

Subject(s):

- Conditional control structures.

Part 1

1. Implement a program that presents the largest of two whole numbers requested to the user. Then, they should be presented from the largest to the smallest.
2. Implement a program that presents the smallest of three whole numbers requested to the user.
3. What is the result of the following code block?

```
int a = 0, b = 1;
if (a = b) {
    printf("The values are the same.");
}
printf("a : %d b: %d: ", a, b);
```

4. Implement a program that ask the user for a number and show whether it is odd or even.
5. Do the following codes show the same result? How many comparisons are made in each case if **a** has the value 1? Turn one of them into a **switch**.

```
if (a == 1) {
    printf("The value is one");
} else if (a == 2) {
    printf("The value is two");
} else if (a == 3) {
    printf("The value is three");
}
```

```
if (a == 1) {
    printf("The value is one");
}
if (a == 2) {
    printf("The value is two");
}
if (a == 3) {
    printf("The value is three");
}
```

Part 2

1. Implement a program that asks the user two values and one character representing one of the four arithmetic operations (+, -, *, /). Present the result of applying the operation corresponding to the values. If the character is invalid, the sum must be made by default.
2. Implement a program that, after asking the user for the bank account balance and amount to credit/debit (positive or negative amount, respectively), shows whether the operation is possible, that is, whether the balance remains positive after the operation.
3. Implement a program that reads the desired menu option (menu options: 1. Create 2. Update, 3.

Delete. 4 Exit). If the option 1, 2 and 3 is chosen, it must present a text with the chosen option. If the chosen option is 4, nothing is done. If the choice is out of the valid options, you must inform the user.

4. Implement a program that reads two grades from 0 to 20 values (if the values are not in this range, you must inform the user that the calculation is not possible). Present the weighted average and inform if the student is approved or not (The approval is obtained with an average higher or equal to 9.5). The weights to consider are test 1: 40% and test 2: 60%.
5. Implement a program that reads a pair of coordinates (x, y) and shows the quadrant of that point. The program must be able to identify if the point is on one of the axes or be the origin **(0.0)**.

Quadrant 2 (-x, y)	Quadrant 1 (x, y)
Quadrant 3 (-x, -y)	Quadrant 4 (x, -y)

Part 3 (optional)

1. The company "XPTO, Lda." contacted you again to adapt the program previously made to the new tax changes. Considering the data described below, prepare a new version of the program that allows to calculate the salary of an employee, as well as the discounts and taxes resulting from this salary processing. Concepts:
 - a. Position: E-Employee, C-Chef, A-Administrator
 - b. Base salary: E-40 EUR/day, C-60 EUR/day and A-80 EUR/day
 - c. Food allowance: 5 euros/day for the employees and 7.5 euros/day for the chiefs and administrators.
 - d. IRS retention:
 - i. 0% if month's salary is less than 1000 euros
 - ii. 20% if the month's maturity exceeds or is equal to 1000 euros
 - e. Social Security:
 - i. Administrators - 9% employee and 21% employer's burden
 - ii. Others - 11% employee and 23.75% employer's burden

The user must be asked for the employee's code as well as his position and the number of days he worked that month. It must then be submitted:

- a. the gross amount to be received from the salary.
- b. the total food allowance.
- c. the amount of IRS retention to be delivered to the state.
- d. total amount to be delivered to the Social Security (both charges).
- e. net amount to be received by the employee.