***Objective:***

* Develop a Python program (Version: Python 3) to provide different functions.
* The program should accept input data, including student name, student ID, marks of different assessments, etc.
* The program should process the data, analyze the input data, determine the module result and give a conclusion.

***Group size:***

* 1 – 2 students

***Hand in:***

* Zip all the source codes (.py format files) and submit to Moodle.

***Demonstration:***

* Each group will present the project during class to your subject lecturer.
* Show the layout and walk through all the functions.

***Part 1 - Input student information and assessments’ marks (36%):***

* The program will get the following inputs from the user.
* Student Name
* Must be alpha character.
* Not null.
* Student ID
* Must be digit.
* The length of the student ID must be equal to 9.
* Not null.
* Test Marks
* Must be digit.
* Test Marks must be between 0 – 100.
* Not null.
* Project Marks
* Must be digit.
* Project Marks must be between 0 – 100.
* Not null.
* Workshop Marks
* Must be digit.
* Workshop Marks must be between 0 – 100.
* Not null.
* Exam Marks
* Must be digit.
* Exam Marks must be between 0 – 100.
* Not null.
* Store the input data in the variable if the input data is valid.
* Show an error message to the user if the input data is invalid.

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| ***Hints:***  *While True:*  *hints1****.isalpha()***  *hints2****.isdigit()*** |

***(Reference cases – Terminal output only)***

***Part 1 - Input student information and assessments’ marks:***

* Start of the program

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: |

* Invalid input – Student Name

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: |

* Valid input – Student Name

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: chantaiman  Enter student ID: |

* Valid input – Student ID

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: chantaiman  Enter student ID: 888888888  Enter test marks: |

* All inputs are successful.

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: chantaiman  Enter student ID: 888888888  Enter test marks: 100  Enter project marks: 100  Enter workshop marks: 100  Enter exam marks: 100 |

*\* Reminder to store all input data in the corresponding variables.*

***Part 2 - Calculate the CA marks, Module marks, and determine the module grade and remarks (34%):***

* Calculate the CA Marks by using the following formula.
* CA Marks = Test Marks \* 40% + Project Marks \* 30% + Workshop Marks \* 30%
* Calculate the Module Marks by using the following formula.
* Module Marks = CA Marks \* 50% + Exam Marks \* 50%
* Determine the module grade by using the following table.

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| --- | --- | --- | --- |
| **CA Marks** | **Exam Marks** | **Module Marks** | **Module Grade** |
| < 40 | - | - | **F** |
| - | < 40 |
| >=40 | >=40 | >= 75 and <=100 | **A** |
| >=65 and < 75 | **B** |
| >=40 and < 65 | **C** |

* Determine the remarks and comments by using the following table.

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| **Module Grade** | **Remarks** | **Comments** |
| F | Restudy | Don't get discouraged, keep trying! |
| A | Pass with A grade | Well done! |
| B | Pass with B grade | Almost can get an A grade, work harder! |
| C | Pass with C grade | Please be careful, you only qualified for a C. |
| Others | Invalid Module Grade | Please double-check the input marks. |

***(Reference cases – Terminal output only)***

***Part 2 - Calculate the CA marks, Module marks, and determine the module grade and remarks:***

* Showing the result of A grade

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: chantaiman  Enter student ID: 888888888  Enter test marks: 100  Enter project marks: 100  Enter workshop marks: 100  Enter exam marks: 100  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Student name: chantaiman  Student ID: 888888888  Test Marks: 100 , Project Marks: 100 , Workshop Marks: 100 , Exam Marks: 100.0  Module Marks: 100.0 , Module Grade: A , Remarks: Pass with A grade  Well done!  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

* Showing the result of B grade

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: chantaiman  Enter student ID: 888888888  Enter test marks: 74  Enter project marks: 74  Enter workshop marks: 74  Enter exam marks: 74  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Student name: chantaiman  Student ID: 888888888  Test Marks: 74 , Project Marks: 74 , Workshop Marks: 74 , Exam Marks: 74.0  Module Marks: 74.0 , Module Grade: B , Remarks: Pass with B grade  Almost can get an A grade, work harder!  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

* Showing the result of C grade

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: chantaiman  Enter student ID: 888888888  Enter test marks: 64  Enter project marks: 64  Enter workshop marks: 64  Enter exam marks: 64  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Student name: chantaiman  Student ID: 888888888  Test Marks: 64 , Project Marks: 64 , Workshop Marks: 64 , Exam Marks: 64.0  Module Marks: 64.0 , Module Grade: C , Remarks: Pass with C grade  Please be careful, you only qualified for a C.  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

* Showing the result of F grade

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: 1  Invalid name, please try again.  Enter student name: chantaiman  Enter student ID: 888888888  Enter test marks: 39  Enter project marks: 39  Enter workshop marks: 39  Enter exam marks: 39  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Student name: chantaiman  Student ID: 888888888  Test Marks: 39 , Project Marks: 39 , Workshop Marks: 39 , Exam Marks: 39.0  Module Marks: 39.0 , Module Grade: F , Remarks: Restudy  Don't get discouraged, keep trying!  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

***Part 3 – Input more than one student data (Challenge) (30%):***

* Ask the user to input one more student data or not.
* Yes Input one more student data.
* No Show the conclusion of current input data.
* If Yes, input one more student data.
* Functions in Part1 and Part2.
* Count the number of A, B, C and F grade students.
* Count the total number of students’ input.
* Calculate the average marks of all students.
* If No, show the conclusion. (refer to reference cases)
* Total number of students’ input
* Average marks of all students
* Count the number of students getting A grade
* Count the number of students getting B grade
* Count the number of students getting C grade
* Count the number of students getting F grade

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| ***Hints:*** *Global variables, E.g.*   * *countTotalStudent* * *countA* * *countB* * *countC* * *countF* * *Etc.*   *Function*  *While True:*   * *Decide to enter one more student data or not.*   *Average marks*   * *total marks of all students / total number of students input* |

***(Reference cases – Terminal output only)***

***Part 3 – Input more than one student data (Challenge):***

* Enter one more student data.

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| \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: chantaiman  Enter student ID: 888888888  Enter test marks: 100  Enter project marks: 100  Enter workshop marks: 100  Enter exam marks: 100  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Student name: chantaiman  Student ID: 888888888  Test Marks: 100 , Project Marks: 100 , Workshop Marks: 100 , Exam Marks: 100.0  Module Marks: 100.0 , Module Grade: A , Remarks: Pass with A grade  Well done!  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Do you want to enter another student record? [Y/y] for Yes, [N/n] for No: y  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Enter information \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Enter student name: chansiuming  Enter student ID: 999999999  Enter test marks: 74  Enter project marks: 74  Enter workshop marks: 74  Enter exam marks: 74  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Student name: chansiuming  Student ID: 999999999  Test Marks: 74 , Project Marks: 74 , Workshop Marks: 74 , Exam Marks: 74.0  Module Marks: 74.0 , Module Grade: B , Remarks: Pass with B grade  Almost can get an A grade, work harder!  \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Result \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*  Do you want to enter another student record? [Y/y] for Yes, [N/n] for No: n  There is/are 2 students' record(s) inputted, and the average marks is: 87.0  Total number of A grade: 1  Total number of B grade: 1  Total number of C grade: 0  Total number of F grade: 0 |