Python Programming

Session 4

Seyyed Ali Shohadaalhosseini

TOPICS Python Fundamentals and Programming

- **Strings**

Strings

Strings in python are surrounded by either single quotation marks, or double quotation marks.

Example : ‘Hello‘ is the same as “Hello”

Question:

What is ‘Hello’ ? how can we use such things in python ?

Answer !

‘Hello’ or any other things in quotation is a value and as we said before, to use a value in python, we must assign it to a variable and use that variable.

But know this that some methods can get a value directly, Like print method, which not only can get value directly and show it in output but also can get a variable which contains a value and prints shows the value of that variable in python.

```
4    hl = 'Hello'
5    print(hl)
6
7    print("Hello")
```

Multiline Strings

You can assign a multiline string to a variable by using three quotes or three double quotes.

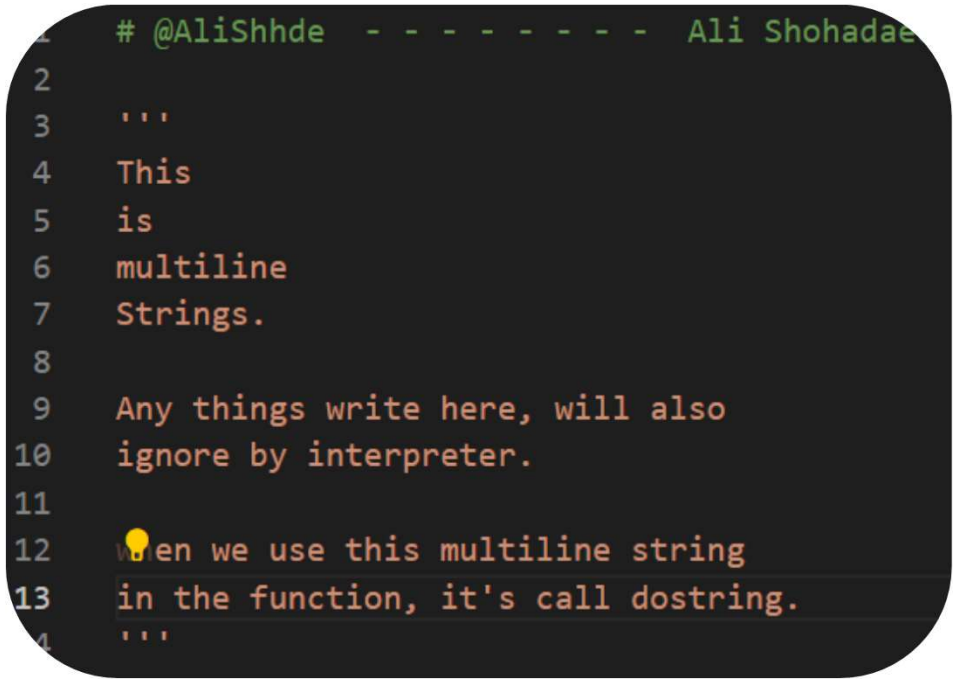
Example:

If you print the multi line string,

in the result, the line breaks are

inserted at the same position as

in the code.



Strings are Arrays!

Like many other popular programming languages, strings in python are arrays of bytes representing unicode characters.

Python does not have a character data type, a single character is simply a string with a length of 1.

And to access each character in a string or actually, to access each element in an array we use a bracket with that element's index in it.

Let's see an example:

Example

a = “Hello, world!”

character	H	e	l	l	o	,		w	o	r	l	d	!
index	0	1	2	3	4	5	6	7	8	9	10	11	12
Access with	a[0]	a[1]	a[2]	a[3]	a[4]	a[5]	a[6]	a[7]	a[8]	a[9]	a[10]	a[11]	a[12]

Looping Through a String

Since strings are arrays, we can loop through the characters in a string, with a loop, better for loop.

Code:

```
For x in “Ali”:
    print(x)
```

Output:

```
A
l
i
```

String length

To get the length of a string, use the len() function.

```
3    a = """ Hello, world! """
4    print(len(a))
```

What is output?

Check if there is a String/character in String

To check if a certain phrase or character is present in a string, we can use the keyword in.

Code:

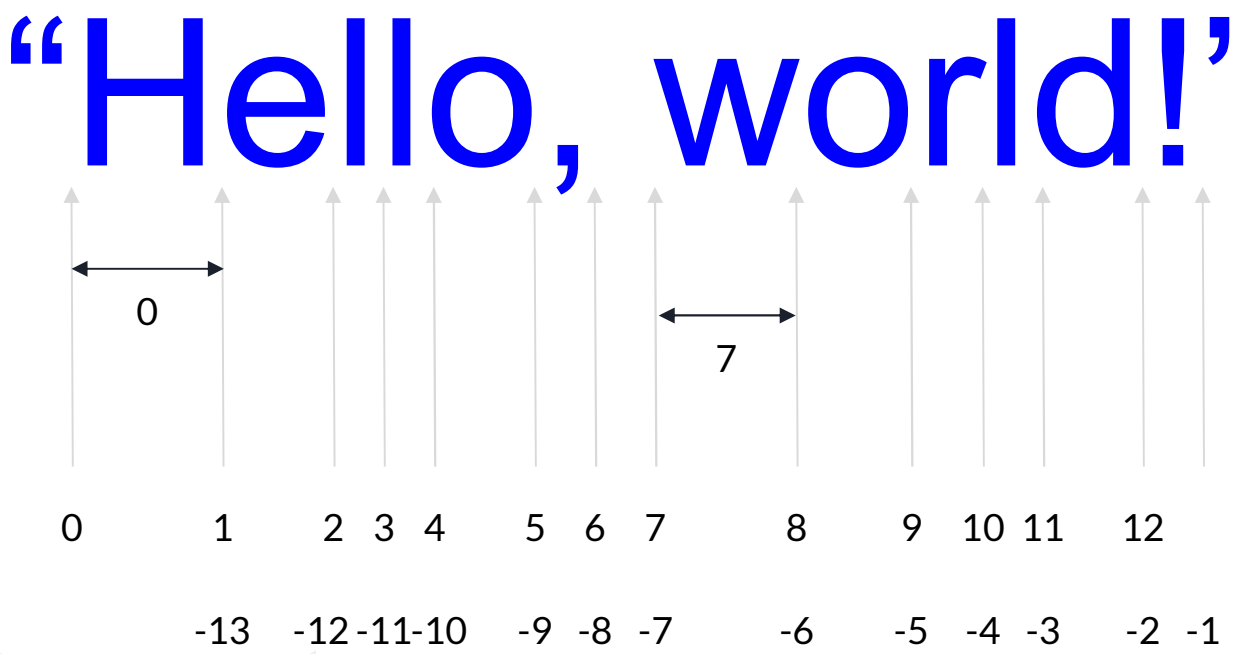
```
txt = “Hello, my name is Ali.”

print(‘Ali’ in txt)
```

What is the output?

Your turn!

What if we wanted to know that a string is not in a string ?

Where to Where



Slicing Strings

We can access a range of character by using the slice syntax.

In the slicing we specify the start index and the end index, separated by a colon, to return a part of the string.

Example: Getting the characters from position 2 to position 5

```
3    str = "Hello, world"
4    print(str[2:5])
```

Output:

```
llo
```

Slicing

Slicing from the start:

By leaving out the *start* index, the range will start at the first character.

Code: str[:4]

Output?

Slicing to the End:

By leaving out the *end* index, the range will go to the end.

Code: str[3:]

Output?

Slicing

We also have negative slicing as you saw before we have negative indexing.

Your Turn: How negative slicing could be?

Modify Strings

Python has a set of built-in methods that you can use on strings.

1. Upper Case: Makes Strings upper
2. Lower Case: Makes Strings lower
3. Remove Whitespace: Removes Spaces in strings
4. Replace String: Replace string with another string
5. Split String: Splits the string into substring

Modify Strings

Upper Case: upper()

Code: str.upper()

Test ?

Lower Case: lower()

Code: str.lower()

Test ?

Modify Strings

Remove whitespace: strip()

Code: str.strip()

Test ?

Replace String: replace()

Code: str.replace('H', 'W')

Test ?

Modify Strings

Split String: split()

Code: str.split(‘,’)

Test ?

String Concatenation

To concatenate, or combine, two strings you can use the + operator.

Code:

```
1   # @AliShhde  - - - - - - - - -  Ali Shohadaee
2
3   a = 'Hello'
4   b = 'World'
5   c = a + b
6   print(c)
```

Output:

```
HelloWorld
```

Question: How to put a space between the words?

String Format

As you may know we can not combine strings and numbers by arithmetic operators. In string we only can use arithmetic operators for only Strings value. But what if we want to combine a string with a number? We can use *format()* method for that.

How does *format()* method work?

Format example

Code:

```python
# @AliShhde  - - - - - - - - -  Ali Shohadaee

age = 10
str = 'Hello i am {} years old, and my name is Ali'
print(str.format(age))

print("Today is {}:{}:{} and the time now is {}".format(1400, 3, 29, 15))
```

Output:

```
Hello i am 10 years old, and my name is Ali
Today is 1400:3:29 and the time now is 15
```

Escape characters

Your turn ;)

Other String Methods

Your turn ;)