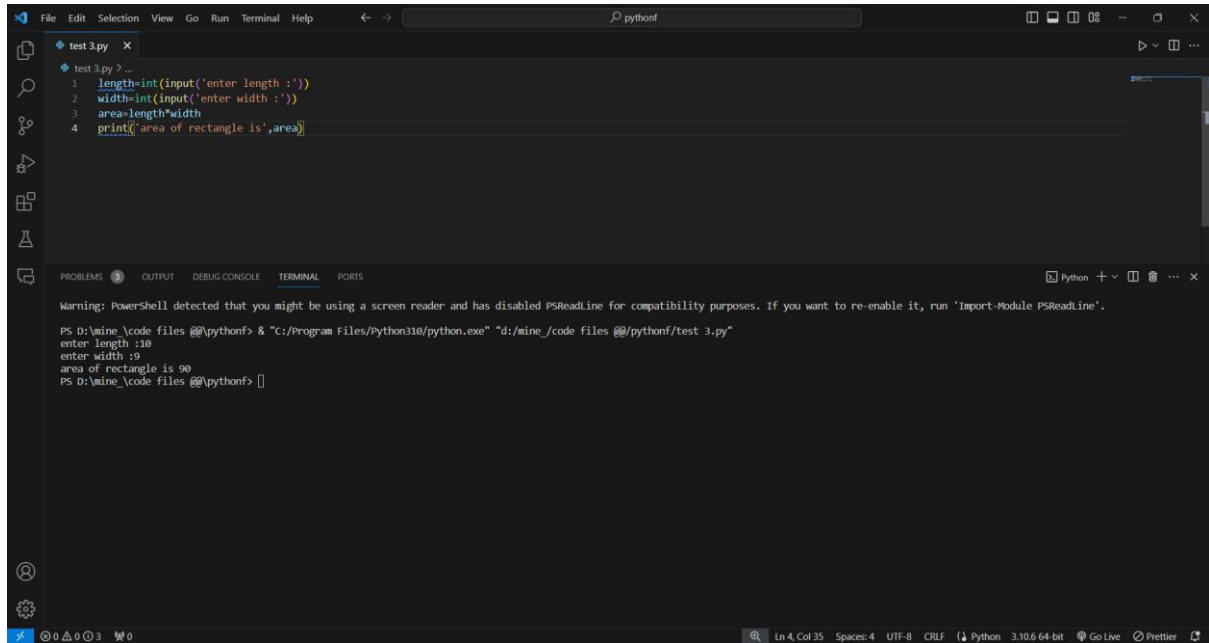


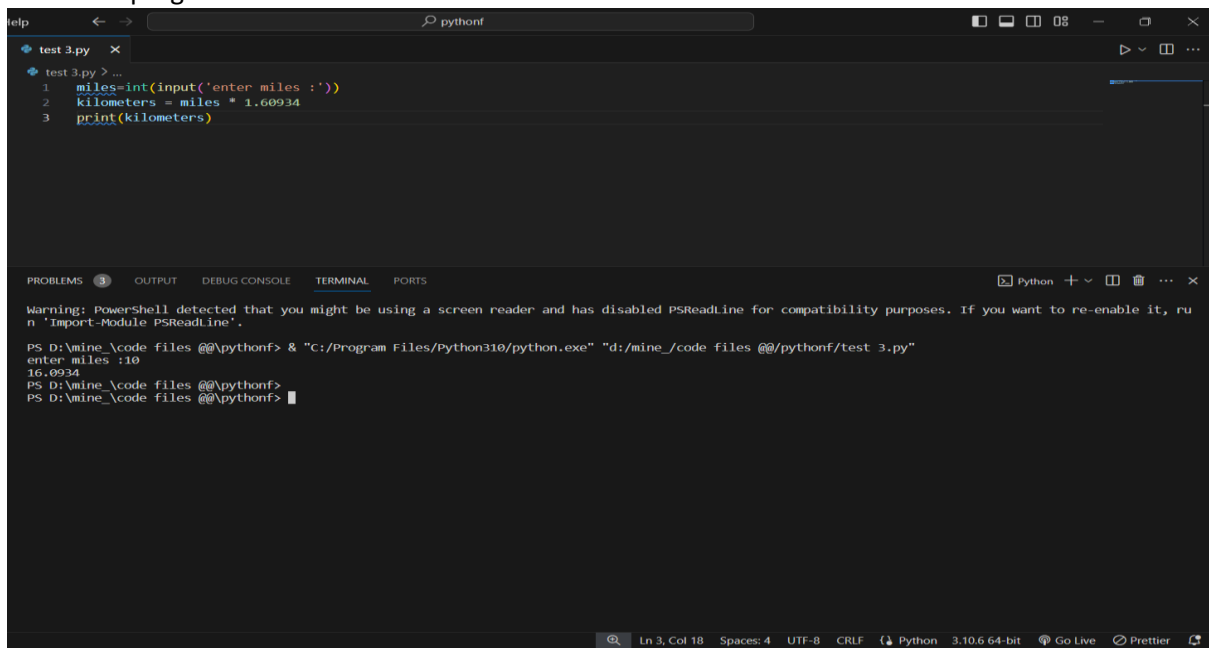
1. Write a Python program to calculate the area of a rectangle given its length and width.



```
File Edit Selection View Go Run Terminal Help
test 3.py x
test 3.py > ...
1 length=int(input('enter length :'))
2 width=int(input('enter width :'))
3 area=length*width
4 print('area of rectangle is',area)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine\_code files @@\pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine/_code files @@/pythonf/test 3.py"
enter length :10
enter width :9
area of rectangle is 90
PS D:\mine\_code files @@\pythonf>
```

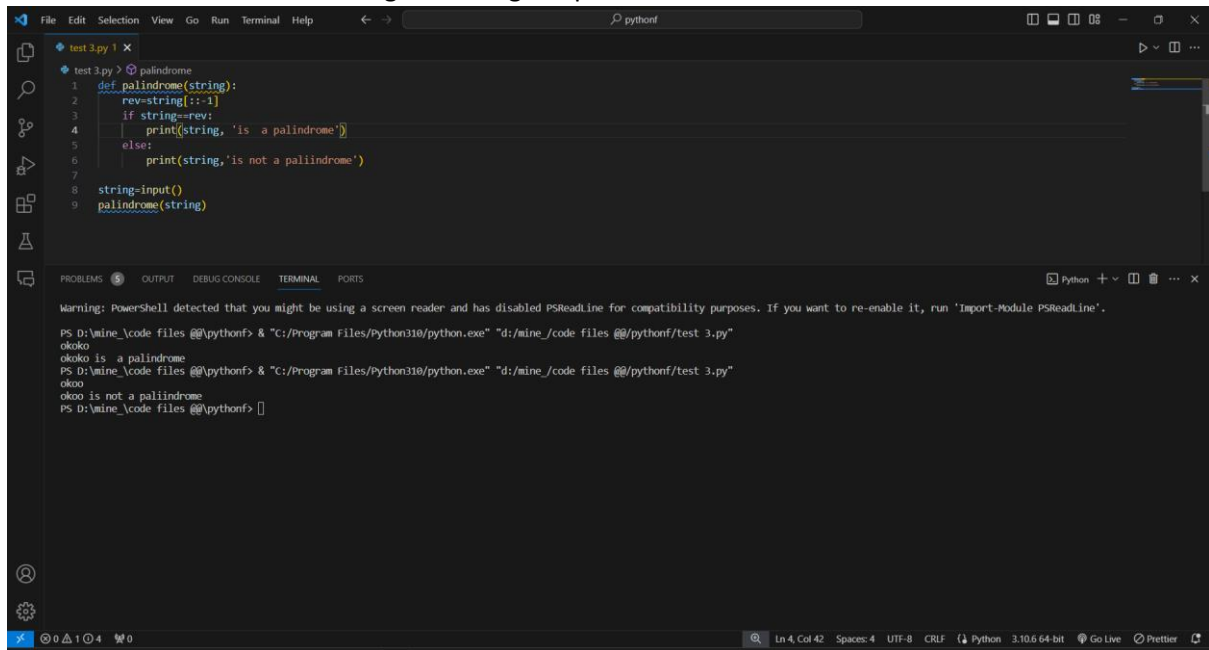
2. Write a program to convert miles to kilometers



```
help
test 3.py x
test 3.py > ...
1 miles=int(input('enter miles :'))
2 kilometers = miles * 1.60934
3 print(kilometers)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine\_code files @@\pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine/_code files @@/pythonf/test 3.py"
enter miles :10
16.0934
PS D:\mine\_code files @@\pythonf>
PS D:\mine\_code files @@\pythonf>
```

3. Write a function to check if a given string is a palindrome



```
test 3.py > palindrome
1 def palindrome(string):
2     rev=string[::-1]
3     if string==rev:
4         print(string, 'is a palindrome')
5     else:
6         print(string, 'is not a paliindrome')
7
8 string=input()
9 palindrome(string)
```

Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.

PS D:\mine_code files @\python> & "C:/Program Files/Python310/python.exe" "d:/mine_code files @\python/test 3.py"

okoko

okoko is a palindrome

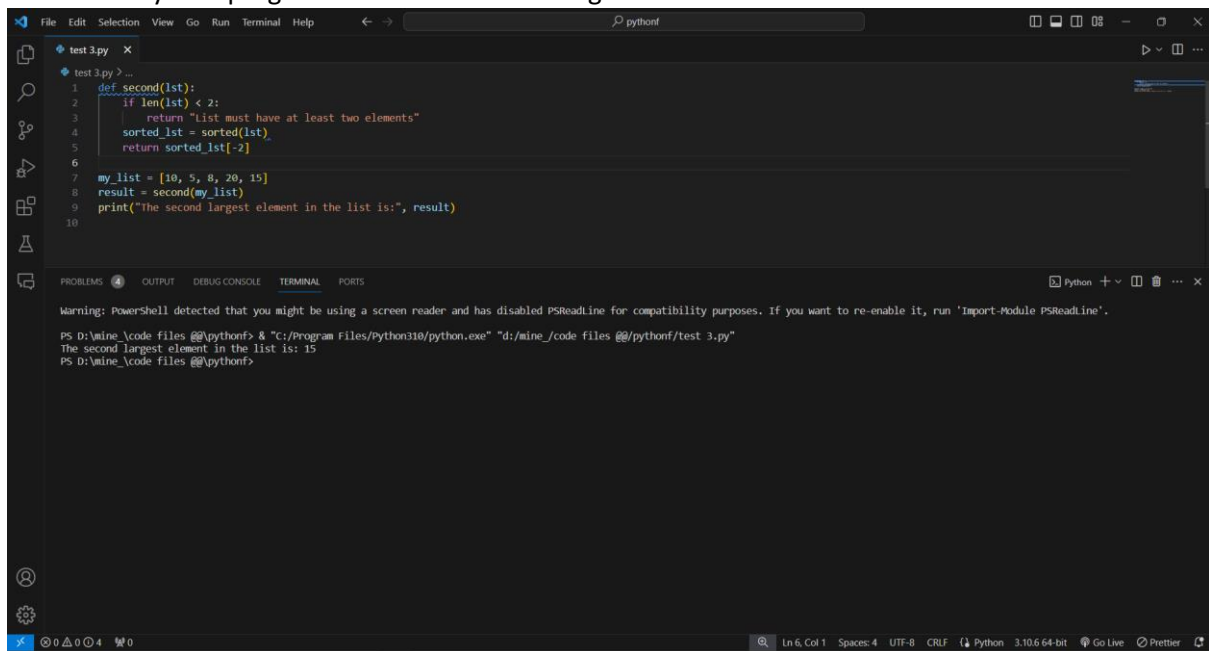
PS D:\mine_code files @\python> & "C:/Program Files/Python310/python.exe" "d:/mine_code files @\python/test 3.py"

okoo

okoo is not a paliindrome

PS D:\mine_code files @\python> []

4. Write a Python program to find the second largest element in a list.



```
test 3.py >
1 def second(lst):
2     if len(lst) < 2:
3         return "List must have at least two elements"
4     sorted_list = sorted(lst)
5     return sorted_list[-2]
6
7 my_list = [10, 5, 8, 20, 15]
8 result = second(my_list)
9 print("The second largest element in the list is:", result)
10
```

Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.

PS D:\mine_code files @\python> & "C:/Program Files/Python310/python.exe" "d:/mine_code files @\python/test 3.py"

The second largest element in the list is: 15

PS D:\mine_code files @\python>

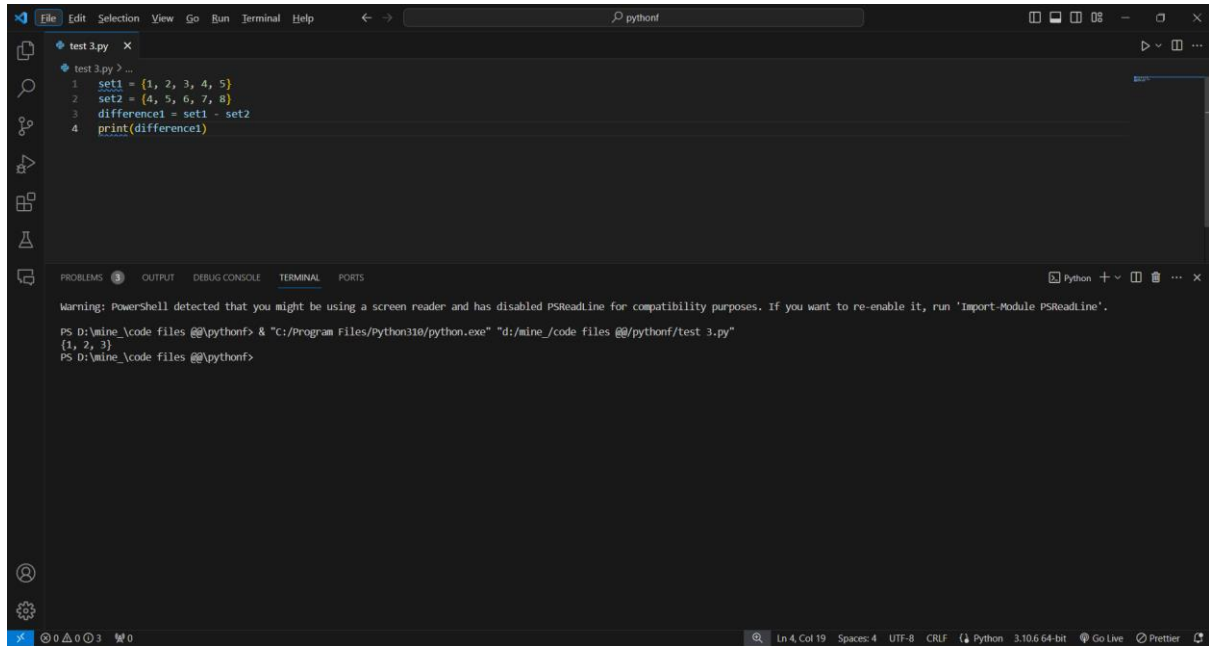
5. Explain what indentation means in Python.

Ans: Indentation is a space used to represent the block of code or statements in python. In the other programming languages like c,c++,java we use the { } curly braces to represent the block of code

for example :

```
for i in range(10):
    print(i)
```

6. Write a program to perform set difference operation.



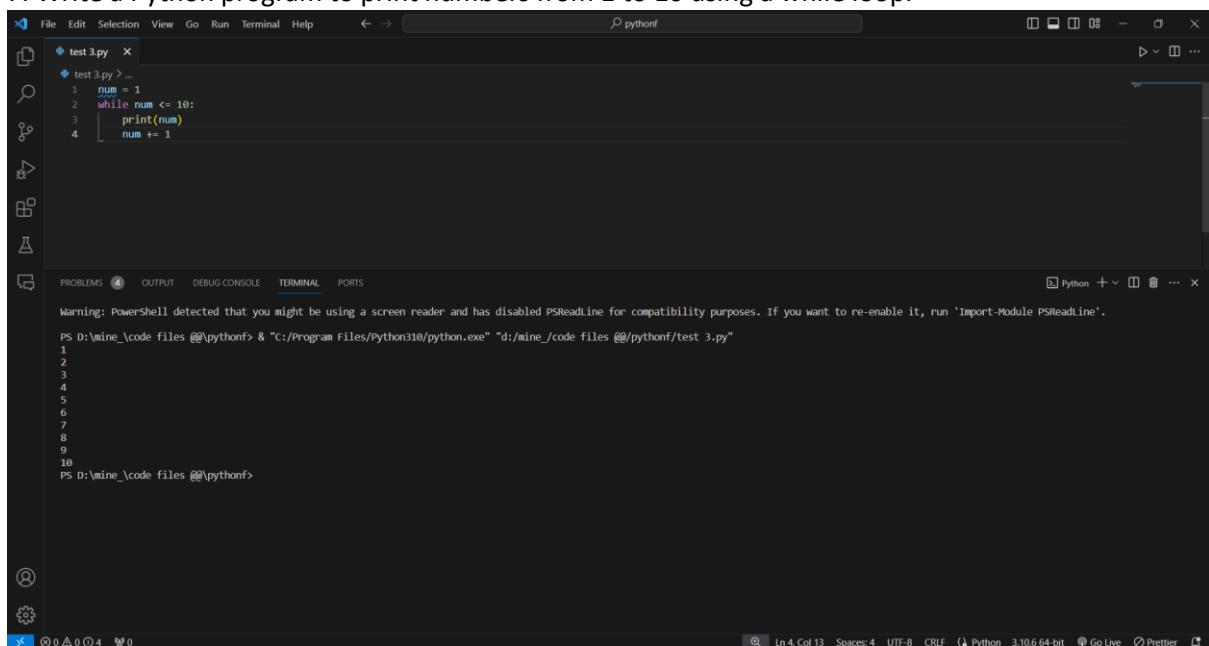
```
File Edit Selection View Go Run Terminal Help
test 3.py X
test 3.py > ...
1 set1 = {1, 2, 3, 4, 5}
2 set2 = {4, 5, 6, 7, 8}
3 difference1 = set1 - set2
4 print(difference1)

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python + - - - X

Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.

PS D:\mine\_code files @@\pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine/_code files @@/pythonf/test 3.py"
{1, 2, 3}
PS D:\mine\_code files @@\pythonf>
```

7. Write a Python program to print numbers from 1 to 10 using a while loop.



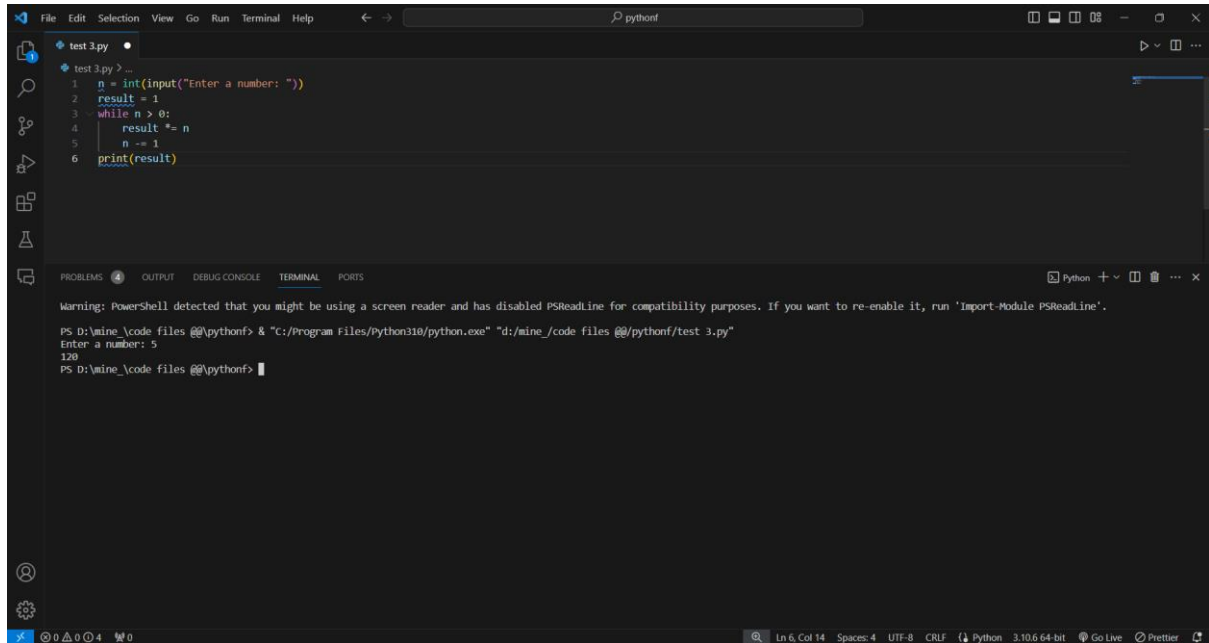
```
File Edit Selection View Go Run Terminal Help
test 3.py X
test 3.py > ...
1 num = 1
2 while num <= 10:
3     print(num)
4     num += 1

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Python + - - - X

Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.

PS D:\mine\_code files @@\pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine/_code files @@/pythonf/test 3.py"
1
2
3
4
5
6
7
8
9
10
PS D:\mine\_code files @@\pythonf>
```

8. Write a program to calculate the factorial of a number using a while loop.



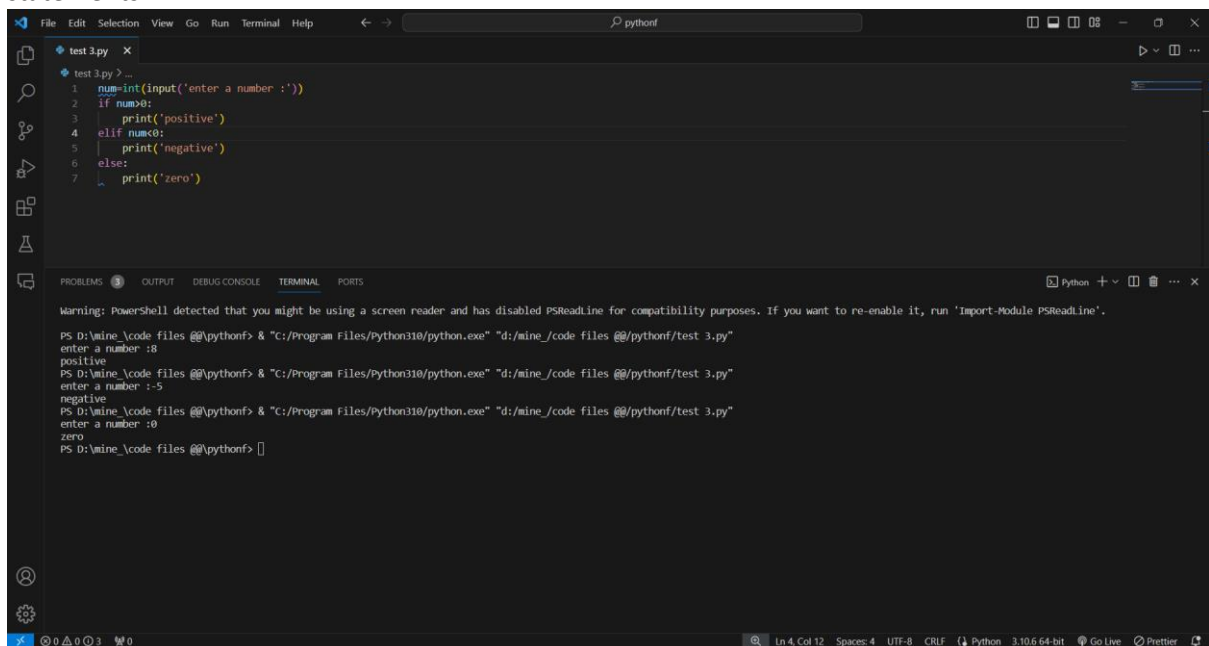
The screenshot shows a VS Code editor with a file named `test 3.py`. The code in the editor is as follows:

```
1 n = int(input("Enter a number: "))
2 result = 1
3 while n > 0:
4     result *= n
5     n -= 1
6 print(result)
```

The terminal output shows the program being executed. It prompts for an input number, and when 5 is entered, it outputs 120.

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code_files\@python> & "C:/Program Files/Python310/python.exe" "d:/mine_/code_files/@/python/test 3.py"
Enter a number: 5
120
PS D:\mine_code_files\@python>
```

9. Write a Python program to check if a number is positive, negative, or zero using if-elif-else statements.



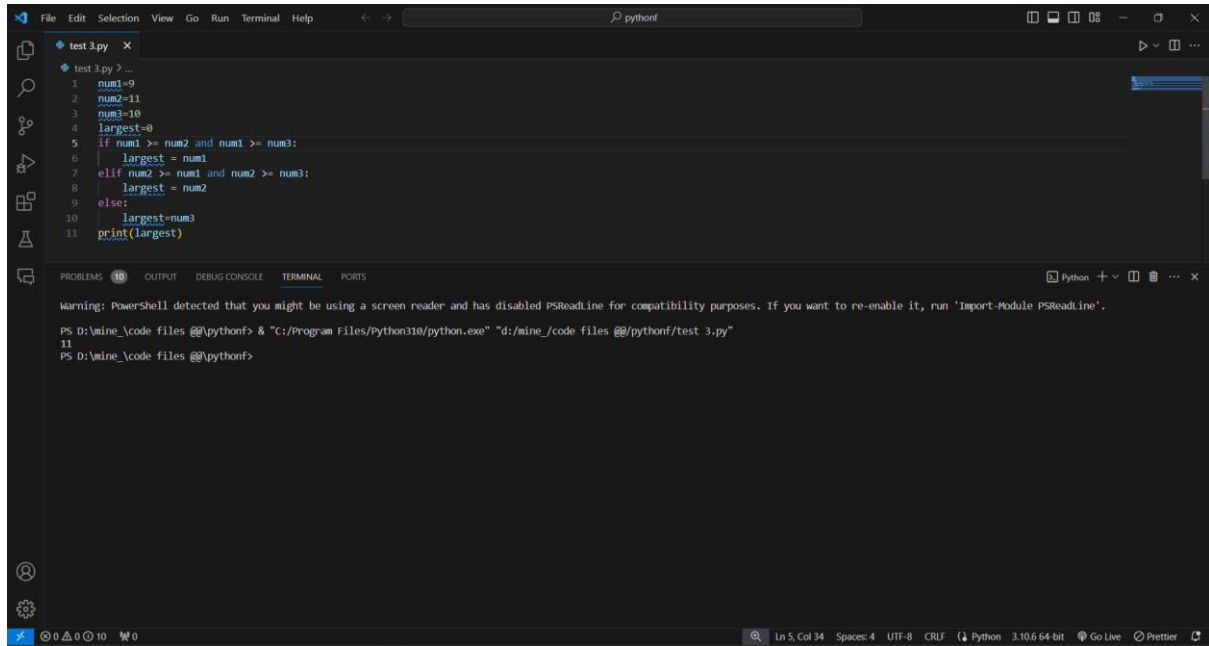
The screenshot shows a VS Code editor with a file named `test 3.py`. The code in the editor is as follows:

```
1 num=int(input('enter a number :'))
2 if num>0:
3     print('positive')
4 elif num<0:
5     print('negative')
6 else:
7     print('zero')
```

The terminal output shows the program being executed. It prompts for an input number, and when 8 is entered, it outputs 'positive'. When -5 is entered, it outputs 'negative'. When 0 is entered, it outputs 'zero'.

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code_files\@python> & "C:/Program Files/Python310/python.exe" "d:/mine_/code_files/@/python/test 3.py"
enter a number :8
positive
PS D:\mine_code_files\@python> & "C:/Program Files/Python310/python.exe" "d:/mine_/code_files/@/python/test 3.py"
enter a number :-5
negative
PS D:\mine_code_files\@python> & "C:/Program Files/Python310/python.exe" "d:/mine_/code_files/@/python/test 3.py"
enter a number :0
zero
PS D:\mine_code_files\@python>
```

10. Write a program to determine the largest among three numbers using conditional statements.



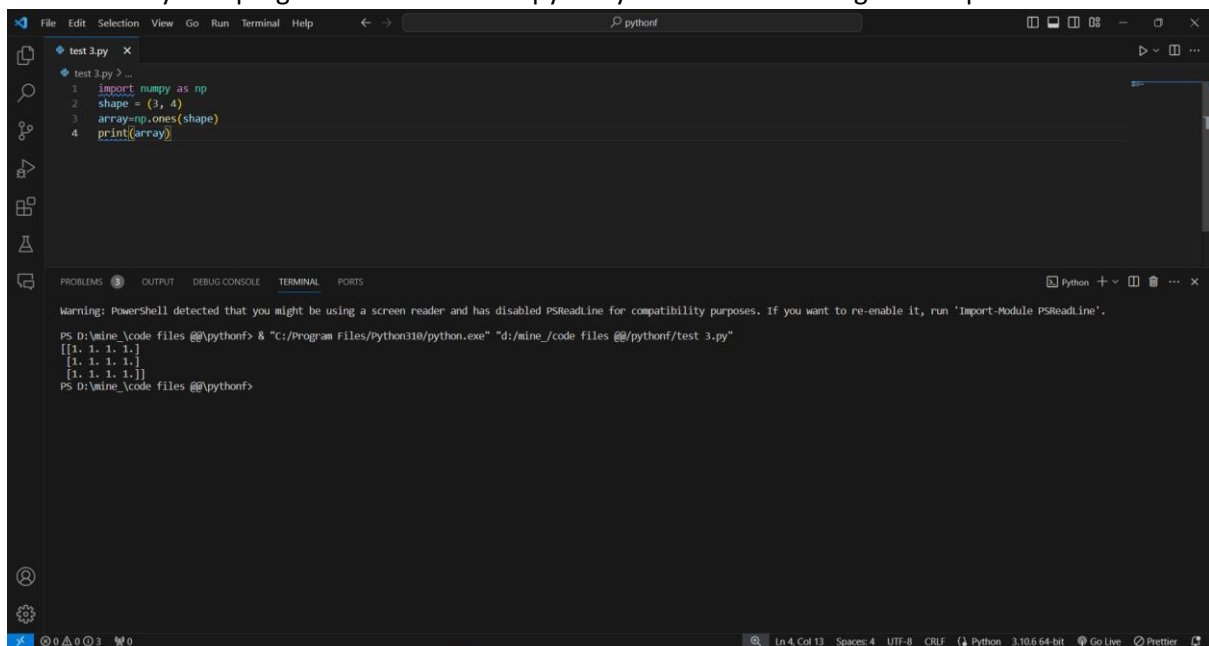
The screenshot shows a VS Code editor with a file named `test 3.py`. The code in the editor is as follows:

```
1 num1=9
2 num2=11
3 num3=10
4 largest=0
5 if num1 >= num2 and num1 >= num3:
6     largest = num1
7 elif num2 >= num1 and num2 >= num3:
8     largest = num2
9 else:
10    largest=num3
11 print(largest)
```

The terminal output shows the following:

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code files @@\python> & "C:/Program Files/Python310/python.exe" "d:/mine_code files @@/python/test 3.py"
11
PS D:\mine_code files @@\python>
```

11. Write a Python program to create a numpy array filled with ones of given shape.



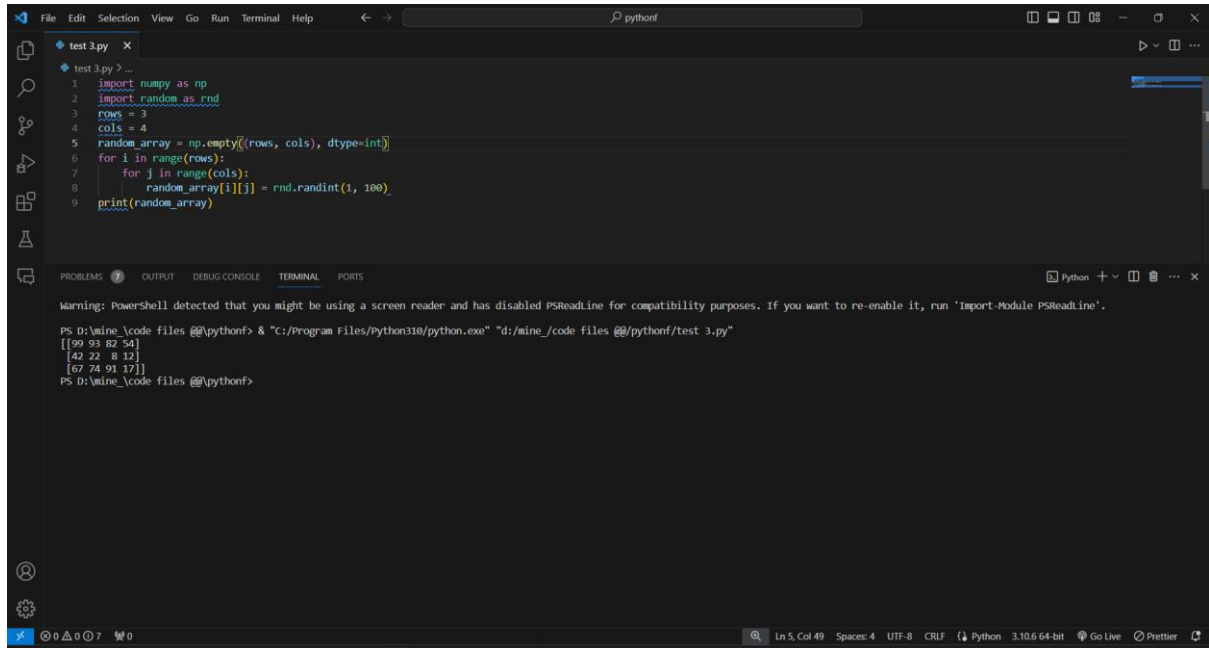
The screenshot shows a VS Code editor with a file named `test 3.py`. The code in the editor is as follows:

```
1 import numpy as np
2 shape = (3, 4)
3 array=np.ones(shape)
4 print(array)
```

The terminal output shows the following:

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code files @@\python> & "C:/Program Files/Python310/python.exe" "d:/mine_code files @@/python/test 3.py"
[[1. 1. 1. 1.]
 [1. 1. 1. 1.]
 [1. 1. 1. 1.]]
PS D:\mine_code files @@\python>
```

12. Write a program to create a 2D numpy array initialized with random integers.



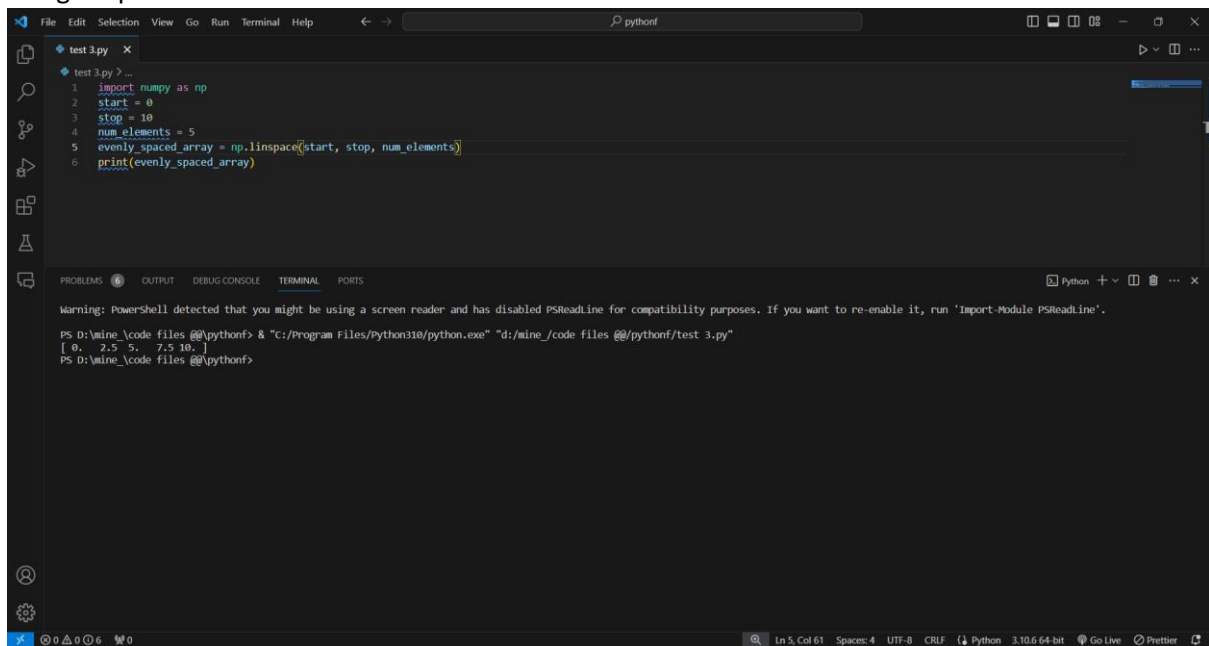
The screenshot shows a VS Code editor with a file named `test 3.py`. The code in the editor is as follows:

```
1 import numpy as np
2 import random as rnd
3 rows = 3
4 cols = 4
5 random_array = np.empty((rows, cols), dtype=int)
6 for i in range(rows):
7     for j in range(cols):
8         random_array[i][j] = rnd.randint(1, 100)
9 print(random_array)
```

The terminal output shows the execution of the script, displaying a 3x4 array of random integers:

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code files @@\pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine_code files @@/pythonf/test 3.py"
[[99 93 82 54]
 [42 22  8 12]
 [67 74 91 12]]
PS D:\mine_code files @@\pythonf>
```

13. Write a Python program to generate an array of evenly spaced numbers over a specified range using `linspace`.



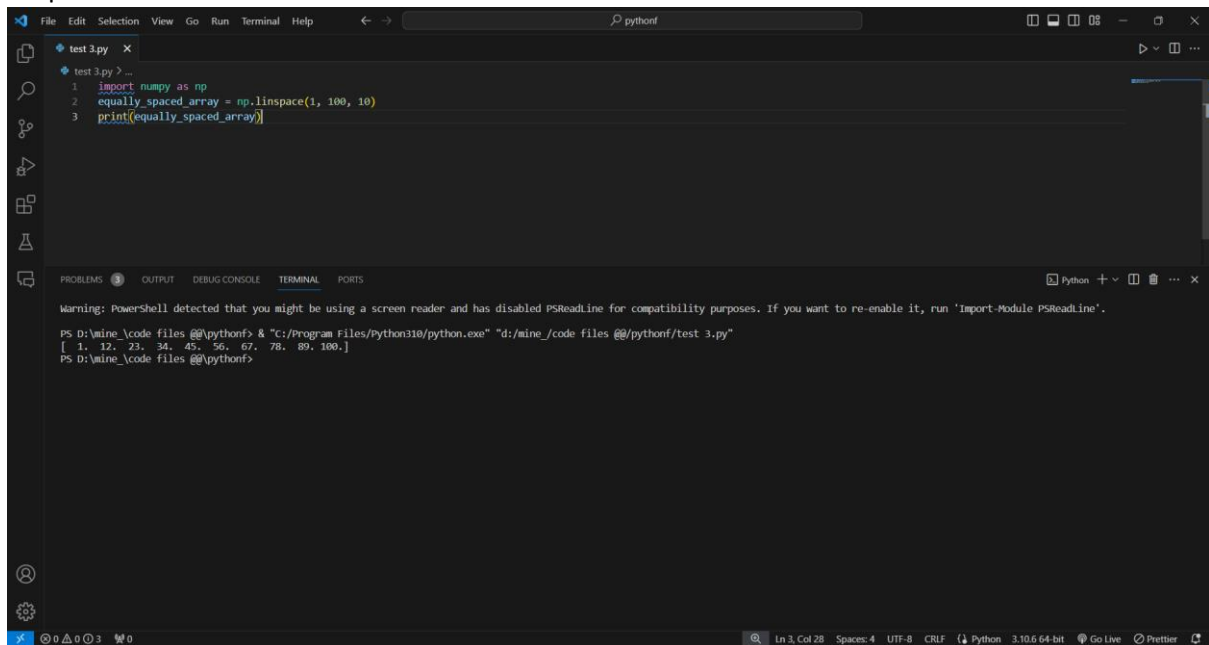
The screenshot shows a VS Code editor with a file named `test 3.py`. The code in the editor is as follows:

```
1 import numpy as np
2 start = 0
3 stop = 10
4 num_elements = 5
5 evenly_spaced_array = np.linspace(start, stop, num_elements)
6 print(evenly_spaced_array)
```

The terminal output shows the execution of the script, displaying an array of 5 evenly spaced numbers from 0 to 10:

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code files @@\pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine_code files @@/pythonf/test 3.py"
[ 0.  2.5  5.  7.5 10.]
PS D:\mine_code files @@\pythonf>
```

14. Write a program to generate an array of 10 equally spaced values between 1 and 100 using linspace.



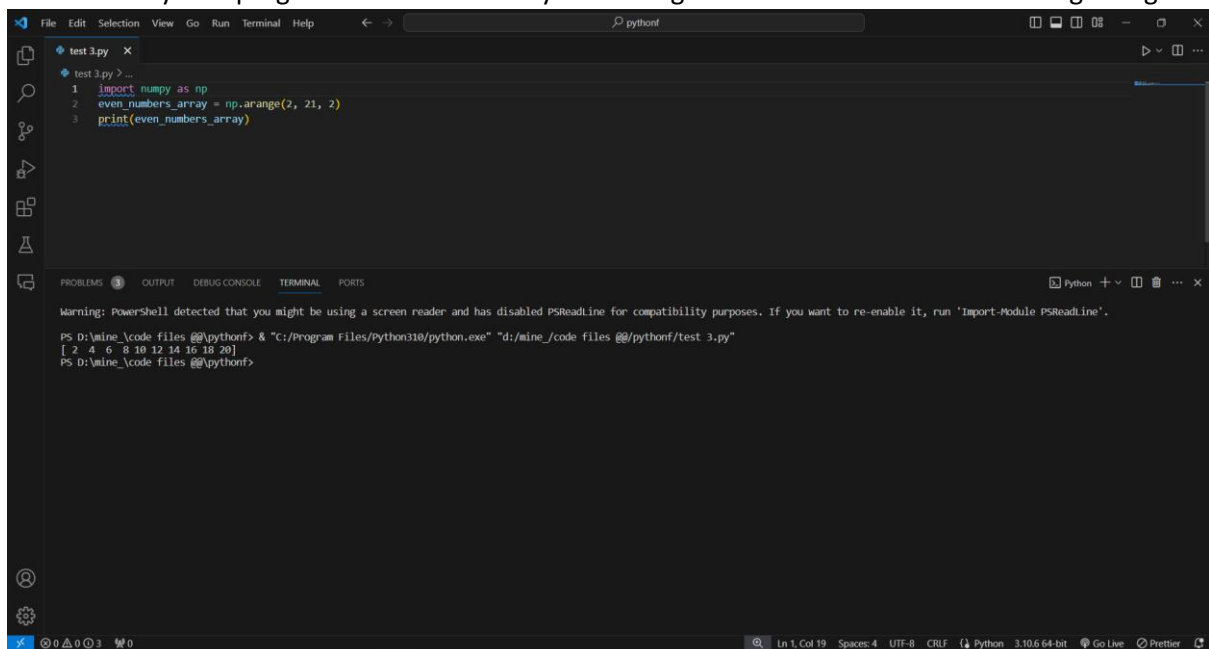
The screenshot shows a Visual Studio Code editor window with a file named 'test 3.py'. The code in the editor is as follows:

```
1 import numpy as np
2 equally_spaced_array = np.linspace(1, 100, 10)
3 print(equally_spaced_array)
```

The bottom panel of the editor shows the 'TERMINAL' output. It contains a warning message from PowerShell and the execution of the Python script, which produces the following output:

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code_files\@pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine_code_files\@pythonf/test 3.py"
[ 1. 12. 23. 34. 45. 56. 67. 78. 89. 100.]
PS D:\mine_code_files\@pythonf>
```

15. Write a Python program to create an array containing even numbers from 2 to 20 using arange.



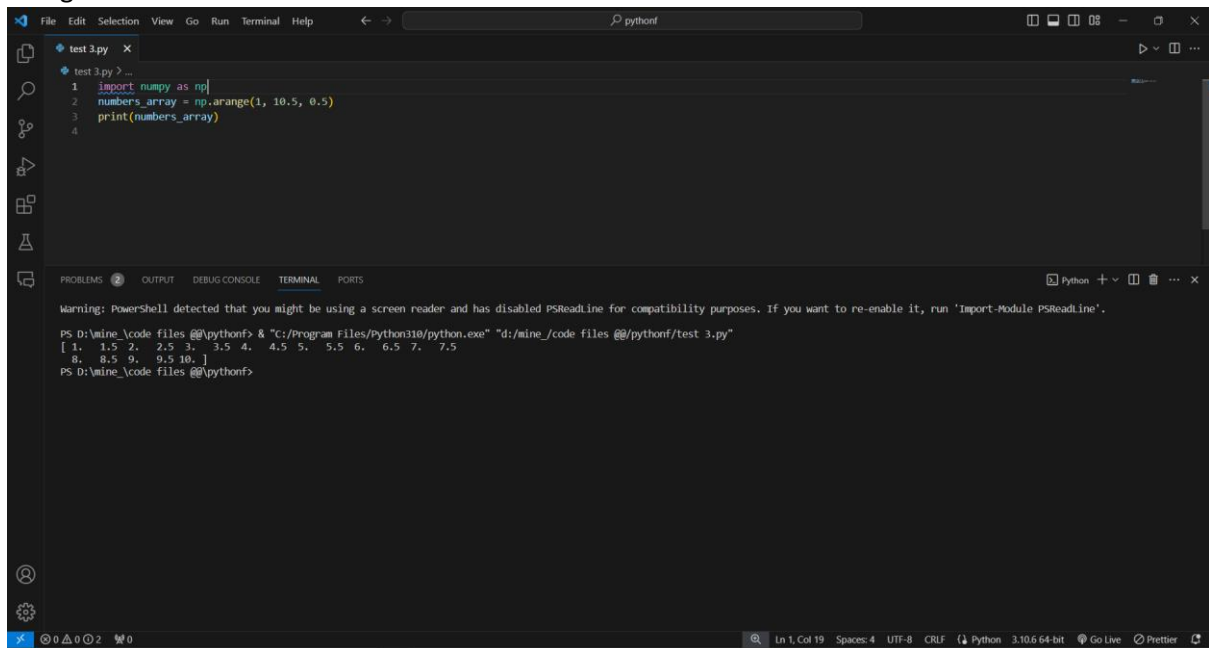
The screenshot shows a Visual Studio Code editor window with a file named 'test 3.py'. The code in the editor is as follows:

```
1 import numpy as np
2 even_numbers_array = np.arange(2, 21, 2)
3 print(even_numbers_array)
```

The bottom panel of the editor shows the 'TERMINAL' output. It contains a warning message from PowerShell and the execution of the Python script, which produces the following output:

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.
PS D:\mine_code_files\@pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine_code_files\@pythonf/test 3.py"
[ 2  4  6  8 10 12 14 16 18 20]
PS D:\mine_code_files\@pythonf>
```

16. Write a program to create an array containing numbers from 1 to 10 with a step size of 0.5 using `arange`.



The image shows a Visual Studio Code editor window with a Python file named `test 3.py`. The code in the file is as follows:

```
1 import numpy as np
2 numbers_array = np.arange(1, 10.5, 0.5)
3 print(numbers_array)
4
```

The terminal output shows the execution of the script, displaying the resulting array:

```
Warning: PowerShell detected that you might be using a screen reader and has disabled PSReadline for compatibility purposes. If you want to re-enable it, run 'Import-Module PSReadline'.

PS D:\mine\_code files @@\pythonf> & "C:/Program Files/Python310/python.exe" "d:/mine/_code files @@\pythonf/test 3.py"
[ 1.  1.5  2.  2.5  3.  3.5  4.  4.5  5.  5.5  6.  6.5  7.  7.5
 8.  8.5  9.  9.5 10.]
PS D:\mine\_code files @@\pythonf>
```

The status bar at the bottom indicates the current line and column (Ln 1, Col 19), the file encoding (UTF-8), the line ending (CRLF), the Python version (3.10.6 64-bit), and the active extensions (Go Live, Prettier).