

PROBLEMS - Lesson 2: Flowcharts

Problems in green → Recommended problems

The rest of the problems are of intermediate difficulty. If you have difficulty moving from one recommended problem to the next one, do some of the problems that appear in between for more progressive learning.

Problem 1

Make the flowchart of an algorithm that only displays the message "Hello world !!!" on the screen.

Problem 2

Make a flowchart of an algorithm that reads a worker's name, number of hours worked, and price per hour, and writes the worker's name, net salary, and taxes (25% of salary).

Problem 3

Make a flowchart of an algorithm that asks the user to enter the three grades of a student, calculate the average of these three grades and display a message on the screen indicating the final average grade.

Problem 4

Make the flowchart of an algorithm that asks two numbers and sorts them from lowest to highest, that is, if the input number in first position is greater than the input number in second position, exchange the value of the two numerical variables. Print the result.

Problem 5

Make a flowchart of an algorithm that asks the user to enter three numbers and determine if the sum of any pairs of them is equal to the other number. If this condition is met, write "EQUAL"; otherwise, type "DIFFERENT".

Problem 6

Make the flowchart of an algorithm that adds even numbers between 2 and 100.

Problem 7

Make the flowchart of an algorithm that counts how many zeros there are in a sequence of numbers entered by the user via the keyboard. When the user enters a negative number, the data entry will end and the number of zeros that the user has entered will be displayed on the screen.

Problem 8

Make a flowchart of an algorithm that averages a series of positive numbers, assuming the data is read from a terminal. A value of zero, as an input, will indicate the end of the series of positive numbers.

Problem 9

Make a flow chart to calculate the speed (in meters per second) of runners in a 1,500m race. The entry will be two numbers: minutes and seconds. For each participant, time will be printed in minutes and seconds, as well as speed. This process will be repeated until the entry is 0 minutes and 0 seconds.

Problem 10

Make the flowchart of an algorithm that simulates a clock. The clock will start at 0:00:00 and stop after 24 hours. The algorithm will have to count the seconds and when it reaches 60 seconds, it will have to increase by one the minutes. When the minutes reach 60, the hours must be increased by one. When it reaches 24 hours, the algorithm will finish. Every second, the clock will show the time on the screen.

Problem 11

Make the flowchart of an algorithm that guesses a number between 1 and 100, thought by a human. The program must write numbers and the human will respond with the symbols '<', '>' or '=', depending on whether the number that has been thought is lower, greater or equal to what the computer wrote. When it is finally guessed, the program should put a message specifying how many questions were needed, and finish.

Problem 12

The Fibonacci sequence of numbers is defined as: $a_0 = 0$, $a_1 = 1$, $a_n = a_{n-1} + a_{n-2}$ for $n \geq 2$. So, the first two terms are 0 and 1, and for the rest, each term is the sum of the previous two. The first numbers in the sequence are: 0, 1, 1, 2, 3, 5, 8, 13, 21, ... Make a flow chart to calculate the n-th term of the sequence