

ASSIGNMENT 1
PROGRAMMING TECHNIQUE 1 (SECJ1013)
SEM 1 (2023/2024)

INSTRUCTIONS TO THE STUDENTS

- This assignment must be done in pairs (a group consisting of 2 members).
- The application examples given in the figure in the question 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, matrics number, and date in the submitted document.

SUBMISSION PROCEDURE

- Please submit this assignment no later than **9 November 2023, Thursday (23:59 MYT)**.
- 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.

QUESTION

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 Figma, Microsoft Visio, draw.io or Lucid chart. 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 with a green header bar. On the left, there are input fields for Age (25), Gender (male selected), Height (180 cm), and Weight (60 kg). Below these is a '+ Settings' link and a 'Calculate' button. On the right, the 'Result' section shows 'BMR = 1,605 Calories/day'. Below this is a table titled 'Daily calorie needs based on activity level' with columns 'Activity Level' and 'Calorie'. The table lists six activity levels with their corresponding calorie needs. At the bottom, there are three lines of text defining '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:

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