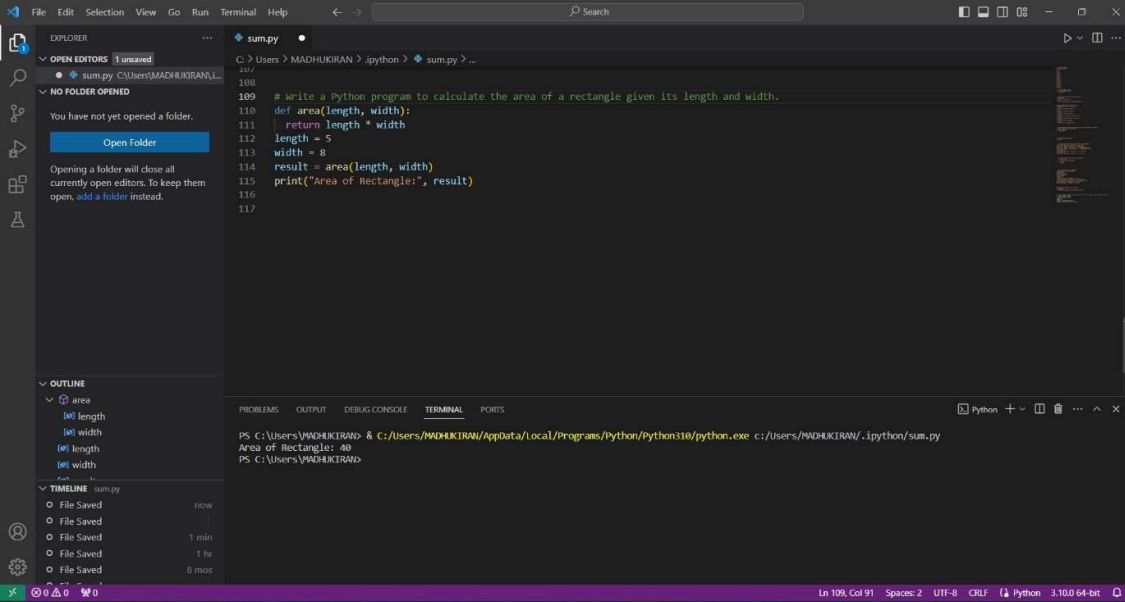


ASSIGNMENT-1

1)



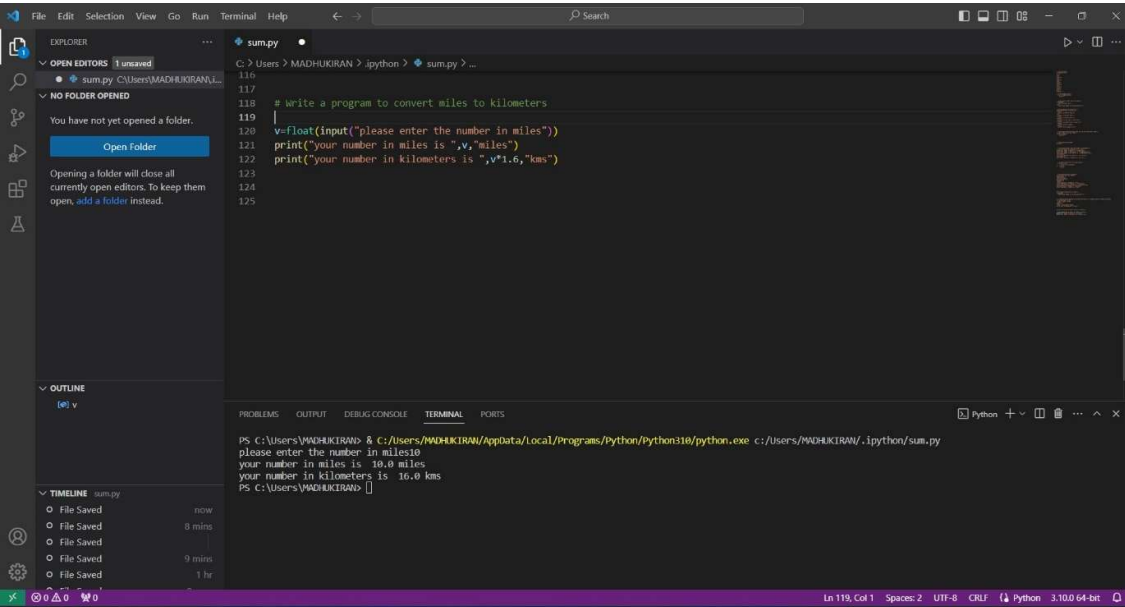
The screenshot shows the Visual Studio Code editor with a Python file named `sum.py`. The code defines a function `area` that calculates the area of a rectangle given its length and width. The function is called with `length = 5` and `width = 8`, and the result is printed. The terminal output shows the command `python sum.py` and the output `Area of Rectangle: 40`.

```
100 # Write a Python program to calculate the area of a rectangle given its length and width.
110 def area(length, width):
111     return length * width
112     length = 5
113     width = 8
114     result = area(length, width)
115     print("Area of Rectangle:", result)
116
117
```

Terminal Output:

```
PS C:\Users\MADHUKIRAN> & C:/Users/MADHUKIRAN/AppData/Local/Programs/Python/Python310/python.exe c:/Users/MADHUKIRAN/.ipython/sum.py
Area of Rectangle: 40
PS C:\Users\MADHUKIRAN>
```

2)



The screenshot shows the Visual Studio Code editor with a Python file named `sum.py`. The code prompts the user to enter a number in miles, converts it to kilometers, and prints the result. The terminal output shows the command `python sum.py` and the user input `10`, resulting in the output `your number in miles is 10.0 miles` and `your number in kilometers is 16.0 kms`.

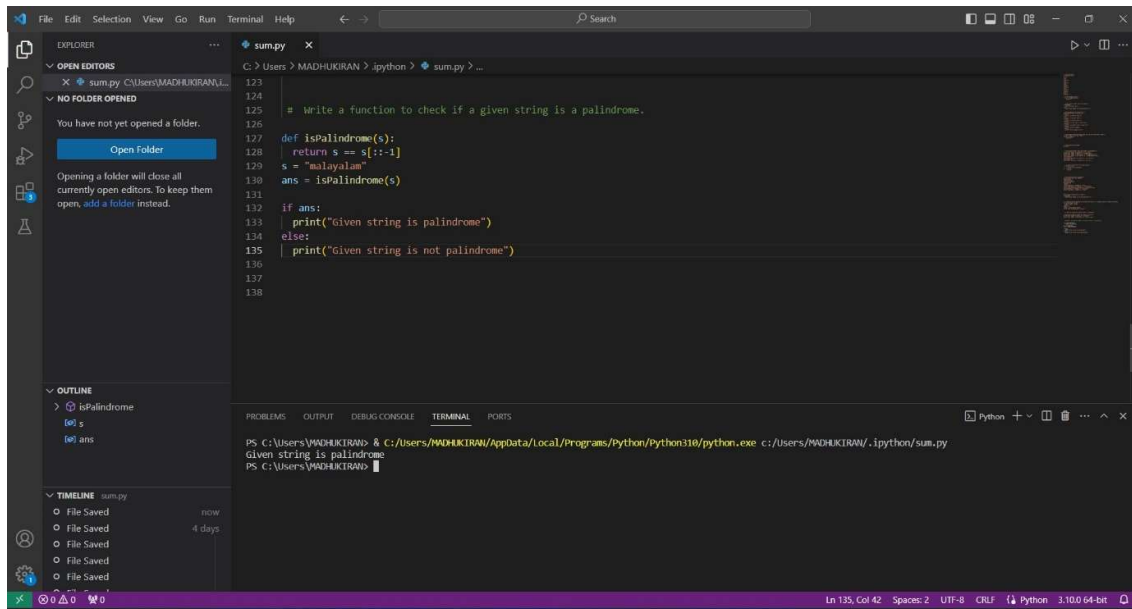
```
116
117
118 # write a program to convert miles to kilometers
119
120 v=float(input("please enter the number in miles"))
121 print("your number in miles is ",v,"miles")
122 print("your number in kilometers is ",v*1.6,"kms")
123
124
125
```

Terminal Output:

```
PS C:\Users\MADHUKIRAN> & C:/Users/MADHUKIRAN/AppData/Local/Programs/Python/Python310/python.exe c:/Users/MADHUKIRAN/.ipython/sum.py
please enter the number in miles10
your number in miles is 10.0 miles
your number in kilometers is 16.0 kms
PS C:\Users\MADHUKIRAN>
```

ASSIGNMENT-1

3)



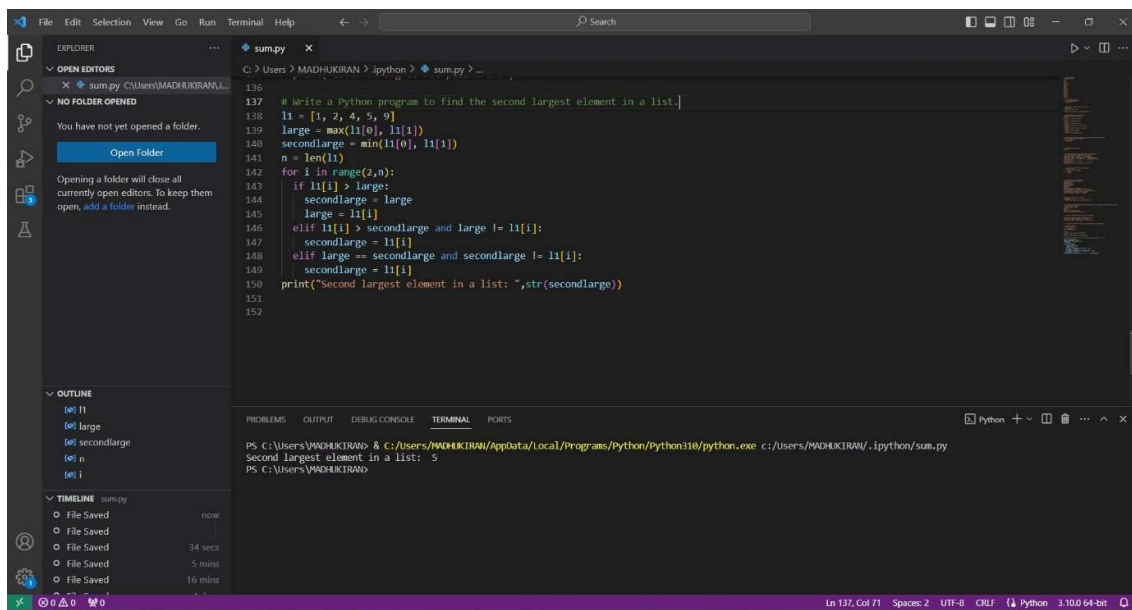
The screenshot shows the Visual Studio Code interface with a Python file named `sum.py` open. The code defines a function `isPalindrome(s)` that checks if a string is a palindrome. The string `s` is set to `"malayalam"`. The function prints `"Given string is palindrome"` if the string is a palindrome, and `"Given string is not palindrome"` otherwise. The terminal output shows the command `python c:/Users/MADHUKIRAN/.ipython/sum.py` and the output `Given string is palindrome`.

```
123
124
125 # Write a function to check if a given string is a palindrome.
126
127 def isPalindrome(s):
128     return s == s[::-1]
129
130 s = "malayalam"
131 ans = isPalindrome(s)
132
133 if ans:
134     print("Given string is palindrome")
135 else:
136     print("Given string is not palindrome")
137
138
```

Terminal Output:

```
PS C:\Users\MADHUKIRAN> & C:\Users\MADHUKIRAN\AppData\Local\Programs\Python\Python310\python.exe c:/Users/MADHUKIRAN/.ipython/sum.py
Given string is palindrome
PS C:\Users\MADHUKIRAN>
```

4)



The screenshot shows the Visual Studio Code interface with a Python file named `sum.py` open. The code defines a function `secondLargest(l1)` that finds the second largest element in a list. The list `l1` is set to `[1, 2, 4, 5, 9]`. The function prints `"Second largest element in a list: 5"`. The terminal output shows the command `python c:/Users/MADHUKIRAN/.ipython/sum.py` and the output `Second largest element in a list: 5`.

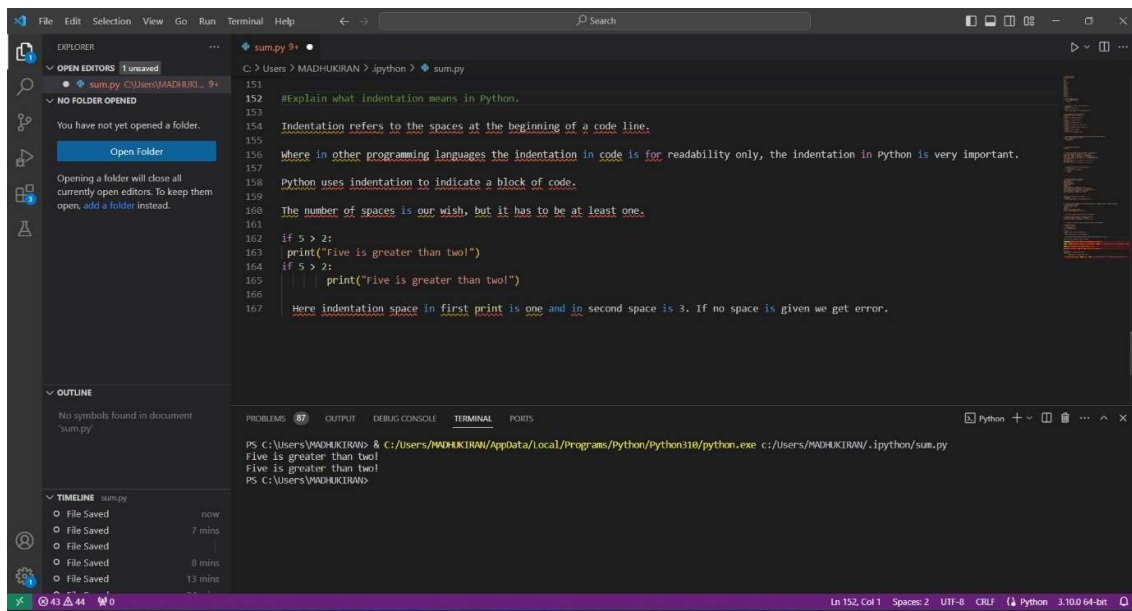
```
136
137 # Write a Python program to find the second largest element in a list.
138 l1 = [1, 2, 4, 5, 9]
139 large = max(l1[0], l1[1])
140 secondlarge = min(l1[0], l1[1])
141 n = len(l1)
142 for i in range(2,n):
143     if l1[i] > large:
144         secondlarge = large
145         large = l1[i]
146     elif l1[i] > secondlarge and large != l1[i]:
147         secondlarge = l1[i]
148     elif large == secondlarge and secondlarge != l1[i]:
149         secondlarge = l1[i]
150 print("Second largest element in a list: ",str(secondlarge))
151
152
```

Terminal Output:

```
PS C:\Users\MADHUKIRAN> & C:\Users\MADHUKIRAN\AppData\Local\Programs\Python\Python310\python.exe c:/Users/MADHUKIRAN/.ipython/sum.py
Second largest element in a list: 5
PS C:\Users\MADHUKIRAN>
```

ASSIGNMENT-1

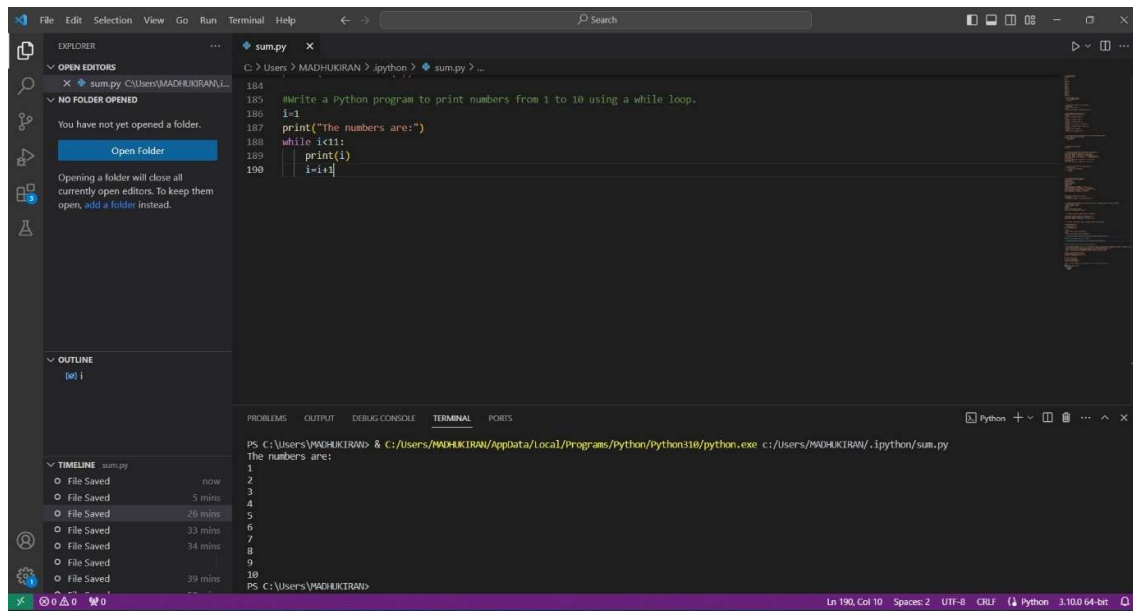
5)



```
File Edit Selection View Go Run Terminal Help
sum.py 9+
C:\Users\MADHUKIRAN>.ipynb> sum.py
151
152 #Explain what indentation means in Python.
153
154 Indentation refers to the spaces at the beginning of a code line.
155
156 Where in other programming languages the indentation in code is for readability only, the indentation in Python is very important.
157
158 Python uses indentation to indicate a block of code.
159
160 The number of spaces is our wish, but it has to be at least one.
161
162 if 5 > 2:
163     print("Five is greater than two!")
164 if 5 > 2:
165     print("Five is greater than two!")
166
167 Here indentation space in first print is one and in second space is 3. If no space is given we get error.
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```

ASSIGNMENT-1

7)



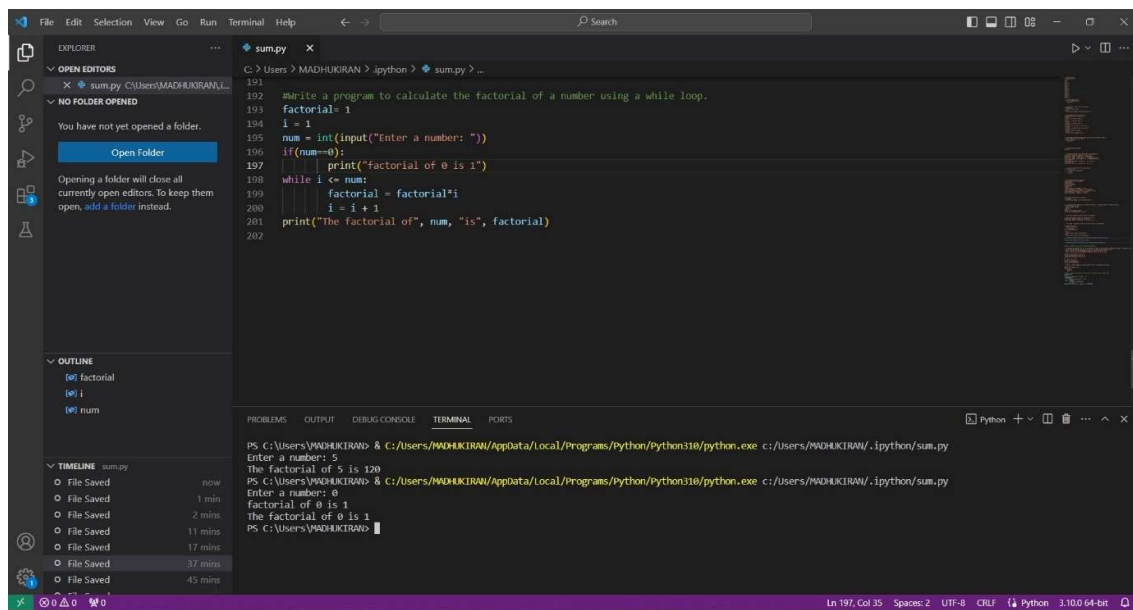
The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows a file named `sum.py` in the folder `C:\Users\MADHUKIRAN\I...>`. The Editor panel displays the following Python code:

```
184
185 #Write a Python program to print numbers from 1 to 10 using a while loop.
186 i=1
187 print("The numbers are:")
188 while i<11:
189     print(i)
190     i=i+1
```

The Output panel at the bottom shows the execution of the program, displaying the numbers 1 through 10.

```
PS C:\Users\MADHUKIRAN> & C:/Users/MADHUKIRAN/Appdata/Local/Programs/Python/Python310/python.exe c:/Users/MADHUKIRAN/.ipython/sum.py
The numbers are:
1
2
3
4
5
6
7
8
9
10
PS C:\Users\MADHUKIRAN>
```

8)



The screenshot shows the Visual Studio Code interface. The Explorer panel on the left shows a file named `sum.py` in the folder `C:\Users\MADHUKIRAN\I...>`. The Editor panel displays the following Python code:

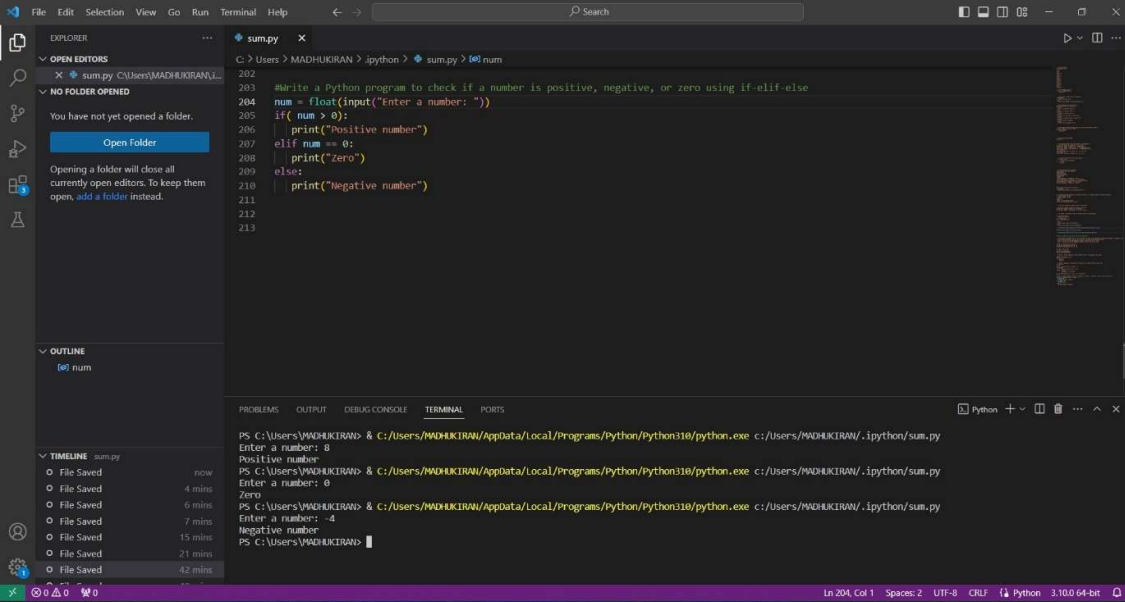
```
191
192 #Write a program to calculate the factorial of a number using a while loop.
193 factorial= 1
194 i = 1
195 num = int(input("Enter a number: "))
196 if(num==0):
197     print("factorial of 0 is 1")
198 while i <= num:
199     factorial = factorial*i
200     i = i + 1
201 print("The factorial of", num, "is", factorial)
202
```

The Output panel at the bottom shows the execution of the program, displaying the factorial of 5 (120) and the factorial of 0 (1).

```
PS C:\Users\MADHUKIRAN> & C:/Users/MADHUKIRAN/Appdata/Local/Programs/Python/Python310/python.exe c:/Users/MADHUKIRAN/.ipython/sum.py
Enter a number: 5
The factorial of 5 is 120
PS C:\Users\MADHUKIRAN> & C:/Users/MADHUKIRAN/Appdata/Local/Programs/Python/Python310/python.exe c:/Users/MADHUKIRAN/.ipython/sum.py
Enter a number: 0
The factorial of 0 is 1
PS C:\Users\MADHUKIRAN>
```

ASSIGNMENT-1

9)



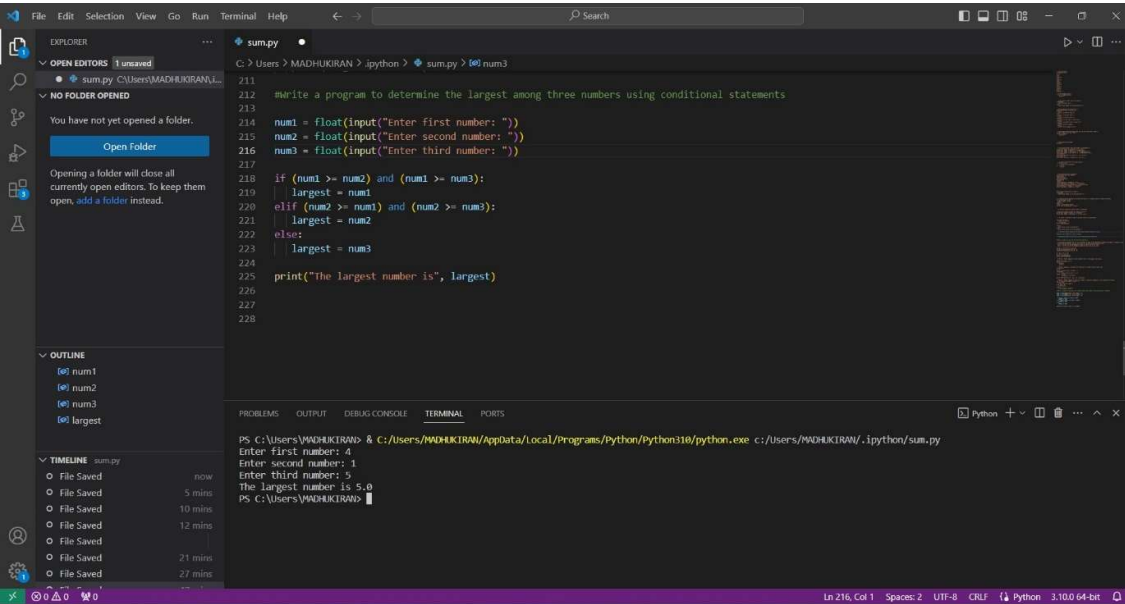
The screenshot shows the Visual Studio Code editor with a file named `sum.py` open. The code is a Python program that checks if a number is positive, negative, or zero using `if-elif-else` statements. The terminal shows the execution of the program, which prompts the user to enter a number. The user enters 0, and the program outputs "Zero".

```
202
203
204 num = float(input("Enter a number: "))
205 if (num > 0):
206     print("Positive number")
207 elif num == 0:
208     print("Zero")
209 else:
210     print("Negative number")
211
212
213
```

Terminal Output:

```
PS C:\Users\WADHUKIRAN> .\python sum.py
Enter a number: 0
Positive number
Enter a number: 0
Zero
PS C:\Users\WADHUKIRAN> .\python sum.py
Enter a number: -4
Negative number
PS C:\Users\WADHUKIRAN>
```

10)



The screenshot shows the Visual Studio Code editor with a file named `sum.py` open. The code is a Python program that determines the largest among three numbers using conditional statements. The terminal shows the execution of the program, which prompts the user to enter three numbers. The user enters 4, 1, and 5, and the program outputs "The largest number is 5.0".

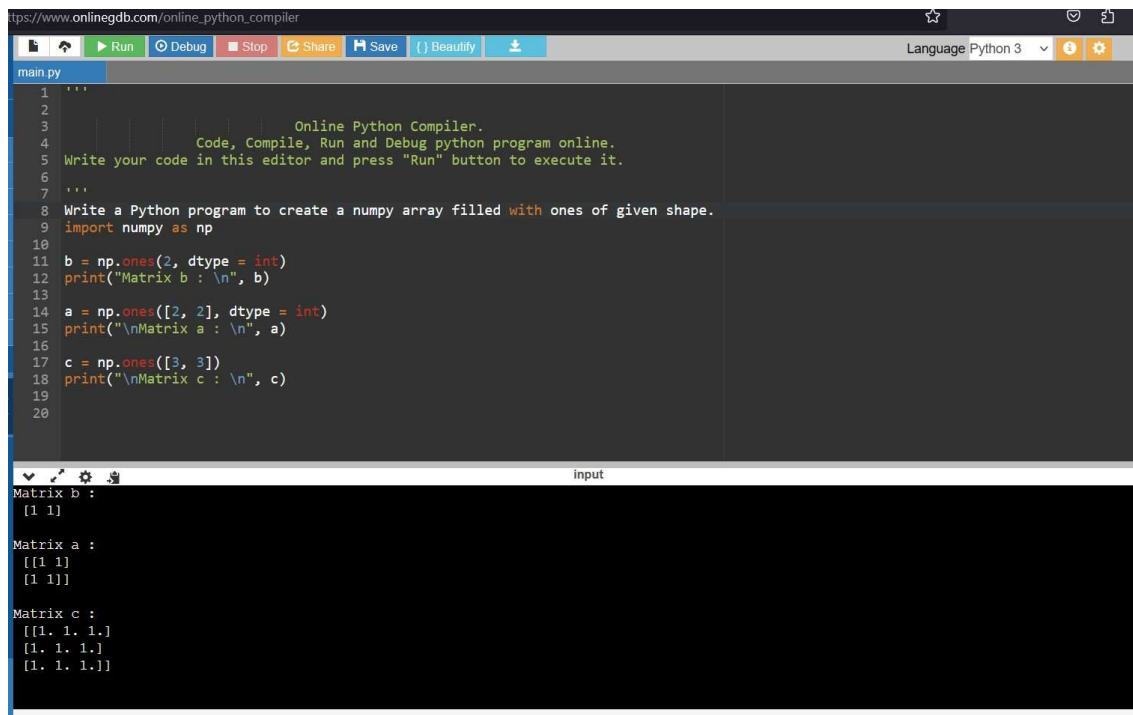
```
211
212 write a program to determine the largest among three numbers using conditional statements
213
214 num1 = float(input("Enter first number: "))
215 num2 = float(input("Enter second number: "))
216 num3 = float(input("Enter third number: "))
217
218 if (num1 >= num2) and (num1 >= num3):
219     largest = num1
220 elif (num2 >= num1) and (num2 >= num3):
221     largest = num2
222 else:
223     largest = num3
224
225 print("The largest number is", largest)
226
227
228
```

Terminal Output:

```
PS C:\Users\WADHUKIRAN> .\python sum.py
Enter first number: 4
Enter second number: 1
Enter third number: 5
The largest number is 5.0
PS C:\Users\WADHUKIRAN>
```

ASSIGNMENT-1

11)



```
1 '''
2
3         Online Python Compiler.
4         Code, Compile, Run and Debug python program online.
5 Write your code in this editor and press "Run" button to execute it.
6 '''
7
8 Write a Python program to create a numpy array filled with ones of given shape.
9 import numpy as np
10
11 b = np.ones(2, dtype = int)
12 print("Matrix b : \n", b)
13
14 a = np.ones([2, 2], dtype = int)
15 print("\nMatrix a : \n", a)
16
17 c = np.ones([3, 3])
18 print("\nMatrix c : \n", c)
19
20
```

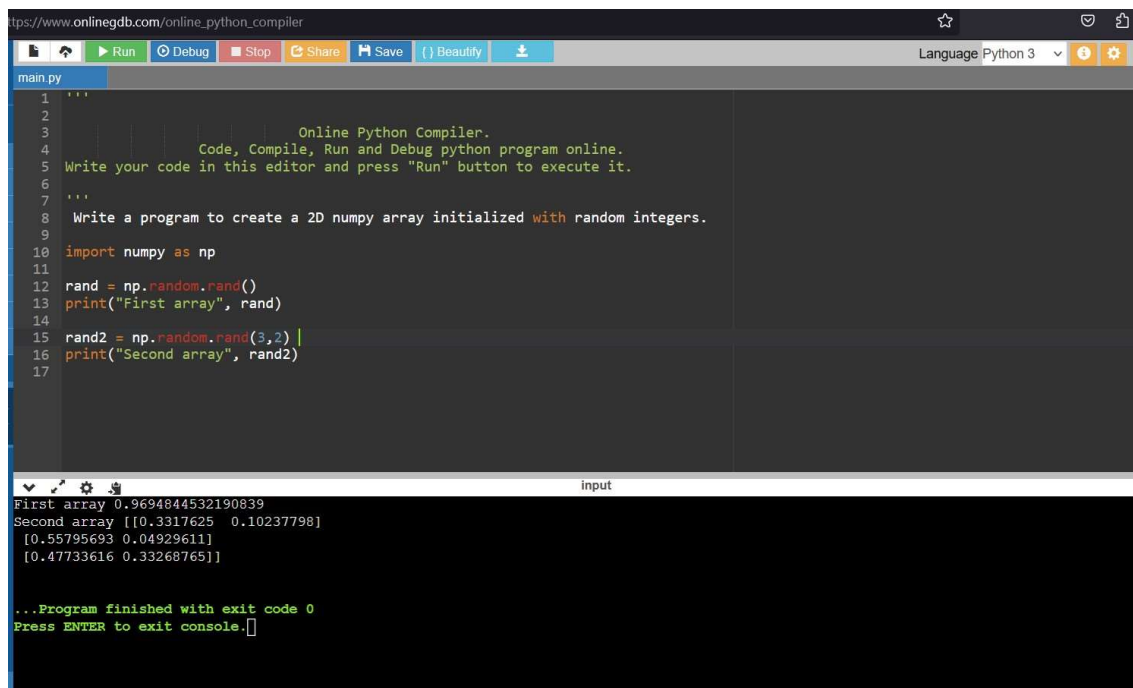
input

```
Matrix b :
[1 1]

Matrix a :
[[1 1]
 [1 1]]

Matrix c :
[[1. 1. 1.]
 [1. 1. 1.]
 [1. 1. 1.]]
```

12)



```
1 '''
2
3         Online Python Compiler.
4         Code, Compile, Run and Debug python program online.
5 Write your code in this editor and press "Run" button to execute it.
6 '''
7
8 Write a program to create a 2D numpy array initialized with random integers.
9
10 import numpy as np
11
12 rand = np.random.rand()
13 print("First array", rand)
14
15 rand2 = np.random.rand(3,2)
16 print("Second array", rand2)
17
```

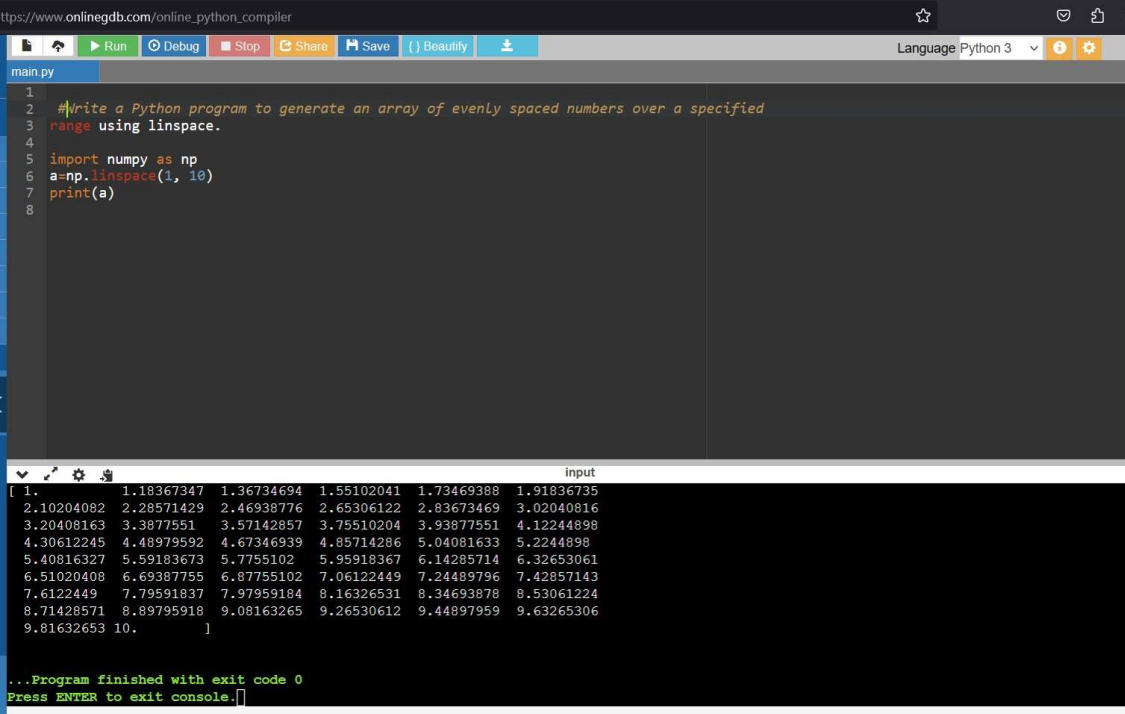
input

```
First array 0.9694844532190839
Second array [[0.3317625  0.10237798]
 [0.55795693 0.04929611]
 [0.47733616 0.33268765]]

...Program finished with exit code 0
Press ENTER to exit console.[]
```

ASSIGNMENT-1

13)



The screenshot shows an online Python compiler interface. The code in the editor is as follows:

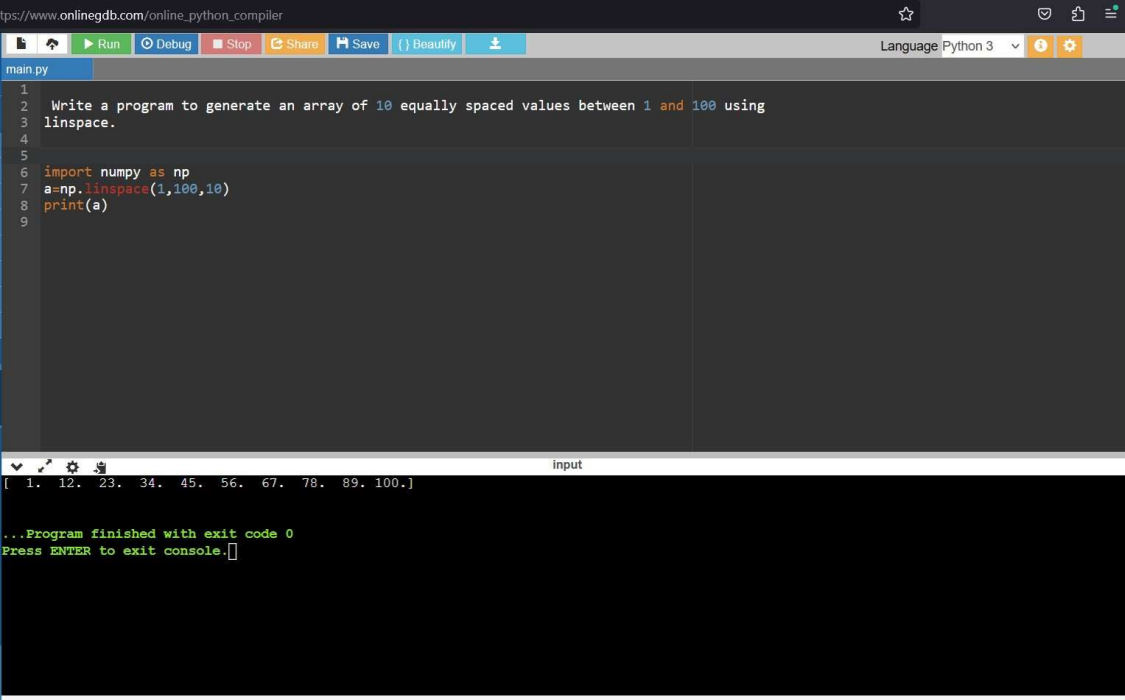
```
1
2 #Write a Python program to generate an array of evenly spaced numbers over a specified
3 range using linspace.
4
5 import numpy as np
6 a=np.linspace(1, 10)
7 print(a)
8
```

The output of the program is displayed in the console:

```
input
[ 1.  2.  3.  4.  5.  6.  7.  8.  9. 10.]
```

Below the output, the console shows the message: "...Program finished with exit code 0 Press ENTER to exit console."

14)



The screenshot shows an online Python compiler interface. The code in the editor is as follows:

```
1
2 Write a program to generate an array of 10 equally spaced values between 1 and 100 using
3 linspace.
4
5
6 import numpy as np
7 a=np.linspace(1,100,10)
8 print(a)
9
```

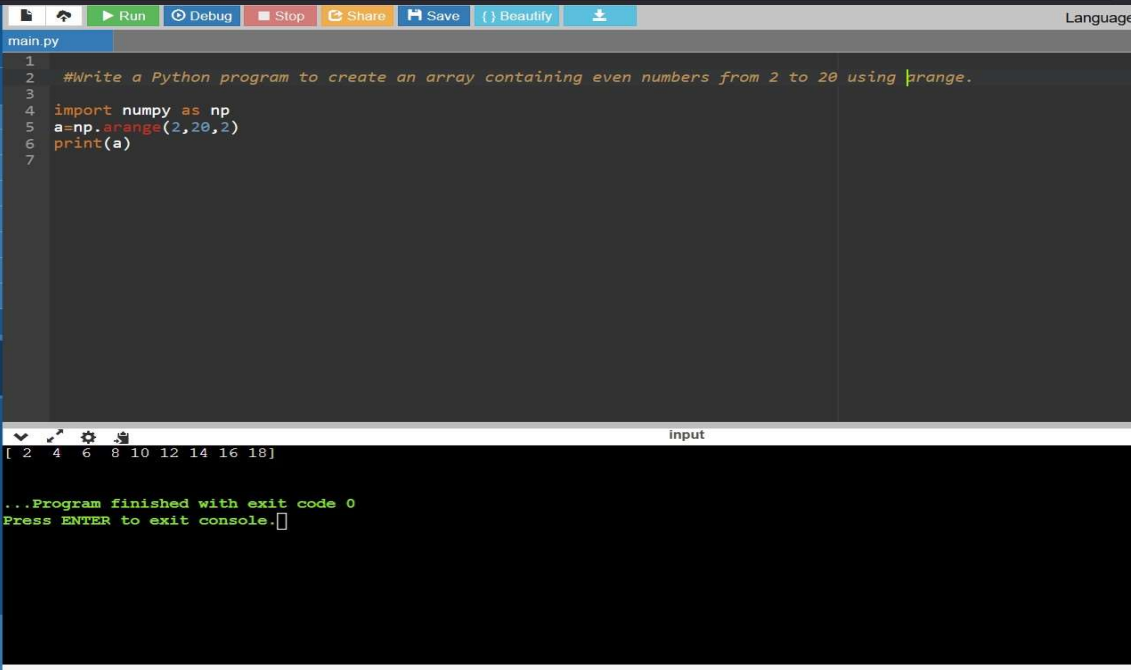
The output of the program is displayed in the console:

```
input
[ 1. 12. 23. 34. 45. 56. 67. 78. 89. 100.]
```

Below the output, the console shows the message: "...Program finished with exit code 0 Press ENTER to exit console."

ASSIGNMENT-1

15)

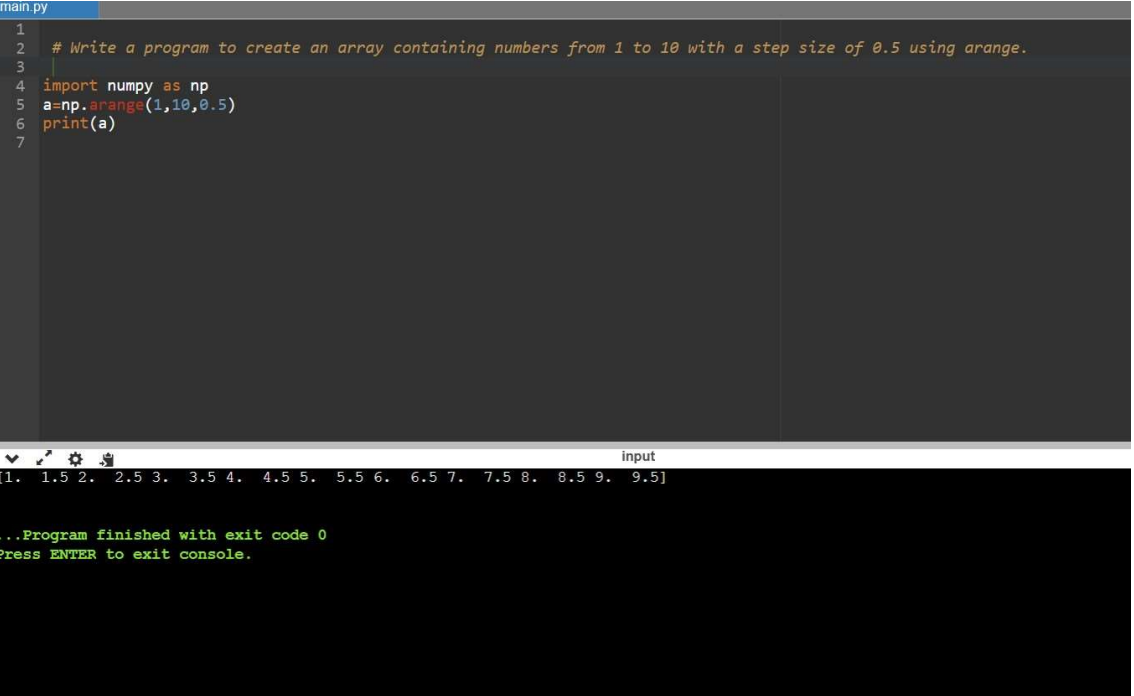


The screenshot shows a Python IDE with a file named 'main.py'. The code in the editor is as follows:

```
1
2 #Write a Python program to create an array containing even numbers from 2 to 20 using |range.
3
4 import numpy as np
5 a=np.arange(2,20,2)
6 print(a)
7
```

The output console at the bottom shows the array [2 4 6 8 10 12 14 16 18] and a message indicating the program finished with exit code 0.

16)



The screenshot shows a Python IDE with a file named 'main.py'. The code in the editor is as follows:

```
1
2 # Write a program to create an array containing numbers from 1 to 10 with a step size of 0.5 using arange.
3
4 import numpy as np
5 a=np.arange(1,10,0.5)
6 print(a)
7
```

The output console at the bottom shows the array [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] and a message indicating the program finished with exit code 0.