Objective: Create MySQL schema and tables

Integrate Python application with MySQL schema

Perform basic SQL operations using Python

Database schema and table design:

Create a table '**student**' having fields 'student_id', 'first_name', 'last_name' and 'email'. In this table, 'student_id' is primary key and will be used as foreign key as well

Create a table '**course**', having fields 'course_id', 'course_title' and 'course_credits'. In this table, 'course id' is unique key and will also be used as foreign key.

Create a table '**registration**'. This table has auto-generated key 'registration_id'. The composite keys 'student_id', 'course_id' and 'enrollment_semester' will be composite keys and will not be repeated. This means that a student cannot enroll in the same course in the same semester more than once. Moreover, student can only enroll in a course if both student and the course exists in their respective tables. You may define this as constraint. If student or course is deleted, that also effects the 'registration' table.

Python integration:

When the application executes, it integrates with database schema (course_registration).

The application displays 7 different options, as shown:

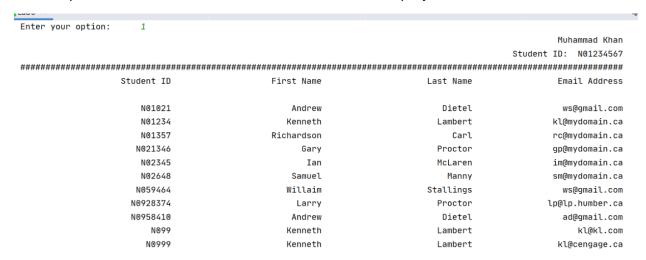
C:\Python\python.exe C:/Users/mk_hu/OneDrive/Desktop/Winter2023/CCGC5003W23/Labs/Lab6/Lab6.py

- 1. Display all students
- 2. Diplay all courses
- 3. Display all registrations -students and courses
- 4. Register student in course
- 5. Search Student
- 6. Add student
- 7. End application

Enter your option: 1

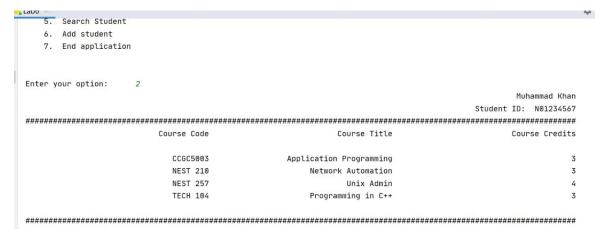
When option 1 is selected, it displays all enrolled students or error message is displayed, "Students not enrolled in the institution".

When option 1 is selected, all enrolled students are displayed in tabular format:



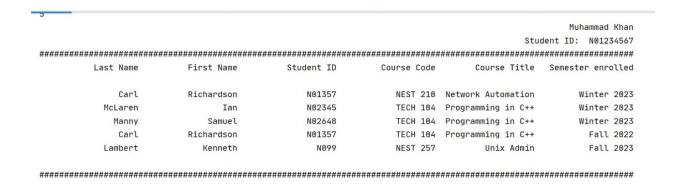
Option 2 displays the courses offered at the institution (if course list exists in the database – or an error message is displayed "Courses not offered at the institution")

Option 2 displays all the courses offered at the institution:



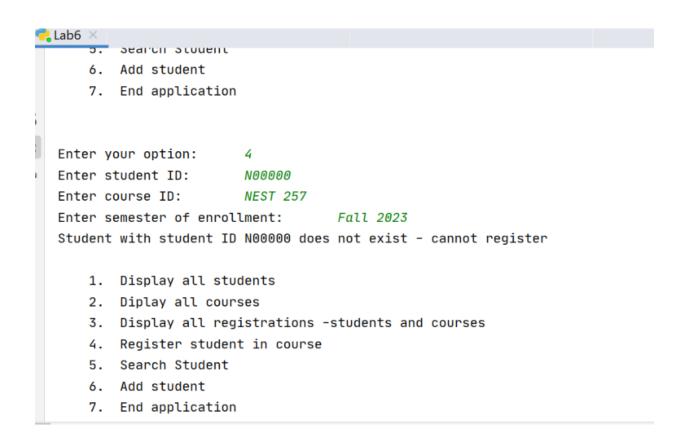
Option 3 displays the current registration in the registration table. It displays all students enrolled in different courses over the period of different semesters. If there are no students registered in any course, then course message "There is no student registered in any course at the institution".

When choosing option 3, following table is displayed showing all the registrations so far:



Choosing option 4 allows you to register student in a course. First the conditions are checked if student is enrolled in the institution and the course is offered at the institution. then the student is enrolled in the course.

This option (option 4) result is shown below (following shows when student is not enrolled in the institution based on student ID):



When choosing option 4, if both the student as well as the course exist, then student is enrolled in the course. This is shown below:

Enter your option: 4 N02648 Enter student ID: Enter course ID: NEST 257 Winter 2024 Enter semester of enrollment: Student with student ID N02648 exists Course with Course ID NEST 257 exists Course with ID NEST 257 and student with student ID N02648, both exist .. Student with ID N02648 registered the course with course ID NEST 257 1. Display all students 2. Diplay all courses 3. Display all registrations -students and courses 4. Register student in course 5. Search Student 6. Add student 7. End application

When choosing option 5, a student can be searched in the institution. Following scenario shows that when option 5 was selected and student did not exist, the message to that effect is displayed:

- 2. Diplay all courses
- 3. Display all registrations -students and courses
- 4. Register student in course
- 5. Search Student
- 6. Add student
- 7. End application

```
Enter your option: 5

Please enter student ID to search information: N00000

Student having student ID N00000 is not enrolled in the institution
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- 1. Display all students
- 2. Diplay all courses
- 3. Display all registrations -students and courses
- 4. Register student in course
- 5. Search Student

In another scenario, when student is already enrolled in the institution, the application (when choosing option 5) displays following:

Enter your option: 5
Please enter student ID to search information: N01357
Student already enrolled in the institution
Student ID First Name Last Name Email Address
N01357 Richardson Carl rc@mydomain.ca

Choosing option 6 allows user to add new student in the institution – if the student is NOT already enrolled based on the student ID.

Following scenario shows that when choosing option 6, and student already exists in the institution, displays the following:

Enter your option: 6

Please enter student ID: N0999

There is student data

When choosing option 6, and student is not already in the system, then following message is displayed:

Enter your option: 6

Please enter student ID: N0718293

There is no student data

The option 6 then asks for the student information, as shown below:

Enter valid choice

Enter your option: 6 Please enter student ID: N0516273	
There is no student data	
Enter first name of student to register:	Daniel
Enter last name of student to register:	Sammy
Enter email ID of the student to register:	ds@ds.humber.ca
Student was added or registered	
 Display all students 	
Diplay all courses	
Display all registrations -students	and courses
Register student in course	
5. Search Student	
6. Add student	
End application	
Following shows if user chooses invalid option:	
Enter your option: 9	
Enter valid choice	
Enter your option: α	

When user chooses option 7, application ends, displaying the message – "Application ending now".

Rubric for Lab 6

Table scripts and screenshots of the three tables (use DESCRIBE table name) to show the table description.

(Generate scripts to create table)

3 Marks

Display students -

If students are in the table

If students are not in the table

0.5 Mark + 0.5 Mark

Display courses -

If courses are in the table

If courses are not in the table

0.5 Mark + 0.5 Mark

Display all registered students in courses

If registration table is empty

If registration table contains data

1 Mark

Add student

Check if student is not already enrolled

Add student 1 Mark

Register Student in a course

Check if student is enrolled

Check if course is offered

Check if student is not already enrolled in the same course

In the same semester (composite key test)

Add student if all criteria are met

2 Marks

Main application and valid choice checks

Conditional and control statements 1 Mark

Total: 10 Marks