
 Marwadi University Marwadi Chandarana Group 	Marwadi University Faculty of Engineering & Technology Department of Information and Communication Technology	
Subject: Programming With Python (01CT1309)	Aim: Write a python program to define a module and import a specific function in that module to another program	
Experiment No: 08	Date:	Enrollment No: 92400133055

[GITHUB](#)

Aim: Write a python program to define a module and import a specific function in that module to another program

IDE:

Python Modules

As our program grows bigger, it may contain many lines of code. Instead of putting everything in a single file, we can use modules to separate codes in separate files as per their functionality. This makes our code organized and easier to maintain.

Module is a file that contains code to perform a specific task. A module may contain variables, functions, classes etc. Let's see an example,

Let us create a module. Type the following and save it as example.py

```
def add(a,b):

    result = a+b



    return result

import example as addition

a = addition.add(4,5)

print(a)
```

Output

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```

1  import operation as addition
2  x=int(input("Enter x"))
3  y=int(input("Enter y"))
4  result = addition.add(x,y)
5  print("After additon: ",result)

```

PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_8.py"
● Enter x5
Enter y6
After additon:  11

```

Import Python Standard Library Modules

The Python standard library contains well over 200 modules. We can import a module according to our needs. Suppose we want to get the value of pi, first we import the math module and use math.pi. For example,



#import standard math module

import math

use math.pi to get value of pi

print("The value of pi is", math.pi)

Output

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```

7  #import standard math module
8  import math
9  # use math.pi to get value of pi
10 print("The value of pi is", math.pi)

```

PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_8.py"
● The value of pi is 3.141592653589793
○ PS E:\SEM 3\PWP>

```

Python import with Renaming

In Python, we can also import a module by renaming it. For example,

import module by renaming it

import math as m

print(m.pi)

Output

Python from...import statement

We can import specific names from a module without importing the module as a whole. For example,



import only pi from math module

from math import pi

print(pi)

Output

<pre> 1 # import only pi from math module 2 from math import pi 3 print(pi) </pre>	<pre> 3.141592653589793 === Code Execution Successful === </pre>
---	---

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Import all names

In Python, we can import all names(definitions) from a module using the following construct:

```
# import all names from the standard module math
```

```
from math import *
```

```
print("The value of pi is", pi)
```

Output

```
19  # import all names from the standard module math
20  from math import *
21  print("The value of pi is", pi)
```

PROBLEMS **2**

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

```
PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_8.py"
```

```
● The value of pi is 3.141592653589793
```

```
○ PS E:\SEM 3\PWP>
```



The dir() built-in function

In Python, we can use the dir() function to list all the function names in a module.

We can use dir in math module in the following way:

```
print(dir(math))
```

Output

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```
27 help('modules')
```



PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS

_abc	asyncio	keyword	re
_ast	asyncore	kiwisolver	reprlib
_asyncio	atexit	lab_1	rlcompleter
_bisect	audioop	lab_2	runpy
_blake2	base64	lab_3	sched
_bootlocale	basics	lab_4	secrets
_bz2	bdb	lab_5	select
_codecs	binascii	lab_6	selectors
_codecs_cn	binhex	lab_7	setuptools
_codecs_hk	bisect	lab_8	shelve
_codecs_iso2022	builtins	lab_9	shlex
_codecs_jp	bz2	lib2to3	shutil
_codecs_kr	cProfile	linecache	signal
_codecs_tw	cal	locale	simple_app
_collections	calendar	logging	site
_collections_abc	cgi	lzma	six

Let's find the area of the circle

$$a = \pi r^2$$

Python Code

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```

33  import math
34  r=5
35  print((math.pi)*r*r)

```

PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_8.py"
● 78.53981633974483
○ PS E:\SEM 3\PWP>

```

Print the values of positive and negative infinity.

```
import math
```

```
print (math.inf)
```

```
print (-math.inf)
```

Output

```

29  import math
30  print (math.inf)
31  print (-math.inf)

```

PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS


```

● PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\lab_8.py"
inf
-inf
○ PS E:\SEM 3\PWP>

```

List of Mathematical function in Math Module

pow(x,y), sqrt(x), trunc(x), cos(x), sin(x), tan(x), degrees(x), radians(x), exp(x), log2(x), log10(x)

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Post Lab Exercise:

- a. Write a Python program to convert degree to radian

```

1  #Question 1
2  import math
3  degree = float(input("Enter degrees: "))
4  radian = math.radians(degree)
5  print(f"{degree} = {radian} radians")

```

PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_8.py"
Enter degrees: 60
60.0 = 1.0471975511965976 radians

```

- b. Make a simplest possible Python program that calculates and prints the value of the formula

$$y = 6x^2 + 4\sin(x)$$

```

7  #Question 2
8  import math
9  x = float(input("Enter value of x: "))
10 y = 6*(x**2) + 4*math.sin(x)
11 print("y =",y)

```



PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\tempCoc
Enter value of x: 2
y = 27.637189707302728
PS E:\SEM 3\PWP>

```

- c. Write a Python function that evaluates the mathematical functions

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$f(x) = \cos(2x)$, $f'(x) = -2 \sin(2x)$, and $f''(x) = -4 \cos(2x)$.

Return these three values. Write out the results of these values for $x = \pi$

```

13  #Question 3
14  import math
15  def functions(x):
16      f = math.cos(2*x)
17      f1 = -2 * math.sin(2*x)
18      f2 = -4 * math.cos(2*x)
19      return f, f1, f2
20  x = math.pi
21  f_result, f1_result, f2_result = functions(x)
22
23  print("f(x) =", f_result)
24  print("f'(x) =", f1_result)
25  print("f''(x) =", f2_result)

```

PROBLEMS **2** OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

PS E:\SEM 3\PWP> python -u "e:\SEM 3\PWP\Class Tutorials\post_lab_8.py"
f(x) = 1.0
f'(x) = 4.898587196589413e-16
f''(x) = -4.0
PS E:\SEM 3\PWP>

```