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Importing

- Importing Syntax
- Random Module
- Simulating Dice Roll
- Practice

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Importing Modules : Import statement

- import <module name> **# import the entire module**

```
import cmath
cmath.sqrt(-1)
```

- from <module name> import * **# import all components from module**

```
from cmath import *
sqrt(-1)
```

- from <module name> import <class/function> **# import selected component from module**

```
from cmath import sqrt
sqrt(-1)
```

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Random Library

- import random module using:

  import random

- Random Integers :

  randrange(end) **0 <= N <= end – 1**

  randrange(100)

  randint(start, end) **start <= N <= end**

  randint(1,10)

  randrange(start, end, [step]) **one from start, start+step, start + step*2..**

  randrange(10,20,2)

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Random Library

- Random Floats:

  random() **Floating number [0.0, 1.0) or 0.0 <= N < 1.0**

  uniform(start, end) **start <= N <= end**

  uniform(11,44.5)

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Practice

- Build a library my_lib.py add a few variables to test.
- Add functions to input data.
- Add the library to the python search path.

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Some Pythonic Humor

- Will there ever be braces in python (__future__ braces)
- Writing hello word is that simple __hello__
- The Zen of Python (import this)
- antigravity

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Functions

- Function definition and call
- Arguments
- Returning from function
- Arguments
- Creating a module

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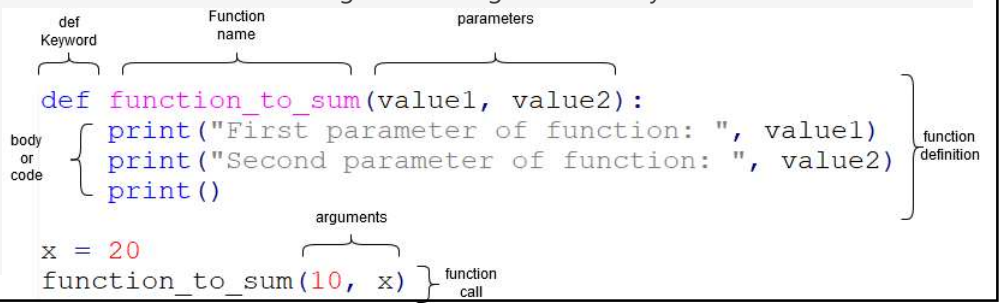
Function Terminology

- **Parameter:** the variables specified in the bracket of a function definition
- **Return value:** the value or variable written after **return** keyword in a function
- **Definition** the code written along with the def statement.
- **Argument** the value passed to a function at *function call*.
- **Function Call** the name of the function along with the arguments if any.



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Creating Functions

- Syntax:

```
def <function name>(arguments):
        """     optional doc string          """
        # body/logic/code of function
```

- ***Def*** keyword is used to start a function
- Function may or may not **return** a **value**; depends on the use of ***return*** keyword
- Function gets executed only when it is **called/invoked**
- WAF that **inputs** temperature in Celsius and **Prints** it in Fahrenheit

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Function Arguments

- Remember the **randrange** function which takes the max value as argument.

```
random.randrange(100) # generates number between 0 and 99
```

- Arguments are a way of passing or giving input values to a function
- WAF (Write a Function) that takes temperature in Celsius as **argument** and **Prints** the temperature in Fahrenheit.
- Update the above method to test the validity of the **type** of argument (it should be **float** or **int** only).

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Returning values

- The **randrange** method returns or gives us the generated value, instead of printing it on the screen.

  num = random.randrange(100) # the result gets stored in num

- Python uses the **return statement** to returns results/values from function
- The function **terminates** once a return statement executes and control passes to the calling function.
- Multiple values can also be returned in form of tuples, dictionaries…

- WAF (Write a Function) that takes temperature in Celsius as **argument** and **returns** the temperature in Fahrenheit.

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Default Arguments

- Some arguments may have a default value.
- i.e. If while calling the value for that argument is not given, then the default value specified in function definition is taken automatically.

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Creating a Module

- Any script created in python is a module and can be imported in other scripts/modules in python.
- Python looks for modules in the current working directory apart from the pythons' default search locations.
- The variable sys.path lists all the locations which are searched.
- Use the environment variable **PYTHONPATH** to add paths to modules other than current working directory.

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Back to Strings

- String Functions
- Indexing and Slicing
- String Formatting

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String Functions

- len() : len(<string object>) # return length of the string
- upper() : **<string object>.upper()** # returns in upper case
- lower()
- isdigit() isalpha() isspace() isalnum()
  islower() isupper()

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Slicing and Indexing

- Indexing:

  <string>[<integer index>]

- Slicing:

  <string>[start : end]

  <string>[start : end : step]

- Start and end decide the end and start point in string

* Indexes start from 0 and end at (length – 1) [Think how to get the length]

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More Methods

- count() : **# counts occurrence of a string in other**
  <string object>.count(<search string>, [start, [end]])
- find() : **# finds index of first occurrence, else returns -1**
  <string object>.find(<search string>, [start, [end]])
- in : **# membership check; this is a keyword not a function**
  <string object> in <other string object>

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Even more functions

- replace() : # replaces all occurrence of **old** with **new count** no of times
  <string object>.replace(old , new [, count])
- split() : # splits a *string object* in multiple strings, using the *split string*
  <string object>.split(<split string> = ' ')
- join() : # joins the *list of strings* using the *join string*
  <joining string>.join(<list of strings>)

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Formatting strings

- " some format string goes in here" % (a tuple of values)
- %s = string
- %d = integer
- %f = float

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