POWERING POTENTIAL

Python Library Functions

Python Library Functions

In this chapter you'll learn about:

- Python inbuilt functions
- How to call such functions
- Pass Parameters to these functions
- How to capture the result

Python Functions

Python Functions

- **Built-in functions**
- print, input, number & string functions
- **Library functions**
- math.min(), math.max(), statistics.median()
- **User defined functions**
- Functions we write ourselves

Parameters and return value

Functions can take one or more *parameters*

- *A value to be used in the function*
- *e.g.*

```
print('Hello World!')
```

Return zero or one result

Do stuff!

- *Many useful things*
- *Not there? Write it! (See the next chapter.)*

About function parameters

A parameter can be ...

- A literal
- A variable
- An *expression*

```
print('Hello World!')
```

```
greeting = 'Hello World'
print(greeting)
```

```
print(100 * 0.2)
```

Standard Library functions

You've seen a few inbuilt functions

- print, input, len, int, str, float, split

But there are many more

- Numeric functions
- `abs, min, max, pow, round`
- `String functions`
- `capitalize, title, lower, upper`
- `Zfill, format, ljust, rjust, center`
- `isdigit, startswith, endswith, replace`

Built-in Numeric functions

```
numbers = [19,63,51,7,99,11,23,15,17,8]

print(min(numbers))

print(max(numbers))

print(pow(2,3))
(or 2**3)

print(abs(-123))
```

```
7

99

8


123
```

Rounding floats

```
print(round(5.671))
print(round(5.671,1))
print(round(5.671,2))
print(int(5.671))
```

```
6
5.7
5.67
5
```

Rounding floats – math library

```
import math

print( math.ceil(2000.98))
print( math.floor(2000.98))
```

2001

2000

`ceil(x)`	the smallest integer `>=` x
`floor(x)`	the largest integer `<=` x

Formatting Strings

```
str = "Bob"
print(str.center(10, '-'))

print(len(str))

print(str.ljust(7)+"Smith")
```

```
---Bob----

3

Bob  Smith
```

```
month="2"
print(month.zfill(2))
```

```
02
```

Lowercase and uppercase

```
str = "Bob"

print(str.lower())
```

bob

```
print(str.upper())
```

BOB

```
name = 'Bob'
if name == 'bob':
    print('Hello bob')
else:
    print("You're not bob!")
```

You're not bob!

```
if name.lower() == 'bob':
    print('Hello bob')
else:
    print("You're not bob!")
```

Hello bob

String function examples

```
str = "bob smith"

print(str.capitalize())
print(str.title())

print(str.replace(' ','_'))
```

```
Bob
smith
Bob
Smith

bob_smit
h
```

```
print(str.title().replace(' ','_'))
```

```
Bob_Smith
```

Can chain functions together

Split function and IN command

- Split a string into a List by a delimiter

```
cities = "london,birmingham,leeds,manchester,bristol"

cityList = cities.split(',')
```

```
london
birmingham
leeds
manchester
bristol
```

```
city = input('Please enter a city name: ')

if city.lower() in cityList:
    print('Your city is in the list!')
```

Extracting part of a string

- You can extract part of a List

```
data = [1,3,5,7,9,11,13,15]
print(data[1:5])
```

```
[3, 5, 7, 9]
```

- And that includes a string

```
word = 'abcdefgh'

print(word[1:5])
```

```
bcde
```

Test before casting to int

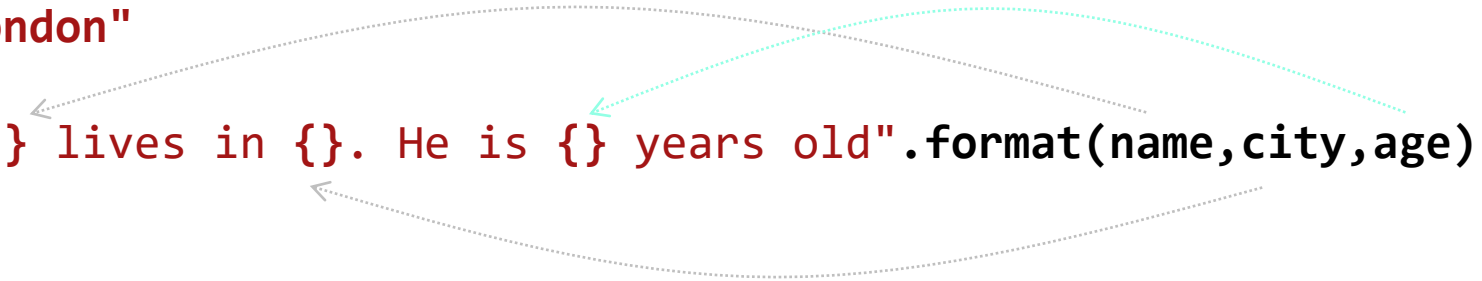
```
strAge = input('Please enter your age: ')
if strAge.isdigit():
    age = int(strAge)
    print(age + 1)
else:
    print(strAge,'is not a valid age!')
```

String format function

```
name="Bob"
age=21
city="London"

str = "{} lives in {}. He is {} years old".format(name,city,age)


print (str)
```



```
Bob lives in London. He is 21 years old

Press any key to continue . . .
```

Other Libraries

- There are 100s of libraries
  https://en.wikipedia.org/wiki/Category:Python_libraries

- Here are a few from the `statistics`

Must import

```
import statistics

numbers = [99,63,51,7,99,11,23,15,17,8]

print( statistics.mean(numbers) )        # average

print( statistics.median(numbers) )      # middle value

print( statistics.mode(numbers) )        # most common data
```

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Exercise

- Please see your Exercise Guide
- 05-Inbuilt Functions.docx

FURTHER READING

- https://www.python.org/
- https://www.tutorialspoint.com/python/python_strings.htm
- https://docs.python.org/3/tutorial/index.html#tutorial-index