Variables in Python

"John"

"Sam"

"Matt"

Variables in Python

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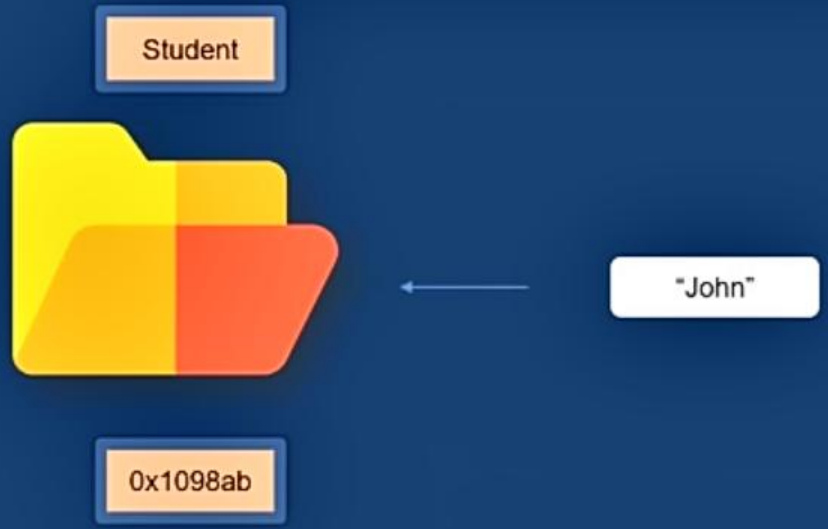
Data/Values can be stored in temporary storage spaces called variables



Variables in Python

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Data/Values can be stored in temporary storage spaces called variables

DataTypes in Python

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Every variable is associated with a data-type

10, 500	3.14, 15.97	TRUE, FALSE	"Sam", "Matt"
int	float	Boolean	

Operators in Python

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Arithmetic Operators

Relational Operators

Logical Operators

Python Tokens

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Smallest meaningful Component in a Program

- Keywords
- Identifiers
- Literals
- Operators

Python Keywords

Keywords are special reserved words

False	class	Finally	Is	Return
None	continue	For	Lambda	Try
True	def	From	Nonlocal	While
and	del	Global	Not	With
as	elif	If	Or	Yield

Python Identifiers

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Identifiers are names used for variables, functions or objects

Rules

- No special character expect _(underscore)
- Identifiers are case sensitive
- First Letter cannot be a digit

Python Literals

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Literals are constants in Python

Python Strings

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Strings are sequence of characters enclosed within single quotes(‘ ’), double quotes(“ “) or triple quotes(“” “”)

‘Hello World’

“This is Sparta”

“” I am going to France tomorrow””

Extracting Individual Characters

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```
In [23]: my_string="My name is John"

In [24]: my_string[0]
Out[24]: 'M'
```

```
In [5]: my_string="My name is John"

In [6]: my_string[-1]
Out[6]: 'n'
```

String Functions

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Finding length of string

```
In [28]: len(my_string)
Out[28]: 15
```

Converting String to lower case

```
In [30]: my_string.lower()
Out[30]: 'my name is john'
```

Converting String to upper case

```
In [31]: my_string.upper()
Out[31]: 'MY NAME IS JOHN'
```

String Functions

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Replacing a substring

```
In [33]: my_string.replace('y','a')
Out[33]: 'Ma name is John'
```

Number of occurrences of substring

```
In [7]: new_string = "hello hello world"
In [8]: new_string.count("hello")
Out[8]: 2
```

String Functions

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Finding the index of substring

```
In [13]: s1 = 'This is sparta!!!'
         s1.find('sparta')

Out[13]: 8
```

Splitting a String

```
In [15]: fruit = 'I like apples, mangoes, bananas'

         fruit.split(',')

Out[15]: ['I like apples', ' mangoes', ' bananas']
```

Tuple in Python

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Tuple is an ordered collection of elements enclosed within ()


```
tup1=(1,'a',True)
```

Extracting Individual Elements

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```
In [20]: tup1=(1,"a",True,2,"b",False)
         tup1[0]

Out[20]: 1
```

```
In [21]: tup1=(1,"a",True,2,"b",False)
         tup1[-1]

Out[21]: False
```

```
In [22]: tup1=(1,"a",True,2,"b",False)
         tup1[1:4]

Out[22]: ('a', True, 2)
```

Modifying a Tuple

You cannot modify a tuple because it is immutable

```
In [49]: tup1[2]="hello"
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-49-2fc16622751e> in <module>
----> 1 tup1[2]="hello"

TypeError: 'tuple' object does not support item assignment
```

Tuple Basic Operations

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Finding Length of Tuple

```
In [24]: tup1=(1,"a",True,2,"b",False)
         len(tup1)

Out[24]: 6
```

Concatenating Tuples

```
In [25]: tup1 = (1,2,3)
         tup2 = (4,5,6)
         tup1+tup2

Out[25]: (1, 2, 3, 4, 5, 6)
```

Tuple Basic Operations

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Repeating Tuple Elements

```
In [29]: tup1 = ('sparta',300)
         tup1*3

Out[29]: ('sparta', 300, 'sparta', 300, 'sparta', 300)
```

Repeating and Concatenating

```
In [31]: tup1 = ('sparta',300)
         tup2 = (4,5,6)
         tup1*3 + tup2

Out[31]: ('sparta', 300, 'sparta', 300, 'sparta', 300, 4, 5, 6)
```

Tuple Functions

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Minimum Value

```
In [32]: tup1=(1,2,3,4,5)
         min(tup1)

Out[32]: 1
```

Maximum Value

```
In [33]: tup1=(1,2,3,4,5)
         max(tup1)

Out[33]: 5
```

List in Python

List is an ordered collection of elements enclosed within []

l1=[1,'a',True]

Extracting Individual Elements

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```
In [58]: l1=[1,"a",2,"b",3,"c"]
         l1[1]

Out[58]: 'a'
```

```
In [59]: l1=[1,"a",2,"b",3,"c"]
         l1[2:5]

Out[59]: [2, 'b', 3]
```

Modifying a List

Changing the element at 0th index

```
In [35]: l1=[1,"a",2,"b",3,"c"]
         l1[0]=100
         l1

Out[35]: [100, 'a', 2, 'b', 3, 'c']
```

Popping the last element

```
In [37]: l1=[1,"a",2,"b",3,"c"]
         l1.pop()
         l1

Out[37]: [1, 'a', 2, 'b', 3]
```

Appending a new element

```
In [36]: l1=[1,"a",2,"b",3,"c"]
         l1.append("Sparta")
         l1

Out[36]: [1, 'a', 2, 'b', 3, 'c', 'Sparta']
```

Modifying a List

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Reversing elements of a list

```
In [40]: l1=[1,"a",2,"b",3,"c"]
         l1.reverse()
         l1

Out[40]: ['c', 3, 'b', 2, 'a', 1]
```

Sorting a list

```
In [43]: l1 = ["mango","banana","guava","apple"]
         l1.sort()
         l1

Out[43]: ['apple', 'banana', 'guava', 'mango']
```

Inserting element at a specified index

```
In [41]: l1=[1,"a",2,"b",3,"c"]
         l1.insert(1,"Sparta")
         l1

Out[41]: [1, 'Sparta', 'a', 2, 'b', 3, 'c']
```

List Basic Operations

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Concatenating Lists

```
In [44]: l1 = [1,2,3]
         l2 = ["a","b","c"]
         l1+l2

Out[44]: [1, 2, 3, 'a', 'b', 'c']
```

Repeating elements

```
In [45]: l1 = [1,"a",True]
         l1*3

Out[45]: [1, 'a', True, 1, 'a', True, 1, 'a', True]
```

Dictionary in Python

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Dictionary is an unordered collection of key-value pairs enclosed with {}


```
Fruit={"Apple":10,"Orange":20}
```

Extracting Keys and Values

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Extracting Keys

```
In [1]: fruit={"Apple":10,"Orange":20,"Banana":30,"Guava":40}
        fruit.keys()

Out[1]: dict_keys(['Apple', 'Orange', 'Banana', 'Guava'])
```

Extracting Values

```
In [70]: fruit={"Apple":10,"Orange":20,"Banana":30,"Guava":40}
         fruit.values()

Out[70]: dict_values([10, 20, 30, 40])
```

Modifying a Dictionary

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Adding a new element

```
In [2]: fruit={"Apple":10,"Orange":20,"Banana":30,"Guava":40}
        fruit["Mango"]=50
        fruit

Out[2]: {'Apple': 10, 'Orange': 20, 'Banana': 30, 'Guava': 40, 'Mango': 50}
```

Changing an existing element

```
In [3]: fruit={"Apple":10,"Orange":20,"Banana":30,"Guava":40,"Mango":50}
        fruit["Apple"]=100
        fruit

Out[3]: {'Apple': 100, 'Orange': 20, 'Banana': 30, 'Guava': 40, 'Mango': 50}
```

Dictionary Functions

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Update one dictionary's elements with another

```
In [4]: fruit1={"Apple":10,"Orange":20}
        fruit2={"Banana":30,"Guava":40}

        fruit1.update(fruit2)

        fruit1

Out[4]: {'Apple': 10, 'Orange': 20, 'Banana': 30, 'Guava': 40}
```

Popping an element

```
In [6]: fruit={"Apple":10,"Orange":20,"Banana":30,"Guava":40}
        fruit.pop("Orange")
        fruit

Out[6]: {'Apple': 10, 'Banana': 30, 'Guava': 40}
```

Set in Python

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Set is an unordered and unindexed collection of elements enclosed with {}


```
s1={1,"a",True}
```