

Hi! Welcome to the first learning video of Programming 2. The objective of this week is getting yourself familiarized with the basics of the Python programming language, as this will be the language we will be using for the rest of the module.

[SLIDE 2] The first question to answer is, why Python? Until 2020, the programming part of this module focused on the Java programming language. And although Java remains an important language, we cannot deny the fact that Python is getting more and more used in a wide variety of areas.

[SLIDE 3] In this slide you can see the 2021 programming language popularity ranking developed by IEEE Spectrum. Python is in the first place, but not only for the ranking of this year.

[SLIDE 4] Python has been occupying the first place since 2017, where got over C as the most popular language.

[SLIDE 5] One of the main reasons behind the popularity of Python is its simplicity, which makes it easy to learn and, most importantly, easy to code. That means less lines of code and shorter developing times.

[SLIDE 6] In fact, in the official site of Python you can find these statements (dating from 1997): first, that Python programs are typically 3 to 5 times shorter than equivalent Java programs and second, that a Python programmer might finish in 2 months a program that might take one year to a C++ programmer.

[SLIDE 7] A more recent study carried out in 2020, focused on beginner programmers, has studied the number of lines required in Python and Java to perform the same simple tasks. On the left plot, the task is sorting an array with numbers. On the right plot you can see the number of lines required to play Tic Tac Toe. You can see that the number of lines in Java is about 1.8 and 2.5 higher than those required in Python for the sorting problem and the Tic Tac Toe game, respectively.

[SLIDE 8] The second main reason why Python is so popular, is the availability of hundreds of libraries to perform a wide variety of tasks. In this module we are going to get familiar with a few of them such as

[SLIDE 9] Pandas for data science,

[SLIDE 10] matplotlib for visualization and

[SLIDE 11] and scikit learn for machine learning.

[SLIDE 12] A final important reason why Python is so popular, is that it allows to use different programming paradigms.

[SLIDE 13] From last year, you already know one paradigm: the procedural programming paradigm used by C. That is, instructions are grouped into procedures or functions.

[SLIDE 14] A second programming paradigm is the object oriented paradigm, where instructions are organized in objects. You are going to learn about object oriented programming very soon in this module. Python allows you to build code using either the procedural paradigm or the object oriented one and that versatility is another reason for its popularity.

[SLIDE 15] With this, I finish the reasons why we have decided to teach you Python in this course.

[SLIDE 16] In the next videos for this week, you will learn the basics of procedural Python.

[SLIDE 17] to do so, we will build on the knowledge you already have of procedural C to show you how the instructions are translated to procedural Python.