University of South Florida

Object Oriented Software Design: Final Project

Made Using Code::Blocks

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COP 3331, Section 1

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Contents of 3331project.zip

- 'myprogram' folder

  - Inside 'myprogram' folder: main.cpp, runproject.bat, report.pdf, 'Data' folder, and 'User' folder.

    - Inside 'User' folder: passwords.txt

    - Inside 'Data' folder: scores.txt and numberOfExams.txt

- **Only one C++ file: main.cpp**

UML Class Diagram

Strong_pwdg
- strongPWD : string
- strong_length : int
- mandatory : vector<string>
- mandatory_char : vector<char>
+ setStrongLength() : void
+ getStrongPwd() : string

Pwdg
- PWD : string
- PWD_length : int
+ SetPwd() : void
+ GetPwd() : string

Simple_pwdg
- Pwd : string
- Pwd_length : int
- Pwd_char : vector<char>
+ setSimpleLength() : void
+ setSimplePwd() : string
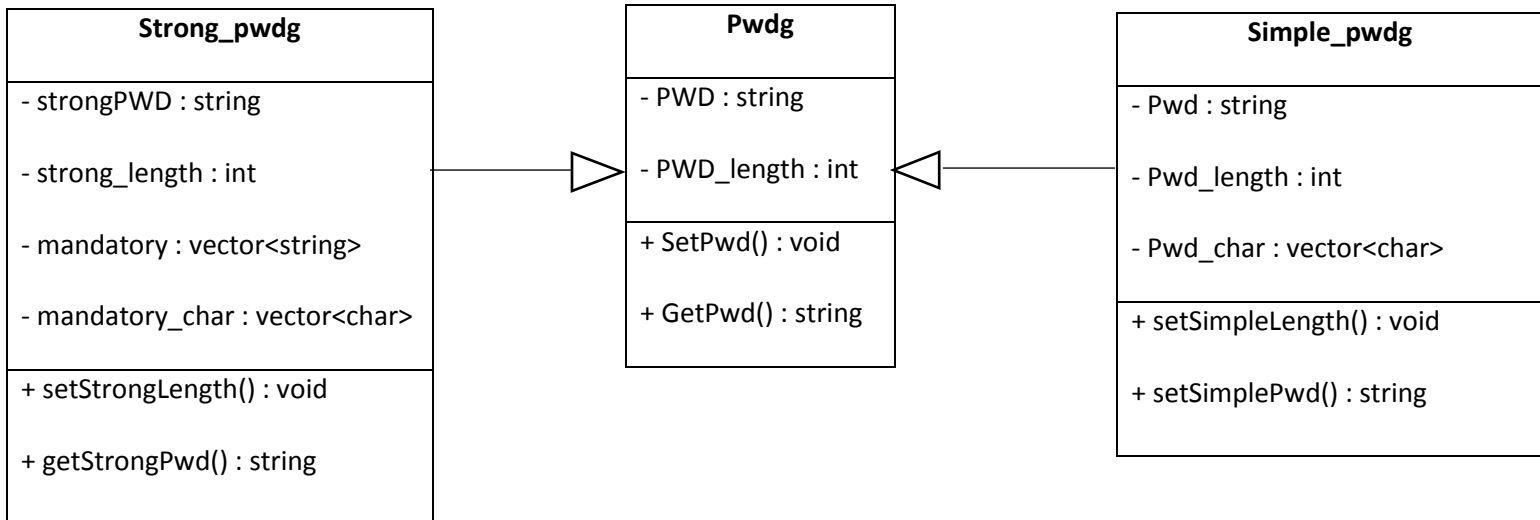
Compilation Commands
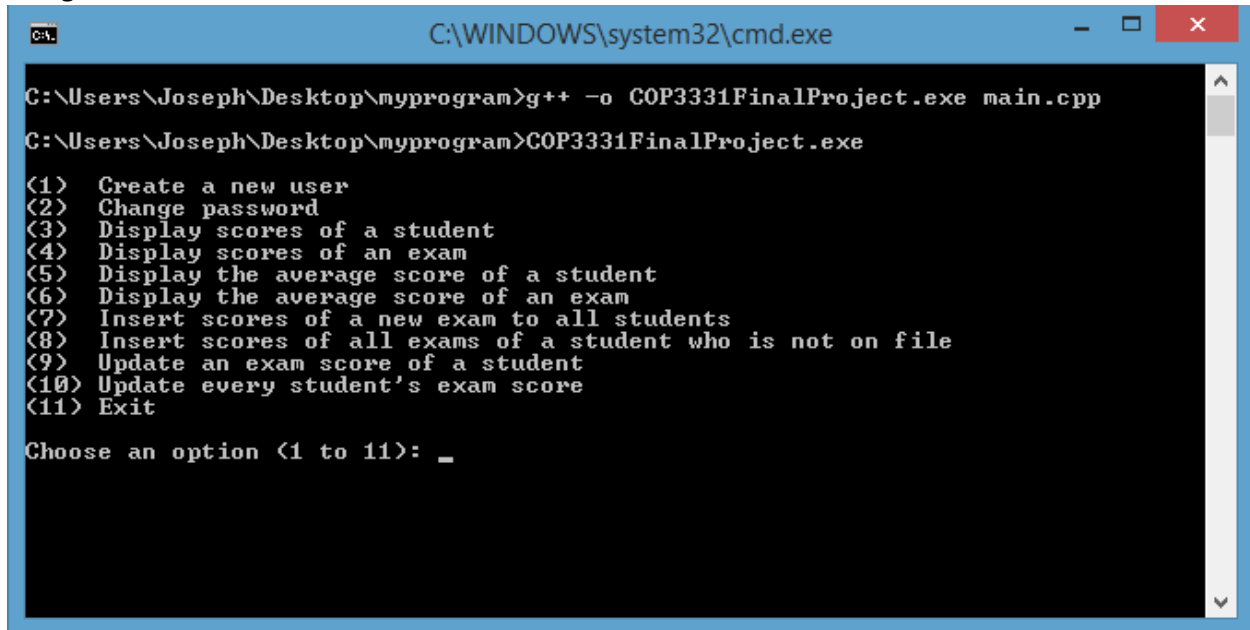
1.) g++ -o COP3331FinalProject.exe main.cpp
2.) COP3331FinalProject.exe

Batch file contents:

Using the batch file:

```
                          C:\WINDOWS\system32\cmd.exe                    _  □  ×

C:\Users\Joseph\Desktop\myprogram>g++ -o COP3331FinalProject.exe main.cpp

C:\Users\Joseph\Desktop\myprogram>COP3331FinalProject.exe

(1)   Create a new user
(2)   Change password
(3)   Display scores of a student
(4)   Display scores of an exam
(5)   Display the average score of a student
(6)   Display the average score of an exam
(7)   Insert scores of a new exam to all students
(8)   Insert scores of all exams of a student who is not on file
(9)   Update an exam score of a student
(10)  Update every student's exam score
(11)  Exit

Choose an option (1 to 11): _
```

Option 1 – New User:

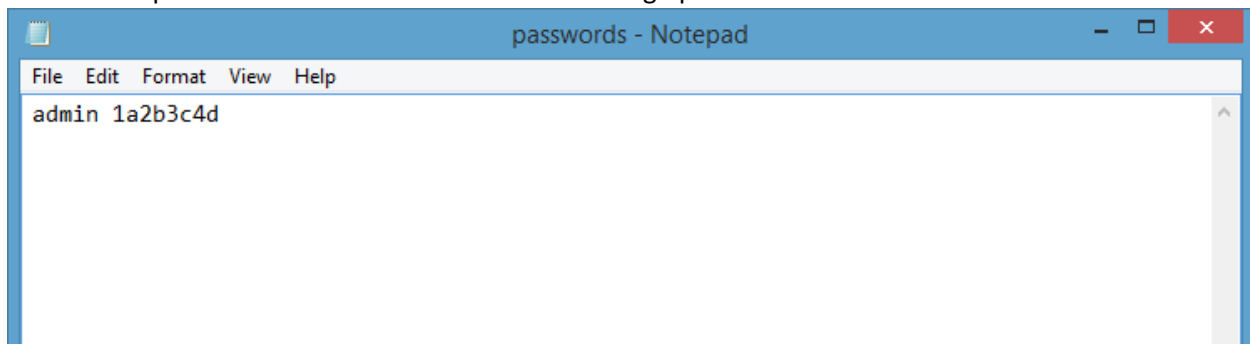Contents of passwords.txt in 'User' folder before using option 1...

```
                          passwords - Notepad                          _  □  ×
File   Edit   Format   View   Help
admin  1a2b3c4d
```

Using option 1...

```
                          C:\WINDOWS\system32\cmd.exe                    _  □  ×
(7)   Insert scores of a new exam to all students
(8)   Insert scores of all exams of a student who is not on file
(9)   Update an exam score of a student
(10)  Update every student's exam score
(11)  Exit

Choose an option (1 to 11): 1
Type out your new username (no spaces): user1
Enter the desired length of the password: 4
Your new username is: user1
Your new password is: =rck

(1)   Create a new user
(2)   Change password
(3)   Display scores of a student
(4)   Display scores of an exam
(5)   Display the average score of a student
(6)   Display the average score of an exam
(7)   Insert scores of a new exam to all students
(8)   Insert scores of all exams of a student who is not on file
(9)   Update an exam score of a student
(10)  Update every student's exam score
(11)  Exit

Choose an option (1 to 11): _
```
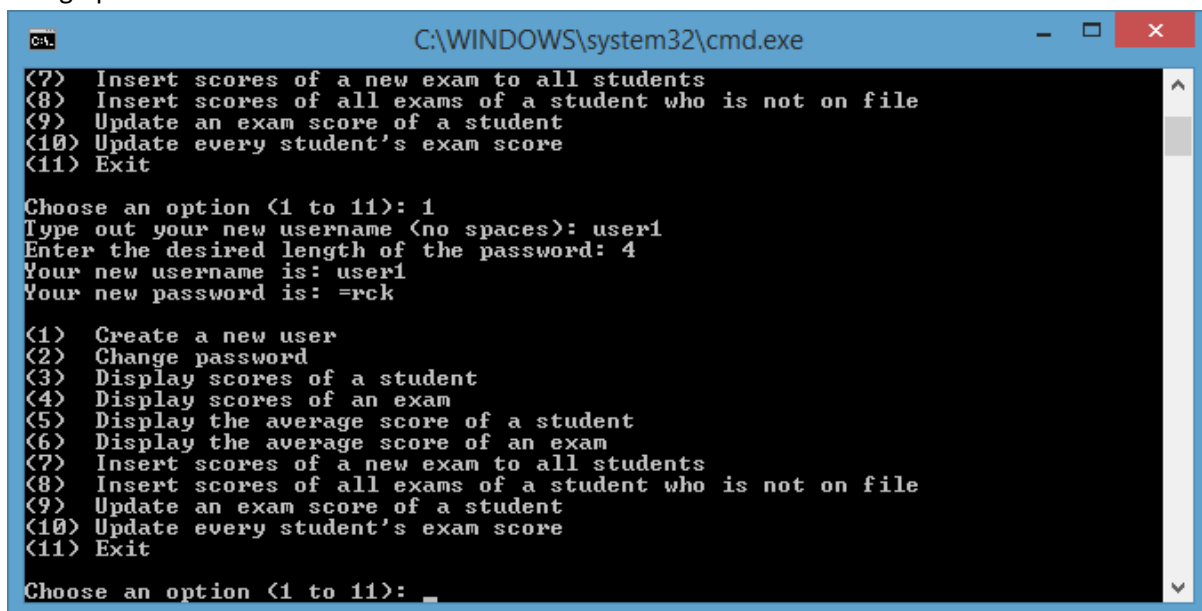
Contents of passwords.txt after using option 1...


```
passwords - Notepad

File   Edit   Format   View   Help

admin 1a2b3c4d
user1 =rck
```

Entering a username that already exists...


```
C:\WINDOWS\system32\cmd.exe

(5)   Display the average score of a student
(6)   Display the average score of an exam
(7)   Insert scores of a new exam to all students
(8)   Insert scores of all exams of a student who is not on file
(9)   Update an exam score of a student
(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11): 1
Type out your new username (no spaces): user1
Username already exists. Returning you to main menu.

(1)   Create a new user
(2)   Change password
(3)   Display scores of a student
(4)   Display scores of an exam
(5)   Display the average score of a student
(6)   Display the average score of an exam
(7)   Insert scores of a new exam to all students
(8)   Insert scores of all exams of a student who is not on file
(9)   Update an exam score of a student
(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11):
```
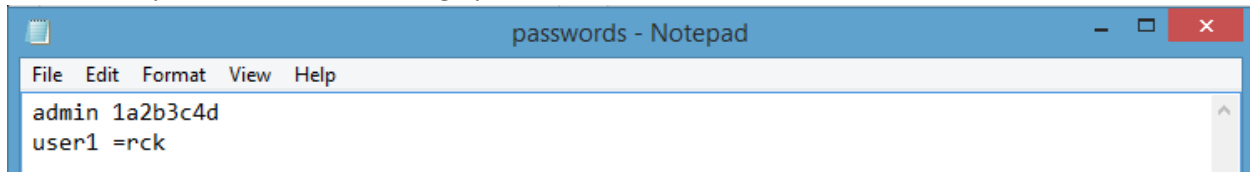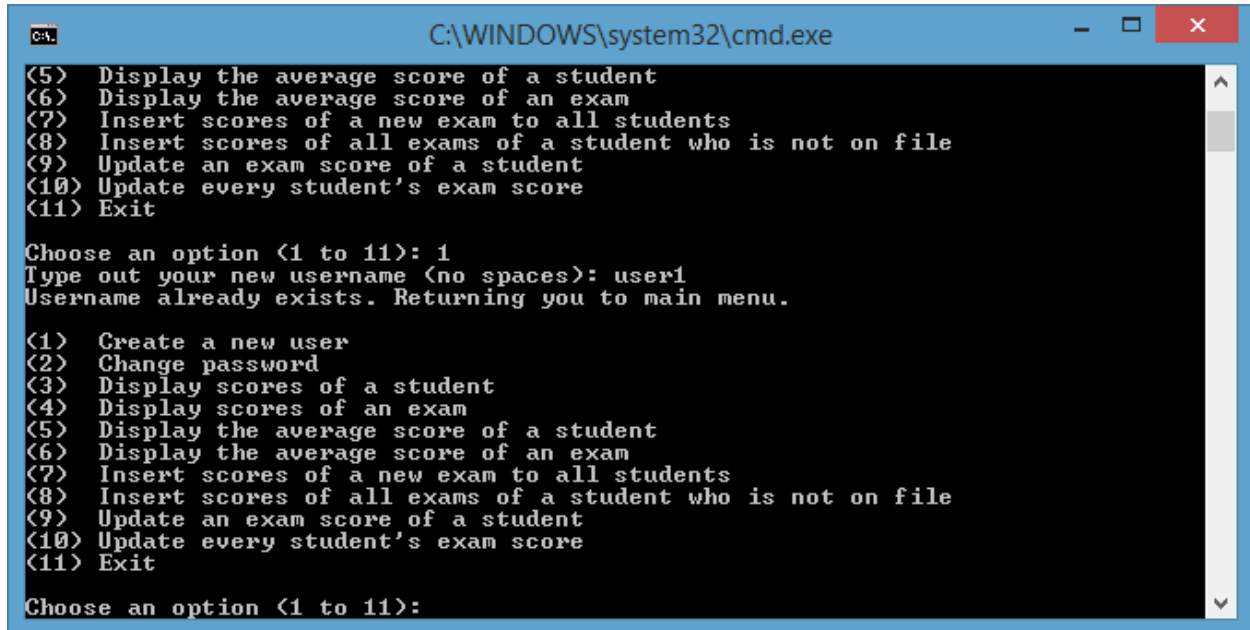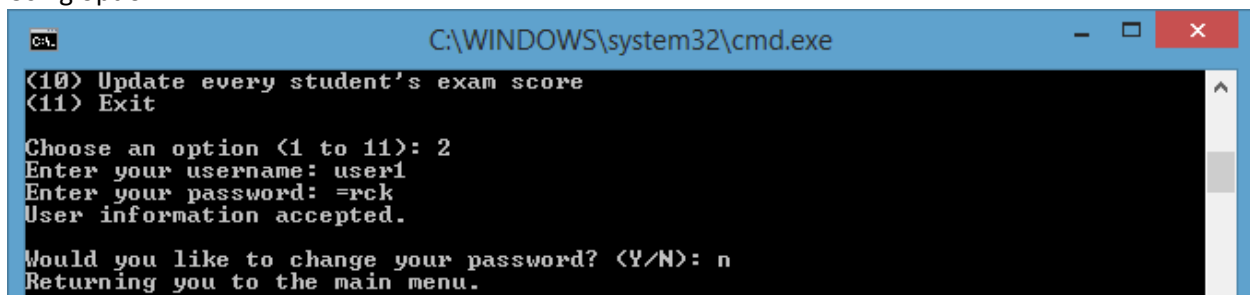
Option 2 – Change User's Password:

Contents of passwords.txt before using option 2 is the same as after using option 1...

Using option 2...
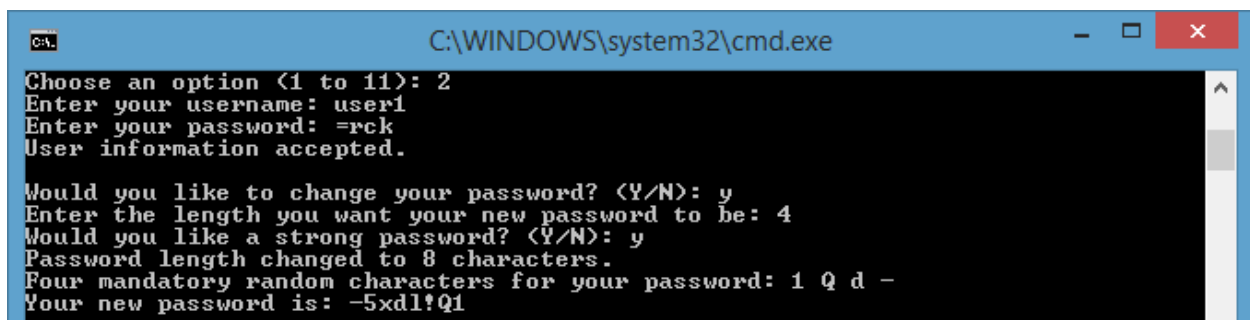

```
C:\WINDOWS\system32\cmd.exe

(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: =rck
User information accepted.

Would you like to change your password? (Y/N): n
Returning you to the main menu.
```

Strong password change...


```
C:\WINDOWS\system32\cmd.exe

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: =rck
User information accepted.

Would you like to change your password? (Y/N): y
Enter the length you want your new password to be: 4
Would you like a strong password? (Y/N): y
Password length changed to 8 characters.
Four mandatory random characters for your password: 1 Q d -
Your new password is: -5xd1!Q1
```

```
passwords - Notepad
File  Edit  Format  View  Help

admin 1a2b3c4d
user1 -5xd1!Q1|
```

Simple password with digits…

```
C:\WINDOWS\system32\cmd.exe

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: -5xd1!Q1
User information accepted.

Would you like to change your password? (Y/N): y
Enter the length you want your new password to be: 4
Would you like a strong password? (Y/N): n
Would you like a password with only digits (D), only letters (L), or a normal pa
ssword? (D/L/N): d
Your new password is: 7281
```

```
passwords - Notepad
File  Edit  Format  View  Help

admin 1a2b3c4d
user1 7281
```

Simple password with letters…

```
C:\WINDOWS\system32\cmd.exe

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: 7281
User information accepted.

Would you like to change your password? (Y/N): y
Enter the length you want your new password to be: 4
Would you like a strong password? (Y/N): n
Would you like a password with only digits (D), only letters (L), or a normal pa
ssword? (D/L/N): l
Your new password is: RMcr
```

```
passwords - Notepad
File  Edit  Format  View  Help

admin 1a2b3c4d
user1 RMcr
```

Normal password (letters, digits, and letters)…

```
C:\WINDOWS\system32\cmd.exe

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: RMcr
User information accepted.

Would you like to change your password? (Y/N): y
Enter the length you want your new password to be: 4
Would you like a strong password? (Y/N): n
Would you like a password with only digits (D), only letters (L), or a normal pa
ssword? (D/L/N): n
Your new password is: 5L#X
```

```
passwords - Notepad
File  Edit  Format  View  Help

admin 1a2b3c4d
user1 5L#X
```

Any invalid input…

```
C:\WINDOWS\system32\cmd.exe                              _  □  ×

(9)  Update an exam score of a student
(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Would you like to change your password? (Y/N): oiawjf
Invalid choice. Returning you to the main menu.
```

```
C:\WINDOWS\system32\cmd.exe                              _  □  ×

(11) Exit

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Would you like to change your password? (Y/N): y
Enter the length you want your new password to be: 4
Would you like a strong password? (Y/N): aoifejwo
Invalid choice. Returning you to the main menu.
```

```
C:\WINDOWS\system32\cmd.exe                              _  □  ×

Choose an option (1 to 11): 2
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Would you like to change your password? (Y/N): y
Enter the length you want your new password to be: 4
Would you like a strong password? (Y/N): n
Would you like a password with only digits (D), only letters (L), or a normal pa
ssword? (D/L/N): aoifjw
Invalid choice. Returning you to main menu.
```

Option 3 – Student's Exam Scores:

```
C:\WINDOWS\system32\cmd.exe                              _  □  ×

Choose an option (1 to 11): 3
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter the ID of the student whose scores you want to view (ID format: U###): U10
2
Matching student ID found.
Exam 1: 73
Exam 2: 0
Exam 3: 100
Exam 4: 62
```

Contents of scores.txt…

```
scores - Notepad                                        _  □  ×
File  Edit  Format  View  Help

U101 77 62 91 95
U102 73 0 100 62
U103 0 0 39 55
U104 84 69 70 100
U105 93 86 70 0
```

Option 4 – All Scores for One Exam:

```
C:\WINDOWS\system32\cmd.exe                                    -  □  ×
Choose an option (1 to 11): 4
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter which exam you want to the scores of (1-4): 2
=== Exam 2 Scores ===
62
0
0
69
86
```

Option 5 – Student's Calculated Average for All Exams:

```
C:\WINDOWS\system32\cmd.exe                                    -  □  ×
(11) Exit

Choose an option (1 to 11): 5
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter the ID of the student whose average you want to calculate (ID format: U###
): U101
Matching student ID found.
U101's average over 4 exams: 81.25
```

Option 6 – Calculated Average of One Exam:

```
C:\WINDOWS\system32\cmd.exe                                    -  □  ×
(9)  Update an exam score of a student
(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11): 6
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter the exam whose average you want to see (1-4): 1
Exam 1's average: 65.4
```

Option 7 – Inserting a New Exam:

Contents of scores.txt before option 7...

```
scores - Notepad                                    -  □  ×
File  Edit  Format  View  Help
U101 77 62 91 95
U102 73 0 100 62
U103 0 0 39 55
U104 84 69 70 100
U105 93 86 70 0
```

Contents of numberOfExams.txt before option 7...

```
numberOfExams - Notepad                             -  □  ×
File  Edit  Format  View  Help
4
```

Inserting a new exam…

```
C:\WINDOWS\system32\cmd.exe                                        _  □  ×

Choose an option (1 to 11): 7
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Would you like to insert a new exam for all students? (Y/N): y
Enter the score of exam 5 for student U101: 100
Enter the score of exam 5 for student U102: 100
Enter the score of exam 5 for student U103: 100
Enter the score of exam 5 for student U104: 100
Enter the score of exam 5 for student U105: 100
New exam with scores added.
```

Text files after option 7…

```
scores - Notepad                                     _  □  ×

File  Edit  Format  View  Help

U101 77 62 91 95 100
U102 73 0 100 62 100
U103 0 0 39 55 100
U104 84 69 70 100 100
U105 93 86 70 0 100
```

```
numberOfExams - Notepad                              _  □  ×

File  Edit  Format  View  Help

5
```

Invalid input…

```
C:\WINDOWS\system32\cmd.exe                                        _  □  ×

(9)  Update an exam score of a student
(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11): 7
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Would you like to insert a new exam for all students? (Y/N): iwufei
Invalid option. Returning to the main menu.
```

Option 8 – Insert a New Student and Their Exam Scores:
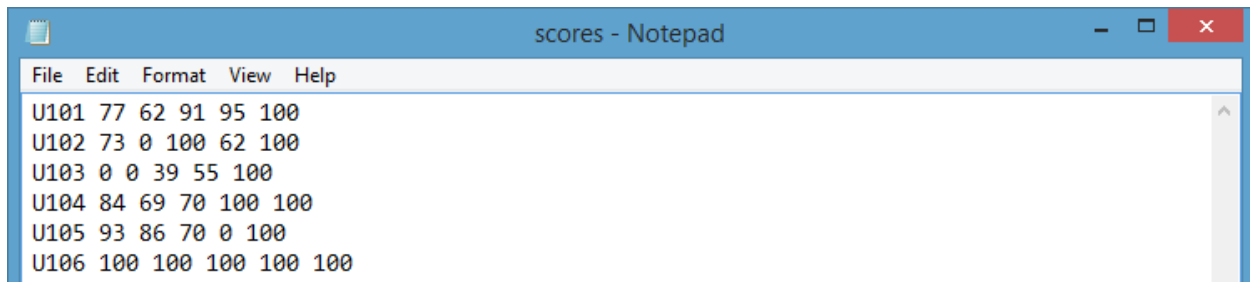
Text files are the same as after option 7…

Using option 8…

```
C:\WINDOWS\system32\cmd.exe                                        _  □  ×

Choose an option (1 to 11): 8
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Would you like to insert a new student with all their exam scores? (Y/N): y
Enter the three numbers in the new student's ID (without the U): 106
Enter student 106's score for exam 1: 100
Enter student 106's score for exam 2: 100
Enter student 106's score for exam 3: 100
Enter student 106's score for exam 4: 100
Enter student 106's score for exam 5: 100
Student ID and exam scores added.
```
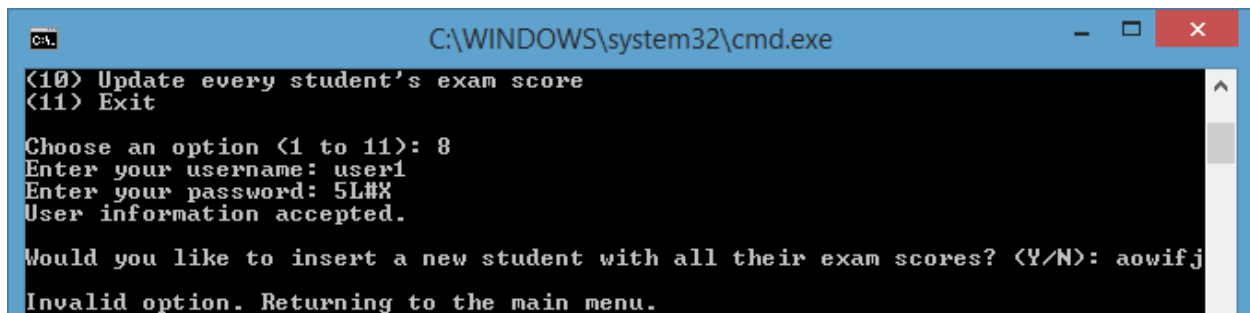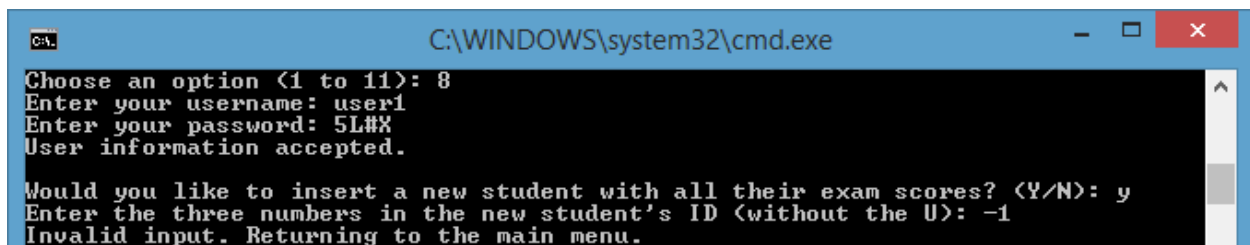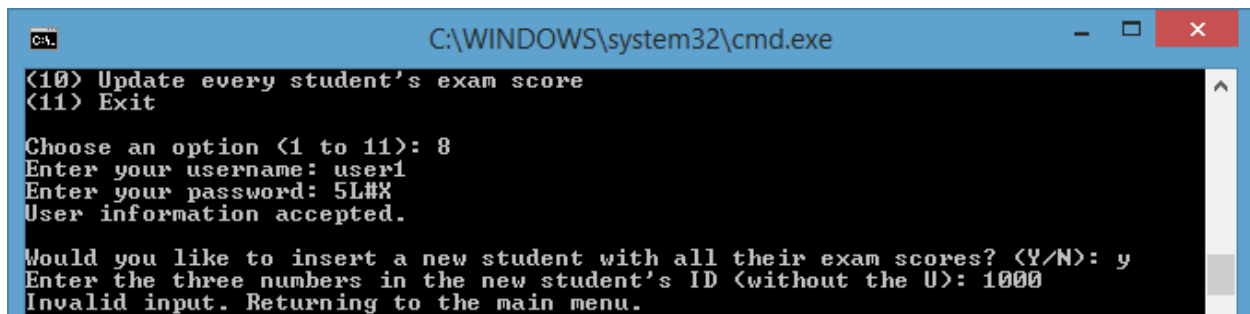
scores.txt changes after option 8…

Invalid input…

Option 9 – Update a Student's Exam Score:

scores.txt is the same after option 8…

Using option 9…

```
C:\WINDOWS\system32\cmd.exe
Choose an option (1 to 11): 9
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter the ID of the student whose records you want to edit (ID format: U###): U1
06
Matching student ID found.
Which exam score do you want to alter? (1-5): 4
Enter the new score to be entered for student U106's exam 4: 0
Student's exam score has been updated.
```

scores.txt after using option 8…

```
scores - Notepad
File  Edit  Format  View  Help
U101 77 62 91 95 100
U102 73 0 100 62 100
U103 0 0 39 55 100
U104 84 69 70 100 100
U105 93 86 70 0 100
U106 100 100 100 0 100
```

Invalid input…

```
C:\WINDOWS\system32\cmd.exe
Choose an option (1 to 11): 9
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter the ID of the student whose records you want to edit (ID format: U###): U1
06
Matching student ID found.
Which exam score do you want to alter? (1-5): 6
Invalid input. Returning to the main menu.
```

```
C:\WINDOWS\system32\cmd.exe
Choose an option (1 to 11): 9
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter the ID of the student whose records you want to edit (ID format: U###): U1
06
Matching student ID found.
Which exam score do you want to alter? (1-5): 4
Enter the new score to be entered for student U106's exam 4: -5
Invalid score. Setting score to 0.
Student's exam score has been updated.
```
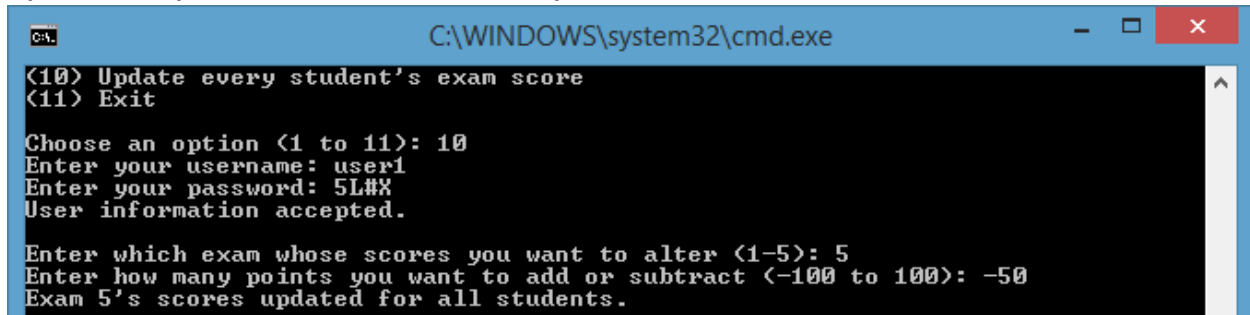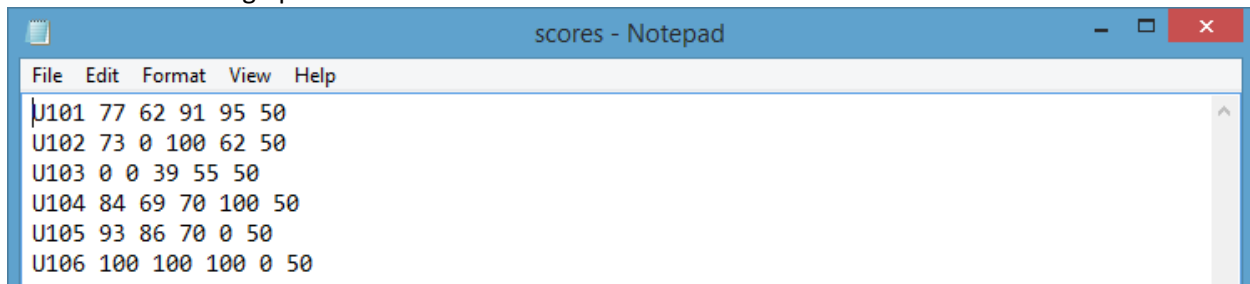
Option 10 – Update One Exam Score for Every Student:

```
C:\WINDOWS\system32\cmd.exe                    -  □  ×
(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11): 10
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter which exam whose scores you want to alter (1-5): 5
Enter how many points you want to add or subtract (-100 to 100): -50
Exam 5's scores updated for all students.
```
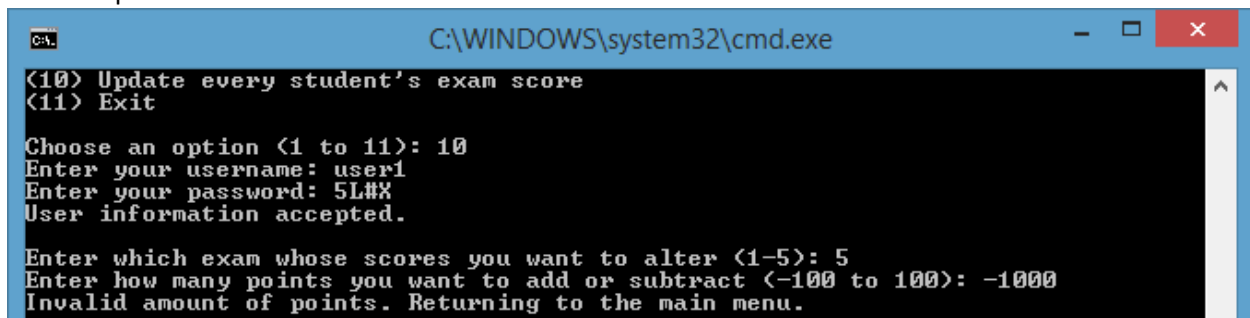
scores.txt after using option 10…

```
scores - Notepad                               -  □  ×
File  Edit  Format  View  Help
U101 77 62 91 95 50
U102 73 0 100 62 50
U103 0 0 39 55 50
U104 84 69 70 100 50
U105 93 86 70 0 50
U106 100 100 100 0 50
```

Invalid input…

```
C:\WINDOWS\system32\cmd.exe                    -  □  ×
(10) Update every student's exam score
(11) Exit

Choose an option (1 to 11): 10
Enter your username: user1
Enter your password: 5L#X
User information accepted.

Enter which exam whose scores you want to alter (1-5): 5
Enter how many points you want to add or subtract (-100 to 100): -1000
Invalid amount of points. Returning to the main menu.
```

Option 11 – Exit:

Program closes after printing "Goodbye." to the screen.

Text files reverted back to original for the submission.