171300038 |
| Name | Khaleduzzaman |
| Trimester / Session | 18/19-1 |
| Lecture Section | TC01 |
| Tutorial Section | TT01 |
| Date submitted | 30 Sep 2018 |
| Deadline of the project | 01 Oct 2018 |
| My contribution in doing this project (in percentage) in the group | 40% |
| Description of my contribution in this project in the group | Class: Trimester, Course, UnderGraduateCourse, PostGraduateCourse, DiplomaCourse and Documentation |
| Number of hours I spent in doing this project | ~205 hours |

I hereby certify that this project represents the work done by all my group members with my contribution clearly stated above without copying from any other resources. I declare that no part of our work has been copied from or by other groups, and that no collusion has taken place with any other persons or groups.

I certify that any disks submitted with this project have been virus checked and have no viruses on them.

Signature: Khaled Date: 30-sept-2018

Note: No coursework will be accepted unless it is accompanied by this submission sheet with all sections completed and it has been signed and dated.

TCP1201 OOP&DS Project Mark Sheet

| | |
|---------------------------------------|--|
| a. Report | |
| i. introduction | |
| ii. problem statement | |
| iii. Solution algorithm | |
| iv. UML class diagrams | |
| v. screen shots | |
| vi. source code | |
| | |
| b. Source Code | |
| i. style | |
| Indentation | |
| self documentation | |
| OOP features used | |
| Data structures use properly | |
| ii. modularity (small size functions) | |
| iii. Error reporting capabilities | |
| iv. code efficiency and strategy | |
| | |
| c. Program execution | |
| i. compile without errors | |
| ii. user friendly | |
| iii. error free during runtime | |
| iv. program output | |
| | |
| d. Bonus | |
| i. individual submission | |
| ii. extra significant features | |
| iii. early submission | |
| | |
| TOTAL | |