

Exercises: Sequential problems

50 points

- 1 – What will this program display? (5 points)

VARIABLES :

number1, number2, number3: Real (Input)

START

number1 \leftarrow 1

number2 \leftarrow 2

number3 \leftarrow 3

number1 \leftarrow number2

number2 \leftarrow number3

number3 \leftarrow number1

WRITE number1, number2, number3

END

- 2 – In the old system of calculating sales tax in Québec, the taxes on a product were 7% for the GST, and 7.5% for the QST (applied after calculating the GST). Make a program that reads the unit price of a product and the quantity purchased, and that displays the amounts for the GST, the QST, and the total price after taxes. (5 points)
- 3 – Make a program that calculates an employee's gross salary for a week, given their hourly rate and the number of hours worked. (5 points)
- 4 – Make a program that reads a temperature in degrees Fahrenheit and converts it into degrees Celsius. (5 points)
The conversion formula is:

$$C = \frac{F - 32}{9} \times 5$$

- 5 – Make a program that displays the volume of a rectangular prism after reading the dimensions of the prism. (5 points)
- 6 – A dealership selling new vehicles asks you to construct a program that calculates the compensation paid to their salespeople. The base salary for all the salespeople is \$400. For each vehicle sold, the salesperson receives a commission of \$200. Also, the salesperson receives a bonus of 5% of the total amount of all their sales.
Make a program that calculates the compensation for one salesperson. (5 points)

- 7 – We want to determine the height of a building of n floors, knowing that the ground floor has a height of 6 meters and that the other floors each have a height of 4 meters. (5 points)
- 8 – An aircraft pilot wants to know the atmospheric pressure, expressed in atmosphere units (atm), as the weather station only provides pressure data in kilopascal units (kPa).
1 atm is equivalent to 101.325 kPa. Make a program that performs the conversion. (5 points)
- 9 – In a computer technology course, the following evaluation weights are used:
- Laboratory work counts for 40% of the grade
 - The midterm exam counts for 25%
 - The final exam counts for 35%

Make a program that calculates the final grade of a student, assuming that each of the three grades the user inputs is out of 100. (5 points)

- 10 – Monique wants to have a little program that allows her to evaluate the total amount of her expenses for a month, as well as the amount of money she can allocate for her leisure activities and non-essential spending. The program should read her projections for expenses in the following categories:

Weekly expenses (one time per week; assuming that 1 month = 4 weeks)

- Food expenses and household expenses
- Common expenses

Monthly expenses (one time per month)

- Public transit pass
- Rent
- Total of monthly bills

The program should also read the amount of her paycheques. Monique receives two paycheques per month.

The program should then display her total expenses, her total income, and the difference.

Make this program. (5 points)