

INTRODUCTION TO THE PYTHON LANGUAGE

PROGRAMMING AND INFORMATION SYSTEMS - 1º THEAT THE GPSI TECHNICAL PROFESSIONAL COURSE



"Education is to the soul what sculpture is to a block of marble."

(Addison, Joseph)



Module 01

Introduction to Programming and Algorithms



Goals

From the practical cases that are presented, the intention is to find a computational solution that returns the expected result to the user.

The code must be developed in Python, in an IDE of your choice and, after it is working, copy and share it in the "Exploring Python (Season 1)" channel.



Contents

- [Video Introductory class to the Visual Studio IDE Development Environment](#)
- [Reference Tutorials for Learning Python](#)
- [Python tutorial with exercises](#)



Activity proposal

1. Create a Python Program that converts meters to centimeters.
2. Make a Program that asks how much someone earns per hour and the number of hours they worked in the month. Calculate and display your total salary for that month on the console.
3. Create a Program that asks the user for 2 whole numbers and a real number. Calculate and show:
 1. the product of double the first with half of the second.
 2. the sum of the triple of the first and third.
 3. the third to the cube.
4. Build a program that asks for the size of a download file (in MB) and the speed of an Internet link (in Mbps), calculate and report the approximate download time of the file using this link (in minutes).
5. Create a program that, through the day and month of a date, informs how many days have passed since the beginning of the year. Always consider that the year has 365 days and that a month has 30 days.
6. A t-shirt factory produces small, medium and large sizes, each selling for 10, 12 and 15 euros respectively. Build a program in which the user provides the amount of small, medium and large t-shirts referring to a sale, and the machine informs how much will be collected.
7. Suppose you have an 8x6 rectangular room. Assuming that you want to cover the floor with 2x2 tiles, create a program that calculates the number of units you will need.
8. Write a program that reads an integer (assumes up to three digits) and prints the output as follows:
HUNDRED = x
TEN = y
UNIT = z
9. The ESEN bar sells only one type of sandwich, the filling of which includes two slices of cheese, a slice of ham and a slice of hamburger. Knowing that each slice of cheese or ham weighs 50 grams, and that the hamburger slice weighs 100 grams, make a program in which the responsible employee provides the amount of sandwiches to make, and the machine informs the amounts (in kilograms) of cheese , ham and meat needed that you need to buy.

10. The company Hipotheticus pays €25 per normal hour worked, and €35 per overtime. Create a program to calculate and print the gross salary and net salary for a given employee. Assume that the take-home pay is equal to the gross pay after deducting 11% for taxes.
11. The Meia-Cola soft drink factory sells its product in three formats: 350 ml can, 600 ml bottle and 2 liter bottle. If a merchant buys a certain amount of each format, build a program to calculate how many liters of soda he has purchased.
12. Design a program that receives a person's weight, calculate and show:
 - a) the new weight if the person gains 15% of the entered weight;
 - b) the new weight if the person loses 20% of the entered weight.
13. The Andromeda galaxy is 2.9 million light years from Earth. One light year equals $9,459 \times 10^{12}$ kilometers. How far is the galaxy from Earth?
14. Calculate the number of seconds that exist in a normal year (365 days).
15. Suppose you have a certain number of empty bottles of capacity 5l, 1.5l, 0.5l and 0.25l. Admit that you have an unlimited number of bottles of each type. Given a certain amount of water that you want to keep in bottles, build a program that indicates the minimum number of bottles of each type needed. Consider that the amount of water is a multiple of 0.25l and each bottle was filled with water.

GOOD WORK! YOU ARE ABLE! BUILD YOUR KNOWLEDGE...

The subject teachers, Andreia
Backyard | Carlos Almeida