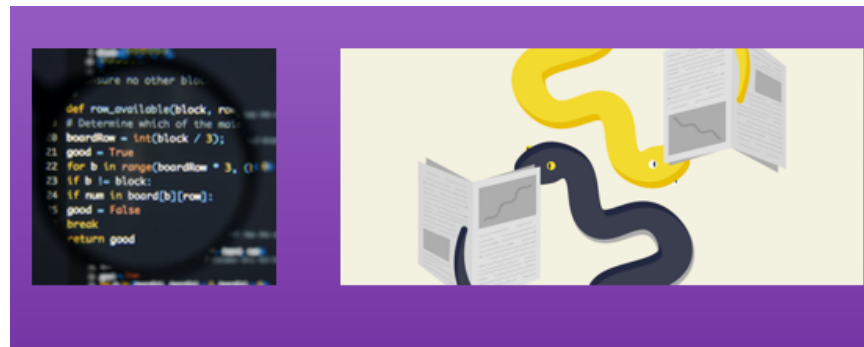


PROBLEM - SOLVING FOCUS

Python is a high-level general-purpose programming language with an emphasis on developer productivity and code readability. Python and the vast majority of its libraries are free and come in source codes. Moreover, unlike many open systems, the license does not restrict the use of Python in commercial development in any way. Python has a clear syntax. It minimizes such auxiliary constructions as brackets, word-organizers of blocks. In return, the programmer must strictly observe the margins, which are the organizers of the blocks. In a result, the code turns out to be uncluttered with unnecessary elements and easy to read.



Python is an interpreted, object-oriented, high-level programming language with dynamic semantics.

The speed of execution of programs written in Python is very high. This is due to the fact that the main Python libraries are written in C++ and take less time to complete than in other high-level languages. In this regard, you can write your own modules for Python in C or C++. In standard Python libraries you can find tools for working with e-mail, Internet protocols, FTP, HTTP, databases, etc. Scripts written using Python are executed on most modern operating systems. This portability provides Python application in the most various fields. Python is suitable for any programming solutions, be it office programs, web applications, GUI applications, etc. Thousands of enthusiasts from all over the world worked on the development of Python. We can be indebted for the support of modern technologies in standard libraries precisely to the fact that Python was open to everyone.

Advantages of Python

- Speed;
- Additional modules;
- Libraries;
- Modernity;
- Popularity



Disadvantages of PYTHON

PYTHON, like other interpreted languages, has a relatively low program execution speed. However, in the case of Python, this disadvantage is compensated by a decrease in the development time of the program. On average, a Python program is 2-4 times more compact than its C++ or Java counterpart. Dynamic typing raises questions for methodologists in programming training.

Disadvantages of Python

- Low speed;
- Inefficient memory consumption;
- Weak in mobile devices;
- Difficult to access database;
- Prone to cause runtime errors

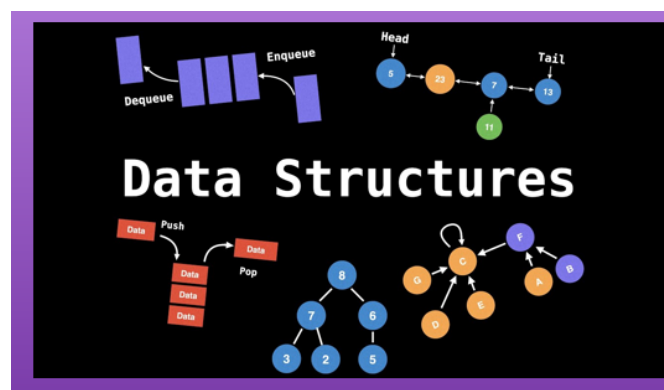


First of all, it is worth noting an interesting feature of Python. It does not contain operator brackets (begin..end in pascal or {..} in C), instead, blocks are indented: spaces or tabs, and the input to the block of operators is carried out by a colon. Single-line comments begin with the pound sign "#", multi-line comments begin and end with three double quotes """""". To assign a value to a variable, the sign "=" is used, and for comparison - "==". To increase the value of a variable, or add to a string, use the operator "+=", and for reduction - "-=". All these operations can interact with most types, including strings.



Data structures

Python contains data structures such as lists, tuples, and dictionaries. Lists are similar to one-dimensional arrays (but you can use a List that includes lists — a multidimensional array), tuples are immutable lists, dictionaries are also lists, but indexes can be of any type, not just numeric. "Arrays" in Python can contain data of any type, that is, numeric, string and other data types can be in one array. Arrays start at index 0, and the last element can be obtained at index -1. You can assign functions to variables and use them accordingly.



Python contains data structures such as lists, tuples, and dictionaries.

You can use part of the array by specifying the first and last index separated by a colon ":". In this case, you will get a part of the array, from the first index to the second, not inclusive. If the first element is not specified, then the count starts from the beginning of the array, and if the last one is not specified, then the array is read to the last element. Negative values determine the position of the element from the end.

Operators

```
main.py
1 #While Loop with break statement
2 i = 5;
3 while True:
4     print("Value of i is " + str(i))
5     i = i + 1
6     if i >= 10:
7         break
Value of i is 5
Value of i is 6
```

The while, if, and for operators make up the
control operators.

Classes

Python is limited in multiple inheritance in classes. Internal variables and internal methods of classes start with two underscores "__" (for example, "__myprivatevar"). We can also assign a value to a class variable from the outside. Example:

Classes

```
class Myclass:
    common = 10
    def __init__(self):
        self.myvariable = 3
    def myfunction(self, arg1, arg2):
        return self.myvariable
```

Here we have declared the Myclass class. The __init__ function is called automatically when classes are initialized.

Writing comments Readable code must contain comments, no matter how the developers treat them. The presence of comments makes the code more readable for your colleagues, and therefore in Python, as in any YAP, this function is implemented. Syntax features: The comment starts with the "#" character. To split long logical strings into physical ones (to increase readability), a slash \ or ordinary

brackets () are used. String literals are enclosed in quotation marks. Moreover, they can be any - single or double. The main thing is that the selected pair belongs to the same type.

Syntax features:

- The comment starts with the "#" character.
- To split long logical strings into physical ones (to increase readability), a slash \ or ordinary brackets () are used. String literals are enclosed in quotation marks.
- Moreover, they can be any - single or double.
- The main thing is that the selected pair belongs to the same type.