Tutorial #4

CS 2882 – Object Oriented Programming using C++

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Scope: Familiarization with classes

1) You are supposed to write a program to assess the marks of Science and Mathematics subjects of group of students in a class. Define and implement a class named "Grades" in the following manner.
   - Marks of Science and Mathematics should be recorded in two floating point variables.
   - The name of a student should be recorded in character array of length 25
   - Define two character variables named, "GradeMatch" and "GradeScience" to hold the grade of each subjects of a student.
   - None of the data members of the class should be allowed direct access.
   - Use the default constructor to initialize all variables to zero.
   - Write a function called "SetName" to set the name of a student and "SetMarks" to set the marks of a students, in an appropriate way.
   - Write a function called "GetGrade" to calculate and return the grade of a subject when the mark is passed in as an input parameter. This function should not be allowed to access directly. The criteria for grading is as follows where, m is the mark:

     ($m \geq 75$ grade "A"), ($65 \leq m < 75$ grade "B"), ($55 \leq m < 65$ grade "C") ($45 \leq m < 55$ grade "D") and ($m < 45$ grade "F")
   - Write a function called "ShowResults" to display the results on screen of Science and Mathematics subjects along with the student name. Call "SetGrade" function within this function to set the grades before printing them on the screen.
   - Place your class definition in a header file named "Grade.h" and write your implementation in "Grade.cpp" source file.
   - Write a program to assess the results of a group of students. Write the necessary codes to get names and marks of students and to print the results one all data are received. Marks are given out of 100 and no negative mark is acceptable. Test your program with 3 students
   - You must take measures to avoid any potential errors that may be caused by including the header file "Grade.h" more than once.