Practical Lab 1

IMPLEMENTING CONDITIONAL LOGIC

Due date: 27 February 2024 | Software Design 1 (SDN150S)

Question 1: Calculate BMI

Description: Write a program to calculate the Body Mass Index (BMI) based on the user's weight and height.

Programming Steps:

1. Ask the user to enter their weight in kilograms and height in meters.
2. Calculate the BMI using the formula BMI = Weight/Height^2
3. Use *if-else statements* to categorize the BMI into Underweight, Normal weight, Overweight, or Obese.
4. Display the BMI value and category.

Conditions: Let BMI less than 18.5 be underweight, BMI < 24.9 be Normal weight, BMI under 29.9 be overweight, and BMI greater 29.9 be Obese.

Question 2: Cinema Ticket System

Description: Implement a cinema ticket pricing system based on user age and time (Day/Night) using *nested if statements*.

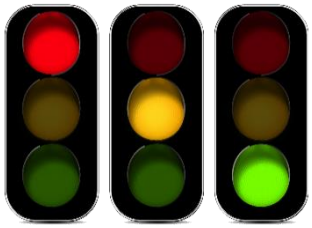
Programming Steps:

1. Ask the user for their age and whether it's Day or Night (D/N) cinema ticket.
2. Use nested if statements to apply discounts to ticket price based on age and time.
3. Display the final ticket.

Conditions:

- Day-time tickets: 50% discount for users under 12 years old or 60 years and older.
- Night-time tickets: 40% discount for users 60 years and older.
- Night-time tickets: 30% discount for users under 12 years old.

Question 3: Traffic Light Simulator



Description: Simulate a traffic light using a *switch statement*. The user enters 'R' for red, 'Y' for yellow, and 'G' for green.

Programming Steps:

5. Ask the user to enter the traffic light color (R, Y, G).
6. Use a switch statement to display actions for each color.
7. Display the action (e.g., "Stop", "Ready", "Go").
8. Remember to check for invalid input.

Question 4: Unit Converter

Description: Create a unit converter (e.g., inches to centimeters, kilograms to pounds) using a *switch statement*.

Programming Steps:

1. Display conversion options to the user.
2. Ask the user to select an option.
3. Use a switch statement to perform the selected conversion.
4. Display the conversion result if all inputs are valid.

Question 5: Simple Calculator

Description: Extend the simple calculator to include power and square root operations using *switch statements*.

Programming Steps:

1. Ask the user to enter two numbers (for square root, the second number can be ignored).
2. Ask the user to enter the operation (+, -, *, /, ^ (for power), r (for square root)).
3. Use a switch statement to perform the selected operation.
4. Display the result.