

Marks: 12

Due: Week 15, December 09

**Question**

In this project you will be creating a student record management system using File I/O operations on objects. You will be using sequential and random file access operations.

- 1- Create a **Student** class that contains the following members: ID, Name, Program, Email, Phone Number, Attendance and CGPA.
- 2- Create getter functions for all data members. Create setter functions for Program, Email, Phone Number, Attendance and CGPA.
- 3- The data of student objects can be saved in a file by those users who have an existing account. Please use the following Menu to check if the user already has an account. If the user does not have an account, allow the user to create an account and then allow the user to login using that information. The data of all users can be saved in a file and can be used for matching username and password information. A sample output is shown below for creating an account for new user and for logging in as an existing user.

```
Student Database Menu
1- Existing User.
2- New User.

Please enter an option: 2
Please enter your User Name without any space: Mike
Please enter your Password without any space: *****
Login Created Successfully!

Student Database Menu
1- Existing User.
2- New User.

Please enter an option: 1
Please enter your User Name without any space: Mike
Please enter your Password without any space: *****
Login Succesfull.
```

1a. Creating a new account

```
Student Database Menu
1- Existing User.
2- New User.

Please enter an option: 1
Please enter your User Name without any space: John
Please enter your Password without any space: *****
Username or Password was incorrect.Please try again.
Please enter your User Name without any space: John
Please enter your Password without any space: *****
Login Succesfull.

Menu
1- List All Students
2- List Students by Program.
3- Add a New Student.
4- Search a Student.
5- Modify data of a Student.
6- Delete a Student.

Please enter an option:
```

1b- Logging in using an existing account

- 4- Once the user has logged in with valid credentials, show the menu to the user as shown in figure 1b above. The user should be able to list all existing students, list students by program, add a new student, search a student using ID, modify data of a student (only those data members can be modified which have setter function) and delete a student.
- 5- Some sample operations are shown below:

```
1- List All Students
2- List Students by Program.
3- Add a New Student.
4- Search a Student.
5- Modify data of a Student.
6- Delete a Student.

Please enter an option: 3
Please enter Student's ID: 1
Please enter Student's Name: Mike
Please enter Student's Program: CSE
Please enter Student's Email: abc@seneca.ca
Please enter Student's Phone Number: 1234567890
Please enter Student's Attendance: 75
Please enter Student's CGPA: 3.2

Do you have another operation to perform? y

Menu

1- List All Students
2- List Students by Program.
3- Add a New Student.
4- Search a Student.
5- Modify data of a Student.
6- Delete a Student.

Please enter an option: 1

Student ID      Name      Program      Email      Phone No:      Attendance      CGPA
1              Mike      CSE          abc@seneca.ca      1234567890      75              3.2
```

## 2a- Adding a New Student and Listing All students

```
Student ID      Name      Program      Email      Phone No:      Attendance      CGPA
1              Mike      CSE          abc@seneca.ca      1234567890      75              3.2
2              John      EEE          def@seneca.ca      4567891234      80              3.5
3              Anne      EEE          sample@seneca.ca      8901234321      76              3.1
4              Bob       CSE          test@seneca.ca      3451234589      73              3.6

Do you have another operation to perform? y

Menu

1- List All Students
2- List Students by Program.
3- Add a New Student.
4- Search a Student.
5- Modify data of a Student.
6- Delete a Student.

Please enter an option: 2
Please enter the program name: CSE

Student ID      Name      Program      Email      Phone No:      Attendance      CGPA
1              Mike      CSE          abc@seneca.ca      1234567890      75              3.2
4              Bob       CSE          test@seneca.ca      3451234589      73              3.6
```

## 2b- Listing students by program

Student ID	Name	Program	Email	Phone No:	Attendance	CGPA
1	Mike	CSE	abc@seneca.ca	1234567890	75	3.2
2	John	EEE	def@seneca.ca	4567891234	80	3.5
3	Anne	EEE	sample@seneca.ca	8901234321	76	3.1
4	Bob	CSE	test@seneca.ca	3451234589	73	3.6

Do you have another operation to perform? y

Menu

1- List All Students  
2- List Students by Program.  
3- Add a New Student.  
4- Search a Student.  
5- Modify data of a Student.  
6- Delete a Student.

Please enter an option: 4  
Please enter student's ID: 3

Student ID	Name	Program	Email	Phone No:	Attendance	CGPA
3	Anne	EEE	sample@seneca.ca	8901234321	76	3.1

## 2c- Searching a student by id

1	Mike	CSE	abc@seneca.ca	1234567890	75	3.2
2	John	EEE	def@seneca.ca	4567891234	80	3.5
3	Anne	EEE	sample@seneca.ca	8901234321	76	3.1
4	Bob	CSE	test@seneca.ca	3451234589	73	3.6

Do you have another operation to perform? y

Menu

1- List All Students  
2- List Students by Program.  
3- Add a New Student.  
4- Search a Student.  
5- Modify data of a Student.  
6- Delete a Student.

Please enter an option: 5  
Please enter student's ID for which you want to modify data: 2

Menu

1- Modify Program  
2- Modify Email.  
3- Modify Phone Number.  
4- Modfiy Attendance.  
5- Modify CGPA.

Please enter your option for modifying student's data: 2  
Please enter new email for this student: john@seneca.ca

## 2d- Modifying record of a student by id

```
Student ID      Name      Program      Email      Phone No:      Attendance      CGPA
1              Mike      CSE          abc@seneca.ca      1234567890      75      3.2
2              John      EEE          john@seneca.ca      4567891234      80      3.5
3              Anne      EEE          sample@seneca.ca      8901234321      76      3.1
4              Bob      CSE          test@seneca.ca      3451234589      73      3.6

Do you have another operation to perform? y

Menu
1- List All Students
2- List Students by Program.
3- Add a New Student.
4- Search a Student.
5- Modify data of a Student.
6- Delete a Student.

Please enter an option: 6
Please enter student's ID which you want to delete: 2

John was deleted from the student's list.

New List is:

Student ID      Name      Program      Email      Phone No:      Attendance      CGPA
1              Mike      CSE          abc@seneca.ca      1234567890      75      3.2
3              Anne      EEE          sample@seneca.ca      8901234321      76      3.1
4              Bob      CSE          test@seneca.ca      3451234589      73      3.6
```

## 2e- Deleting record of a student by id

### Submission requirements:

- 1- The sample run of the program shown above is just an example of the output that could be produced by the program, however, you can modify this output to make your program more user-friendly.
- 2- Please note that it is required to include all necessary error checking.
- 3- This project must be **shown and run** in the last lab (Dec 09) and submitted on the BlackBoard before the deadline, or it will be awarded a 0.
- 4- The project should be submitted as a single PDF file. The project file should include the source code, the user's manual, and the samples of the program's outputs (i.e., screen captures).
- 5- **Under no circumstances an extension will be granted for this project.**

**IMPORTANT:** If you are not able to show the program in your last lab class, you can show your program earlier.