
 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:25-8-2025	Enrollment No:92400133108

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
```

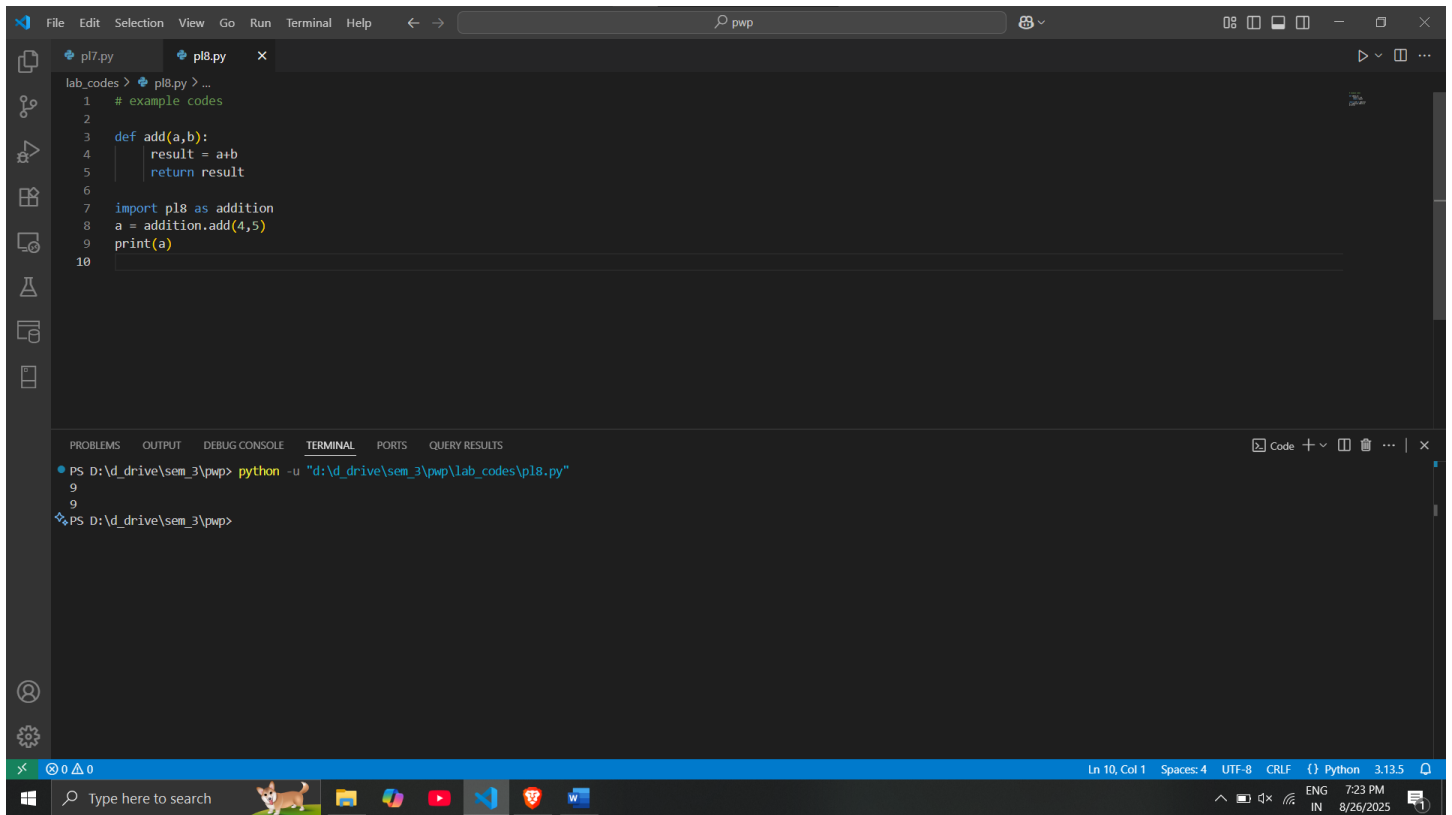
```
import example as addition
```

```
a = addition.add(4,5)
```

```
print(a)
```

Output

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```

lab_codes > pl8.py > ...
1  # example codes
2
3  def add(a,b):
4      result = a+b
5      return result
6
7  import pl8 as addition
8  a = addition.add(4,5)
9  print(a)
10
  
```

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS QUERY RESULTS
PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"
9
9
PS D:\d_drive\sem_3\pwp>
  
```

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

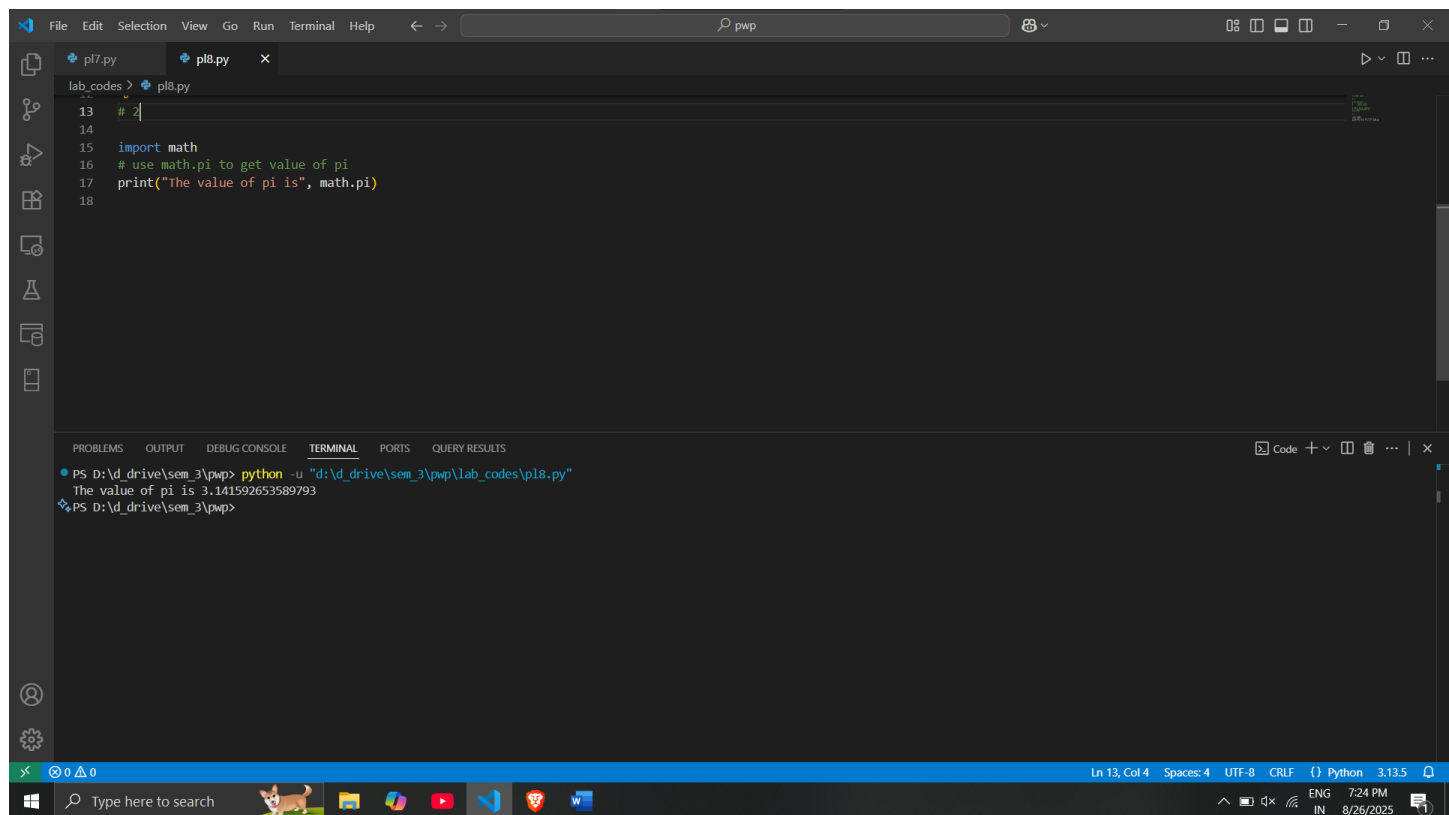
import math

# use math.pi to get value of pi
  
```

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

Output



The screenshot shows a Visual Studio Code editor with a file named `pl8.py` open. The code in the file is as follows:

```
13 # 2
14
15 import math
16 # use math.pi to get value of pi
17 print("The value of pi is", math.pi)
18
```

The terminal at the bottom shows the command executed and the output:

```
PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl8.py"
The value of pi is 3.141592653589793
PS D:\drive\sem_3\pwp>
```

Python import with Renaming



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

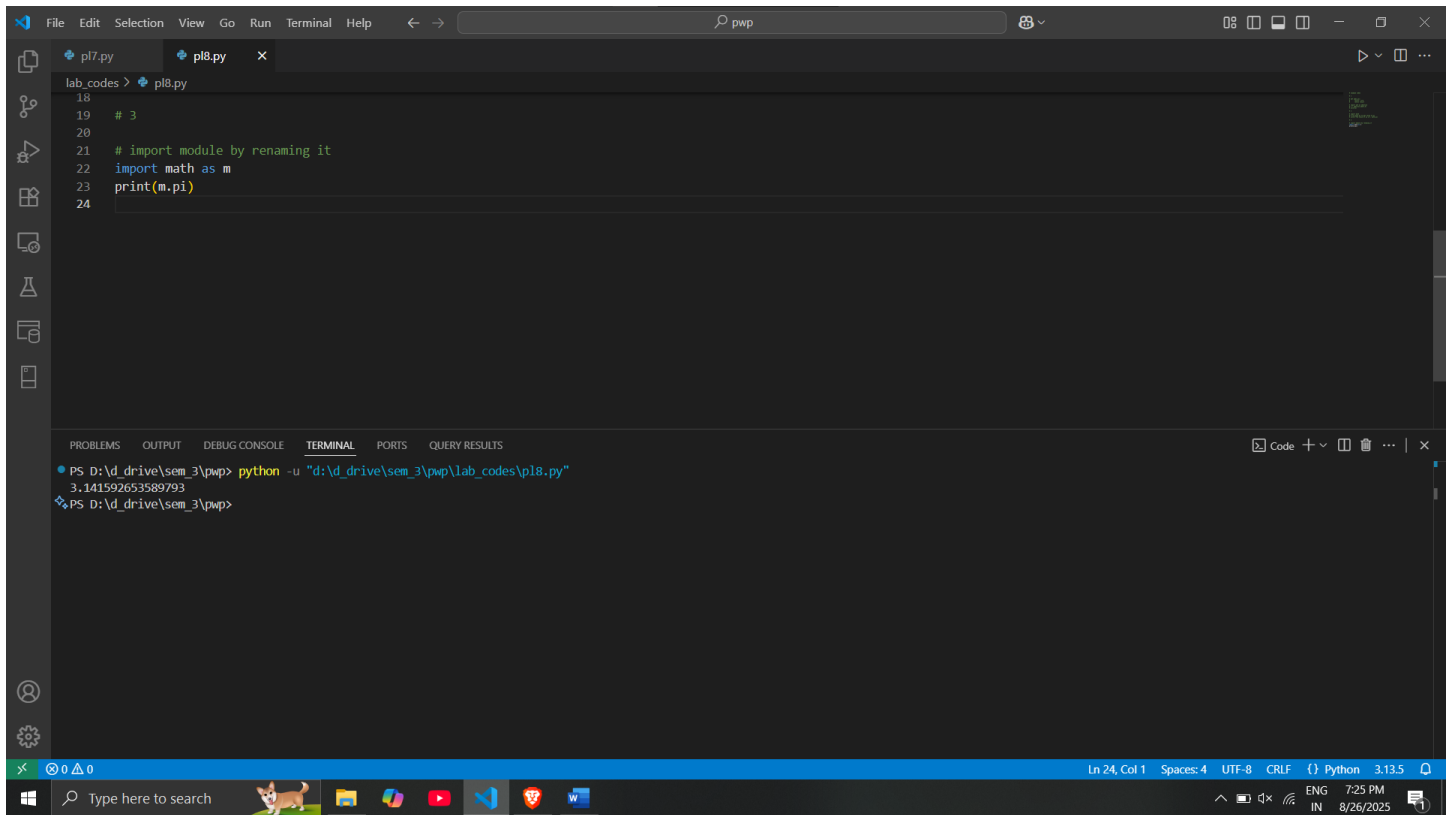
```
# import module by renaming it
```

```
import math as m
```

```
print(m.pi)
```

Output

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```

18
19 # 3
20
21 # import module by renaming it
22 import math as m
23 print(m.pi)
24

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS QUERY RESULTS

PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"

3.141592653589793

PS D:\d_drive\sem_3\pwp>

Python from...import statement



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

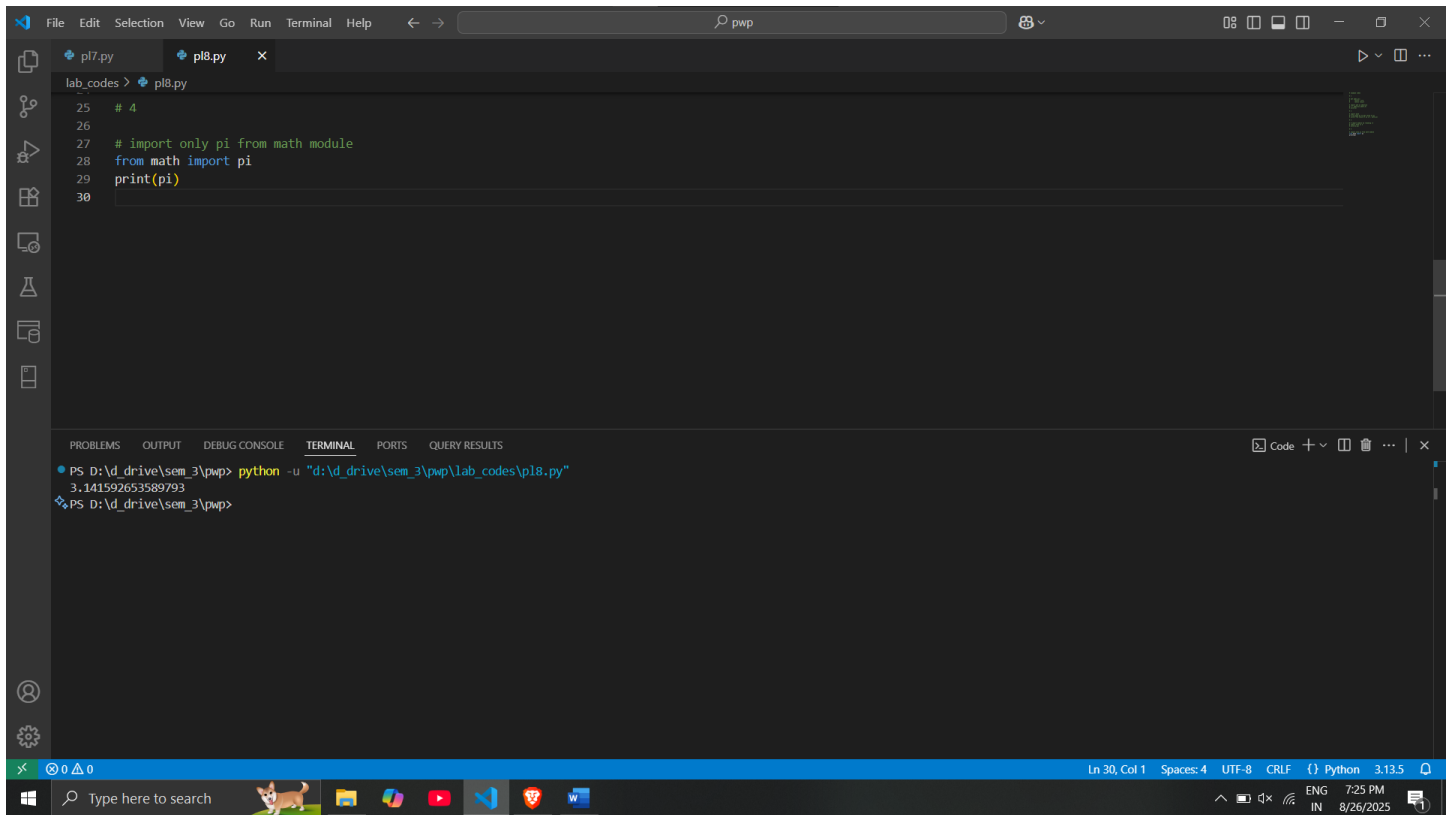
import only pi from math module

from math import pi

print(pi)

Output

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```

25 # 4
26
27 # import only pi from math module
28 from math import pi
29 print(pi)
30

```

Terminal Output:

```

PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"
3.141592653589793
PS D:\d_drive\sem_3\pwp>

```

Import all names



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

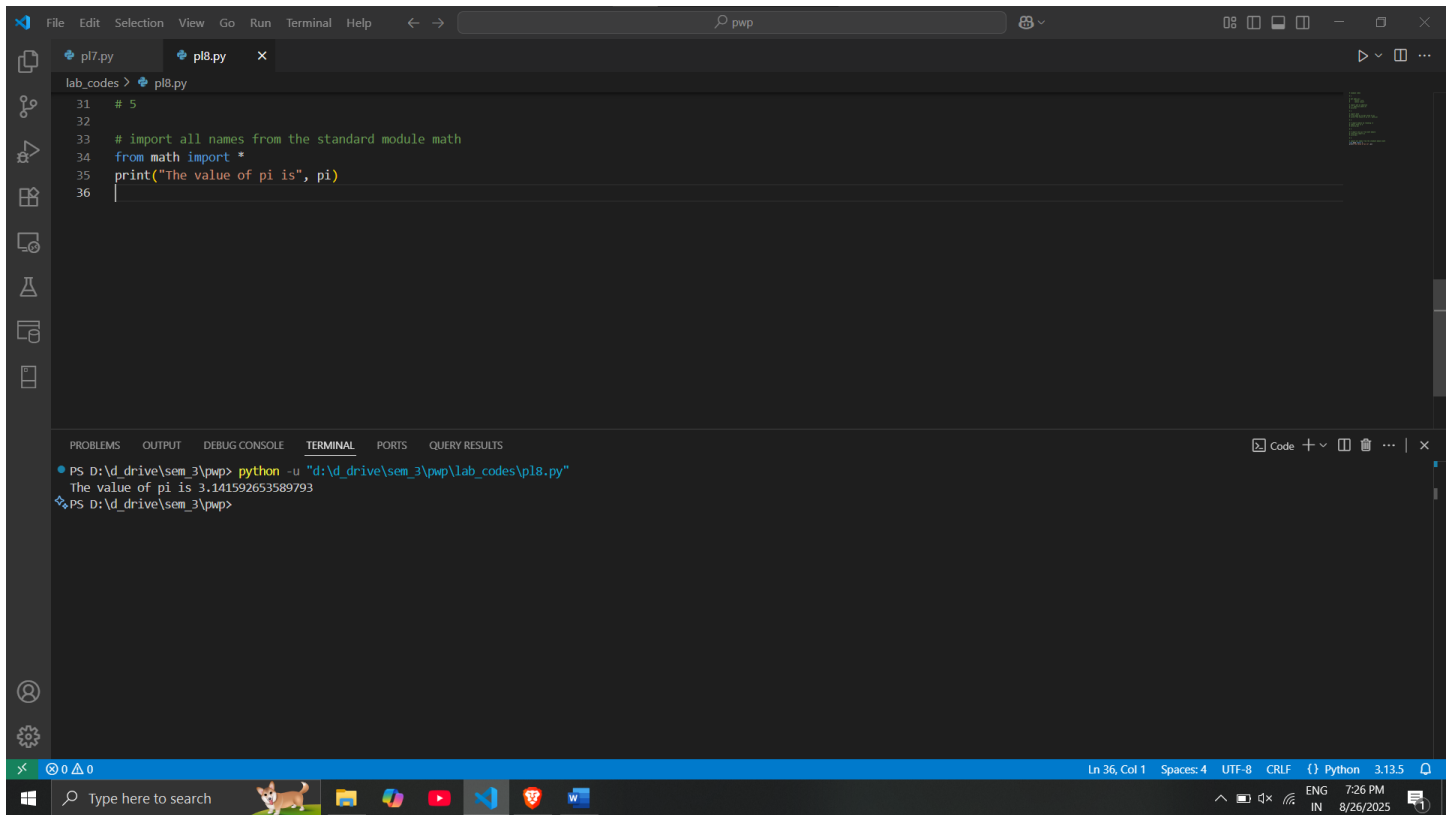
```
# import all names from the standard module math
```

```
from math import *
```

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

Output

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The screenshot shows a Visual Studio Code editor window with a file named `pl8.py` open. The code in the editor is as follows:

```

31 # 5
32
33 # import all names from the standard module math
34 from math import *
35 print("The value of pi is", pi)
36

```

Below the editor, the TERMINAL panel shows the command `python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"` being executed, resulting in the output: `The value of pi is 3.141592653589793`.



The `dir()` built-in function

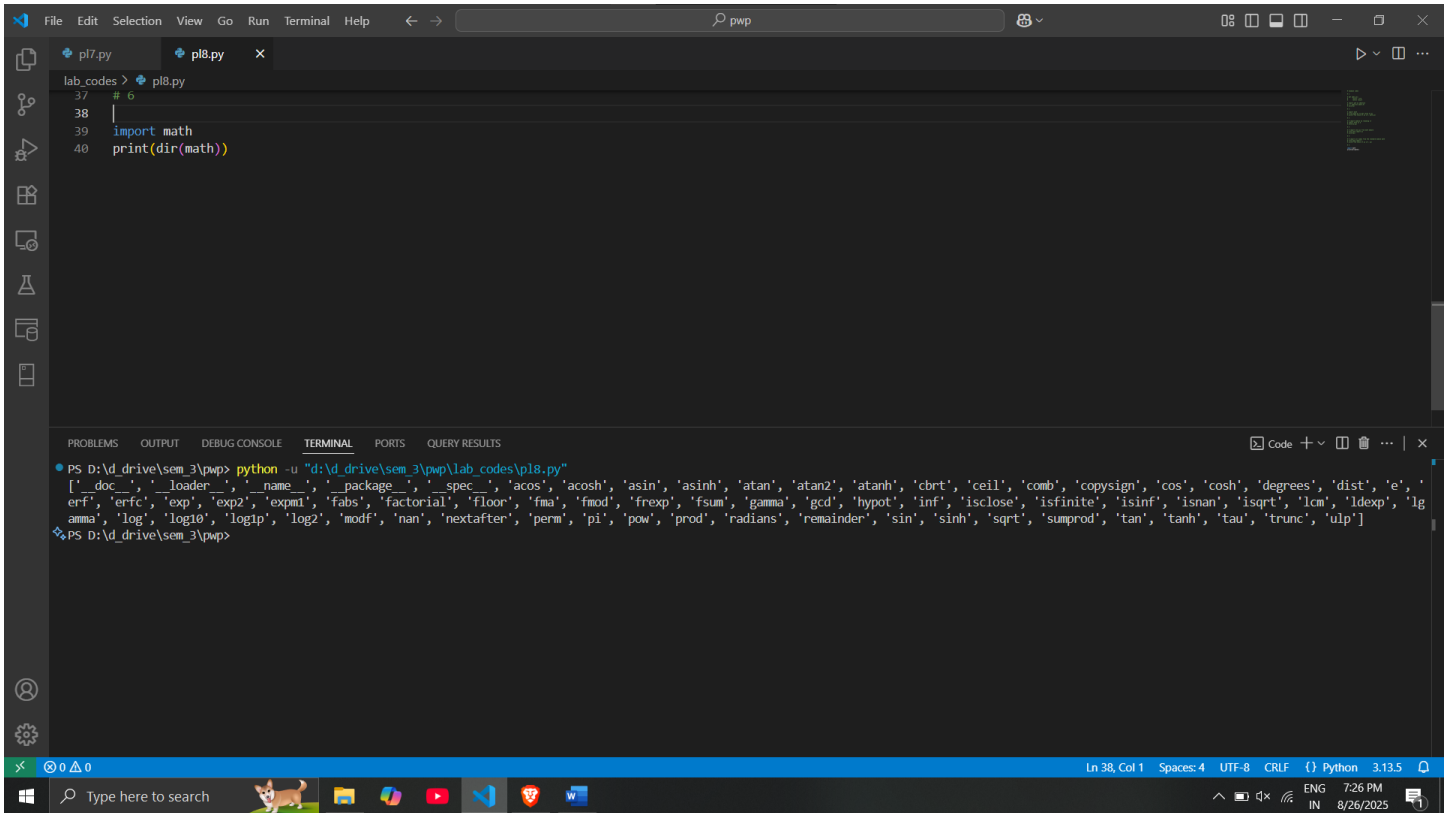
In Python, we can use the `dir()` function to list all the function names in a module.

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

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

Output

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```

lab_codes > pl8.py
37 # 6
38
39 import math
40 print(dir(math))

```

```

PS D:\drive\sem_3\pwp> python -u "d:\drive\sem_3\pwp\lab_codes\pl8.py"
['_doc_', '_loader_', '_name_', '_package_', '_spec_', 'acos', 'acosh', 'asin', 'asinh', 'atan', 'atan2', 'atanh', 'cbrt', 'ceil', 'comb', 'copysign', 'cos', 'cosh', 'degrees', 'dist', 'e', 'erf', 'erfc', 'exp', 'exp2', 'expm1', 'fabs', 'factorial', 'floor', 'fma', 'fmod', 'frexp', 'fsum', 'gamma', 'gcd', 'hypot', 'inf', 'isclose', 'isfinite', 'isinf', 'isnan', 'isqrt', 'lcm', 'ldexp', 'lgamma', 'log', 'log10', 'log1p', 'log2', 'modf', 'nan', 'nextafter', 'perm', 'pi', 'pow', 'prod', 'radians', 'remainder', 'sin', 'sinh', 'sqrt', 'sumprod', 'tan', 'tanh', 'tau', 'trunc', 'ulp']
PS D:\drive\sem_3\pwp>



```

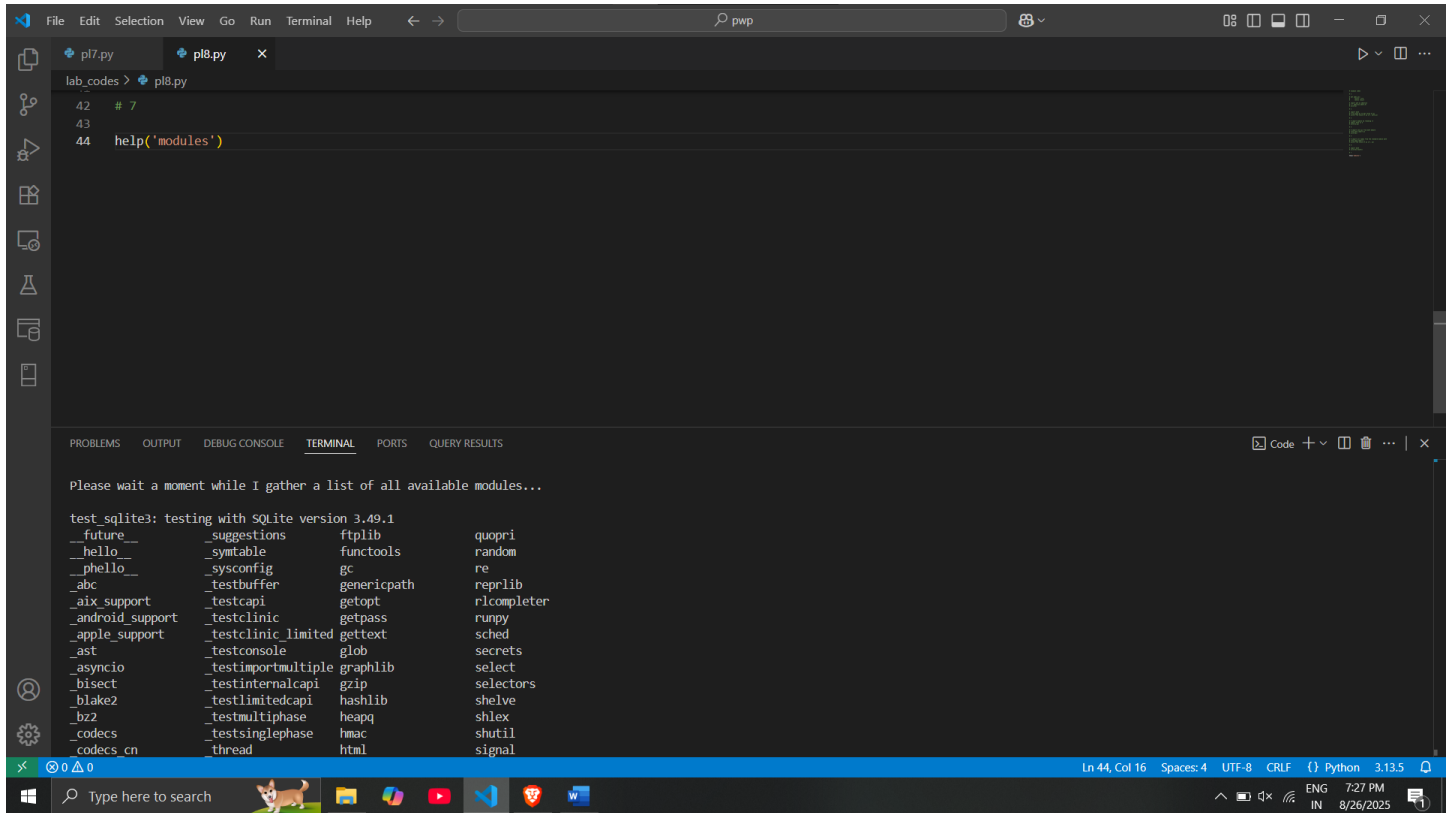
Built-in modules

Some examples of Python built-in modules include “os”, “sys”, “math”, and “datetime”.

help('modules')

Output:

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```

lab_codes > pl8.py
42 # 7
43
44 help('modules')

```

Please wait a moment while I gather a list of all available modules...

```

test_sqlite3: testing with SQLite version 3.49.1
__future__      _symtable       ftplib          quopri
__hello__       _sysconfig      functools       random
__phello__      _testbuffer     gc              re
__abc__         _testcapi       getopt          reprlib
_aix_support    _testclinic     getpass        rlecompleter
_android_support _testclinic_limited gettext         runpy
_apple_support  _testconsole    glob           secrets
_ast           _testimportmultiple graphlib        select
_asyncio       _testinternalcapi gzip            selectors
_bisect        _testlimitedcapi hashlib         shelve
_blake2        _testmultiphase heapq           shlex
_bz2           _testsinglephase hmac            shutil
_codecs        codecs.cn       thread          html          signal

```

Let’s find the area of the circle

$$a = \pi r^2$$

Python Code

```

import math



r=14

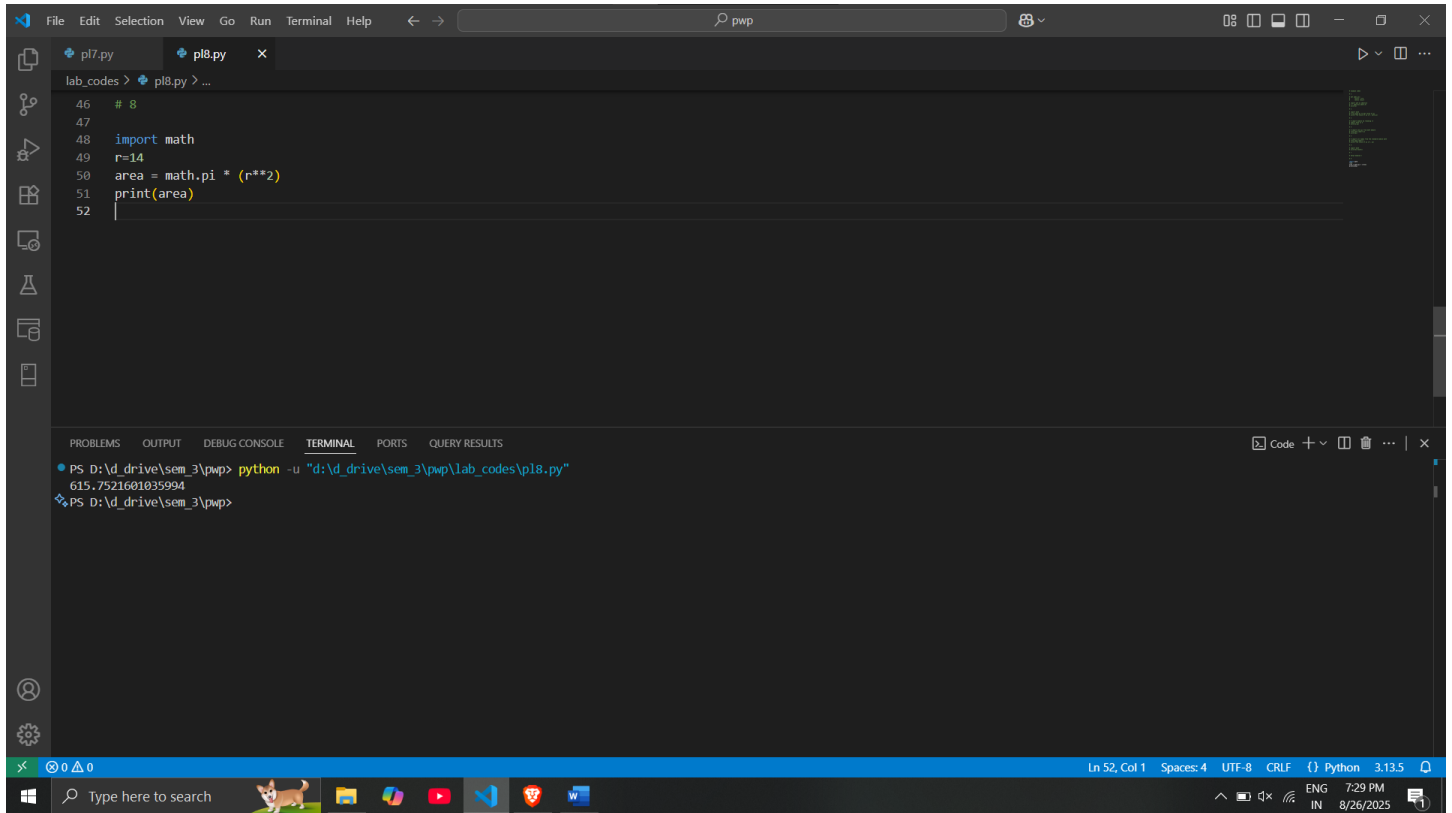
area = math.pi * (r**2)

print(area)

```

Output :

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```

46 # 8
47
48 import math
49 r=14
50 area = math.pi * (r**2)
51 print(area)
52

```

PROBLEMS OUTPUT DEBUG CONSOLE **TERMINAL** PORTS QUERY RESULTS

```

PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"
615.7521601035994
PS D:\d_drive\sem_3\pwp>

```

Ln 52, Col 1 Spaces: 4 UTF-8 CRLF Python 3.13.5



Print the values of positive and negative infinity.

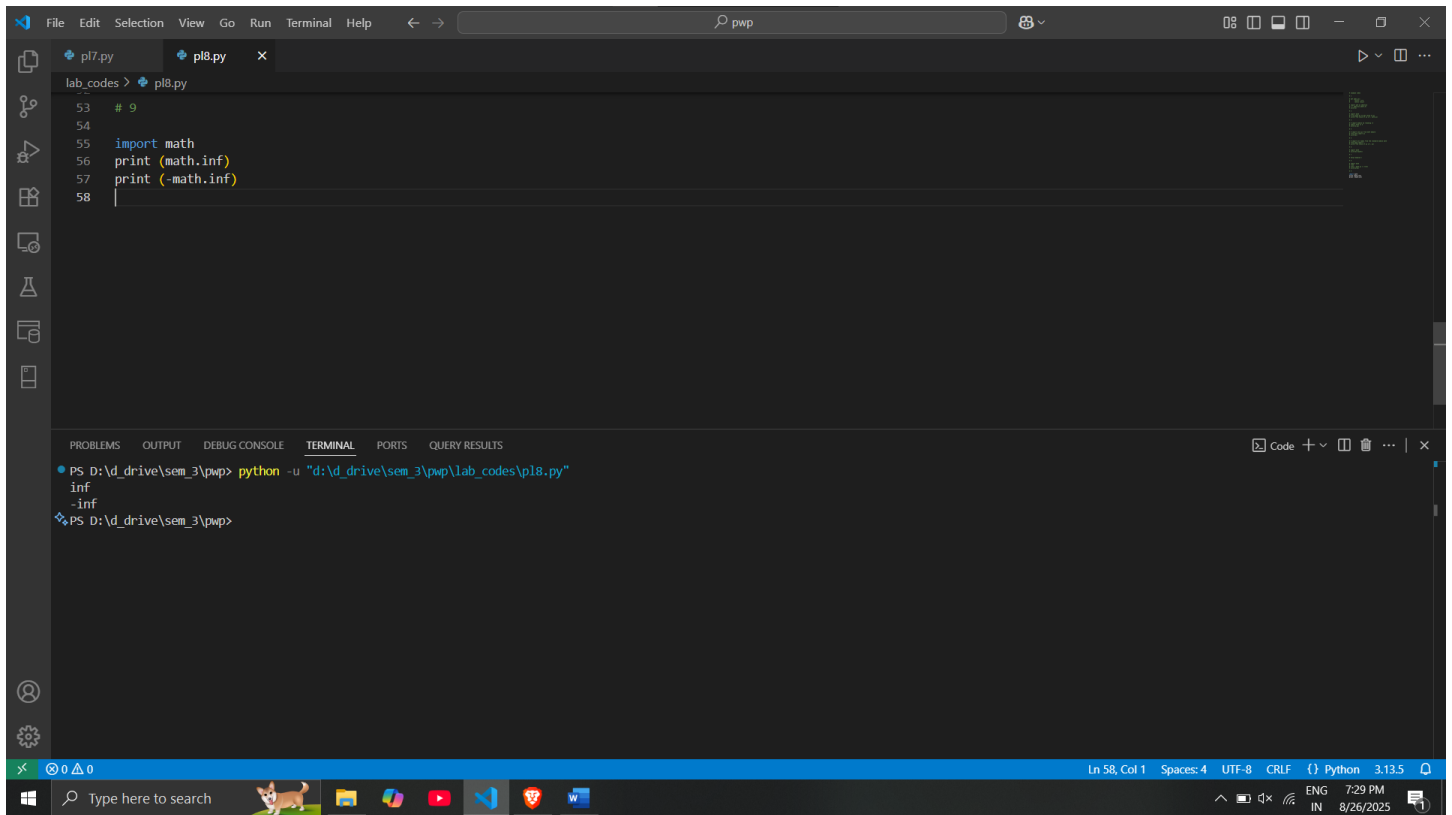
```
import math
```

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

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

Output

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The screenshot shows a Visual Studio Code editor with a file named `pl8.py` open. The code in the editor is as follows:

```

53 # 9
54
55 import math
56 print (math.inf)
57 print (-math.inf)
58

```

Below the editor, the TERMINAL panel shows the command `python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"` being executed, resulting in the output:

```



inf
-inf

```

The status bar at the bottom indicates the current line is 58, column 1, with 4 spaces, using UTF-8 encoding and CRLF line endings. The Python version is 3.13.5.

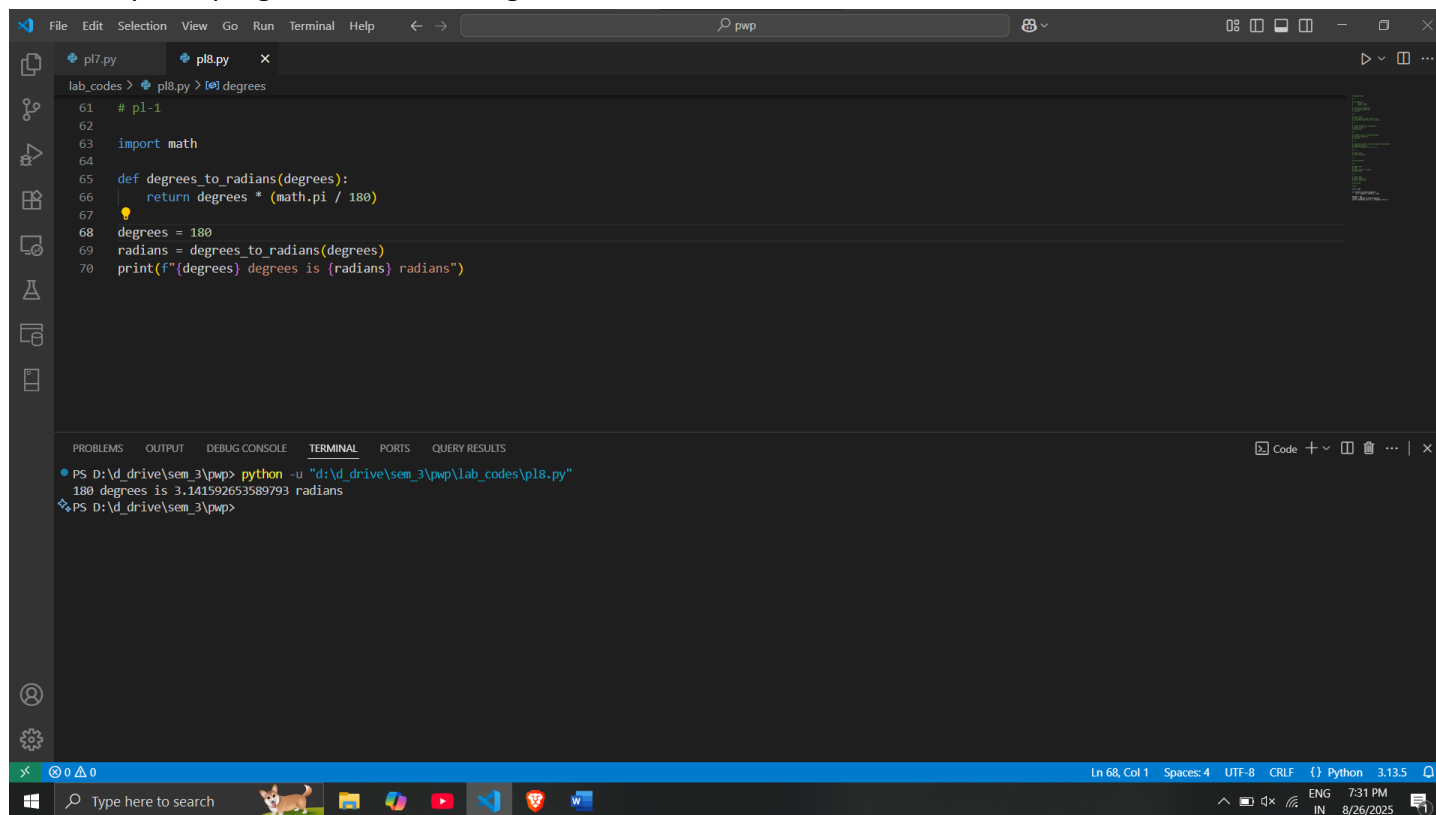
List of Mathematical function in Math Module

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:

- Write a Python program to convert degree to radian





```

lab_codes > pl8.py > degrees
61 # pl-1
62
63 import math
64
65 def degrees_to_radians(degrees):
66     return degrees * (math.pi / 180)
67
68 degrees = 180
69 radians = degrees_to_radians(degrees)
70 print(f"{degrees} degrees is {radians} radians")

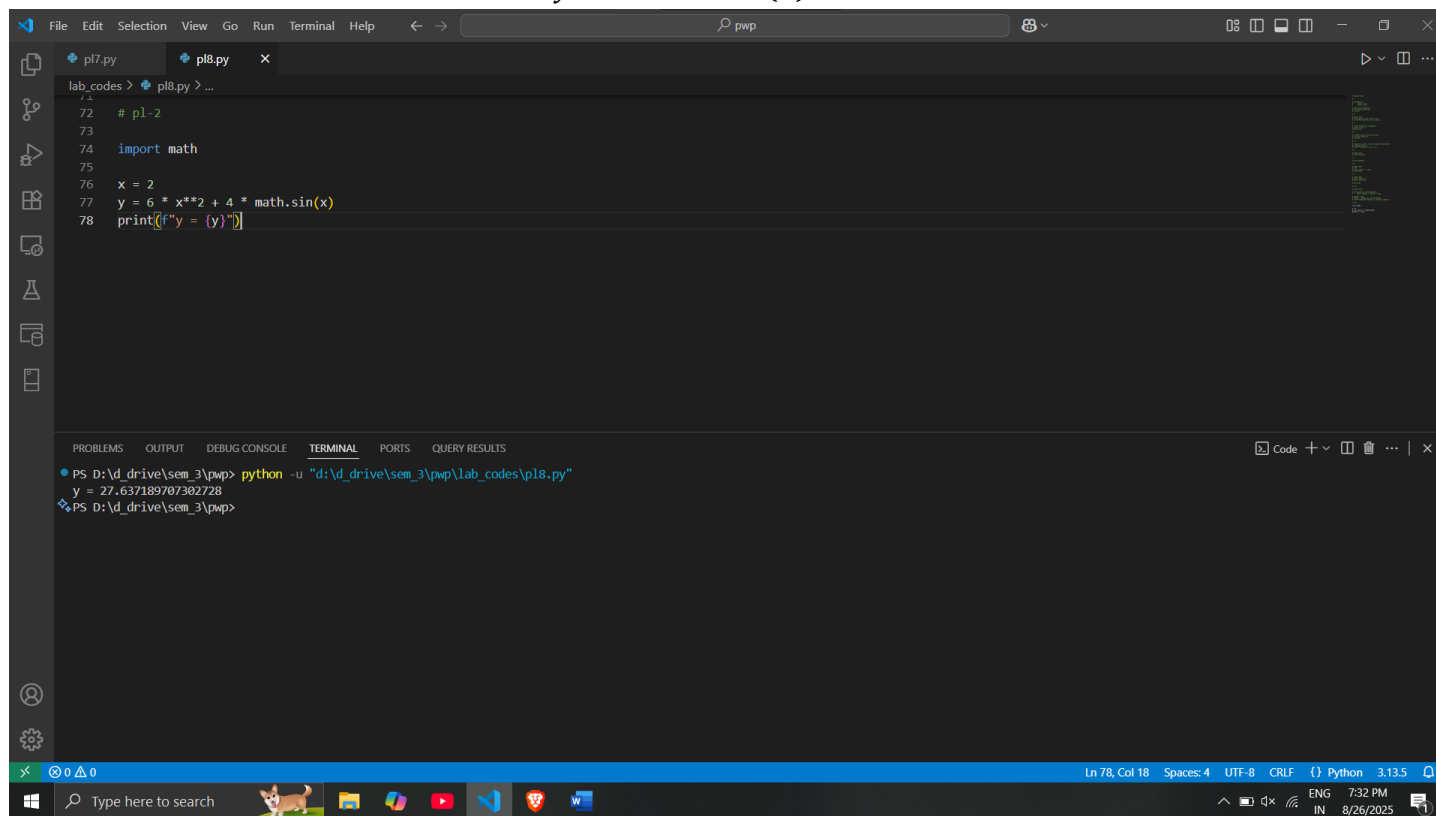
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS QUERY RESULTS
PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"
180 degrees is 3.141592653589793 radians
PS D:\d_drive\sem_3\pwp>

```

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

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



```

lab_codes > pl8.py > ...
72 # pl-2
73
74 import math
75
76 x = 2
77 y = 6 * x**2 + 4 * math.sin(x)
78 print(f"y = {y}")

```



PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS QUERY RESULTS

```

PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"
y = 27.637189707302728
PS D:\d_drive\sem_3\pwp>

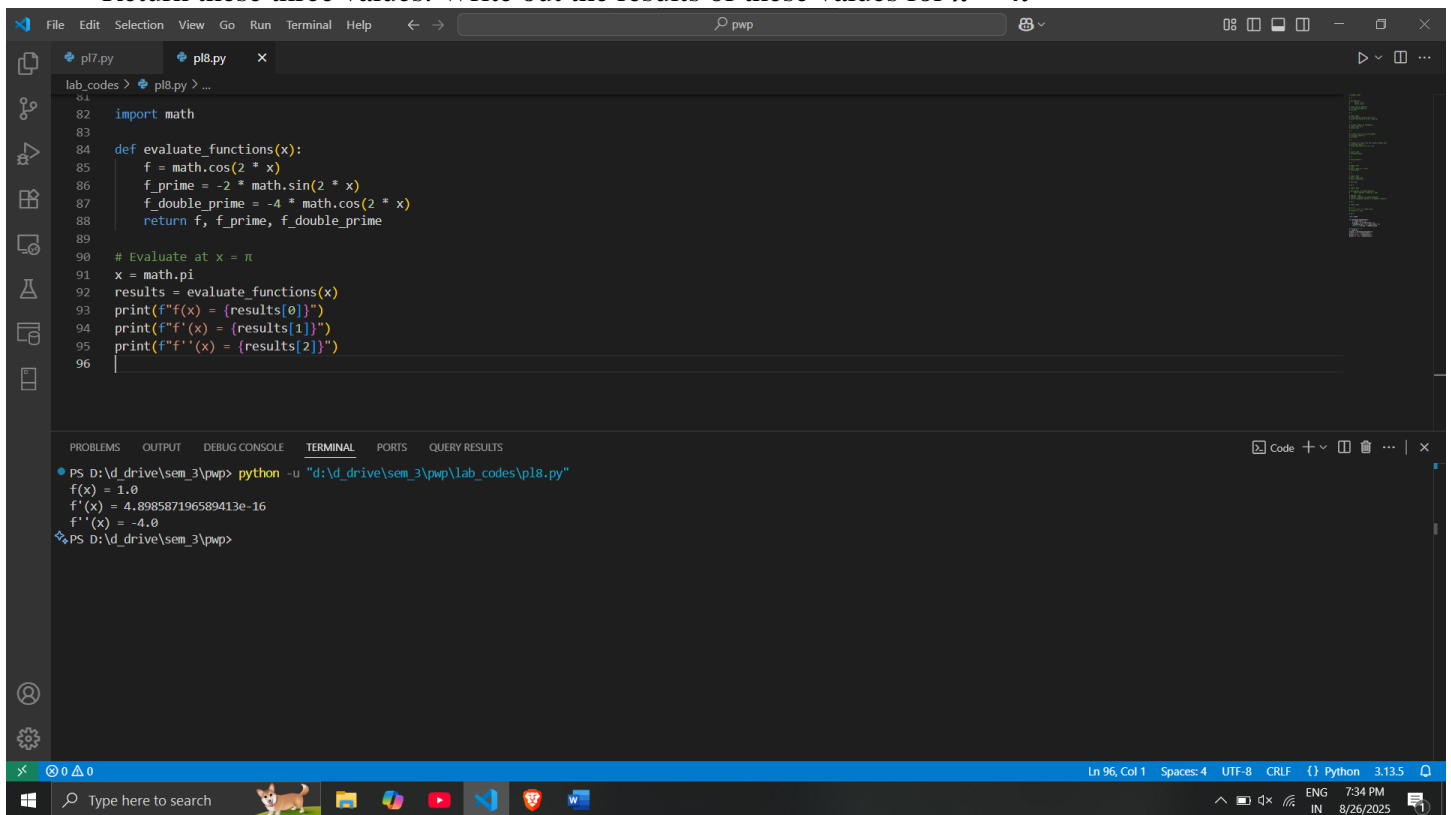
```

Ln 78, Col 18 Spaces: 4 UTF-8 CRLF Python 3.13.5

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- c. Write a Python function that evaluates the mathematical functions
 $f(x) = \cos(2x)$, $f'(x) = -2 \sin(2x)$, and $f''(x) = -4 \cos(2x)$.

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



```

lab_codes > pl8.py > ...
81
82 import math
83
84 def evaluate_functions(x):
85     f = math.cos(2 * x)
86     f_prime = -2 * math.sin(2 * x)
87     f_double_prime = -4 * math.cos(2 * x)
88     return f, f_prime, f_double_prime
89
90 # Evaluate at x = pi
91 x = math.pi
92 results = evaluate_functions(x)
93 print(f"f(x) = {results[0]}")
94 print(f"f'(x) = {results[1]}")
95 print(f"f''(x) = {results[2]}")
96

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS QUERY RESULTS

```

PS D:\d_drive\sem_3\pwp> python -u "d:\d_drive\sem_3\pwp\lab_codes\pl8.py"
f(x) = 1.0
f'(x) = 4.898587196589413e-16
f''(x) = -4.0
PS D:\d_drive\sem_3\pwp>

```

Ln 96, Col 1 Spaces: 4 UTF-8 CRLF Python 3.13.5