What are Modules?

In [ ]:
```
--> Collections of classes , variables and functions is called a modules.
--> Each and Every file in Python is a Module.
--> Each and Every file that is having .py extension is a module.
```

What are Packages?

In [ ]:
```
Collections of modules is known as a Package.(Folder that is having n number of Module).
```

Types of Modules

In [ ]:
```
Two Types of Modules:

    Builtin Modules -->That modules which we can directly use by importing it. There is no need
    to define that module.Internally Pvm knows the variables/functions/classes that are present in
    that module.

    Example:
        math module
        random module

    User Defined Modules --> that modules which are prepared by the developer as per the
                             business requirement.
    Example:
        addf
        subt
```

About Import Module?

In [ ]:
```
--> If we want to import any Python File(Module) to my current File then we need to use import keyword.
--> import keyword to make code in one module available in another.
--> Imports in Python are important for structuring your code effectively

Syntax:
    import Module_Name

Syntax for Calling any Method/Variable of that Module:
    Module_name.FunctionName/Variable_Name
```

Few important Builtin Module

Help Function

In [ ]:
```
Help is a function that is used to give the description of a module
```

Math Module

In [15]:
```
import math
#print(help(math))
print(math.sqrt(144))    #math.sqrt() is used to return square root of a number
print(math.factorial(5)) #math.factorial() is used to return the factorial of a number
print(math.sin(200))
print(math.tanh(200))
print(math.pi)           #math.pi is used to return the pi value
print(math.ceil(5.4))    #math.ceil() is used to return the ceil value
print(math.floor(6.5))   #math.floor() is used to return the floor value
```

```
12.0
120
-0.8732972972139946
1.0
3.141592653589793
6
6
```

Random Module

In [ ]:
```
In Random Module Three Functions are Very Important:
    1.random.random()
    2.random.randint()
    3.random.uniform()
```

random.random() Function

In [ ]:
```
random.random() --> Function is used to generate a random number from 0 to 1
```

In [20]:
```
import random
#print(help(random))
for i in range(10):
    print(random.random())  #random number between 0 to 1
```

```
0.8416114160074224
0.8294094026760904
0.7685731903672596
0.21528987083822326
0.49567720618502364
0.5204319481599796
0.504787493191886
0.014157233756902698
0.34142647030943163
0.7745919869020532
```

random.randint()

In [ ]:
```
random.randint(start,end) --> Function is used to return a random number between a given range.
                          --> It is always expecting Two Arguments(start and end)
```

In [36]:
```
for i in range(5):
    print(random.randint(1,200))
```

```
61
138
20
12
149
```

In [2]:
```
import random
for i in range(5):
    print(random.randint(999,9999))
```

```
1367
6619
4028
8524
7026
```

In [44]:
```
x=random.randint(999,9999)
print(x)
y=int(input("Enter OTP"))
if x==y:
    print("Successfully Logged In")
else:
    print("Invalid OTP")
```

```
8180
Enter OTP99909
Invalid OTP
```

random.uniform() Function

In [ ]:
```
random.uniform(start,end) --> Function is used to return a random floating number between a given
                              range.
                          --> It is always expecting two arguments to be passed(start,end)
```

In [3]:
```
#uniform function --> return random number within a given range(floating number)
for i in range(10):
    print(random.uniform(1,200))
```

```
70.01275628183346
144.11944035004856
184.36375642622662
48.615149521991526
31.0108295962854
101.71892255984008
153.53749459066776
25.38816577813439
155.46502401635854
53.661418316957594
```

User Defined module

In [ ]:
```
--> Create any file with variables/functions/classes and the extension of the file must be .py only.
--> After creating a python file open a new Python file/notebook and import the previous python file
--> With the help of import statement you can use these functions variables and classes of one file
    into another.
```

Example:

In [52]:
```
import info
print(help(info))
print(info.college_name)
print(info.Calculater_info(20,40))
print(info.wish())
```

```
Help on module info:

NAME
    info

FUNCTIONS
    Calculater_info(x, y)

    wish()

DATA
    college_name = 'Edyoda Digital university'

FILE
    c:\users\praty\info.py


None
Edyoda Digital university
Addition is  60
Subtraction is  -20
Division is  0
Modulus is  20
Exponent is  109951162777600000000000000000000000000000000000000

Hello How are You
Hope Everything is Going well
None
```

In [55]:
```
import info
import importlib
importlib.reload(info)
print(help(info))
print(info.college_name)
print(info.Calculater_info(20,40))
print(info.wish())
print(info.welcome("name","Batch"))
```

```
Help on module info:

NAME
    info

FUNCTIONS
    Calculater_info(x, y)

    welcome(name, Batch)

    wish()

DATA
    Batch = 'DS290922A'
    college_name = 'Edyoda Digital university'
    name = 'Jappan Singh Anand'

FILE
    c:\users\praty\info.py


None
Edyoda Digital university
Addition is  60
Subtraction is  -20
Division is  0
Modulus is  20
Exponent is  109951162777600000000000000000000000000000000000000

Hello How are You
Hope Everything is Going well
None
Hi nameWelcome to edyoda
```

In [62]:
```
import salary
#print(help(salary))
print(salary.company)
#print(salary.Employee())
print(salary.salary_Grade())
```

```
Edyoda Digital University
Enter your salary(In Lakhs):20
You are a Boss
```

Advantage of Modules is Code Reuseability

In [ ]:
```
--> That means if you are creating one module then you can use the functionality and variables
    of that modules in any other file.
```

User Defined Packages

In [ ]:
```
Packages --> collections of that modules which are prepared by the developer as per the
             business requirement.
Syntax:
    import package_name.module_name
```

Example:

In [67]:
```
import Python.info
print(Python.info.college_name)
print(Python.info.Calculater_info(10,20))
print(Python.info.wish())
```

```
Edyoda Digital university
Addition is  30
Subtraction is  -10
Division is  0
Modulus is  10
Exponent is  100000000000000000000

Hello How are You
Hope Everything is Going well
None
```

Another Way to import a Module

In [ ]:
```
#Second way to import a module in current file
Syntax:
    from module_name import Function_name
    from module_name import *

Benefits of Importing module with from keywords is:
    You need not to write whole module name while calling the function/variables/classes of the module.
```

Example

In [75]:
```
from Python  import *
print(info.college_name)
print(info.Calculater_info(10,20))
print(info.wish())
print(salary.Employee())
```

```
Edyoda Digital university
Addition is  30
Subtraction is  -10
Division is  0
Modulus is  10
Exponent is  100000000000000000000

Hello How are You
Hope Everything is Going well
None
Enter Employee Namename
Enter Employee Age23
Enter Employee Citylko
Enter Employee Salary20
Enter Employee Postlko
Employee Name is : name
Employee Age is : 23
Employee City is : lko
Employee Designation is : lko
```

In [69]:
```
from info import *
import importlib
importlib.reload(info)
print(help(info))
print(college_name)
print(Calculater_info(20,40))
print(wish())
print(welcome("name","Batch"))
```

```
Help on module Python.info in Python:

NAME
    Python.info

FUNCTIONS
    Calculater_info(x, y)

    welcome(name, Batch)

    wish()

DATA
    Batch = 'DS290922A'
    college_name = 'Edyoda Digital university'
    name = 'Jappan Singh Anand'

FILE
    c:\users\praty\python\info.py


None
Edyoda Digital university
Addition is  60
Subtraction is  -20
Division is  0
Modulus is  20
Exponent is  109951162777600000000000000000000000000000000000000

Hello How are You
Hope Everything is Going well
None
Hi nameWelcome to edyoda
```

In [72]:
```
from info import Calculater_info
print(college_name)
print(Calculater_info(20,40))
print(wish())
print(welcome("name","Batch"))
```

```
Edyoda Digital university
Addition is  60
Subtraction is  -20
Division is  0
Modulus is  20
Exponent is  109951162777600000000000000000000000000000000000000

Hello How are You
Hope Everything is Going well
None
Hi nameWelcome to edyoda
```

In [74]:
```
from name import *
print(name())
print(roll())
```

```
Hello
None
World
None
```

In [ ]: