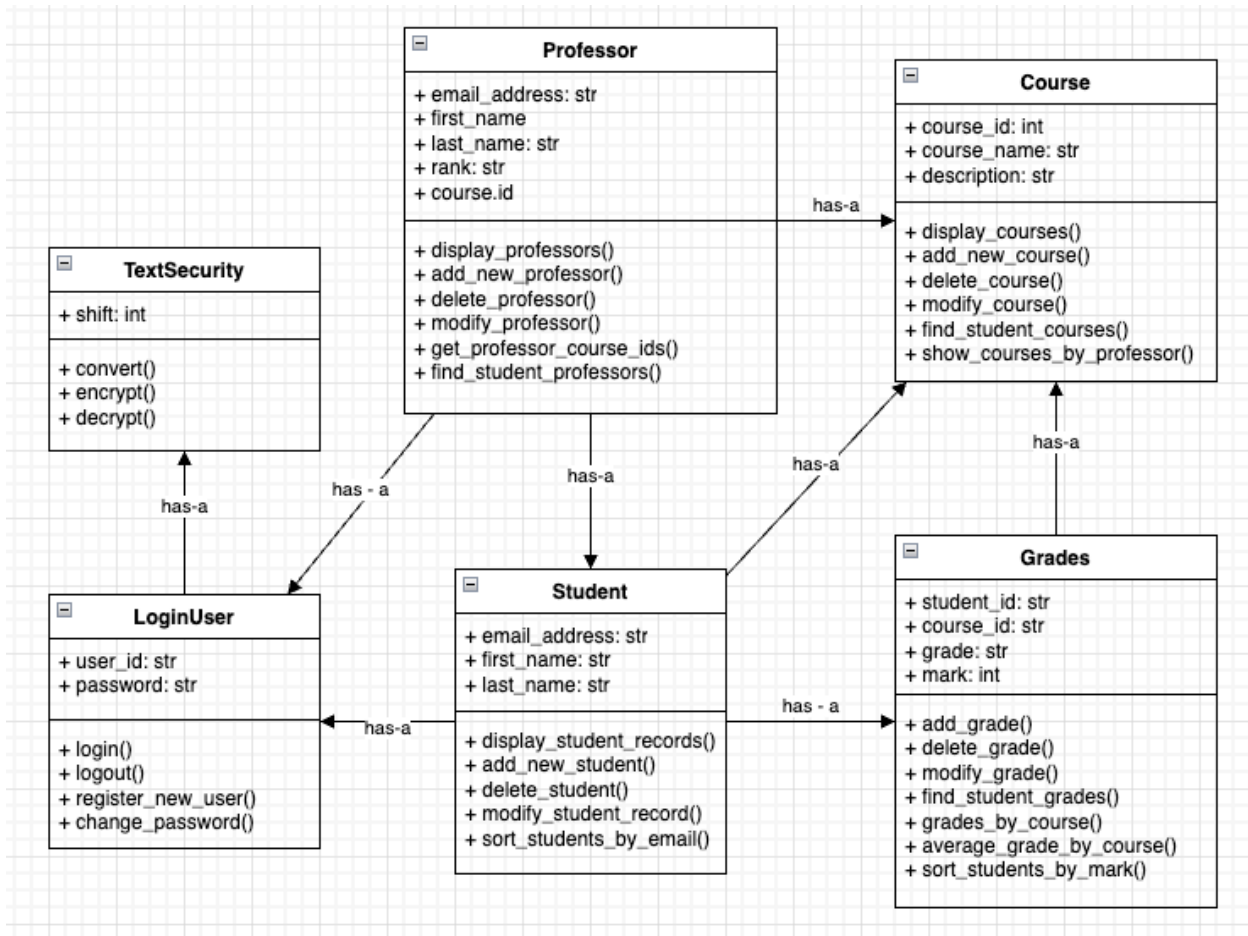


Louisa Stumpf
Professor Saini
Data 200
19 March, 2025

Lab 1

GitHub: https://github.com/louisasss/Stumpf_Lab1

Relationship Diagram:



Screenshots:

Login as student@email.com, password concealed while typing, student menu prompted

```
o (base) louisias@Louisias-MacBook-Pro Lab1 % /usr/bin/python3 "/Users/louisias/Documents/Data 200 - Python/Lab1/Lab1.py"

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 1
Executing option 1...
Enter your email address: student@email.com
Enter your password:
Login Successful!
Logging in...

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: 1
```

If password incorrect, print message and prompt login menu again

```
o (base) louisias@Louisias-MacBook-Pro Lab1 % /usr/bin/python3 "/Users/louisias/Documents/Data 200 - Python/Lab1/Lab1.py"

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 1
Executing option 1...
Enter your email address: student@email.com
Enter your password:
Login failed - Incorrect password.

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 1
Executing option 1...
Enter your email address: student@email.com
Enter your password:
Login Successful!
Logging in...

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: █
```

Select modify personal details for student, this prompts a menu to choose the value to modify.
Selected modify email and changed to student1@email.com

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: 1

Updating personal details...

Modify Student
1. Email
2. First Name
3. Last Name
Select the field you would like to modify: 1
Please enter the new value: student1@email.com
Record for student@email.com updated successfully!

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: 1
```

Select option 3, view grades for student0@school.com

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: 3

Displaying Grades...
Grades for student0@school.com:
Course: C0, Grade: A, Mark: 90
Course: C1, Grade: A, Mark: 92
Course: C2, Grade: B, Mark: 81

=====
Welcome to CheckMyGrade
=====
```

Select option 4, view courses for student0@school.com

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: 4

Displaying Courses...
Courses for student0@school.com:
Course: C0 - Course0, Description: A sample course
Course: C1 - Course1, Description: A sample course
Course: C2 - Course2, Description: A sample course

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
```

Select option 5, view professors for student0@school.com

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: 5

Displaying Professors...
Professors for student0@school.com:
Email: prof0@school.com, Name: ProfFirst0 ProfLast0, Rank: Associate, Teaches: C0
Email: prof1@school.com, Name: ProfFirst1 ProfLast1, Rank: Associate, Teaches: C1
Email: prof2@school.com, Name: ProfFirst2 ProfLast2, Rank: Associate, Teaches: C2

=====
Welcome to CheckMyGrade
=====
```

Select option 6, user logs out and returns to login menu

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Student Main Menu:
1. Update personal details
2. Update password
3. View grades
4. View course details
5. View professor details
6. Exit
Please select an option: 6

Logging Out...

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: █
```

Login as professor and professor menu is prompted

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 1
Executing option 1...
Enter your email address: prof0@school.com
Enter your password:
Login Successful!
Logging in...

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Professor Main Menu:
1. Update personal details
2. Update password
3. Add/delete/modify student
4. Add/delete/modify grade
5. View courses
6. View course statistics
7. Exit
Please select an option: █
```

Select option 1 and user is prompted with values to modify professor

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Professor Main Menu:
1. Update personal details
2. Update password
3. Add/delete/modify student
4. Add/delete/modify grade
5. View courses
6. View course statistics
7. Exit
Please select an option: 1

Updating personal details...

Modify Professor
1. Email
2. First Name
3. Last Name
4. Rank
5. Course id
Select the field you would like to modify: 2
Please enter the new value: Sam
Record for prof0@school.com updated successfully!

=====
Welcome to CheckMyGrade
=====
```

Select option 3, user is prompted to add/delete/modify student, select modify, user is prompted to enter student email and select the value to modify change last name to LastName

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Professor Main Menu:
1. Update personal details
2. Update password
3. Add/delete/modify student
4. Add/delete/modify grade
5. View courses
6. View course statistics
7. Exit
Please select an option: 3

1. Add Student
2. Delete Student
3. Modify Student
Please select an option: 3

Modifying student record...
Please enter the student's email: student0@school.com

Modify Student
1. Email
2. First Name
3. Last Name
Select the field you would like to modify: 3
Please enter the new value: LastName
Record for student0@school.com updated successfully!

=====
```

Select option 4, user is prompted to add/delete/modify grade, select modify, user is prompted to enter student email and course id associated with grade and select the value to modify change mark to 94

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Professor Main Menu:
1. Update personal details
2. Update password
3. Add/delete/modify student
4. Add/delete/modify grade
5. View courses
6. View course statistics
7. Exit
Please select an option: 4

1. Add Grade
2. Delete Grade
3. Modify Grade
Please select an option: 3

Modifying grade record...
Please enter the student's email: student@school.com
Please enter the course id: C1

Modify Grade
1. Student email
2. Course id
3. Grade
4. Mark
Select the field you would like to modify: 4
Please enter the new value: 94
Record for student@school.com, C1 updated successfully!

=====
Welcome to CheckMyGrade
=====
```

Select option 5 and view courses taught by the logged in professor

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Professor Main Menu:
1. Update personal details
2. Update password
3. Add/delete/modify student
4. Add/delete/modify grade
5. View courses
6. View course statistics
7. Exit
Please select an option: 5

Displaying Courses...
Courses taught by prof@school.com:
Course: C0 - Course0, Description: A sample course

=====
Welcome to CheckMyGrade
=====
```

Select option 6 and user is prompted to enter the course id, the average mark for the course and count of each grade is returned

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Professor Main Menu:
1. Update personal details
2. Update password
3. Add/delete/modify student
4. Add/delete/modify grade
5. View courses
6. View course statistics
7. Exit
Please select an option: 6
Please enter the id of the course you would like to view: C1

C1
The average mark is: 84.36
The number of A's recieved is: 4
The number of B's recieved is: 4
The number of C's recieved is: 3
The number of D's recieved is: 0
The number of F's recieved is: 0
```

Select option 7 and professor logs out and returns to login menu

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Professor Main Menu:
1. Update personal details
2. Update password
3. Add/delete/modify student
4. Add/delete/modify grade
5. View courses
6. View course statistics
7. Exit
Please select an option: 7

Logging Out...

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
```

Login as admin@school.com and view admin menu

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 1
Executing option 1...
Enter your email address: admin@school.com
Enter your password:
Login Successful!
Logging in...

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: █
```

Select option 1 and view all professor records, note prof0@school.com the name is updated to Sam

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 1
Displaying professor records...
Email: prof0@school.com, Name: Sam ProfLast0, Rank: Associate, Course ID: C0
Email: prof1@school.com, Name: ProfFirst1 ProfLast1, Rank: Associate, Course ID: C1
Email: prof2@school.com, Name: ProfFirst2 ProfLast2, Rank: Associate, Course ID: C2
Email: prof3@school.com, Name: ProfFirst3 ProfLast3, Rank: Associate, Course ID: C3
Email: prof4@school.com, Name: ProfFirst4 ProfLast4, Rank: Associate, Course ID: C4
Email: prof5@school.com, Name: ProfFirst5 ProfLast5, Rank: Associate, Course ID: C5
Email: prof6@school.com, Name: ProfFirst6 ProfLast6, Rank: Associate, Course ID: C6
Email: prof7@school.com, Name: ProfFirst7 ProfLast7, Rank: Associate, Course ID: C7
Email: prof8@school.com, Name: ProfFirst8 ProfLast8, Rank: Associate, Course ID: C8
Email: prof9@school.com, Name: ProfFirst9 ProfLast9, Rank: Associate, Course ID: C9
Email: prof10@school.com, Name: ProfFirst10 ProfLast10, Rank: Associate, Course ID: C10
Email: prof11@school.com, Name: ProfFirst11 ProfLast11, Rank: Associate, Course ID: C11
Email: prof12@school.com, Name: ProfFirst12 ProfLast12, Rank: Associate, Course ID: C12
Email: prof13@school.com, Name: ProfFirst13 ProfLast13, Rank: Associate, Course ID: C13
Email: prof14@school.com, Name: ProfFirst14 ProfLast14, Rank: Associate, Course ID: C14
Email: prof15@school.com, Name: ProfFirst15 ProfLast15, Rank: Associate, Course ID: C15
Email: prof16@school.com, Name: ProfFirst16 ProfLast16, Rank: Associate, Course ID: C16
Email: prof17@school.com, Name: ProfFirst17 ProfLast17, Rank: Associate, Course ID: C17
Email: prof18@school.com, Name: ProfFirst18 ProfLast18, Rank: Associate, Course ID: C18
Email: prof19@school.com, Name: ProfFirst19 ProfLast19, Rank: Associate, Course ID: C19
Email: prof20@school.com, Name: ProfFirst20 ProfLast20, Rank: Associate, Course ID: C20
Email: prof21@school.com, Name: ProfFirst21 ProfLast21, Rank: Associate, Course ID: C21
Email: prof22@school.com, Name: ProfFirst22 ProfLast22, Rank: Associate, Course ID: C22
Email: prof23@school.com, Name: ProfFirst23 ProfLast23, Rank: Associate, Course ID: C23
Email: prof24@school.com, Name: ProfFirst24 ProfLast24, Rank: Associate, Course ID: C24
Email: prof25@school.com, Name: ProfFirst25 ProfLast25, Rank: Associate, Course ID: C25
Email: prof26@school.com, Name: ProfFirst26 ProfLast26, Rank: Associate, Course ID: C26
Email: prof27@school.com, Name: ProfFirst27 ProfLast27, Rank: Associate, Course ID: C27
```


Select option 2 and view all course records

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 2
Displaying course records...
Course id: C0, Course Name: Course0, Description: A sample course,
Course id: C1, Course Name: Course1, Description: A sample course,
Course id: C2, Course Name: Course2, Description: A sample course,
Course id: C3, Course Name: Course3, Description: A sample course,
Course id: C4, Course Name: Course4, Description: A sample course,
Course id: C5, Course Name: Course5, Description: A sample course,
Course id: C6, Course Name: Course6, Description: A sample course,
Course id: C7, Course Name: Course7, Description: A sample course,
Course id: C8, Course Name: Course8, Description: A sample course,
Course id: C9, Course Name: Course9, Description: A sample course,
Course id: C10, Course Name: Course10, Description: A sample course,
Course id: C11, Course Name: Course11, Description: A sample course,
Course id: C12, Course Name: Course12, Description: A sample course,
Course id: C13, Course Name: Course13, Description: A sample course,
Course id: C14, Course Name: Course14, Description: A sample course,
Course id: C15, Course Name: Course15, Description: A sample course,
Course id: C16, Course Name: Course16, Description: A sample course,
Course id: C17, Course Name: Course17, Description: A sample course,
Course id: C18, Course Name: Course18, Description: A sample course,
Course id: C19, Course Name: Course19, Description: A sample course,
Course id: C20, Course Name: Course20, Description: A sample course,
Course id: C21, Course Name: Course21, Description: A sample course,
Course id: C22, Course Name: Course22, Description: A sample course,
Course id: C23, Course Name: Course23, Description: A sample course,
Course id: C24, Course Name: Course24, Description: A sample course,
Course id: C25, Course Name: Course25, Description: A sample course,
Course id: C26, Course Name: Course26, Description: A sample course,
Course id: C27, Course Name: Course27, Description: A sample course,
Course id: C28, Course Name: Course28, Description: A sample course.
```

Select option 3 and view all student records, note student0@school.com last name is updated to LastName

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 3
Displaying student records...
Email: student0@school.com, Name: First0 LastName
Email: student1@school.com, Name: First1 Last1
Email: student2@school.com, Name: First2 Last2
Email: student3@school.com, Name: First3 Last3
Email: student4@school.com, Name: First4 Last4
Email: student5@school.com, Name: First5 Last5
Email: student6@school.com, Name: First6 Last6
Email: student7@school.com, Name: First7 Last7
Email: student8@school.com, Name: First8 Last8
Email: student9@school.com, Name: First9 Last9
Email: student10@school.com, Name: First10 Last10
Email: student11@school.com, Name: First11 Last11
Email: student12@school.com, Name: First12 Last12
Email: student13@school.com, Name: First13 Last13
Email: student14@school.com, Name: First14 Last14
Email: student15@school.com, Name: First15 Last15
Email: student16@school.com, Name: First16 Last16
Email: student17@school.com, Name: First17 Last17
Email: student18@school.com, Name: First18 Last18
Email: student19@school.com, Name: First19 Last19
Email: student20@school.com, Name: First20 Last20
Email: student21@school.com, Name: First21 Last21
Email: student22@school.com, Name: First22 Last22
```

Select option 4 and add professor, user prompted to add professor details, see professor added in second screenshot

```
Email: prof_2@school.com, Name: ProfFirst2 ProfLast2, Rank: Associate, Course ID: C42

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 4

1. Add Professor
2. Delete Professor
3. Modify Professor
Please select an option: 1

Adding new professor...
Please enter the email address of the new professor: test@email.com
Please enter the first name of the new professor: Test
Please enter the last name of the new professor: Test
Please enter the rank of the new professor: professor
Please enter the new professor's course id: T1
New professor added.

=====
Welcome to CheckMyGrade
=====

Email: prof42@school.com, Name: ProfFirst42 ProfLast42, Rank: Associate, Course ID: C42
Email: prof43@school.com, Name: ProfFirst43 ProfLast43, Rank: Associate, Course ID: C43
Email: prof44@school.com, Name: ProfFirst44 ProfLast44, Rank: Associate, Course ID: C44
Email: prof45@school.com, Name: ProfFirst45 ProfLast45, Rank: Associate, Course ID: C45
Email: prof46@school.com, Name: ProfFirst46 ProfLast46, Rank: Associate, Course ID: C46
Email: prof47@school.com, Name: ProfFirst47 ProfLast47, Rank: Associate, Course ID: C47
Email: prof48@school.com, Name: ProfFirst48 ProfLast48, Rank: Associate, Course ID: C48
Email: prof49@school.com, Name: ProfFirst49 ProfLast49, Rank: Associate, Course ID: C49
Email: test@email.com, Name: Test Test, Rank: professor, Course ID: T1

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
```

Select option 4 and delete professor, user prompted to enter the email to delete, see professor deleted in second screenshot

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 4

1. Add Professor
2. Delete Professor
3. Modify Professor
Please select an option: 2

Deleting professor...
Please enter the professor's email: test@email.com
Professor with email test@email.com has been deleted.
=====

Email: prof43@school.com, Name: ProfFirst43 ProfLast43, Rank: Associate, Course ID: C43
Email: prof44@school.com, Name: ProfFirst44 ProfLast44, Rank: Associate, Course ID: C44
Email: prof45@school.com, Name: ProfFirst45 ProfLast45, Rank: Associate, Course ID: C45
Email: prof46@school.com, Name: ProfFirst46 ProfLast46, Rank: Associate, Course ID: C46
Email: prof47@school.com, Name: ProfFirst47 ProfLast47, Rank: Associate, Course ID: C47
Email: prof48@school.com, Name: ProfFirst48 ProfLast48, Rank: Associate, Course ID: C48
Email: prof49@school.com, Name: ProfFirst49 ProfLast49, Rank: Associate, Course ID: C49

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: █
```

Select option 5, user prompted to add/delete/modify course, select add course and user prompted to add course details, note second screenshot shows course added

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 5

1. Add Course
2. Delete Course
3. Modify Course
Please select an option: 1

Adding new course...
Please enter the new course's id: T1
Please enter the new course's name: Test Course
Please enter the new course's description: test
New course: 'T1 - Test Course' added.
=====

Course id: C45, Course Name: Course45, Description: A sample course,
Course id: C46, Course Name: Course46, Description: A sample course,
Course id: C47, Course Name: Course47, Description: A sample course,
Course id: C48, Course Name: Course48, Description: A sample course,
Course id: C49, Course Name: Course49, Description: A sample course,
Course id: T1, Course Name: Test Course, Description: test,
```

Select option 5, user prompted to add/delete/modify course, select delete course and user prompted to enter course id to delete, note second screenshot shows course C49 deleted

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 5

1. Add Course
2. Delete Course
3. Modify Course
Please select an option: 2

Deleting course...
Please enter the course id: C49

Course id: C46, Course Name: Course46, Description: A sample course,
Course id: C47, Course Name: Course47, Description: A sample course,
Course id: C48, Course Name: Course48, Description: A sample course,
Course id: T1, Course Name: Test Course, Description: test,
```

Select option 5, user prompted to add/delete/modify course, select modify course and user prompted to select the value to modify, note second screenshot shows course T1 name changed

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 5

1. Add Course
2. Delete Course
3. Modify Course
Please select an option: 3

Modifying course record...
Please enter the course id: T1

Modify Course
1. Course id
2. Course Name
3. Description
Select the field you would like to modify: 2
Please enter the new value: Updated Name
Record for T1 updated successfully!
=====

Course id: C45, Course Name: Course45, Description: A sample course,
Course id: C46, Course Name: Course46, Description: A sample course,
Course id: C47, Course Name: Course47, Description: A sample course,
Course id: C48, Course Name: Course48, Description: A sample course,
Course id: T1, Course Name: Updated Name, Description: test,
```

Select option 6, user prompted to add/delete/modify student, select add student and user prompted to add student details, note second screenshot shows student added

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 6

1. Add Student
2. Delete Student
3. Modify Student
Please select an option: 1

Adding new student...
Please enter the email address of the new student: test@email.com
Please enter the first name of the new student: Test
Please enter the last name of the new student: Test
New student: 'Test Test' added.
=====

Email: student997@school.com, Name: First997 Last997
Email: student998@school.com, Name: First998 Last998
Email: student999@school.com, Name: First999 Last999
Email: new_student@example.com, Name: New Student
Email: test@email.com, Name: Test Test
```

Select option 6, user prompted to add/delete/modify student, select delete student and user prompted to enter email of student to delete, note second screenshot shows student test@email.com deleted

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 6

1. Add Student
2. Delete Student
3. Modify Student
Please select an option: 2

Deleting student...
Please enter the student's email: test@email.com
Student with email test@email.com has been deleted.

=====

Email: student996@school.com, Name: First996 Last996
Email: student997@school.com, Name: First997 Last997
Email: student998@school.com, Name: First998 Last998
Email: student999@school.com, Name: First999 Last999
Email: new_student@example.com, Name: New Student
```

Select option 6 to add/delete/modify student, user selects value to modify, select email, note student student999@school.com updated to updated999@email.com

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 6

1. Add Student
2. Delete Student
3. Modify Student
Please select an option: 3

Modifying student record...
Please enter the student's email: student999@school.com

Modify Student
1. Email
2. First Name
3. Last Name
Select the field you would like to modify: 1
Please enter the new value: updated999@email.com
Record for student999@school.com updated successfully!

=====

Email: student997@school.com, Name: First997 Last997
Email: student998@school.com, Name: First998 Last998
Email: updated999@email.com, Name: First999 Last999
Email: new_student@example.com, Name: New Student
```

Select option 7 and user prompted to enter the course id to view, view students by the course id entered

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 7
Please enter the id of the course you would like to view: C1
Student: student0@school.com, Grade: A, Mark: 94
Student: student5@school.com, Grade: B, Mark: 85
Student: student6@school.com, Grade: C, Mark: 76
Student: student7@school.com, Grade: B, Mark: 82
Student: student8@school.com, Grade: A, Mark: 94
Student: student26@school.com, Grade: B, Mark: 79
Student: student27@school.com, Grade: C, Mark: 70
Student: student36@school.com, Grade: A, Mark: 98
Student: student37@school.com, Grade: C, Mark: 75
Student: student46@school.com, Grade: B, Mark: 81
Student: student47@school.com, Grade: A, Mark: 94
=====
```

Select option 8 and view students sorted by mark

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 8

Students sorted by marks:
Student: student36@school.com, Course: C1, Grade: A, Mark: 98
Student: student2@school.com, Course: C0, Grade: A, Mark: 97
Student: student19@school.com, Course: C4, Grade: A, Mark: 96
Student: student44@school.com, Course: C0, Grade: A, Mark: 96
Student: student28@school.com, Course: C2, Grade: A, Mark: 95
Student: student0@school.com, Course: C1, Grade: A, Mark: 94
Student: student8@school.com, Course: C1, Grade: A, Mark: 94
Student: student47@school.com, Course: C1, Grade: A, Mark: 94
Student: student14@school.com, Course: C3, Grade: A, Mark: 93
Student: student32@school.com, Course: C4, Grade: A, Mark: 92
Student: student25@school.com, Course: C0, Grade: A, Mark: 91
Student: student39@school.com, Course: C2, Grade: A, Mark: 91
Student: student0@school.com, Course: C0, Grade: A, Mark: 90
Student: student30@school.com, Course: C3, Grade: A, Mark: 90
Student: student9@school.com, Course: C2, Grade: A, Mark: 89
Student: student1@school.com, Course: C0, Grade: B, Mark: 88
Student: student49@school.com, Course: C2, Grade: B, Mark: 88
Student: student31@school.com, Course: C3, Grade: B, Mark: 87
Student: student20@school.com, Course: C4, Grade: B, Mark: 86
Student: student35@school.com, Course: C0, Grade: B, Mark: 86
Student: student5@school.com, Course: C1, Grade: B, Mark: 85
Student: student38@school.com, Course: C2, Grade: B, Mark: 84
Student: student29@school.com, Course: C2, Grade: B, Mark: 83
Student: student7@school.com, Course: C1, Grade: B, Mark: 82
Student: student24@school.com, Course: C0, Grade: B, Mark: 82
Student: student0@school.com, Course: C2, Grade: B, Mark: 81
Student: student46@school.com, Course: C1, Grade: B, Mark: 81
Student: student15@school.com, Course: C3, Grade: B, Mark: 80
Student: student33@school.com, Course: C4, Grade: B, Mark: 80
Student: student41@school.com, Course: C3, Grade: B, Mark: 80
Student: student26@school.com, Course: C1, Grade: B, Mark: 79
Student: student45@school.com, Course: C0, Grade: C, Mark: 79
Student: student21@school.com, Course: C4, Grade: C, Mark: 78
Student: student3@school.com, Course: C0, Grade: C, Mark: 77
Student: student6@school.com, Course: C1, Grade: C, Mark: 76
Student: student37@school.com, Course: C1, Grade: C, Mark: 75
```

Select option 9 and view students sorted by email

```
=====
Welcome to CheckMyGrade
=====
```

```
CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 9
```

```
Students sorted by email:
Email: new_student@example.com, First Name: New, Last Name: Student
Email: student0@school.com, First Name: First0, Last Name: LastName
Email: student100@school.com, First Name: First100, Last Name: Last100
Email: student101@school.com, First Name: First101, Last Name: Last101
Email: student102@school.com, First Name: First102, Last Name: Last102
Email: student103@school.com, First Name: First103, Last Name: Last103
Email: student104@school.com, First Name: First104, Last Name: Last104
Email: student105@school.com, First Name: First105, Last Name: Last105
Email: student106@school.com, First Name: First106, Last Name: Last106
Email: student107@school.com, First Name: First107, Last Name: Last107
Email: student108@school.com, First Name: First108, Last Name: Last108
Email: student109@school.com, First Name: First109, Last Name: Last109
Email: student110@school.com, First Name: First110, Last Name: Last110
Email: student111@school.com, First Name: First111, Last Name: Last111
Email: student112@school.com, First Name: First112, Last Name: Last112
Email: student113@school.com, First Name: First113, Last Name: Last113
Email: student114@school.com, First Name: First114, Last Name: Last114
Email: student115@school.com, First Name: First115, Last Name: Last115
Email: student116@school.com, First Name: First116, Last Name: Last116
Email: student117@school.com, First Name: First117, Last Name: Last117
Email: student118@school.com, First Name: First118, Last Name: Last118
Email: student119@school.com, First Name: First119, Last Name: Last119
Email: student120@school.com, First Name: First120, Last Name: Last120
Email: student121@school.com, First Name: First121, Last Name: Last121
Email: student122@school.com, First Name: First122, Last Name: Last122
Email: student123@school.com, First Name: First123, Last Name: Last123
Email: student124@school.com, First Name: First124, Last Name: Last124
Email: student125@school.com, First Name: First125, Last Name: Last125
Email: student126@school.com, First Name: First126, Last Name: Last126
Email: student127@school.com, First Name: First127, Last Name: Last127
Email: student128@school.com, First Name: First128, Last Name: Last128
Email: student129@school.com, First Name: First129, Last Name: Last129
Email: student130@school.com, First Name: First130, Last Name: Last130
Email: student131@school.com, First Name: First131, Last Name: Last131
Email: student132@school.com, First Name: First132, Last Name: Last132
Email: student133@school.com, First Name: First133, Last Name: Last133
Email: student134@school.com, First Name: First134, Last Name: Last134
Email: student135@school.com, First Name: First135, Last Name: Last135
Email: student136@school.com, First Name: First136, Last Name: Last136
Email: student137@school.com, First Name: First137, Last Name: Last137
```


Select option 10 and log out, returns to login menu

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Admin Main Menu:
1. View all professor records
2. View all course records
3. View all student records
4. Add/delete/modify professor
5. Add/delete/modify course
6. Add/delete/modify student
7. View grades by course
8. View students sorted by mark
9. View students sorted by email
10. Exit
Please select an option: 10

Logging Out...

=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: █
```

In login menu, select option 2 and add new user, note second screenshot were user is added to csv and password is encrypted, note third screenshot were new user logs in successfully

```
=====
Welcome to CheckMyGrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 2
Signup for Check My Grade:
Please enter the new user's email: test@school.com
Please enter the new user's password:
Please enter the new user's role: student
Hello new user!
Please enter your first name: Test
Please enter your last name: Test
New student: ' ' added.
User 'test@school.com' registered successfully!
```

```
user_id,password,role
student0@school.com,tewwasvhi,student
prof0@school.com,tewwasvh,professor
admin@school.com,tewwasvh,admin
test@school.com,tewwasvh,student
█
```

```
CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 1
Executing option 1...
Enter your email address: test@school.com
Enter your password:
Login Successful!
Logging in...
```

Select option 3 in login menu and application is exited

```
welcome to checkmygrade
=====

CheckMyGrade Main Menu:
1. Login
2. Signup
3. Exit
Please select an option: 3
Exiting app... Goodbye!
(base) louisas@Louisas-MacBook-Pro Lab1 %
```

Unit Test for Lab 1, tests add/modify/delete capabilities and displays search and sort time:

```
● (base) louisas@Louisas-MacBook-Pro Lab1 % /usr/bin/python3 "/Users/louisas/Documents/Data 200 - Python/Lab1/test_lab1.py"
New student: ' ' added.
.Student with email student500@school.com has been deleted.
.Record for student600@school.com updated successfully!
Checking modification for student600@school.com:
True
.Displaying student records...
Email: student0@school.com, Name: First0 Last0
Email: student1@school.com, Name: First1 Last1
Email: student2@school.com, Name: First2 Last2
Email: student3@school.com, Name: First3 Last3
Email: student4@school.com, Name: First4 Last4
Email: student5@school.com, Name: First5 Last5
Email: student6@school.com, Name: First6 Last6
Email: student7@school.com, Name: First7 Last7
Email: student8@school.com, Name: First8 Last8
Email: student9@school.com, Name: First9 Last9
Email: student10@school.com, Name: First10 Last10
Email: student11@school.com, Name: First11 Last11
Email: student12@school.com, Name: First12 Last12
Email: student13@school.com, Name: First13 Last13
Email: student14@school.com, Name: First14 Last14
Email: student15@school.com, Name: First15 Last15
Email: student16@school.com, Name: First16 Last16
Email: student17@school.com, Name: First17 Last17
Email: student18@school.com, Name: First18 Last18
Email: student19@school.com, Name: First19 Last19
Email: student20@school.com, Name: First20 Last20
Email: student21@school.com, Name: First21 Last21
Email: student22@school.com, Name: First22 Last22
Email: student23@school.com, Name: First23 Last23
Email: student24@school.com, Name: First24 Last24
Email: student25@school.com, Name: First25 Last25
Email: student26@school.com, Name: First26 Last26
Email: student27@school.com, Name: First27 Last27
Email: student28@school.com, Name: First28 Last28
Email: student29@school.com, Name: First29 Last29
Email: student30@school.com, Name: First30 Last30
Email: student31@school.com, Name: First31 Last31
Email: student32@school.com, Name: First32 Last32
Email: student33@school.com, Name: First33 Last33
Email: student34@school.com, Name: First34 Last34
Email: student35@school.com, Name: First35 Last35
Email: student36@school.com, Name: First36 Last36
Email: student37@school.com, Name: First37 Last37
Email: student38@school.com, Name: First38 Last38
Email: student39@school.com, Name: First39 Last39
Email: student40@school.com, Name: First40 Last40
Email: student41@school.com, Name: First41 Last41
Email: student42@school.com, Name: First42 Last42
Email: student43@school.com, Name: First43 Last43
Email: student44@school.com, Name: First44 Last44
Email: student45@school.com, Name: First45 Last45
Email: student46@school.com, Name: First46 Last46
Email: student47@school.com, Name: First47 Last47
Email: student48@school.com, Name: First48 Last48
Email: student49@school.com, Name: First49 Last49
Email: student50@school.com, Name: First50 Last50
```

Unittest cont:

```
Email: student949@school.com, Name: First949 Last949
Email: student950@school.com, Name: First950 Last950
Email: student951@school.com, Name: First951 Last951
Email: student952@school.com, Name: First952 Last952
Email: student953@school.com, Name: First953 Last953
Email: student954@school.com, Name: First954 Last954
Email: student955@school.com, Name: First955 Last955
Email: student956@school.com, Name: First956 Last956
Email: student957@school.com, Name: First957 Last957
Email: student958@school.com, Name: First958 Last958
Email: student959@school.com, Name: First959 Last959
Email: student960@school.com, Name: First960 Last960
Email: student961@school.com, Name: First961 Last961
Email: student962@school.com, Name: First962 Last962
Email: student963@school.com, Name: First963 Last963
Email: student964@school.com, Name: First964 Last964
Email: student965@school.com, Name: First965 Last965
Email: student966@school.com, Name: First966 Last966
Email: student967@school.com, Name: First967 Last967
Email: student968@school.com, Name: First968 Last968
Email: student969@school.com, Name: First969 Last969
Email: student970@school.com, Name: First970 Last970
Email: student971@school.com, Name: First971 Last971
Email: student972@school.com, Name: First972 Last972
Email: student973@school.com, Name: First973 Last973
Email: student974@school.com, Name: First974 Last974
Email: student975@school.com, Name: First975 Last975
Email: student976@school.com, Name: First976 Last976
Email: student977@school.com, Name: First977 Last977
Email: student978@school.com, Name: First978 Last978
Email: student979@school.com, Name: First979 Last979
Email: student980@school.com, Name: First980 Last980
Email: student981@school.com, Name: First981 Last981
Email: student982@school.com, Name: First982 Last982
Email: student983@school.com, Name: First983 Last983
Email: student984@school.com, Name: First984 Last984
Email: student985@school.com, Name: First985 Last985
Email: student986@school.com, Name: First986 Last986
Email: student987@school.com, Name: First987 Last987
Email: student988@school.com, Name: First988 Last988
Email: student989@school.com, Name: First989 Last989
Email: student990@school.com, Name: First990 Last990
Email: student991@school.com, Name: First991 Last991
Email: student992@school.com, Name: First992 Last992
Email: student993@school.com, Name: First993 Last993
Email: student994@school.com, Name: First994 Last994
Email: student995@school.com, Name: First995 Last995
Email: student996@school.com, Name: First996 Last996
Email: student997@school.com, Name: First997 Last997
Email: student998@school.com, Name: First998 Last998
Email: student999@school.com, Name: First999 Last999
Email: new_student@example.com, Name: New Student
Search Time: 0.002228 seconds
.Sort Time: 0.000401 seconds
.
```

Ran 5 tests in 0.007s

OK

(base) louisas@Louisias-MacBook-Pro Lab1 %