KOÇ
ÜNİVERSİTESİ
COMPUTER ENGINEERING

COMP132: Advanced Programming
Programming Project Report

Tutoring Center

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Fall/22

Part 1

1. List of Users

Username	Password	Type		Username	Password	Type
Student1	0000	Student		Student21	0000	Student
Student2	0000	Student		Student22	0000	Student
Student3	0000	Student		Student23	0000	Student
Student4	0000	Student		Student24	0000	Student
Student5	0000	Student				
Student6	0000	Student		Tutor1	1111	Tutor
Student7	0000	Student		Tutor2	1111	Tutor
Student8	0000	Student		Tutor3	1111	Tutor
Student9	0000	Student		Tutor4	1111	Tutor
Student10	0000	Student		Tutor5	1111	Tutor
Student11	0000	Student		Tutor6	1111	Tutor
Student12	0000	Student		Tutor7	1111	Tutor
Student13	0000	Student		Tutor8	1111	Tutor
Student14	0000	Student		Tutor9	1111	Tutor
Student15	0000	Student		Tutor10	1111	Tutor
Student16	0000	Student		Tutor11	1111	Tutor
Student17	0000	Student		Tutor12	1111	Tutor
Student18	0000	Student				
Student19	0000	Student		Atakan	123	Administrator
Student20	0000	Student				

2. List of Tutors

Username	Password	Type	Level		Username	Password	Type	Level
Tutor1	1111	Tutor	ALevel		Tutor7	1111	Tutor	BLevel
Tutor2	1111	Tutor	ALevel		Tutor8	1111	Tutor	BLevel
Tutor3	1111	Tutor	ALevel		Tutor9	1111	Tutor	BLevel
Tutor4	1111	Tutor	ALevel		Tutor10	1111	Tutor	BLevel
Tutor5	1111	Tutor	ALevel		Tutor11	1111	Tutor	BLevel
Tutor6	1111	Tutor	ALevel		Tutor12	1111	Tutor	BLevel

3. List of Courses

Course Name	Type	Prerequisite Courses	Registered Students	Registered Tutors	Required Equipment
MATH101	**Beginner**	**-**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
MATH102	**Beginner**	**MATH101**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
PHYS101	**Beginner**	**-**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
PHYS102	**Beginner**	**PHYS101**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
CHEM101	**Beginner**	**-**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
CHEM102	**Beginner**	**CHEM101**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
MATH201	**Advanced**	**MATH102**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
ENGR421	**Advanced**	**MATH201**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
CHEM210	**Advanced**	**CHEM102**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
ELEC301	**Advanced**	**MATH201**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
COMP207	**Advanced**	**-**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**
MECH311	**Advanced**	**PHYS102**	**Randomly 8 students**	**Randomly 3 tutors**	**Randomly 2 equipment**

4. List of Student

Username	Password	Type		Username	Password	Type
Student1	0000	Student		Student13	0000	Student
Student2	0000	Student		Student14	0000	Student
Student3	0000	Student		Student15	0000	Student
Student4	0000	Student		Student16	0000	Student
Student5	0000	Student		Student17	0000	Student
Student6	0000	Student		Student18	0000	Student
Student7	0000	Student		Student19	0000	Student
Student8	0000	Student		Student20	0000	Student
Student9	0000	Student		Student21	0000	Student
Student10	0000	Student		Student22	0000	Student
Student11	0000	Student		Student23	0000	Student
Student12	0000	Student		Student24	0000	Student

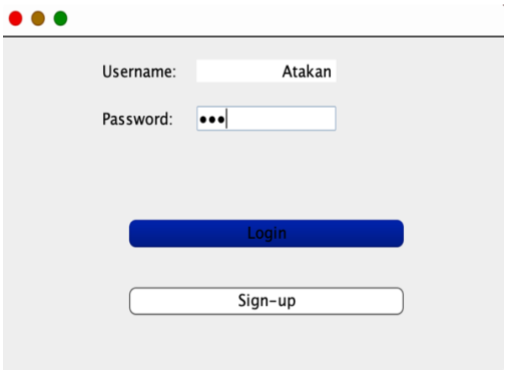
***Students are matched with courses randomly so that each course is taken by 8 different students. Tutors are matched with courses randomly, considering course types and tutor levels, so that each course is given by 3 different tutors.**

Application Usage Information

1. Sign up / Login Guide

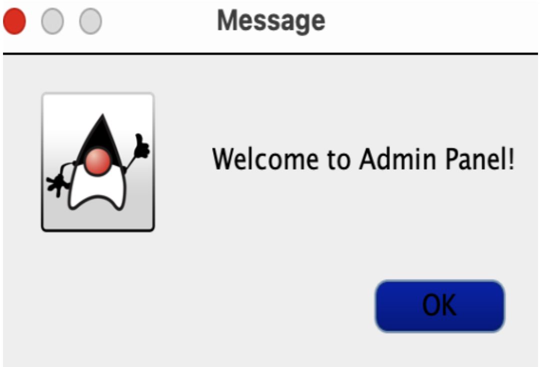
When we run the code, login page (Fig. 1) appears and asks for Username and Password. To enter the panel of existing user, we should fill the blanks and push the Login button. If these two variables are matched with any user (Student-Tutor-Administration), then Fig. 2 appears, and relevant panel opens for the user entering the system. Otherwise, Fig. 3 appears, and the system asks for Username and Password, again.

When we want to create a new user, we should press the Sign-up button in Fig. 1. Then Fig. 4 appears, and new user is created. After creating a new user, we will push " <-- Back To" button and go back to Login Page. Then we may login with the new user's information.


Username: Atakan

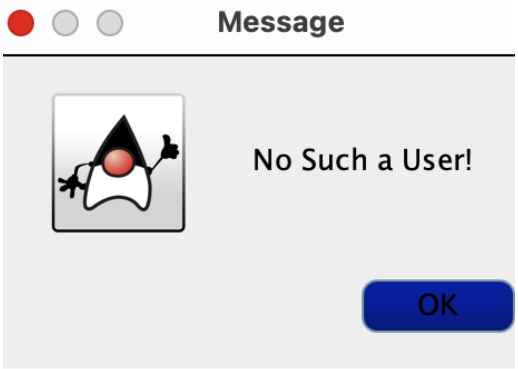
Password: •••

Fig. 1: Login – Signup Page


Message

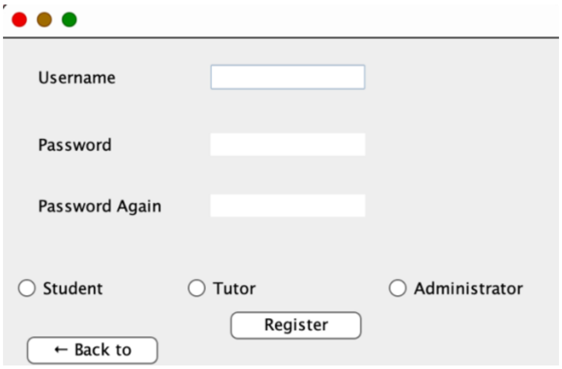
Welcome to Admin Panel!

Figure 2: Successful Login


Message

No Such a User!

Figure 3: Unsuccessful Login


Username

Password

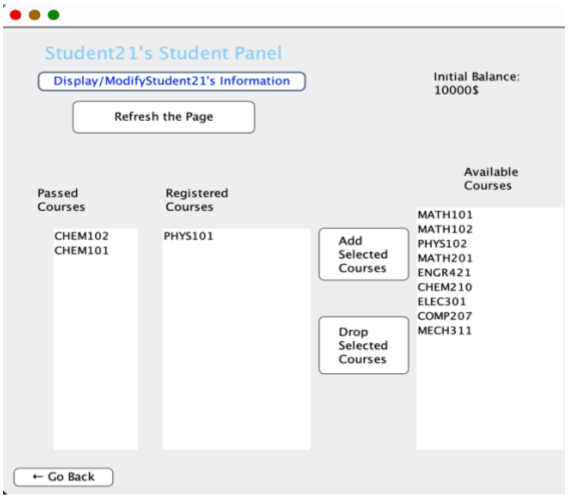
Password Again

○ Student ○ Tutor ○ Administrator

Figure 4: Signup Page

2. Student’s Guide

When we login with any student’s information, student panel appears. Since I set all the students balance as 10000$, it appears like that at the right top of the page. Passed courses and registered courses are randomly assigned and the left ones appears in Available Course List. When we select any course from the list and push the “Add Selected Courses” button, it will move to Registered Course list. Smilarly, the selected course from the Registered Course list will move to Available Course list when “Drop Selected Courses” button is pushed. We may see and change any information about the student by “Display / Modify Student’s Information” button (Fig. 6). Lastly, when we push the “Refresh” button [3], all the information changed are updated and accordingly to Registered Courses, Balance is updated.



Student21's Student Panel

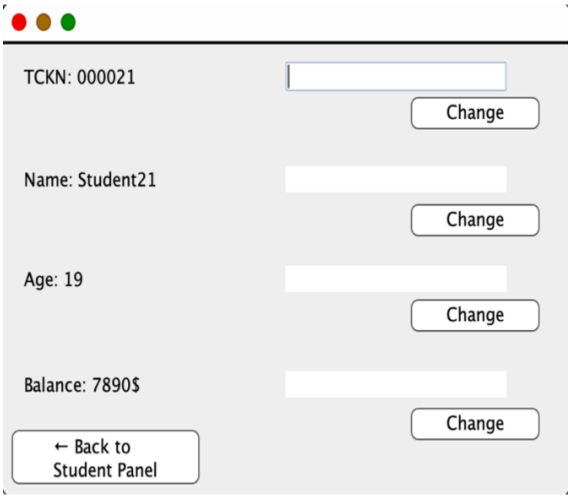
Initial Balance: 10000$

Passed Courses: CHEM102, CHEM101

Registered Courses: PHYS101

Available Courses: MATH101, MATH102, PHYS102, MATH201, ENGR421, CHEM210, ELEC301, COMP207, MECH311

Figure 5: Student Panel



TCKN: 000021

Name: Student21

Age: 19

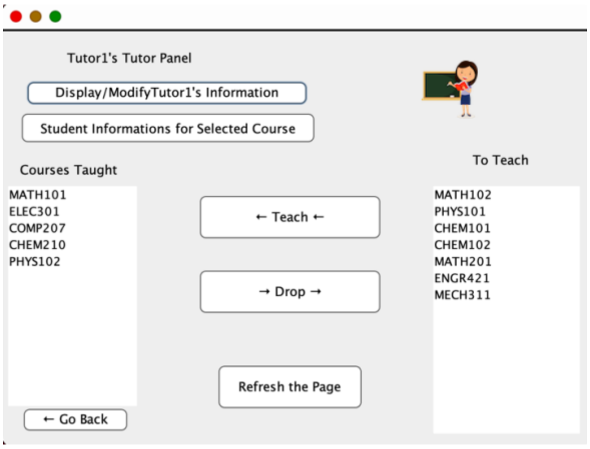
Balance: 7890$

Figure 6: Display / Modify Student’s Information Page

3. Tutor’s Guide

When we login with any tutor’s information, Tutor Panel (Fig. 7) appears. Since courses are randomly assigned to tutors so that each course is taught by 3 different tutors, Courses Taught List is already filled. However, the tutor may select any course from this list and stop to teach it by pushing “Drop” Button. On the other hand, tutor may select a course, appropriately to its level, from the “To Teach” list and by pushing “Teach” button, the selected course will move to Courses Taught list. If the tutor is BLevel and the selected course is Advanced, warning (Fig. 8) appears. “Display/Modify Information” button works similar to student panel. If is there any change in information, via pushing “Refresh” button, changes will appear. To refresh the page, I benefit from Reference [3]. Lastly, when we select any course from Courses Taught list and push “Student Information from Selected Course” button, students taken the selected course from the tutor will appear.

***Tutor images are also provided at the right top in Tutor Panel. [2]**



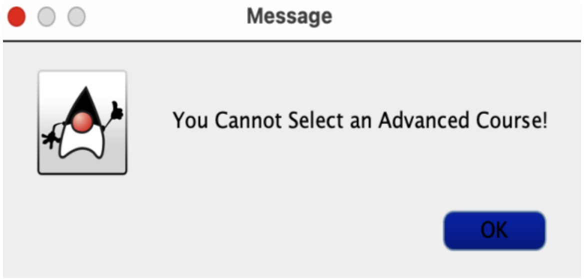
Courses Taught

MATH101
ELEC301
COMP207
CHEM210
PHYS102

To Teach

MATH102
PHYS101
CHEM101
CHEM102
MATH201
ENGR421
MECH311

Figure 7: Tutor Panel



You Cannot Select an Advanced Course!

Figure 8: Tutor-Course Level Warning

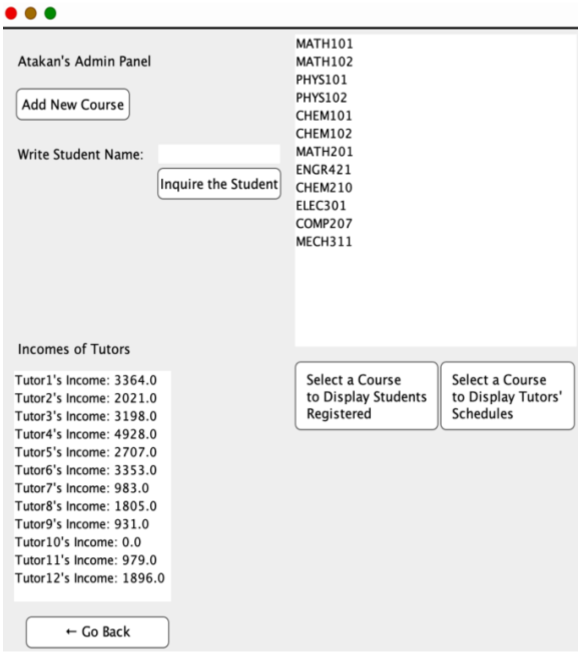
4. Administrator's Guide

When we login via Administrator's information, Fig. 9 appears. At the left-bottom, Incomes of each tutor can be seen which is calculated via each tutor's tutoring cost (percentage cuts are taken into consideration) multiplied with the number of courses given by the tutor.

When we push "Add New Course" button, Fig. 10 appears and as soon as the course level is set, the list for prospective prerequisite courses will appear as a list. For instance, if the course is assigned as Beginner Course, only Beginner level courses will appear in the list. After course name, course level and prerequisites are set, the course is added to course list of tutoring centers.

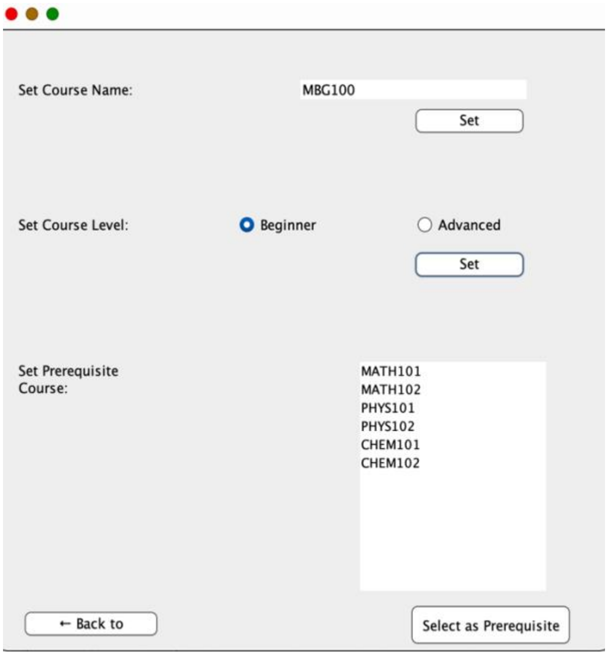
When we write the name of a student in the Text Field, we should press "Inquire the Student" button to query. If a wrong name is written, then a warning will appear.

Lastly, we may select any course from the course list at the right top. When we press "Select a course to display students registered" button after choosing a course, Fig 11. and the sorted list of students registered in the selected course will appear. Also, if we press "Select a course to display tutors' schedules" button after selecting a course, Fig 12. and the schedules of tutors teaching the selected course will appear.



MATH101
MATH102
PHYS101
PHYS102
CHEM101
CHEM102
MATH201
ENGR421
CHEM210
ELEC301
COMP207
MECH311

Tutor1's Income: 3364.0
Tutor2's Income: 2021.0
Tutor3's Income: 3198.0
Tutor4's Income: 4928.0
Tutor5's Income: 2707.0
Tutor6's Income: 3353.0
Tutor7's Income: 983.0
Tutor8's Income: 1805.0
Tutor9's Income: 931.0
Tutor10's Income: 0.0
Tutor11's Income: 979.0
Tutor12's Income: 1896.0



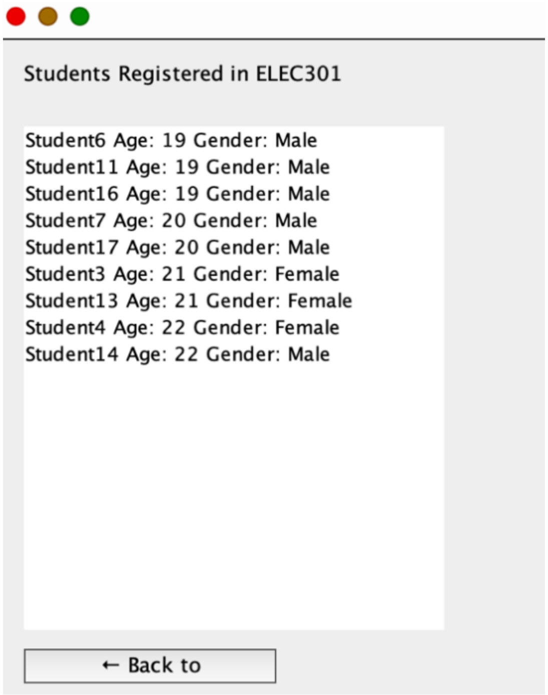
Set Course Name: MBG100

Set Course Level: ● Beginner ○ Advanced

MATH101
MATH102
PHYS101
PHYS102
CHEM101
CHEM102

Figure 9: Admin Panel

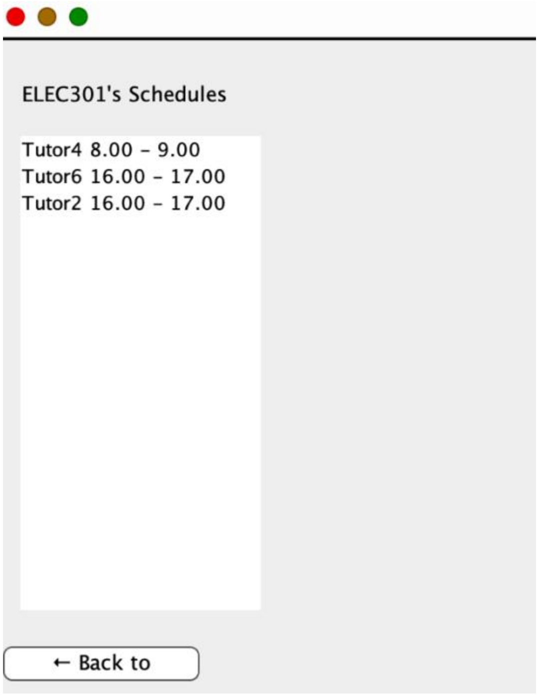
Figure 10: Add New Course Page



Students Registered in ELEC301

```
Student6 Age: 19 Gender: Male
Student11 Age: 19 Gender: Male
Student16 Age: 19 Gender: Male
Student7 Age: 20 Gender: Male
Student17 Age: 20 Gender: Male
Student3 Age: 21 Gender: Female
Student13 Age: 21 Gender: Female
Student4 Age: 22 Gender: Female
Student14 Age: 22 Gender: Male
```

Figure 11: Sorted Student List Registered in Selected Course.



ELEC301's Schedules

```
Tutor4 8.00 - 9.00
Tutor6 16.00 - 17.00
Tutor2 16.00 - 17.00
```

Figure 12: Schedules of Tutors Teaching Selected Course.

Part 2

1. Class Relations and Hierarchies

There are separate classes for each window in GUI, all in (default package). In the “core” package, I created CourseLevel class and RoleType class for courses and tutors, respectively. In the “data” package, there is a “Data” class in which all the users, courses, equipment are created, and their relations are assigned. I preferred to use “Data” class to initialize and declare objects instead of any “main” named class. My main method “public static void main(String[] args)” is in the “LoginPanel” class since I used it to start the whole system. That’s why I do not need to any extra “main” class. In the “Models” package, I have different classes to initialize objects of the system. Also, there is a polymorphism and inheritance between “ALevelTutor/BLevelTutor” and “Tutor” classes. In here, “Tutor” class is abstract since there are methods where the functionality is not declared in there. In “ALevelTutor/BLevelTutor” classes, I will declare their functionality according to the Tutor Type. According to these types of tutors and levels of courses, I set different rules for costs, prerequisites etc.

2. GUI Components

I mainly used JPanel as container and Absolute Layout as layout. As components, I used JLabel, JTextField, JButton, JRadioButton, JPasswordField, JList and JOptionPane [1]. I learned how to install and use “window builder” from References [4] and [5].

References

[1] https://stackoverflow.com/questions/8852560/how-to-make-popup-window-in-java

[2] https://www.seekpng.com/ipng/u2q8a9q8r5e6y3e6_teacher-cartoon-vector-png/

[3] https://stackoverflow.com/questions/7628121/how-can-i-refresh-or-reload-the-jframe

[4] https://www.youtube.com/watch?v=7HChmKwOUzw

[5] https://www.youtube.com/watch?v=vcHDscPR9Vw

[6] https://stackoverflow.com/questions/6533243/create-gui-using-eclipse-java/6533365#6533365