**HKIIT(ST)**

**Diploma of Foundation Studies**

**AY 2025/26**

**Project (20%)**

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| **Stream** | : Information Technology |
| **Course Code** | : FS113002N |
| **Module Title** | : Programming Concept and Applications |
| **Module Code** | : ITE3711 |
| **Date of Submission** | : 12-12-2025 |

***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 (30%):***

1. 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.

1. Store the input data in the variable if the input data is valid.
2. 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:***

1. Start of the program

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

1. Invalid input – Student Name

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

1. 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: |

1. 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: |

1. 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 (28%):***

1. Calculate the CA Marks by using the following formula.
   * CA Marks = Test Marks \* 40% + Project Marks \* 30% + Workshop Marks \* 30%
2. Calculate the Module Marks by using the following formula.
   * + Module Marks = CA Marks \* 50% + Exam Marks \* 50%
3. 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** |

1. 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:***

1. 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 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

1. 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 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

1. 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 \*\*\*\*\*\*\*\*\*\*\*\*\*\*\* |

1. 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) (27%):***

1. 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.
2. 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.
3. 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):***

1. 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 |

***Part 4 – Enhancement of the project (15%)***

For example,

1. Implement a new function that enhances the functionality of the project.
2. Provide a user interface for the user to interact with the Python program (e.g. using ***Tkinter****).*

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| import tkinter as tk  from tkinter import messagebox  # Create the main window  main\_window = tk.Tk()  main\_window.title("Simple Calculator")  main\_window.geometry("300x300")  # Set window size to accommodate placed widgets  # Create input field for the first number  label\_number1 = tk.Label(main\_window, text="Enter the first number:")  label\_number1.place(x=50, y=20, width=200, height=30)  input\_field1 = tk.Entry(main\_window)  input\_field1.place(x=50, y=50, width=200, height=30)  # Create input field for the second number  label\_number2 = tk.Label(main\_window, text="Enter the second number:")  label\_number2.place(x=50, y=90, width=200, height=30)  input\_field2 = tk.Entry(main\_window)  input\_field2.place(x=50, y=120, width=200, height=30)  # Create result label  result\_label = tk.Label(main\_window, text="Result: ")  result\_label.place(x=50, y=160, width=200, height=30)  # Create calculate button with embedded logic  calculate\_button = tk.Button(main\_window, text="Calculate", command=lambda: (      result\_label.config(text=f"Result: {float(input\_field1.get()) + float(input\_field2.get())}")      if input\_field1.get().replace(".", "").replace("-", "").isdigit() and input\_field2.get().replace(".", "").replace("-", "").isdigit()      else messagebox.showerror("Error", "Please enter valid numbers!")  ))  calculate\_button.place(x=50, y=200, width=100, height=30)  # Start the main event loop  main\_window.mainloop() |