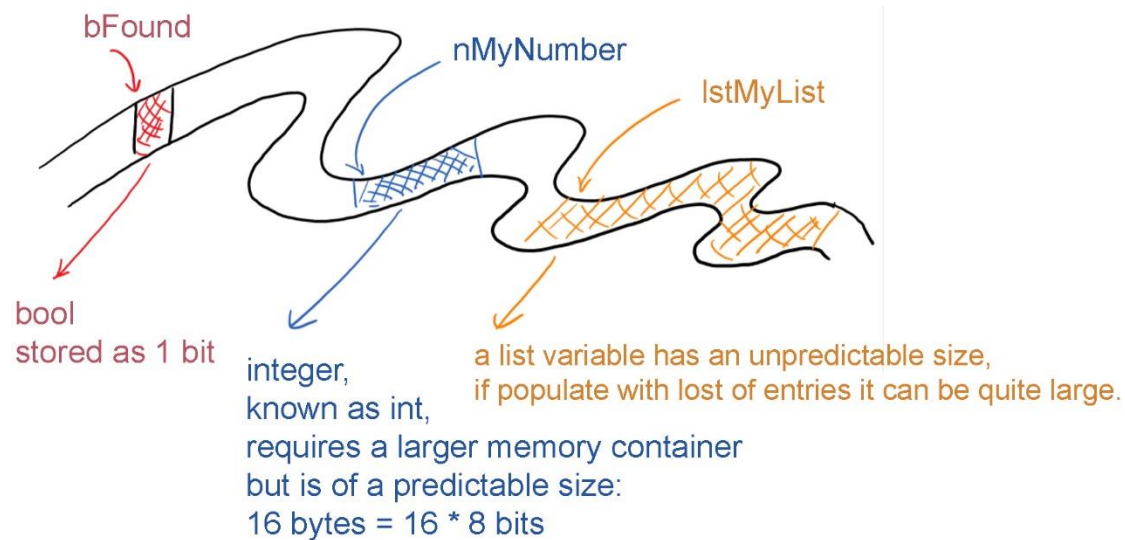


Memory

Memory is allocated whenever you ask Python for a **variable**.

The size depends on what type of variable you are asking for.

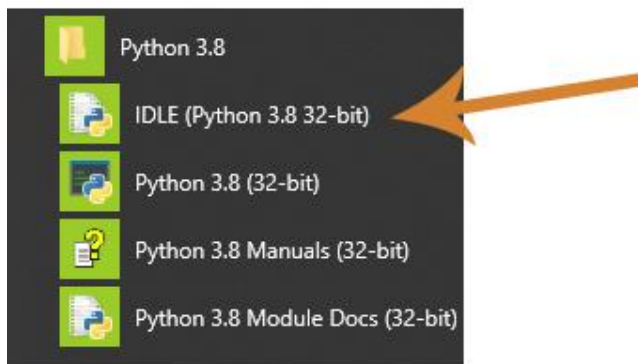


In Python, a variable can start with a certain type and can later be morphed into a completely new type by assigning the variable a new kind of value.

The name of the variable represents a location in memory. This is a bit like your home address, it tells where you live. The same goes for variable names, it stores an address that records where the content lives in memory when your program becomes alive.

To see what the current content of a variable is, you can use a print command: `print(...)`.

Install the IDLE application at: <https://www.python.org/downloads/> then run the shell from your windows menu.



From the shell's File menu, click on New File. A new window opens with an untitled file. Open the File menu there and click on Save As, then navigate to where you want to store the file.

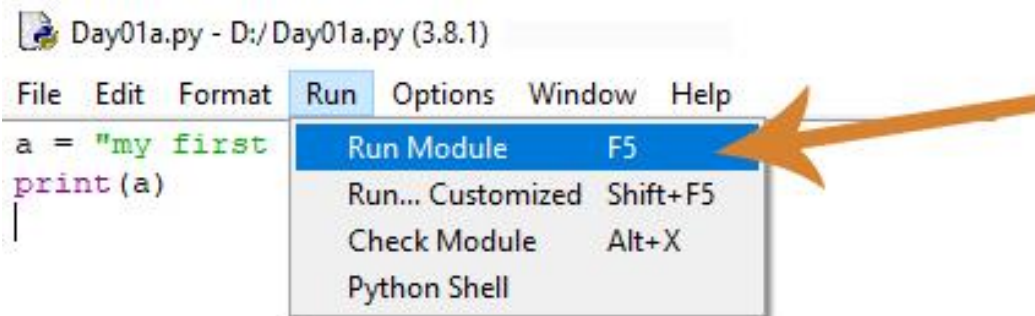
I named my file as Day01a, and it received the extension .py automatically.

Copy this example into your file, then press Save.

```
a = "my first string"
print(a)
```

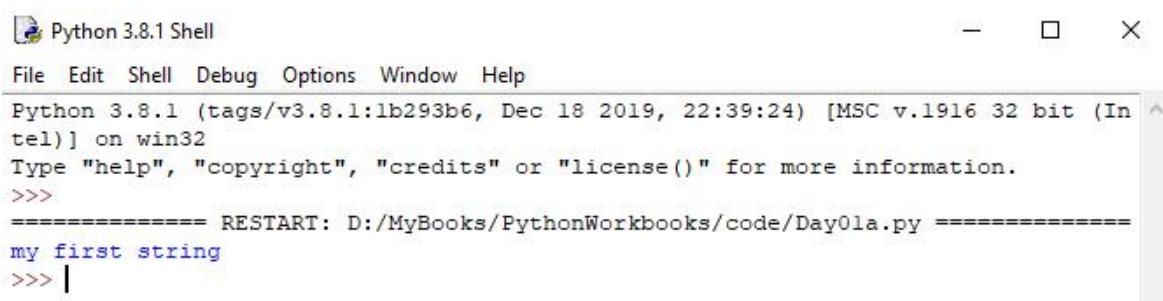
`a` is a variable. Python knows now that `a`'s type is string because the value it was given is surrounded in quotation marks. We can use single or double quotes: `"` or `'`.

Run the file: Run menu, select Run Module as shown.



The program runs in the original shell you have opened earlier.

The result of the print statement is shown below.



Remember for the future you how have created and stored this .py file and how you have run it. We'll repeat this a lot.

To see what type the variable `a` has, we can can print its type. Change the code as follows.

```
a = "my first string"
print(a)
print (type(a))
```

The result is

```
my first string
<class 'str'>
```

A string is considered a complicated type that has lots of extras. Most complicated types are called **classes**. This is why the answer to what type **a** is, is not just **str**, but it is also mentioned that it is a class: **<class 'str'>**.

Let's see how the type of our variable **a** transforms from the above string into the a **number**, specifically an integer. It does so on the fly. The new code for this looks like this.

```
a = "my first string"
print(a)
print (type(a))

a = 1
print (type(a))
```

Save your code and run it. The result is

```
my first string
<class 'str'>
<class 'int'>
```

The first time **a** had the type **'str'**, the second type it was **'int'**. Python interprets the value you are giving the variable to decide its type. **1** is a number and it does not have quotation marks.

Homework:

You are given two variables, each contains a string, as follows.

```
sStr1 = "my first string"  
sStr2 = "my name is Rory"
```

Complete the program to first print the strings. Then swap the two strings programmatically, that is sStr2 should contain “my first string” and sStr1 should have “my name is Rory”. Print the strings after the swap. Assume you do not know what these strings are or the program works for any string, even if you change their values.

Attempt the solution on your own. Compare your answers to the solution provided on the next page.

Solution

The solution for this problem is:

```
sStr1 = "my first string"
sStr2 = "my name is Rory"
print("The strings before the swap-----")
print(sStr1)
print(sStr2)
sHelper = sStr1
sStr1 = sStr2
sStr2 = sHelper
print("The strings AFTER the swap-----")
print(sStr1)
print(sStr2)
```

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