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Lecture No. 6: Python Strings

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The in Syntax:

Definition:

The in syntax is used to determine if a letter or a substring exists in a string. It returns True if a match is found, otherwise False is returned.

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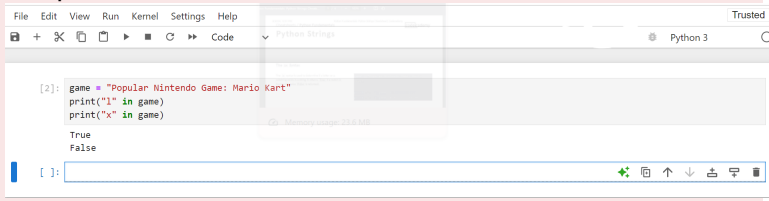
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The in Syntax:

Example:

```
game = "Popular Nintendo Game: Mario Kart"  
print("l" in game)           # Prints: True  
print("x" in game)         # Prints: False
```

Output:



```
File Edit View Run Kernel Settings Help Trusted  
Python Strings Python 3  
[2]: game = "Popular Nintendo Game: Mario Kart"  
print("l" in game)  
print("x" in game)  
True  
False  
[ ]:
```

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Indexing and Slicing Strings:

Definition:

Python strings can be indexed using the same notation as lists, since strings are lists of characters. A single character can be accessed with bracket notation (`[index]`), or a substring can be accessed using slicing (`[start:end]`).

Indexing with negative numbers counts from the end of the string.

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Indexing and Slicing Strings:

Example:

```
str = 'yellow'  
str[1] #Output: 'e'  
str[-1] # Output: 'w'  
str[4:6] # Output: 'ow'  
str[:4] # Output: 'yell'  
str[-3:] # Output: 'low'
```


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String Method `.lower()`:

Definition:

The string method `.lower()` returns a string with all uppercase characters converted into lowercase

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String Method `.lower()`:

Example:

```
greeting = "Welcome To Chili's"  
print(greeting.lower())  
#Output: Prints: welcome to chili's
```


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Iterate String:

Definition:

To iterate through a string in Python, “for...in” notation is used.

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Iterate String:

Example:

```
str = "hello"  
for c in str:  
    print(c)  
#Output:  
# h  
# e  
# l  
# l  
# o
```

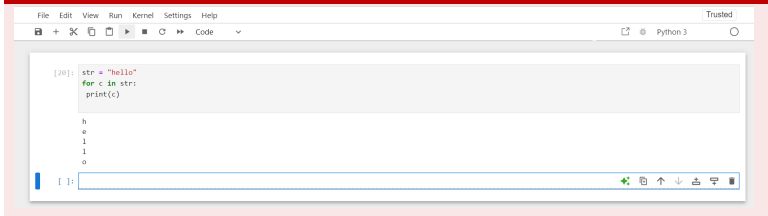
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Iterate String:

Output:



```
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[20]: str = "hello"
      for c in str:
        print(c)

h
o
l
l
o

In [ ]: 
```

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String Method `.split()`:

Definition:

The string method `.split()` splits a string into a list of items:

- If no argument is passed, the default behavior is to split on whitespace.
- If an argument is passed to the method, that value is used as the delimiter on which to split the string.

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String Method `.split()`:

Example:

```
text = "Silicon Valley"  
print(text.split())  
#Output: Prints: ['Silicon', 'Valley']  
print(text.split('i'))  
#Output: Prints: ['S', 'l', 'con Valley']
```

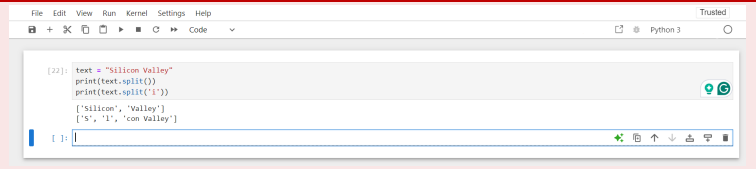
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String Method .split():

Output:



```
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[22]: text = "Silicon Valley"
      print(text.split())
      print(text.split('l'))

      ['Silicon', 'Valley']
      ['S', 'l', 'con Valley']

[ ]:
```

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Built-in Function len():

Definition:

In Python, the built-in len() function can be used to determine the length of an object. It can be used to compute the length of strings, lists, sets, and other countable objects.

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Built-in Function len():

Example:

- ```
length = len("Hello")
print(length)
Output: 5
```
- ```
colors = ['red', 'yellow', 'green']  
print(len(colors))  
# Output: 3
```

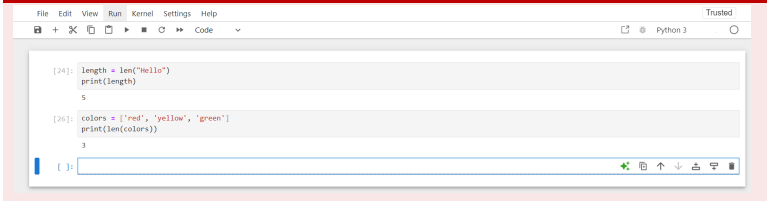
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Built-in Function len():

Output:



```
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[24]: length = len("Hello")
      print(length)
      5

[26]: colors = ['red', 'yellow', 'green']
      print(len(colors))
      3

[ ]: 
```

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Python string method `.find()`:

Definition:

The Python string method `.find()` returns the index of the first occurrence of the string passed as the argument. It returns `-1` if no occurrence is found.

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Python string method `.find()`:

Example:

```
mountain_name = "Mount Kilimanjaro"  
print(mountain_name.find("o"))  
# Output: Prints 1 in the console.
```

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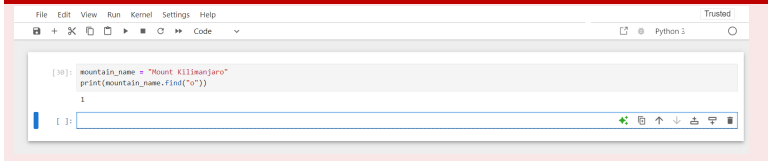
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Python string method `.find()`:

Output:



```
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Python 3

[30]: mountain_name = "Mount Kilimanjaro"
      print(mountain_name.find("o"))

1
```

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String Concatenation:

Definition:

To combine the content of two strings into a single string, Python provides the $+$ operator. This process of joining strings is called concatenation.

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String Concatenation:

Example:

```
x = 'One fish, '  
y = 'two fish.'  
z = x + y  
print(z)  
# Output: One fish, two fish.
```

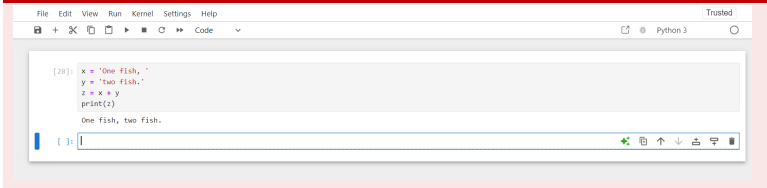
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String Concatenation:

Output:



```
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[28]: x = 'One fish, '
      y = 'two fish.'
      z = x + y
      print(z)

One fish, two fish.

[ ]: |
```

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Python String .format():

Definition:

The Python string method `.format()` replaces empty brace (`{ }`) placeholders in the string with its arguments. If keywords are specified within the placeholders, they are replaced with the corresponding named arguments to the method.

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Python String `.format()`:

Example:

- `msg1 = 'Fred scored out of points.'`
`msg1.format(3, 10)`
Output: 'Fred scored 3 out of 10 points.'
- `msg2 = 'Fred verb a adjective noun.'`
`msg2.format(adjective='fluffy', verb='tickled',
noun='hamster')`
Output: 'Fred tickled a fluffy hamster.'

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String Method `.strip()`:

Definition:

The string method `.strip()` can be used to remove characters from the beginning and end of a string. A string argument can be passed to the method, specifying the set of characters to be stripped. With no arguments to the method, whitespace is removed.

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String Method .strip():

Example:

- ```
1 text1 = ' apples and oranges '
text1.strip()
Output: 'apples and oranges'
```
- ```
2 text2 = '...+...lemons and limes...-...'  
# Here we strip just the "." characters  
text2.strip('.')  
# Output: '+...lemons and limes...-'
```
- ```
3 # Here we strip both "." and "+" characters
text2.strip('.+')
Output: 'lemons and limes...-'
```

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String Method `.strip()`:

Example:

```
4 # Here we strip ".", "+", and "-" characters
text2.strip('.-+')
Output: 'lemons and limes'
```

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## String Method .strip():

## Output:

```
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[43]: text1 = ' apples and oranges '
 text1.strip()
[43]: 'apples and oranges'

[45]: text2 = '.....lemons and limes.....'
 # Here we strip just the "." characters
 text2.strip('.')
[45]: '.....lemons and limes....'

[49]: text2 = '.....lemons and limes.....'
 # Here we strip both "." and "+" characters
 text2.strip('+.')
[49]: 'lemons and limes....'

[51]: text2 = '.....lemons and limes.....'
 # Here we strip ".", "+", and "-" characters
 text2.strip('.-+')
[51]: 'lemons and limes'

[]:
```

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String Method `.title()`:

**Definition:**

The string method `.title()` returns the string in title case. With title case, the first character of each word is capitalized while the rest of the characters are lowercase.

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String Method `.title()`:

Example:

```
my_var = "dark knight"
print(my_var.title())
Output: Prints: Dark Knight
```

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## String Method .title():

## Output:



```
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[5]: my_var = "dark knight"
 print(my_var.title())
 Dark knight
```

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## String replace:

### Definition:

The `.replace()` method is used to replace the occurrence of the first argument with the second argument within the string.

The first argument is the old substring to be replaced, and the second argument is the new substring that will replace every occurrence of the first one within the string.

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String replace:

Example:

```
fruit = "Strawberry"
print(fruit.replace('r', 'R'))
Output: StRawbeRRy
```

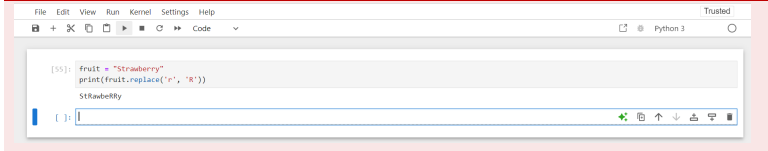
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## String replace:

## Output:



```
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Python 3
[55]: fruit = "Strawberry"
print(fruit.replace('r', 'R'))
StrawbeRry
[]: |
```

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String Method `.upper()`:

**Definition:**

The string method `.upper()` returns the string with all lowercase characters converted to uppercase.

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String Method `.upper()`:

Example:

```
dinosaur = "T-Rex"
print(dinosaur.upper())
Output: T-REX
```

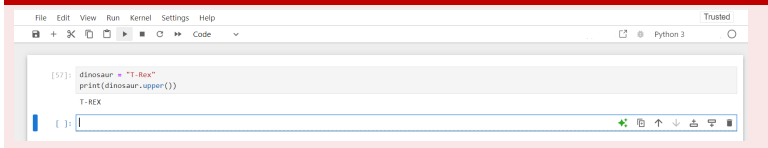
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## String Method .upper():

## Output:



```
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+ - < > < > < > < > Code Python 3
[57]: dinosaur = "T-Rex"
 print(dinosaur.upper())
 T-REX
[]: |
```

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## String Method `.join()`:

### Definition:

The string method `.join()` concatenates a list of strings together to create a new string joined with the desired delimiter.

The `.join()` method is run on the delimiter and the array of strings to be concatenated together is passed in as an argument.

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String Method `.join()`:

Example:

```
x = "-" .join(["Codecademy", "is", "awesome"])
print(x)
Output: Codecademy-is-awesome
```

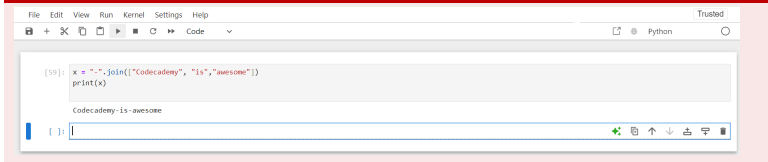
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## String Method .join():

## Output:



```
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[59]: x = "-".join(["Codecademy", "is", "awesome"])
print(x)
Codecademy-is-awesome
[]: |
```

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## Strings:

### Definition:

In computer science, sequences of characters are referred to as strings. Strings can be any length and can include any character such as letters, numbers, symbols, and whitespace (spaces, tabs, new lines).

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## Escaping Characters:

### Definition:

Backslashes (`\`) are used to escape characters in a Python string.

For instance, to print a string with quotation marks, the given code snippet can be used.

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## Escaping Characters:

### Example:

```
txt = "She said \Never let go:"
print(txt)
Output: She said "Never let go"
```

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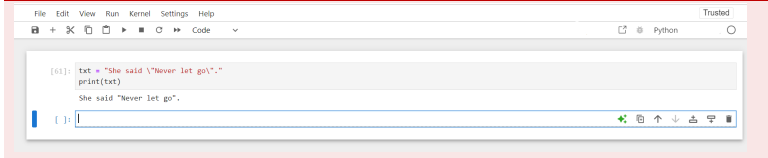
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## Escaping Characters:

## Output:



```
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[01]: txt = "She said \"Never let go\"."
 print(txt)
 She said "Never let go".
[]:
```

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Immutable strings:

**Definition:**

Strings are immutable in Python. This means that once a string has been defined, it can't be changed. There are no mutating methods for strings. This is unlike data types like lists, which can be modified once they are created.

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## Index Error:

### Definition:

When indexing into a string in Python, if you try to access an index that doesn't exist, an Index Error is generated. For example, the following code would create an Index Error :



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Index Error:

Example:

```
fruit = "Berry"
indx = fruit[6]
```

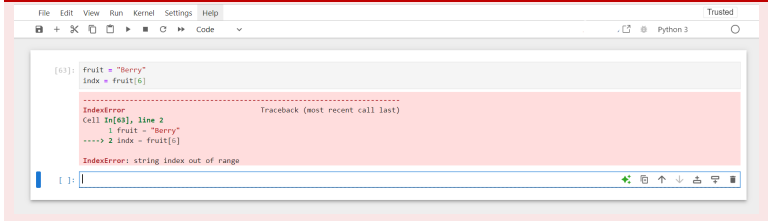
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## Index Error:

## Output:



```
[6]: fruit = "Berry"
 indx = fruit[6]

IndexError Traceback (most recent call last)
Cell In[6], line 2
 1 fruit = "Berry"
----> 2 indx = fruit[6]

IndexError: string index out of range
```