ASSIGNMENT 2

PROGRAMMING TECHNIQUE 1 (SECJ1013)

SECTION 02, SEM 1 (2025/2026)

INSTRUCTIONS TO THE STUDENTS

- *This assignment must be done **in pairs** (a group consisting of 2 members).*
- *Follow the same group list and set number as your previous Assignment 1.*
- *Your program must follow the input and output as required in the text and shown in the examples. You must test the programs with (but not limited to) all the input given in the examples.*
- *Any form of plagiarisms is **NOT ALLOWED**. Students who copied other students' programs will get **ZERO** marks (both parties, students who copied, and students that share their work).*
- *The use of any form of generative AI to generate the code is **NOT ALLOWED**. **ZERO** marks will be given if caught.*
- *Please insert your **name and partner's name, matrics number, and date** as a comment in your program.*

SUBMISSION PROCEDURE

- *Please submit this assignment according to the due date in e-learning.*
- *Only one submission per pair (group) that includes one file is required for the submission which is the source code (the file with the extension .cpp).*
- *Submit the assignment via the UTM's e-learning system.*

SET 1

Based on the problem given below, write a complete C++ program. You need to develop a Basal Metabolic Rate (BMR) Calculator to estimate a basal metabolic rate: the amount of energy expended while at rest in a neutrally temperate environment, and in a post-absorptive state (meaning that the digestive system is inactive, which requires about 12 hours of fasting). The program should produce the outputs as in **Figure 1**. ***Note:*** The values in **bold** are input by the user. **Figure 2** shows the example of the BMR calculator application as a guide to developing your own BMR calculator.

```
Basal Metabolic Rate (BMR) Calculator

Age [15-80]: 84
Age [15-80]: 10
Age [15-80]: 25
Gender [F @ M]: w
Gender [F @ M]: f
Height (cm): 180
Weight (kg): 60

BMR = 1439.00 Calories/ day (using Mifflin-St Jeor Equation)

Daily calorie needs based on activity level

Activity Level                                    Calorie
Sedentary: little or no exercise                  1,727
Exercise 1-3 times/week                           1,979
Exercise 4-5 times/week                           2,108
Daily exercise or intense exercise 3-4 times/week 2,230
Intense exercise 6-7 times/week                   2,482
Very intense exercise daily, or physical job     2,734

Exercise: 15-30 minutes of elevated heart rate activity.
```

```
Intense exercise: 45-120 minutes of elevated heart rate activity.
Very intense exercise: 2+ hours of elevated heart rate activity.

Do you want to enter other data? [Y @ N]: n

Thank you :)
```

Figure 1: The example of inputs and outputs

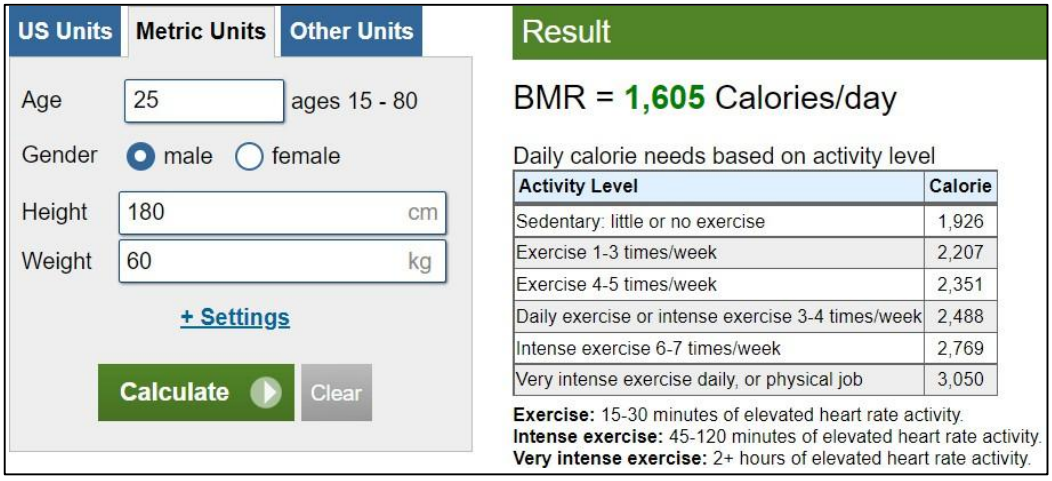

Figure 2: BMR calculator application
(***Source:*** *https://www.calculator.net/bmr-calculator.html*)

Please take note that in your program, you **MUST** apply:

a) Branching/ selection (if..else)
b) Loop/ repetition (repeat..until/ do..while)
c) User-defined function. Besides the **main** function, your program needs to define at least **ONE** more other function. Use appropriate arguments for the function.

SET 2

Based on the problem given below, write a complete C++ program. You need to develop a Loan Calculator to estimate a monthly installment and to help you to plan your finances. The program should produce the outputs as in **Figure 3**. ***Note:*** The values in **bold** are input by the user. **Figure 4** shows the example loan calculator applications as a guide to develop your own loan calculator.

```
Proton Car Loan Calculator

Model [1-X50, 2-Exora, 3-Persona]: 3
Variants [1-1.6L Standard CVT, 2-1.6L Premium CVT]: 2
Region [1-Peninsular Malaysia, 2-East Malaysia]: 1

Car Info
Model: Persona
Variant: 1.6L Premium CVT
Region: Peninsular Malaysia
Paint Type: Metallic
Price (MYR): 54600.00

Down Payment (MYR): 5460
Interest Rate (%): 3.5
Repayment period (in years): 9
```

```
MONTHLY INSTALLMENT (MYR): 598.33

Do you want to enter other data? [Y @ N]: n

Thank you :)
```

Figure 3: The example of inputs and outputs

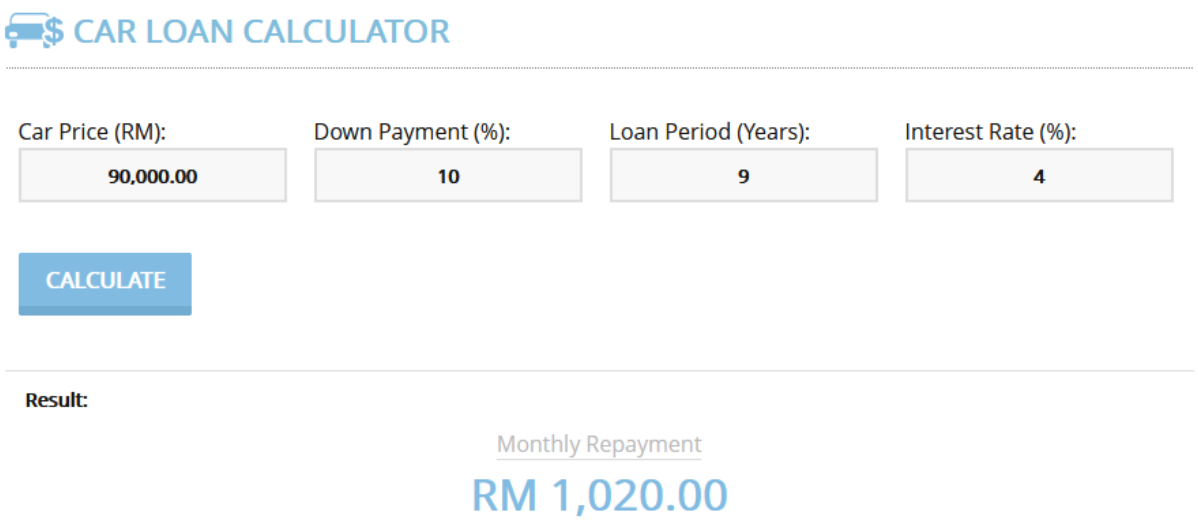

Figure 4: Car loan calculator application
(***Source:*** *https://www.calculator.com.my/car-loan)*

Please take note that in your program, you **MUST** apply:

a) Branching/ selection (if..else)
b) Loop/ repetition (repeat..until/ do..while)
c) User-defined function. Besides the **main** function, your program needs to define at least **ONE** more other function. Use appropriate arguments for the function.