

ASSIGNMENT 1
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).
- Please refer to the group list to find out your group members/ partner and your set of assignments.
- The application examples given in the figure in the question set can be used as a guide to design your solution (flow chart).
- Any form of plagiarisms is **NOT ALLOWED**. Students who copied other students' assignments will get **ZERO** marks (both parties, students who copied, and students that share their work).
- Please insert your **name and partner's name, matrix 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 flow chart (the file with the extension .pdf).
- Submit the assignment via the UTM's e-learning system.

SET 1

Based on the problem given below, analyze the problem and design its solution using a **flow chart**. The flow chart must be drawn by using any appropriate drawing tools such as Microsoft Visio, draw.io (<https://app.diagrams.net/>), and Lucid chart (<https://www.lucidchart.com/pages/examples/flowchart-maker>). 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) (**Source:** <https://www.calculator.net/bmr-calculator.html>). **Figure 1** shows the example of the BMR calculator application as a guide to developing your own BMR calculator.

The screenshot shows a BMR calculator application. On the left, there are input fields for Age (25), Gender (male selected), Height (180 cm), and Weight (60 kg). Below these fields are buttons for '+ Settings', 'Calculate', and 'Clear'. On the right, the 'Result' section displays 'BMR = 1,605 Calories/day'. Below this, a table titled 'Daily calorie needs based on activity level' lists various activity levels and their corresponding calorie needs. At the bottom, there are definitions for 'Exercise', 'Intense exercise', and 'Very intense exercise'.

Activity Level	Calorie
Sedentary: little or no exercise	1,926
Exercise 1-3 times/week	2,207
Exercise 4-5 times/week	2,351
Daily exercise or intense exercise 3-4 times/week	2,488
Intense exercise 6-7 times/week	2,769
Very intense exercise daily, or physical job	3,050

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.

Figure 1: BMR calculator application
(**Source:** <https://www.calculator.net/bmr-calculator.html>)

Please take note that in your solution (flow chart), you **MUST** apply:

- Branching/ selection (if..else)
- Loop/ repetition (repeat..until/ do..while)
- User-defined function flow chart. Besides the **main** function flow chart, your solution needs to design at least **ONE** more other function flow chart. Use appropriate arguments for the function.

SET 2

Based on the problem given below, analyze the problem and design its solution using a **flow chart**. The flow chart must be drawn by using any appropriate drawing tools such as Microsoft Visio, draw.io (<https://app.diagrams.net/>), and Lucid chart (<https://www.lucidchart.com/pages/examples/flowchart-maker>). You need to develop a Loan Calculator to estimate a monthly installment and to help you to plan your finances. **Figure 2** shows the example of car loan calculator applications as a guide to develop your own loan calculator.

CAR LOAN CALCULATOR

Car Price (RM):	Down Payment (%):	Loan Period (Years):	Interest Rate (%):
90,000.00	10	9	4
CALCULATE			

Result:

Monthly Repayment
RM 1,020.00

Figure 2: Car loan calculator application
(*Source:* <https://www.calculator.com.my/car-loan>)

Please take note that in your solution (flow chart), you **MUST** apply:

- Branching/ selection (if..else)
- Loop/ repetition (repeat..until/ do..while)
- User-defined function flow chart. Besides the **main** function flow chart, your solution needs to design at least **ONE** more other function flow chart. Use appropriate arguments for the function.