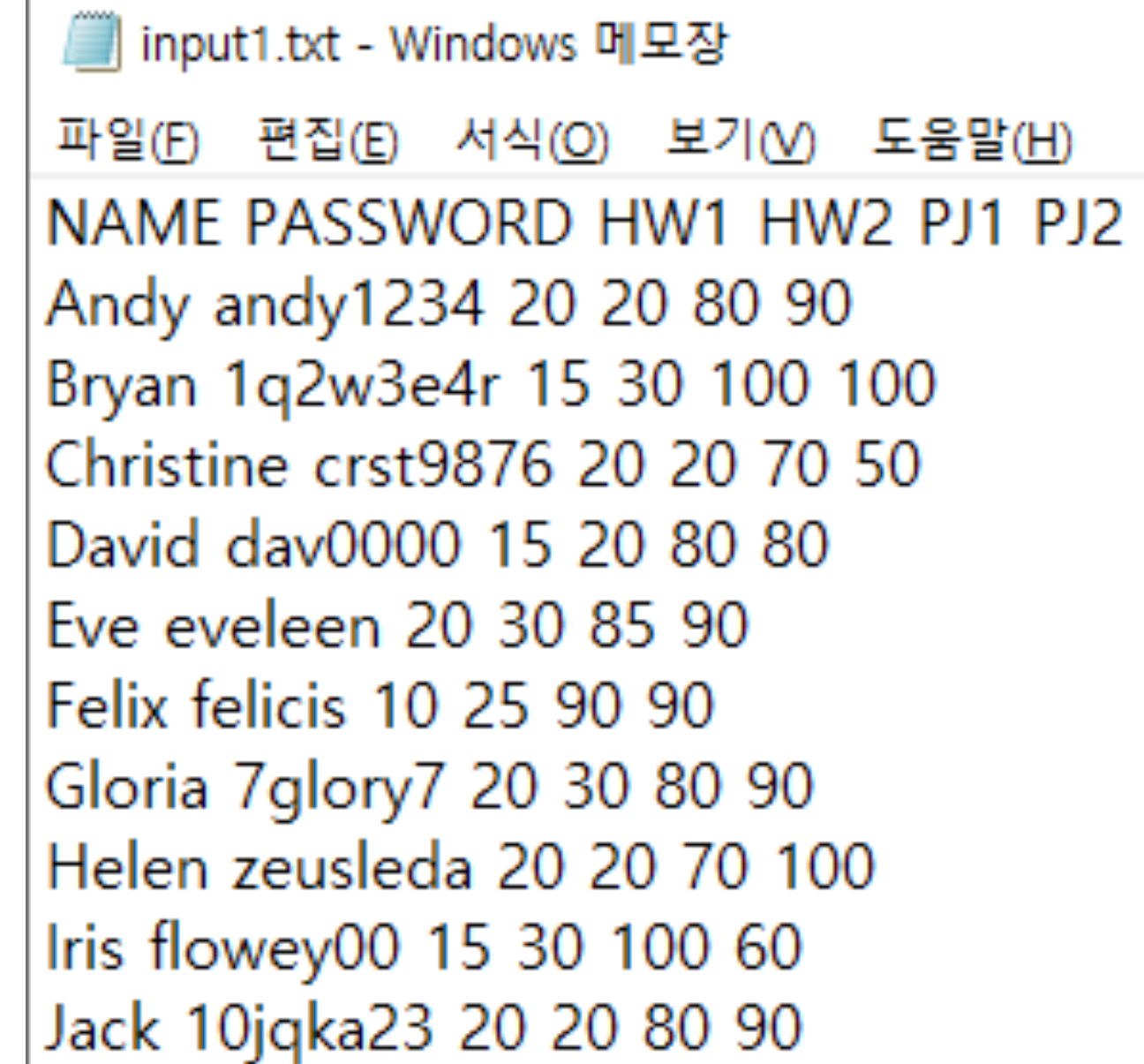


Description for Project 2: Score browsing system

- The objective of this project is to gain a deeper insight into classes, structured data, sorting and file operation.
- In this assignment, you need to implement code for score browsing system.
- Your program should read data from the file(input.txt) and produce the output according to the instructions.
- If your program produces correct response for all the inputs, you will receive 90 points.
- The remaining 10 points are report scores. You should write a report on how your code works as detailed as you can.

Given text file

- input.txt
 - Information for (Student name, password, scores)
 - There are 11 students information in the input file.



```
input1.txt - Windows 메모장
파일(F)  편집(E)  서식(O)  보기(V)  도움말(H)
NAME PASSWORD HW1 HW2 PJ1 PJ2
Andy andy1234 20 20 80 90
Bryan 1q2w3e4r 15 30 100 100
Christine crst9876 20 20 70 50
David dav0000 15 20 80 80
Eve eveleen 20 30 85 90
Felix felicis 10 25 90 90
Gloria 7glory7 20 30 80 90
Helen zeusleda 20 20 70 100
Iris flowey00 15 30 100 60
Jack 10jqka23 20 20 80 90
```

Command information

- 1. Login
- 2. Student info
- 3. Score rank
- 4. Score statistic
- 9. Logout
- 0. Terminate

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: █
```

- When user select 'Login' command, you must be prompted to enter a name and password.
- If the name and password match the information of input.txt, treat it as successful login.

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 1
Student name: Bryan
Password: 1q2w3e4r
Login Success.
Select the command: █
```

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 1
Student name: Bryan
Password: 00000000
Login Fail.
Select the command: █
```

- Do not accept other logins after first successful login:
‘You've already logged in.’

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 1
Student name: Bryan
Password: 1q2w3e4r
Login Success.
Select the command: 1
You've already logged in.
Select the command: █
```

- If the cumulative number of login failures is more than three times, it is treated as a login failure.
- The cumulative number of login failures counted respectively about each ID(name).
- Administrator has no login restriction.

```
Select the command: 1
Student name: Bryan
Password: 1
Login Fail.
Select the command: 1
Student name: Bryan
Password: 2
Login Fail.
Select the command: 1
Student name: Bryan
Password: 3
Please contact administrator and reset your password.
Login Fail.
Select the command: 1
Student name: Bryan
Password: 1q2w3e4r
Please contact administrator and reset your password.
Login Fail.
Select the command:
```

- When user select 'Student info' command, the output includes student name and all of scores.
- If user didn't login, then print error message: 'Please login first.'

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 2
Please login first.
Select the command: 1
Student name: Bryan
Password: 1q2w3e4r
Login Success.
Select the command: 2
Name: Bryan
Homework: 15 30
Project: 100 100
Select the command: █
```


- When user select 'Score Rank' command, the output includes student name and all of scores.
- If user didn't login, then print error message: 'Please login first.'
- If the score is the same, it is treated as a tie.
E.g. A: 100, B:100, C: 80 then each rank is 1, 1, 3.

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 3
Please login first.
Select the command: 1
Student name: Bryan
Password: 1q2w3e4r
Login Success.
Select the command: 3
Your rank is...
HW1: 7
HW2: 1
Project1: 1
Project2: 1
Select the command:
```


Grade statistic – image fixed

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- When user select 'Grade statistic' command, the output includes average and median of scores.
- In this case, output is printed even if user didn't login.
- Median can be calculated like right figure.

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 4
Average scores and median scores are...
HW1: 17.2727, 20
HW2: 23.6364, 20
Project1: 85, 80
Project2: 85, 90
Select the command: █
```

1, 3, 3, **6**, 7, 8, 9

Median = **6**

1, 2, 3, **4**, **5**, 6, 8, 9

Median = $(4 + 5) \div 2$
= **4.5**

- Some commands can only be used when log-in with an administrator account.
- If non administrator user or non log-in user use those commands, print error message: 'You do not have authority.'

```
class Project
{
    private:
        const string adminid = "admin";
        const string adminpw = "unisteee";
```

```
Select the command: 1
Student name: admin
Password: unisteee
Login Success.
[Admin Command]
5. All data
6. Modify info
7. Add student
Select the command: █
```

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 6
You do not have authority.
Select the command: █
```

- Show all the scores.
- If a student is added, (command 7)
that student's score should also be shown.

```
class Project
{
    private:
        const string adminid = "admin";
        const string adminpw = "unisteee";
}
```

```
[Admin Command]
5. All data
6. Modify info
7. Add student
Select the command: 5
All data:
Andy: 20 20 80 90
Bryan: 15 30 100 100
Christine: 20 20 70 50
David: 15 20 80 80
Eve: 20 30 85 90
Felix: 10 25 90 90
Gloria: 20 30 80 90
Helen: 20 20 70 100
Iris: 15 30 100 60
Jack: 20 20 80 90
Kevin: 15 15 100 95
Select the command: 
```

- Receive student name and information to modify as input.

```
[Admin Command]
5. All data
6. Modify info
7. Add student
Select the command: 6
Whose information are you going to modify?: Bryan
What information are you going to modify?(password, HW1, HW2, PJ1, PJ2): HW1
Enter new score: 20
Change complete.
Select the command: 5
All data:
Andy: 20 20 80 90
Bryan: 20 30 100 100
Christine: 20 20 70 50
David: 15 20 80 80
Eve: 20 30 85 90
Felix: 10 25 90 90
Gloria: 20 30 80 90
Helen: 20 20 70 100
Iris: 15 30 100 60
Jack: 20 20 80 90
Kevin: 15 15 100 95
Select the command: 
```

- When password is modified, new password must include uppercase, lowercase, numbers, and punctuation characters.
- When administrator modify the student's password, the restriction of that student(page 7) is lifted.

```
[Admin Command]
5. All data
6. Modify info
7. Add student
Select the command: 6
Whose information are you going to modify?: Bryan
What information are you going to modify?(password, HW1, HW2, PJ1, PJ2): password
Enter new password: bryan1234
Wrong password.
Select the command: 6
Whose information are you going to modify?: Bryan
What information are you going to modify?(password, HW1, HW2, PJ1, PJ2): password
Enter new password: Bryan12^^
Change complete.
Select the command: █
```


- When score is modified, score must be within the range. If not, keep the previous value.
- The range of each score:
 - HW1: 0~20
 - HW2: 0~30
 - PJ1: 0~100
 - PJ2: 0~100

```
[Admin Command]
5. All data
6. Modify info
7. Add student
Select the command: 6
Whose information are you going to modify?: Bryan
What information are you going to modify?(password, HW1, HW2, PJ1, PJ2): HW1
Enter new score: 30
Wrong input.
Select the command: 6
Whose information are you going to modify?: Bryan
What information are you going to modify?(password, HW1, HW2, PJ1, PJ2): HW1
Enter new score: 20
Change complete.
Select the command: █
```


- Add new student.
- Student name, password and scores are inputs.
- Score must be within the range. (page 15)
If not, write it down as zero.
- In this case, there is no password restriction.

```
[Admin Command]
5. All data
6. Modify info
7. Add student
Select the command: 7
Student name: Lily
Password: Evans#$
HW1 score: 20
HW2 score: 30
PJ1 score: 100
PJ2 score: 100
Select the command: 5
All data:
Andy: 20 20 80 90
Bryan: 15 30 100 100
Christine: 20 20 70 50
David: 15 20 80 80
Eve: 20 30 85 90
Felix: 10 25 90 90
Gloria: 20 30 80 90
Helen: 20 20 70 100
Iris: 15 30 100 60
Jack: 20 20 80 90
Kevin: 15 15 100 95
Lily: 20 30 100 100
Select the command: █
```

- Log out the account user are accessing.

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 1
Student name: Bryan
Password: 1q2w3e4r
Login Success.
Select the command: 9
Logout complete
Select the command: 2
Please login first.
Select the command: 9
You are not login.
Select the command: 
```

Terminate & Wrong command

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- When user select 'Terminate' command, the program finished.
- When user type wrong number, then print error message: 'Wrong Command.'

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 4
Average scores and median scores are...
HW1: 17.2727, 15
HW2: 23.6364, 20
Project1: 85, 80
Project2: 85, 90
Select the command: 0

...Program finished with exit code 0
Press ENTER to exit console.
```

```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 8
Wrong Command.
Select the command: 1d
Wrong Command.
Select the command: de
Wrong Command.
Select the command: 
```

Example

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```
1. Login
2. Student info
3. Score Rank
4. Score statistic
9. Logout
0. Terminate
Select the command: 1
Student name: admin
Password: unisteee
Login Success.
[Admin Command]
5. All data
6. Modify info
7. Add student
Select the command: 6
Whose information are you going to modify?: Andy
What information are you going to modify?(password, HW1, HW2, PJ1, PJ2): HW1
Enter new score: 15
Change complete.
Select the command: 7
Student name: Lily
Password: evans123
HW1 score: 10
HW2 score: 10
PJ1 score: 90
PJ2 score: 90
Select the command: 5
All data:
Andy: 15 20 80 90
Bryan: 15 30 100 100
Christine: 20 20 70 50
David: 15 20 80 80
Eve: 20 30 85 90
Felix: 10 25 90 90
Gloria: 20 30 80 90
Helen: 20 20 70 100
Iris: 15 30 100 60
Jack: 20 20 80 90
Kevin: 15 15 100 95
Lily: 10 10 90 90
Select the command: 9
Logout complete
```

```
Select the command: 4
Average scores and median scores are...
HW1: 16.25, 15
HW2: 22.5, 20
Project1: 85.4167, 82.5
Project2: 85.4167, 90
Select the command: 1
Student name: Lily
Password: evans123
Login Success.
Select the command: 2
Name: Lily
Homework: 10 10
Project: 90 90
Select the command: 3
Your rank is...
HW1: 11
HW2: 12
Project1: 4
Project2: 4
Select the command: 5
You do not have authority.
Select the command: 9
Logout complete
Select the command: 0

...Program finished with exit code 0
Press ENTER to exit console.
```

- Libraries that are not covered in class cannot be used.
- You can make new functions and modify the given functions in skeleton code.
- Exception cases not covered in the handout can be handled appropriately by your judgement.

Any output that you mentioned is fine.

- Your code must be of your own work.
- You must not share your code with other students.
- Do not search the sample implementation on the internet, you can search general approaches or techniques to solving problems.
- We will use plagiarism detection program for all codes.