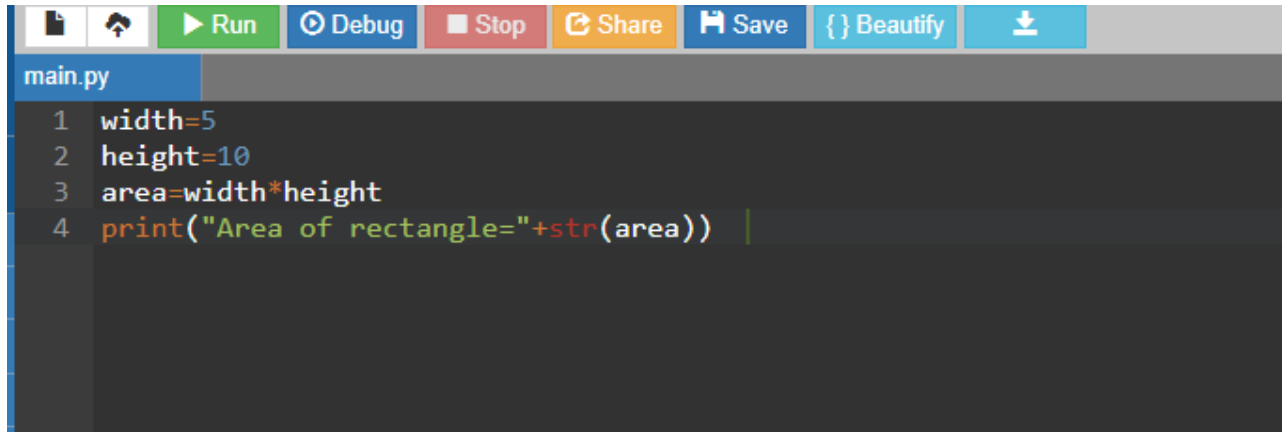


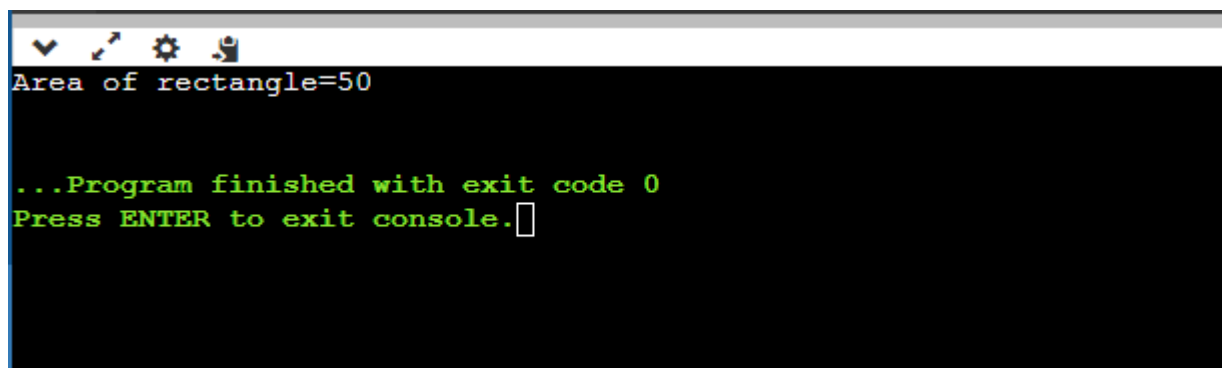
Assessment-1

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

Ans.



```
main.py
1 width=5
2 height=10
3 area=width*height
4 print("Area of rectangle="+str(area))
```

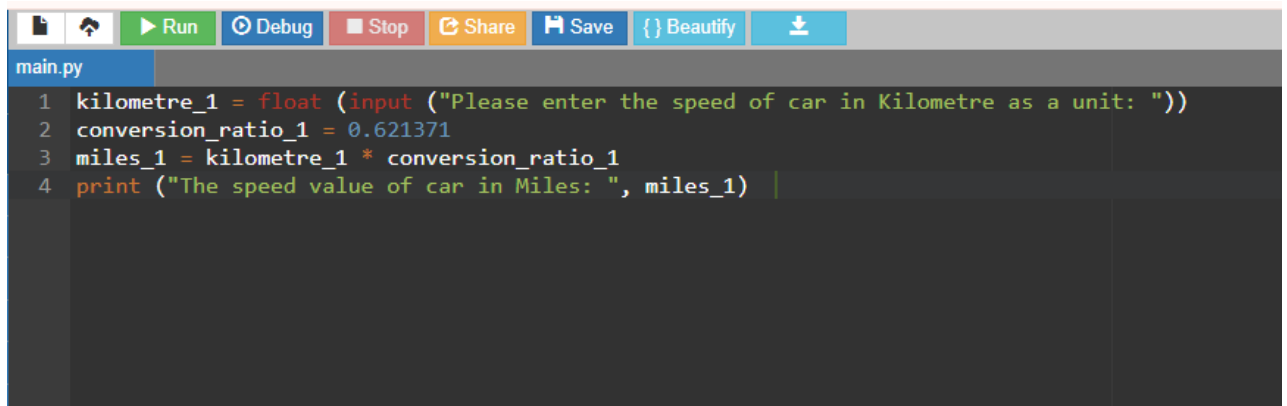


```
Area of rectangle=50

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

2. Write a program to convert miles to kilometers

Ans



```
main.py
1 kilometre_1 = float (input ("Please enter the speed of car in Kilometre as a unit: "))
2 conversion_ratio_1 = 0.621371
3 miles_1 = kilometre_1 * conversion_ratio_1
4 print ("The speed value of car in Miles: ", miles_1)
```

```
input
Please enter the speed of car in Kilometre as a unit: 20
The speed value of car in Miles: 12.42742

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

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

Ans.

```
main.py
1 string=input("Enter a letter:")
2 if(string==string[::-1]):
3     print("The letter is a palindrome")
4 else:
5     print("The letter is not a palindrome")

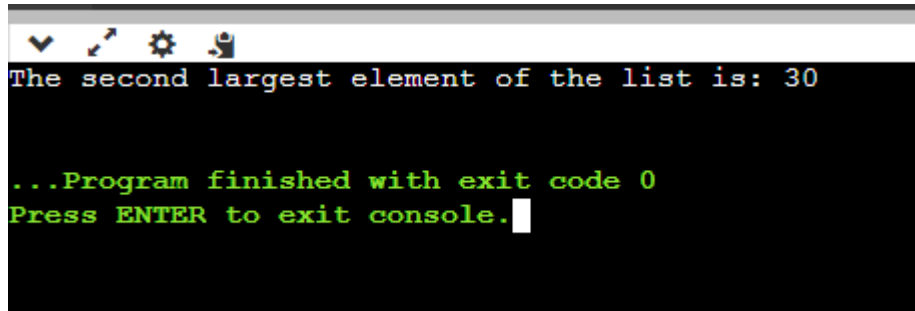
Enter a letter:madam
The letter is a palindrome

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

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

Ans.

```
main.py
1 list_val = [20, 30, 40, 25, 10]
2 list_val.sort()
3 print("The second largest element of the list is:", list_val[-2])
```



```
The second largest element of the list is: 30

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

5.Explain what indentation means in python.

Ans. Indentation is used to define the structure and hierarchy of code. It serves as a way to group blocks of code together. Unlike many other programming languages that use curly braces { } or keywords like begin and end to denote code blocks, Python uses indentation.

Here's what indentation signifies in Python:

Block Structure: Indentation is used to define blocks of code such as loops, conditional statements,function definitions, and class definitions. Each level of indentation represents a nested block.

Readability: Python places a strong emphasis on code readability. By enforcing indentation, Python code tends to be more readable and visually organized.

No Delimiters: In Python, there are no explicit block delimiters like curly braces { }. Instead, indentation is used to determine the start and end of blocks.

Consistency: Since Python requires consistent indentation, it enforces a consistent coding style across projects and among developers. This reduces the likelihood of syntax errors and improves code maintainability.

Whitespace: Python is sensitive to whitespace, so the spaces or tabs used for indentation must be consistent throughout the codebase. Mixing spaces and tabs can lead to indentation errors.

Example to illustrate indentation in Python:

if True:

 print("This line is indented")

if False:

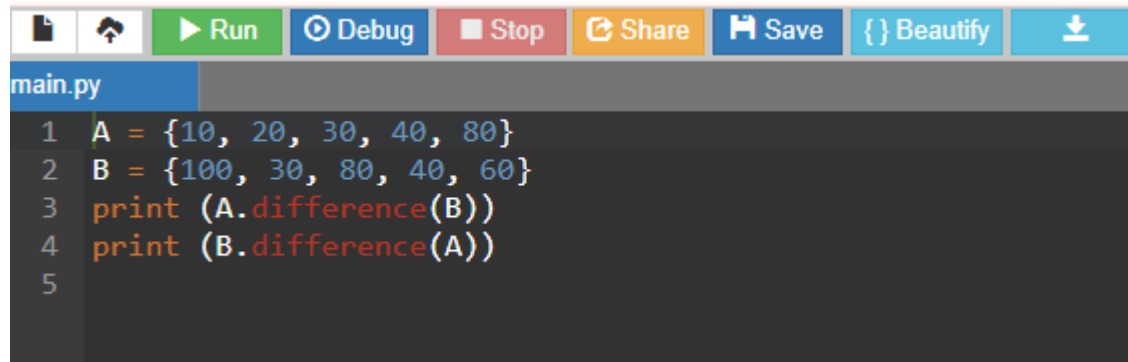
 print("This line is indented further")

 print("Back to the first indentation level")

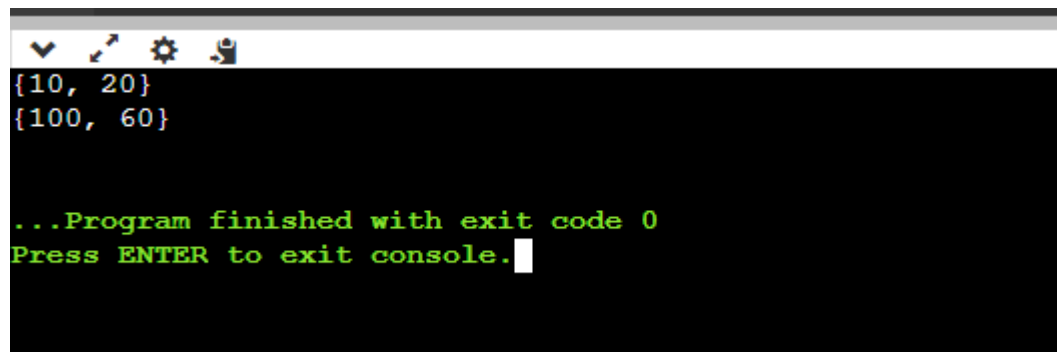
print("This line is not indented")

6.Write a program to perform set difference operation

Ans



```
main.py
1 A = {10, 20, 30, 40, 80}
2 B = {100, 30, 80, 40, 60}
3 print (A.difference(B))
4 print (B.difference(A))
5
```

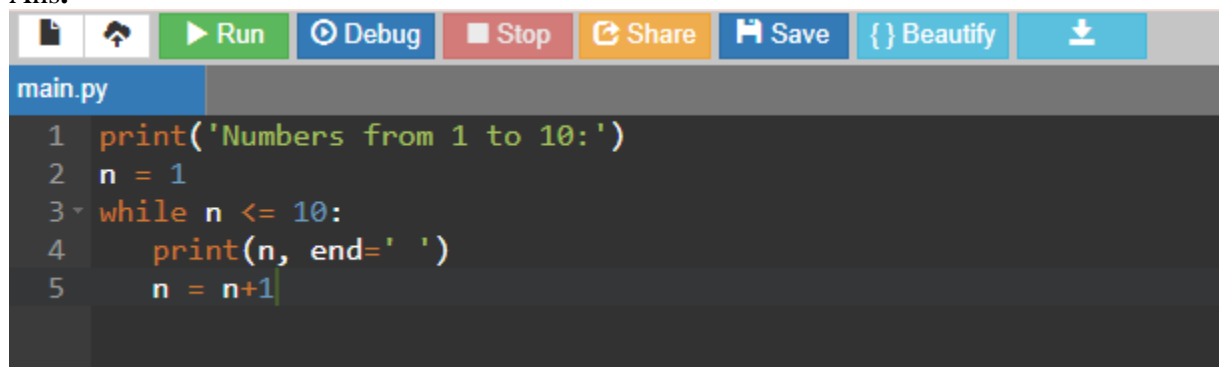


```
{10, 20}
{100, 60}

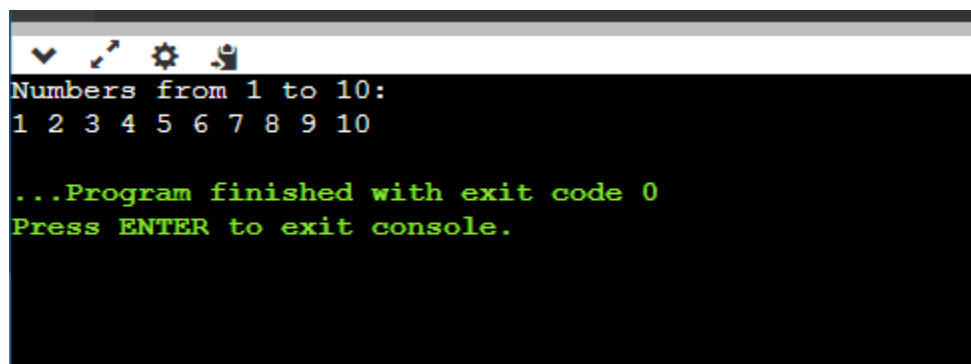
...Program finished with exit code 0
Press ENTER to exit console.
```

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

Ans.



```
main.py
1 print('Numbers from 1 to 10:')
2 n = 1
3 while n <= 10:
4     print(n, end=' ')
5     n = n+1
```

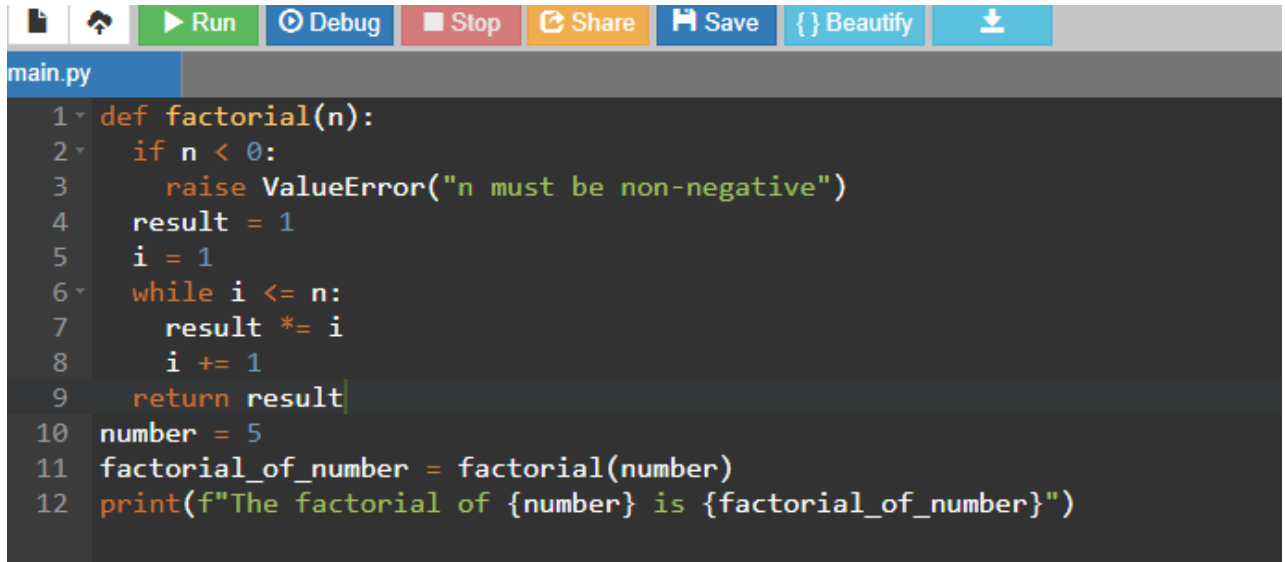


```
Numbers from 1 to 10:
1 2 3 4 5 6 7 8 9 10

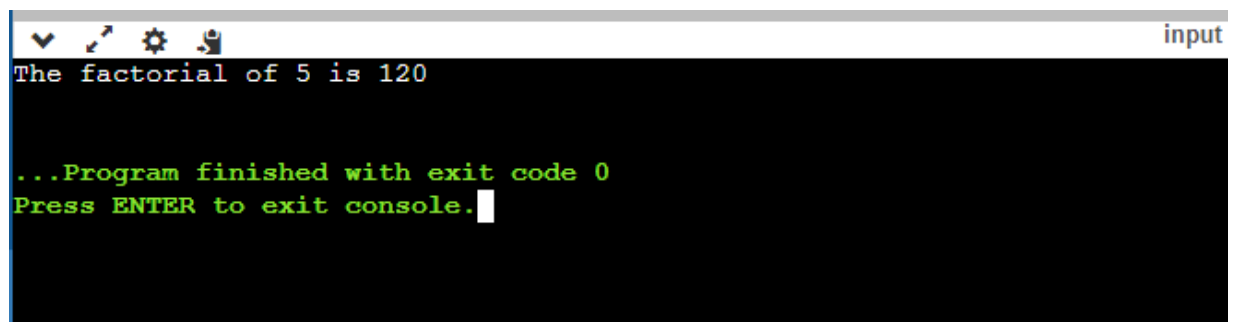
...Program finished with exit code 0
Press ENTER to exit console.
```

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

Ans.



```
main.py
1 def factorial(n):
2     if n < 0:
3         raise ValueError("n must be non-negative")
4     result = 1
5     i = 1
6     while i <= n:
7         result *= i
8         i += 1
9     return result
10 number = 5
11 factorial_of_number = factorial(number)
12 print(f"The factorial of {number} is {factorial_of_number}")
```

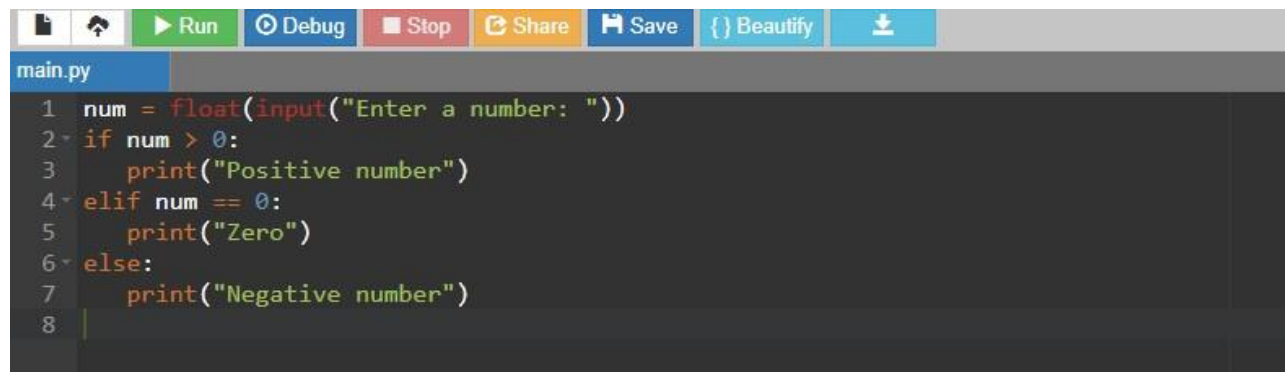


```
input
The factorial of 5 is 120

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

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

Ans.



```
main.py
1 num = float(input("Enter a number: "))
2 if num > 0:
3     print("Positive number")
4 elif num == 0:
5     print("Zero")
6 else:
7     print("Negative number")
8
```

```
Enter a number: 34
Positive number

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

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

Ans.

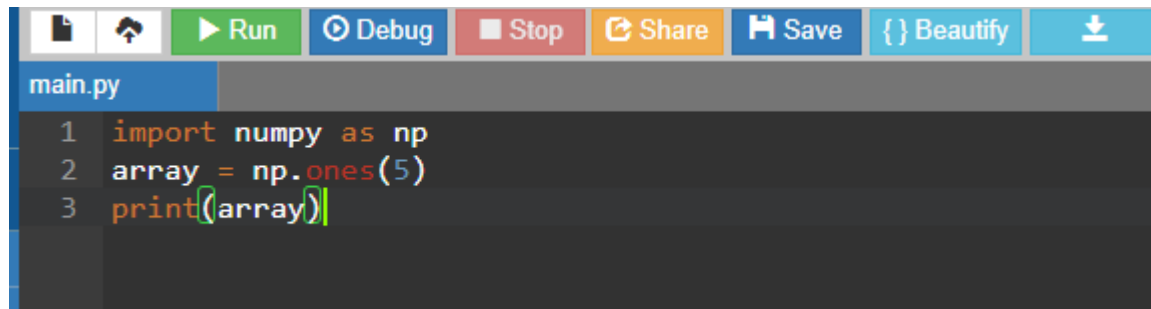
```
main.py
1 num1 = 10
2 num2 = 14
3 num3 = 12
4 if (num1 >= num2) and (num1 >= num3):
5     largest = num1
6 elif (num2 >= num1) and (num2 >= num3):
7     largest = num2
8 else:
9     largest = num3
10 print("The largest number is", largest)
```

```
The largest number is 14

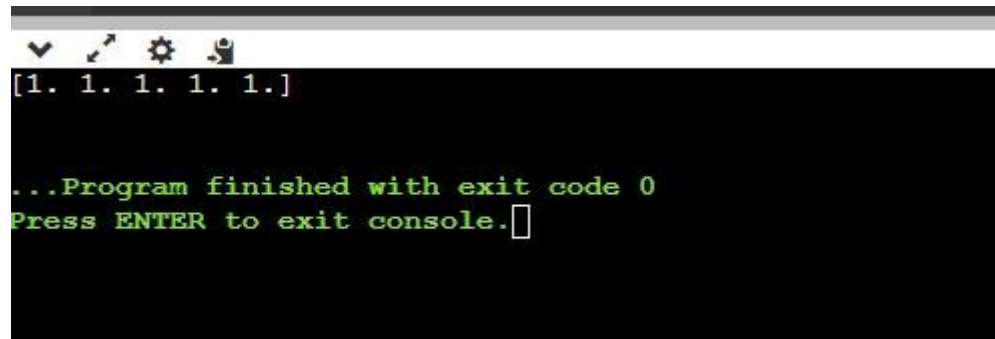
...Program finished with exit code 0
Press ENTER to exit console.
```

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

Ans.



```
main.py
1 import numpy as np
2 array = np.ones(5)
3 print(array)
```

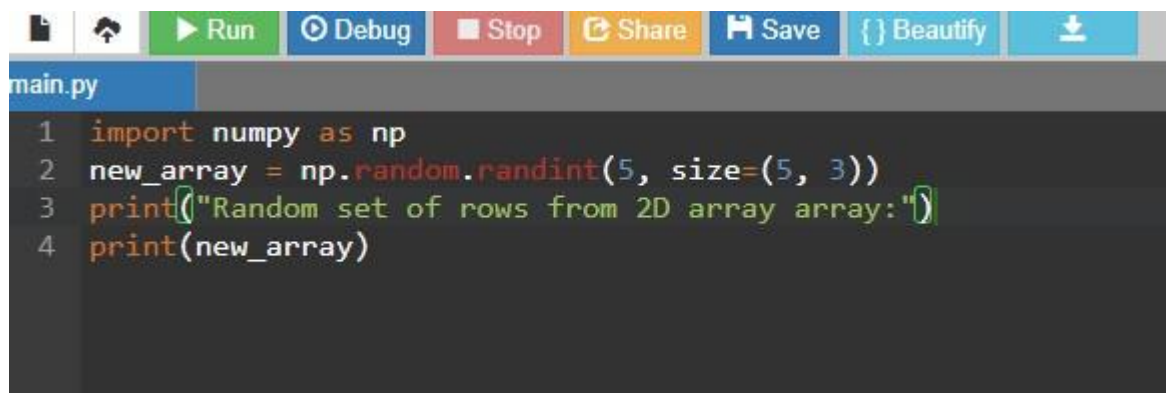


```
[1. 1. 1. 1. 1.]

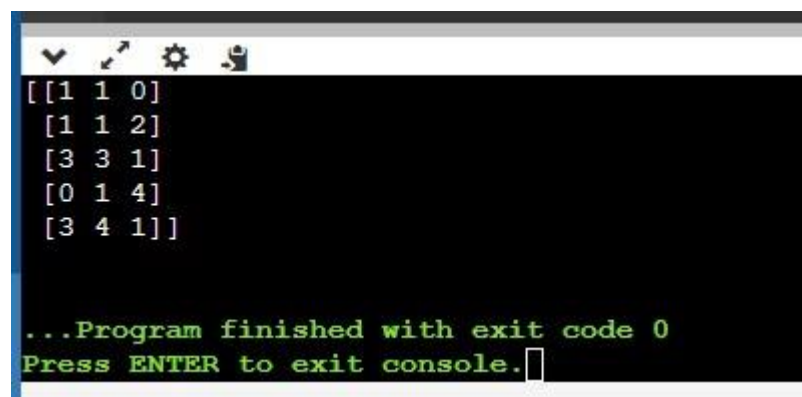
...Program finished with exit code 0
Press ENTER to exit console.
```

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

Ans.



```
main.py
1 import numpy as np
2 new_array = np.random.randint(5, size=(5, 3))
3 print("Random set of rows from 2D array array:")
4 print(new_array)
```

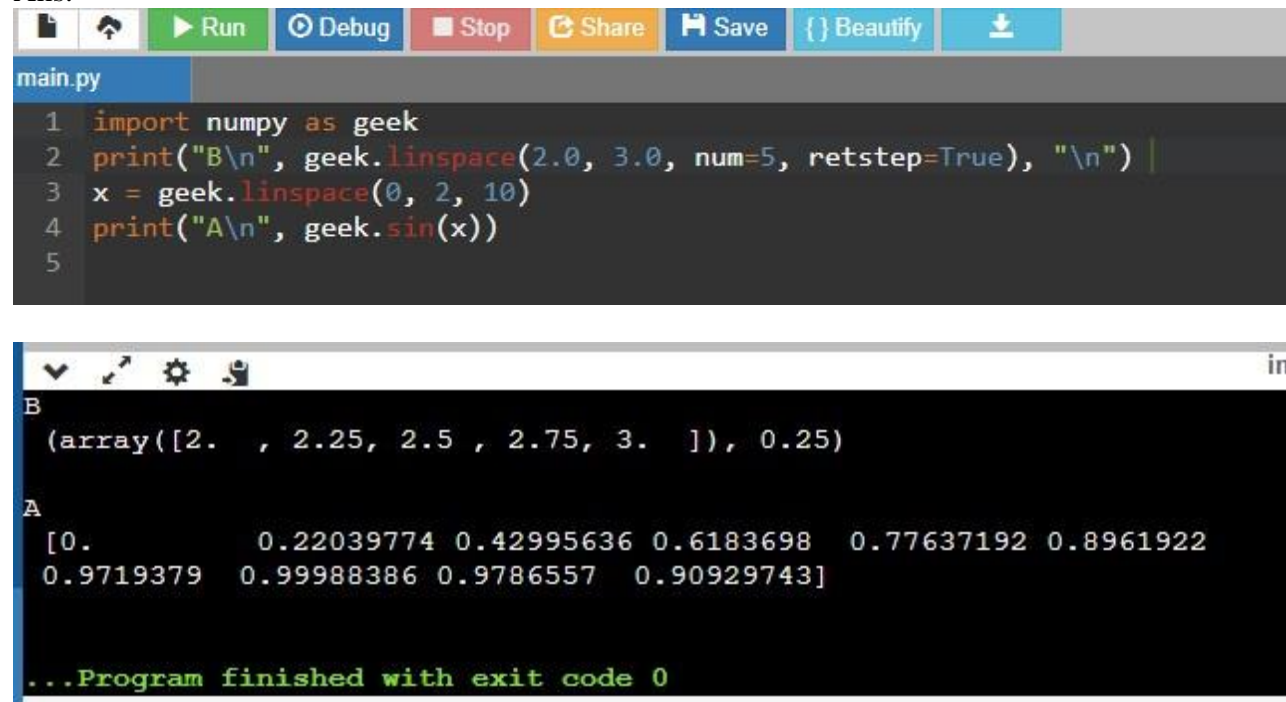


```
[[1 1 0]
 [1 1 2]
 [3 3 1]
 [0 1 4]
 [3 4 1]]

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

13.write a python program to generate an array of evenly spaced numbers over a specified range using linspace.

Ans.



The screenshot shows a Python IDE with a toolbar at the top containing icons for file operations, running, debugging, stopping, sharing, saving, and beautifying code. The file name is 'main.py'. The code in the editor is as follows:

```
1 import numpy as geek
2 print("B\n", geek.linspace(2.0, 3.0, num=5, retstep=True), "\n")
3 x = geek.linspace(0, 2, 10)
4 print("A\n", geek.sin(x))
5
```

The output window shows the following results:

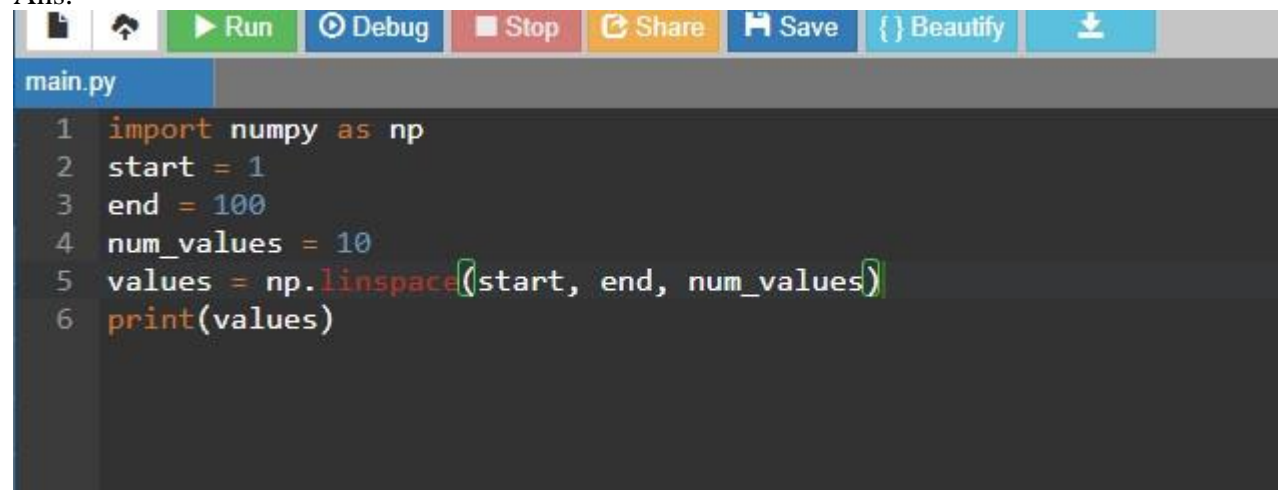
```
B
(array([2.  , 2.25, 2.5  , 2.75, 3.  ]), 0.25)

A
[0.          0.22039774 0.42995636 0.6183698  0.77637192 0.8961922
 0.9719379  0.99988386 0.9786557  0.90929743]
```

At the bottom, it says "...Program finished with exit code 0".

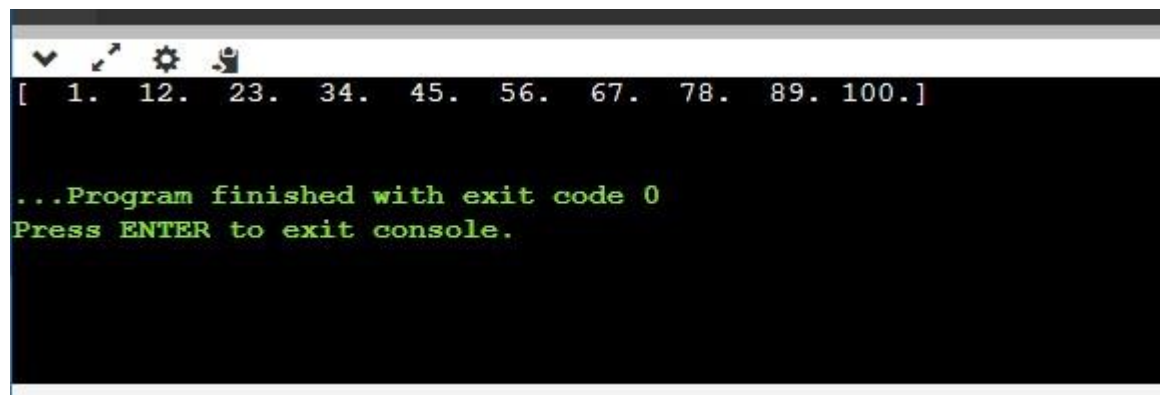
14.write a program to generate an array of 10 equally spaced values between 1 and 100 using linspace

Ans.



The screenshot shows a Python IDE with a toolbar at the top containing icons for file operations, running, debugging, stopping, sharing, saving, and beautifying code. The file name is 'main.py'. The code in the editor is as follows:

```
1 import numpy as np
2 start = 1
3 end = 100
4 num_values = 10
5 values = np.linspace(start, end, num_values)
6 print(values)
```

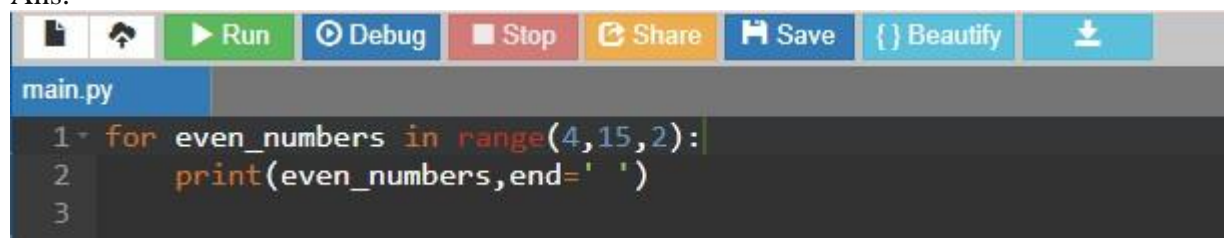



```
[ 1.  12.  23.  34.  45.  56.  67.  78.  89. 100.]

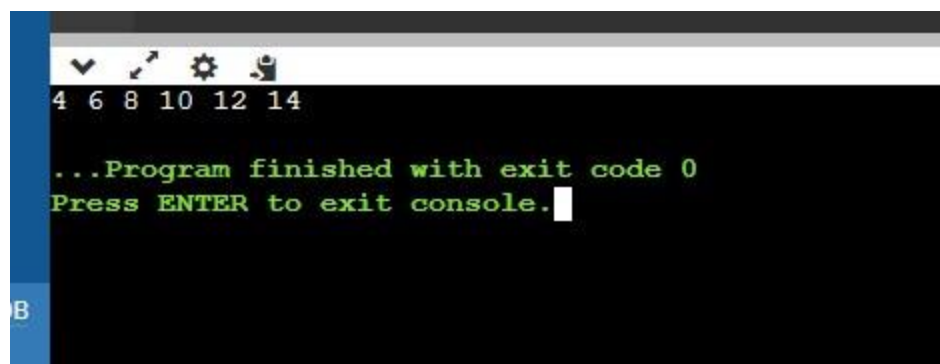
...Program finished with exit code 0
Press ENTER to exit console.
```

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

Ans.



```
main.py
1 for even_numbers in range(4,15,2):
2     print(even_numbers,end=' ')
3
```

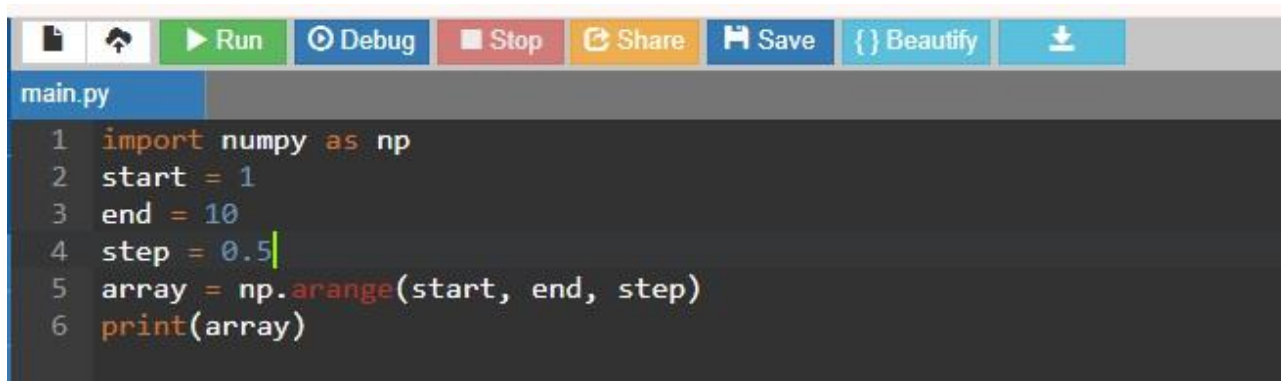


```
4 6 8 10 12 14

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

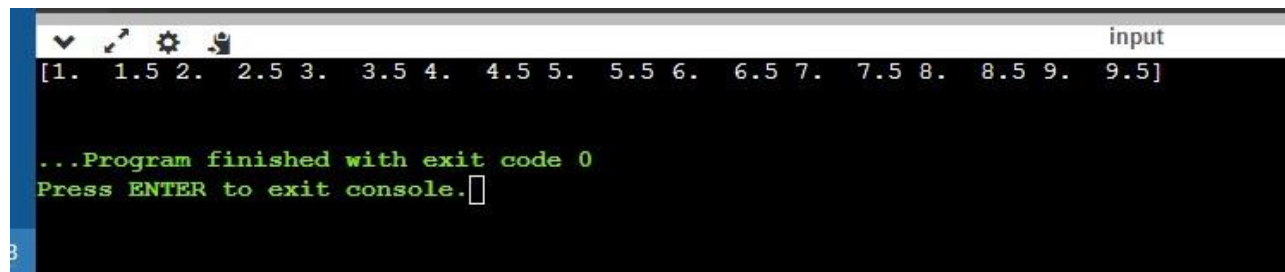
16. Write a program to create an array containing numbers from 1 to 10 with a step size of 0.5 using a range.

Ans.



The screenshot shows a code editor window with a toolbar at the top containing icons for file operations and buttons for Run, Debug, Stop, Share, Save, Beautify, and Download. The file name 'main.py' is displayed in the left sidebar. The code in the editor is as follows:

```
1 import numpy as np
2 start = 1
3 end = 10
4 step = 0.5
5 array = np.arange(start, end, step)
6 print(array)
```



The screenshot shows a terminal window with a toolbar at the top containing icons for window management and settings. The terminal output is as follows:

```
input
[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]

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

