Conditional Logic

Exercises

Level - Easy

Exercise 1-1

1. Ask the user for a number using the input() function.
2. If the number is greater than 10, print "The number is greater than 10."

Exercise 1-2

1. Ask the user for their age.
2. If they are 18 or older, print "You are an adult."
3. Otherwise, print "You are a minor."

Exercise 1-3

1. Ask the user for a grade (from 0 to 100).
2. If the grade is 90 or above, print "A".
3. If the grade is 80 to 89, print "B".
4. If the grade is 70 to 79, print "C".
5. If the grade is 60 to 69, print "D".
6. Otherwise, print "F".

Exercise 1-4

1. Declare two variables: a = 5 and b = 10.
2. Check if a is lower than 8 and b is greater than 8.
3. If both conditions are true, print "Both conditions are true."

Exercise 1-5

1. Declare a variable x = 5.
2. Use the is operator to check if x is 5.
3. If true, print "x is 5."

Level - Moderate

Exercise 2-1

1. A store offers the following discounts:
    a. Purchase over $50 but less than $100: 10% discount.
    b. Purchase of $100 or more: 20% discount.
2. Ask the user for the amount of their purchase, and calculate the total amount after applying the discount.

Exercise 2-2

You can't use multiple conditions for this exercise.

1. A movie theater charges different ticket prices depending on a person's age:
    a. Below 12 years: $5.
    b. 12 to 59 years: $10.
    c. 60 years and above: $7.
2. Ask the user for their age and print out the price of the movie ticket for them.

Exercise 2-3

1. Ask the user for the lengths of three sides of a triangle.
2. Determine if those sides can form a valid triangle. (Hint: In a valid triangle, the sum of any two sides should be greater than the third side.)

Exercise 2-4

1. Ask the user for their weight (in kilograms) and height (in meters).
2. Calculate their Body Mass Index (BMI) using the formula:

$$BMI = Weight\ (kg) / Height(m)^2$$

3. Then categorize their BMI into:
    a. Underweight: <18.5
    b. Normal weight: 18.5–24.9
    c. Overweight: 25–29.9
    d. Obesity: ≥30
4. Print out their BMI and its category.

Exercise 2-5

1. Ask the user for two numbers.
2. Without actually multiplying the numbers:
    a. If the multiplication of the two number is positive print "The result is positive"
    b. If the multiplication of the two number is negative print "The result is negative"
    c. Otherwise, print "The result is 0."

Level - Hard

Exercise 3-1

1. Given the following tax brackets:
    a. Income up to $10 000: 10%
    b. Income over $10 000 and up to $40 000: 15%
    c. Income over $40 000 and up to $80 000: 20%
    d. Income over $80 000: 25%
2. Ask the user for their income and calculate the tax they owe based on the brackets.

Tips : Note that this is a progressive tax, so they'll owe different amounts for different portions of their income.

Exercise 3-2

1. Ask the user for a year.
2. Determine if that year is a leap year.

Tips : A year is a leap year if it's divisible by 4, but years divisible by 100 are not leap years unless they're also divisible by 400.

Exercise 3-3

Reuse Exercise 2-4 but add the following to prevent mistakes from the user:

1. If the user provided their weight in grams, convert it to kilograms.
2. If the user provided their height in centimeters, convert it to meters.