All homework assignments turned in for credits are to be the result of individual effort.

Please submit your answer in two separate files as follow:

- **source code in a plain text format (.txt) (not screenshot/image object). Please do NOT include line number in your source code.**
- **a screenshot in PDF format showing the execution instructions and execution result. Please indicate where the online compiler (e.g., https://www.onlinegdb.com/online_prolog_compiler) can be used to run your code.**

PL: ch16

Homework Question: **100** pts

Develop a system/application in **Prolog** that will allow grader to:

1. load a set of student's grades (see samples from the Table C below)
2. query student's final letter grade (A, B, C, etc.) by a given student's name.
3. query student(s) whose grade matches to the input letter grade (e.g., A). For example, show student(s) whose final letter grade is A.

There are 3 types of grades for each student—HWs, Exams, and Project, with a weight of 20%, 40% and 40%, respectively, to the 100-point final grade.

Table A and B show how the final grades (in points and letter) are computed.
Table C shows samples of students' grades.
Please note that your system/application should work for any input grades, not just for the sample grades in Table C.

You will define the **execution instructions** to answer the following questions so that grader can test out your application in **Prolog**:

1. how to load your source code to Prolog runtime/compiler
2. how to load students' grades to Prolog runtime/compiler
3. how to query student's letter grade
4. how to query student(s) whose letter grade matches to an input letter grade

Please DO NOT hard code any input values, output values in your code.

Steps for execution

1. Copy the code from *"Advanced Software Paradigms_CSCI_6221_10_Sagar_Sheth_HW8.txt"*.
2. Open the below link in the web browser.
   - https://www.onlinegdb.com/online_prolog_compiler

3. Paste the Code in and Click on the Execute Button.

```prolog
/*******************************************************************************

                        Online Prolog Compiler.
                Code, Compile, Run and Debug Prolog program online.
Write your code in this editor and press "Run" button to execute it.

*******************************************************************************/

read_int(Int) :-
    write('Enter an integer: '),
    read_line_to_codes(user_input, Codes),
    number_codes(Int, Codes).

read_student(Student) :-
    write('Enter student name: '),
    read_line_to_string(user_input, Name),
    write('Enter HW1 score: '),
    read_int(S1),
    write('Enter HW2 score: '),
    read_int(S2),
    write('Enter HW3 score: '),
    read_int(S3),
    write('Enter Mid Term score: '),
```

4. The below output should be displayed on the terminal.

```
Enter number of students: Enter an integer: 3

Enter student 3
Enter student name: Aseem
Enter HW1 score: Enter an integer: 89
Enter HW2 score: Enter an integer: 88
Enter HW3 score: Enter an integer: 100
Enter Mid Term score: Enter an integer: 89
Enter Final Term score: Enter an integer: 99
Enter Project score: Enter an integer: 95
Enter student 2
Enter student name: Sagar
Enter HW1 score: Enter an integer: 92
Enter HW2 score: Enter an integer: 93
Enter HW3 score: Enter an integer: 95
Enter Mid Term score: Enter an integer: 89
Enter Final Term score: Enter an integer: 97
Enter Project score: Enter an integer: 95
Enter student 1
Enter student name: Turk
Enter HW1 score: Enter an integer: 75
Enter HW2 score: Enter an integer: 75
Enter HW3 score: Enter an integer: 75
Enter Mid Term score: Enter an integer: 75
Enter Final Term score: Enter an integer: 75
Enter Project score: Enter an integer: 75
Enter student name to calculate GPA: Sagar
The GPA for Sagar is: A
Do you want to query another student? (y/n): y
Enter student name to calculate GPA: Aseem
The GPA for Aseem is: A
Do you want to query another student? (y/n): y
Enter student name to calculate GPA: Turk
The GPA for Turk is: B
Do you want to query another student? (y/n): n
Enter GPA to search for: A
The following students have GPA A:
Aseem
Sagar

Do you want to search for another GPA? (y/n): y
Enter GPA to search for: B
The following students have GPA B:
Turk

Do you want to search for another GPA? (y/n): y
Enter GPA to search for: C
No students found with GPA C
Do you want to search for another GPA? (y/n): n


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

Instructions to run the code and query the students:

1. The Code will ask the user to enter the number of students it wants to work with.
2. After entering above number, it will ask the following information regarding the student
   - Enter student name:
   - Enter HW1 score: Enter an integer:
   - Enter HW2 score: Enter an integer:
   - Enter HW3 score: Enter an integer:
   - Enter Mid Term score: Enter an integer:
   - Enter Final Term score: Enter an integer:
   - Enter Project score: Enter an integer:
3. This process will go on till you enter the information of all the students.
4. After this process the code will ask the user to enter the Student name, make sure the value entered is case sensitive.
5. After giving the grade it will ask the user if it wants to calc the grade of another student, if selected y it will ask the student name if selected n the code will go to the next function.
6. In this function will ask the user to enter a GPA and if a student/students have that GPA it will print their names.
7. After printing the names the code will ask if it user wants to search again, if selected y it will ask the GPA if selected n the code will exit.
8. If the code exits the user has to re-enter all the student information again.
9. Kindly refer to the output screenshot as a reference of the for logical flow of the code.