Lesson 4. Control Flow
Exercises I – Conditional instructions

Exercise 1. Write a C program that reads an integer number from the keyboard and prints a message if it is larger than 100.

Exercise 2. Write a C program that reads two integer numbers on the keyboard and prints if the first of them is divisible by the second one.

Exercise 3. Write a C program that reads an integer value on the keyboard and prints if it is an even or an odd number. If the number is even, prints if it is divisible by 3.

Exercise 4. Write a C program that reads two integer numbers on the keyboard and prints the largest of them. Consider the case when the two values are equal.

Exercise 5. Write a C program that prints on the screen the price of a cinema ticket according to the age of the customer. The program must read the user's age and calculate the price as follows: (a) Normal ticket: 7 euros; (b) Children under 5: 60% discount; (c) People over 60: 55% discount. Use a constant to define the normal ticket price.

Exercise 6. Write a C program to calculate the value of the function below for a value *x* introduced on the keyboard:

$$f(x) = \begin{cases} x + 3 \; if \; x \le 0 \\ x^2 + 2x \; if \; x > 0 \end{cases}$$

Exercise 7. Write a C program that reads three integer values from the keyboard and prints on the screen the message "Access granted" if their respective values are 1, 2 and 3.

Exercise 8. Write a C program that reads an integer value on the keyboard and, if the value has two digits, shows on the screen: (1) sum of the two digits; (2) number of even digits.

Exercise 9. Write a C program that reads three integer values on the keyboard and prints them in decreasing order.

Exercise 10. Write a C program that reads five integer values on the keyboard and shows the smallest of them.

Exercise 11. Write a C program that reads a character on the keyboard and, by using the *switch* instruction, prints on the screen if it is a number or not. Repeat the exercise by using the *if* instruction.

Exercise 12. Write a C program that prints on the screen the menu below and reads the option selected by the user. According to the option, the program must read the corresponding data to perform the selected area calculation. The resulting are must be printed on the screen.

Calculate the area

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1. Calculate the area of a triangle (base, height)
2. Calculate the area of a trapezoid (edge a, edge b, height)
3. Calculate the area of a rectangle (base, height)
4. Calculate the area of a rectangle (edge a, edge b, edge c)

Exercise 13. Write a C program that calculates the employees' weekly pay based on the worked hours and the salary per hour. The user must introduce on the keyboard the worked hours and the salary per hour. Worked hours above 37.5 are considered extra hours; extra hours are paid twice the normal salary per hour. Change the program to consider as extra hours those above 40, instead of 37.5.

Exercise 14. Write a C program that reads from the keyboard an integer number c representing a card of the Spanish *baraja* and prints on the screen:

- "As" if c is 1
- "Sota" if c is 10
- "Caballo" if c is 11
- "Rey" if c is 12
- "It is not an As or Figure" if c is in {2, …, 9}
- "Not a valid value" for any other value

Exercise 15. Write a program that calculates the slope m of the line between two points p_1 = (x_1, y_1) and p_2 = (x_2, y_2):

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$