

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

Ans:

```

s1.py - C:/Users/backdoor/s1.py (3.11.4)
File Edit Format Run Options Window Help
length = float(input('Please Enter the Length of a rectangle: '))
width = float(input('Please Enter the Width of a rectangle: '))

# calculate the area
area = length * width

print('The Area of a Rectangle using', length, 'and', width, ' = ', area)

IDLE Shell 3.11.4
Python 3.11.4 [tags/v3.11.4:1d2390ef, Jun 7 2023, 05:45:13] [MSC v.1934 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:/Users/backdoor/s1.py
Please Enter the Length of a rectangle: 9
Please Enter the Width of a rectangle: 10
The Area of a Rectangle using 9.0 and 10.0 = 90.0
>>>

```

2. Write a program to convert miles to kilometers?

Ans:

```

s1.py - C:/Users/backdoor/s1.py (3.11.4)
File Edit Format Run Options Window Help
miles = float(input('Enter the value in miles: '))
kilometers = miles * 1.6
print('%4.1f miles = %0.1f kilometers' % (miles, kilometers))

IDLE Shell 3.11.4
Python 3.11.4 [tags/v3.11.4:1d2390ef, Jun 7 2023, 05:45:13] [MSC v.1934 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
= RESTART: C:/Users/backdoor/s1.py
Please Enter the Length of a rectangle: 9
Please Enter the Width of a rectangle: 10
The Area of a Rectangle using 9.0 and 10.0 = 90.0
>>>
Enter the value in miles: 9
9.0000 miles = 14.4000 kilometers
>>>

```

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

Ans:

```

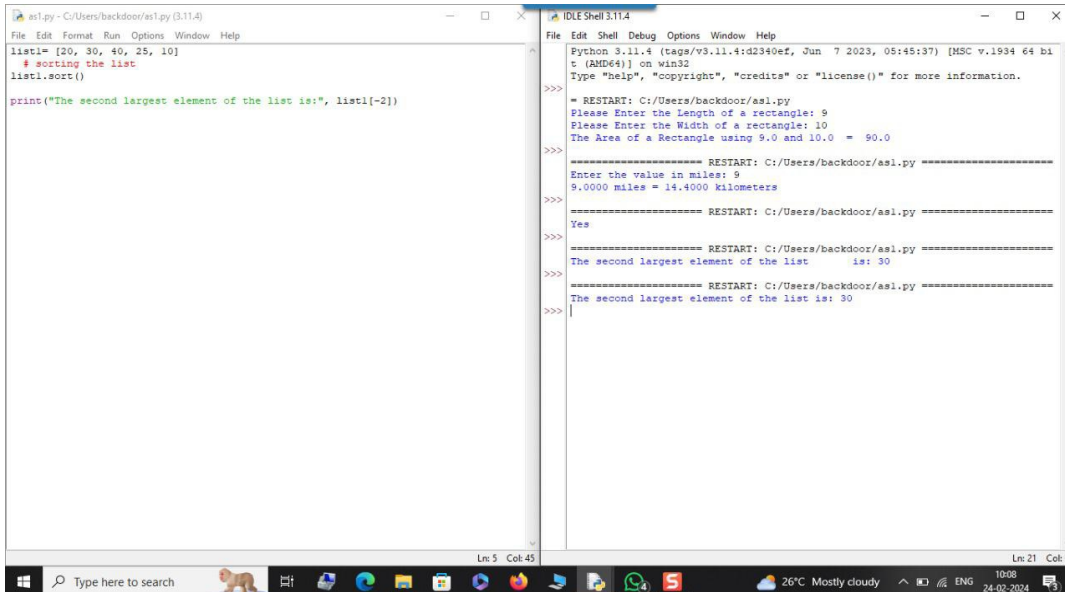
s1.py - C:/Users/backdoor/s1.py (3.11.4)
File Edit Format Run Options Window Help
def isPalindrome(s):
    return s == s[::-1]
s = 'DAD'
ans = isPalindrome(s)
if ans:
    print('Yes')
else:
    print('No')

IDLE Shell 3.11.4
Python 3.11.4 [tags/v3.11.4:1d2390ef, Jun 7 2023, 05:45:13] [MSC v.1934 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
= RESTART: C:/Users/backdoor/s1.py
Please Enter the Length of a rectangle: 9
Please Enter the Width of a rectangle: 10
The Area of a Rectangle using 9.0 and 10.0 = 90.0
>>>
Enter the value in miles: 9
9.0000 miles = 14.4000 kilometers
>>>
Yes
>>>

```

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

Ans:



```
#!/usr/bin/env python3
# coding: utf-8
list1 = [20, 30, 40, 25, 10]
# sorting the list
list1.sort()

print("The second largest element of the list is:", list1[-2])
```

```
Python 3.11.4 (tags/v3.11.4:d2340ef, Jun 7 2023, 05:45:37) [MSC v.1934 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.

>>>
===== RESTART: C:/Users/backdoor/asl.py =====
Please Enter the Length of a rectangle: 9
Please Enter the Width of a rectangle: 10
The Area of a Rectangle using 9.0 and 10.0 = 90.0
>>>
===== RESTART: C:/Users/backdoor/asl.py =====
Enter the value in miles: 9
9.0000 miles = 14.4000 kilometers
>>>
===== RESTART: C:/Users/backdoor/asl.py =====
Yes
>>>
===== RESTART: C:/Users/backdoor/asl.py =====
The second largest element of the list is: 30
>>>
===== RESTART: C:/Users/backdoor/asl.py =====
The second largest element of the list is: 30
>>>
```

5. Explain what indentation means in Python?

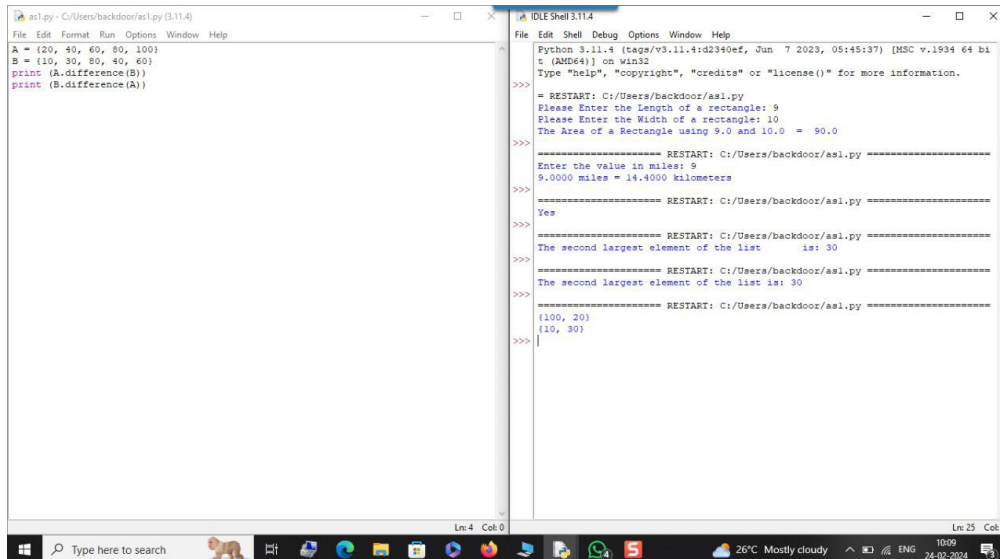
Ans:

Indentation refers to the spacing at the beginning of a line of code that determines its grouping and hierarchy within the program's structure. Unlike many programming languages that use braces ({}), Python uses indentation to signify the beginning and end of blocks of code.

When writing Python code, we have to define a group of statements for functions and loops. This is done by properly indenting the statements for that block.

6. Write a program to perform set difference operation?

Ans:



The screenshot shows a Python IDE with two windows. The left window, titled 'a1.py', contains the following code:

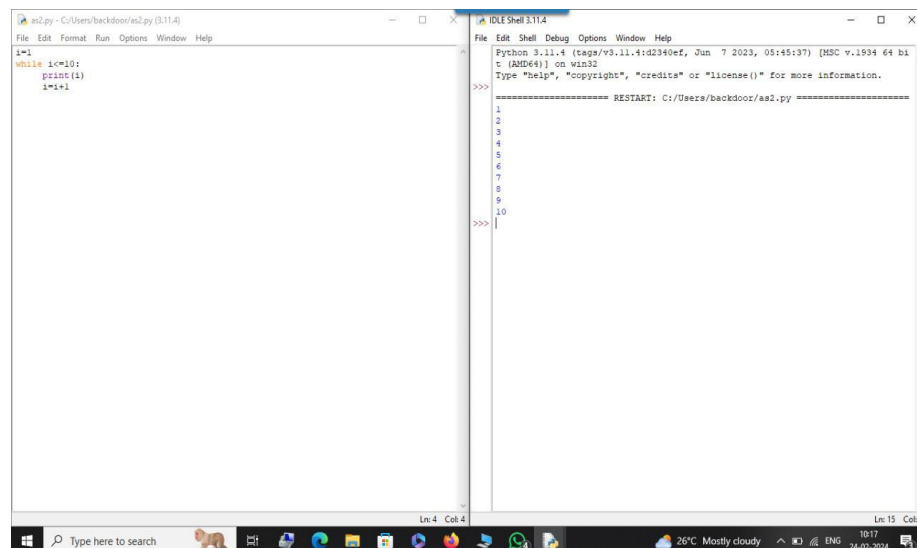
```
A = {20, 40, 60, 80, 100}
B = {10, 30, 50, 40, 60}
print(A.difference(B))
print(B.difference(A))
```

The right window, titled 'IDLE Shell 3.11.4', shows the output of the program:

```
Python 3.11.4 (tags/v3.11.4:d2340ef, Jun 7 2023, 05:45:37) [MSC v.1934 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
= RESTART: C:/Users/backdoor/as1.py
Please Enter the Length of a rectangle: 9
Please Enter the Width of a rectangle: 10
The Area of a Rectangle using 9.0 and 10.0 = 90.0
>>>
===== RESTART: C:/Users/backdoor/as1.py =====
Enter the value in miles: 9
9.0000 miles = 14.4000 kilometers
>>>
===== RESTART: C:/Users/backdoor/as1.py =====
Yes
>>>
===== RESTART: C:/Users/backdoor/as1.py =====
The second largest element of the list is: 30
>>>
===== RESTART: C:/Users/backdoor/as1.py =====
The second largest element of the list is: 30
>>>
===== RESTART: C:/Users/backdoor/as1.py =====
(100, 20)
(10, 30)
>>>
```

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

Ans:



The screenshot shows a Python IDE with two windows. The left window, titled 'a2.py', contains the following code:

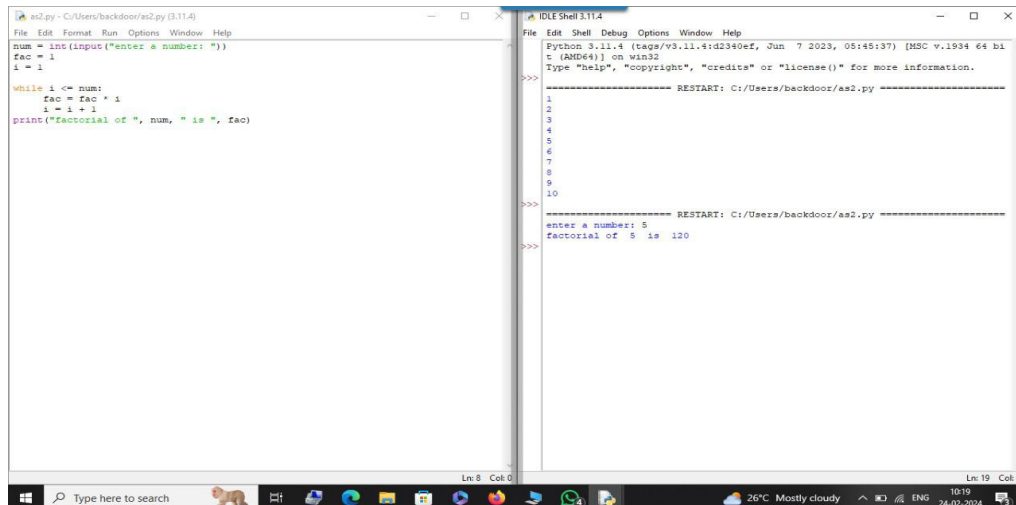
```
i=1
while i<=10:
    print(i)
    i=i+1
```

The right window, titled 'IDLE Shell 3.11.4', shows the output of the program:

```
Python 3.11.4 (tags/v3.11.4:d2340ef, Jun 7 2023, 05:45:37) [MSC v.1934 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
===== RESTART: C:/Users/backdoor/as2.py =====
1
2
3
4
5
6
7
8
9
10
>>>
```

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

Ans:

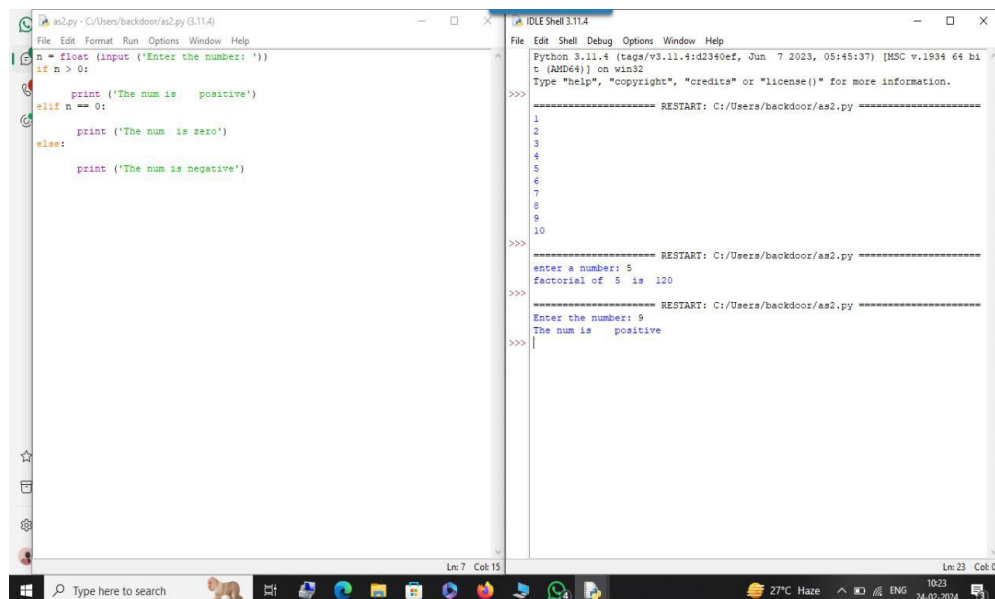


```
File Edit Format Run Options Window Help
a2.py - C:/Users/backdoor/a2.py (3.11.4)
num = int(input("enter a number: "))
fac = 1
i = 1
while i <= num:
    fac = fac * i
    i = i + 1
print("factorial of ", num, " is ", fac)
```

```
Python 3.11.4 (tags/v3.11.4:d2340ef, Jun 7 2023, 05:45:37) [MSC v.1934 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
1
2
3
4
5
6
7
8
9
10
>>>
===== RESTART: C:/Users/backdoor/a2.py =====
>>>
enter a number: 5
factorial of 5 is 120
>>>
```

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

Ans:

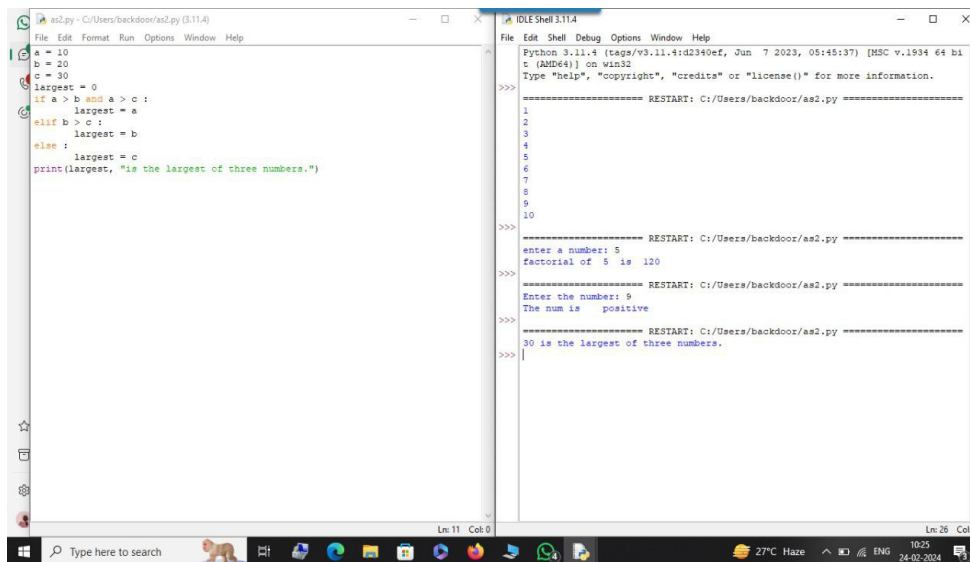


```
File Edit Format Run Options Window Help
a2.py - C:/Users/backdoor/a2.py (3.11.4)
n = float(input('Enter the number: '))
if n > 0:
    print('The num is positive')
elif n == 0:
    print('The num is zero')
else:
    print('The num is negative')
```

```
Python 3.11.4 (tags/v3.11.4:d2340ef, Jun 7 2023, 05:45:37) [MSC v.1934 64 bi
t (AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
1
2
3
4
5
6
7
8
9
10
>>>
===== RESTART: C:/Users/backdoor/a2.py =====
>>>
enter a number: 5
factorial of 5 is 120
>>>
===== RESTART: C:/Users/backdoor/a2.py =====
>>>
Enter the number: 9
The num is positive
>>>
```

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

Ans



The screenshot shows a Python IDE with two windows. The left window, titled 'a2.py', contains the following code:

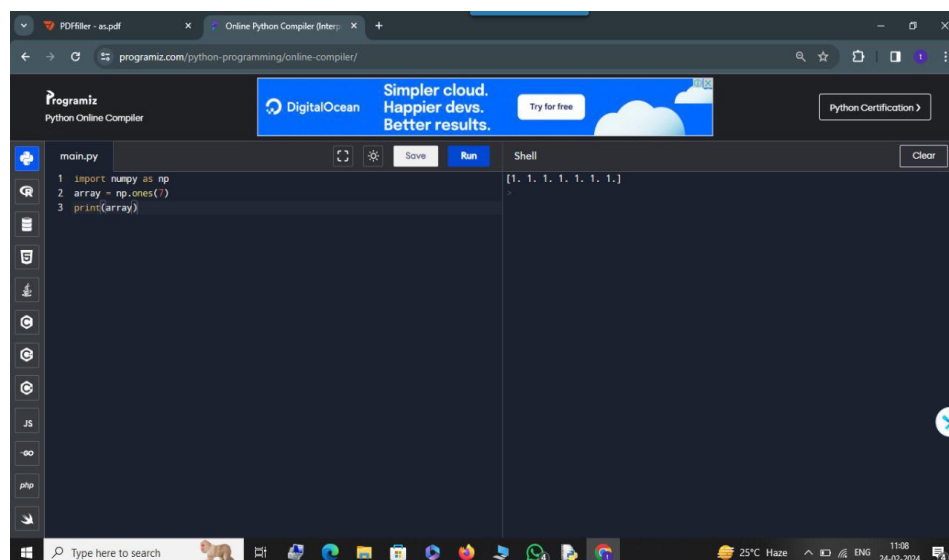
```
a = 10
b = 20
c = 30
largest = 0
if a > b and a > c :
    largest = a
elif b > c :
    largest = b
else :
    largest = c
print(largest, "is the largest of three numbers.")
```

The right window, titled 'IDLE Shell 3.11.4', shows the output of the program after three restarts:

```
>>>
===== RESTART: C:/Users/backdoor/a2.py =====
1
2
3
4
5
6
7
8
9
10
>>>
enter a number: 5
Factorial of 5 is 120
>>>
===== RESTART: C:/Users/backdoor/a2.py =====
Enter the number: 9
The num is positive
>>>
===== RESTART: C:/Users/backdoor/a2.py =====
30 is the largest of three numbers.
>>>
```

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

Ans:



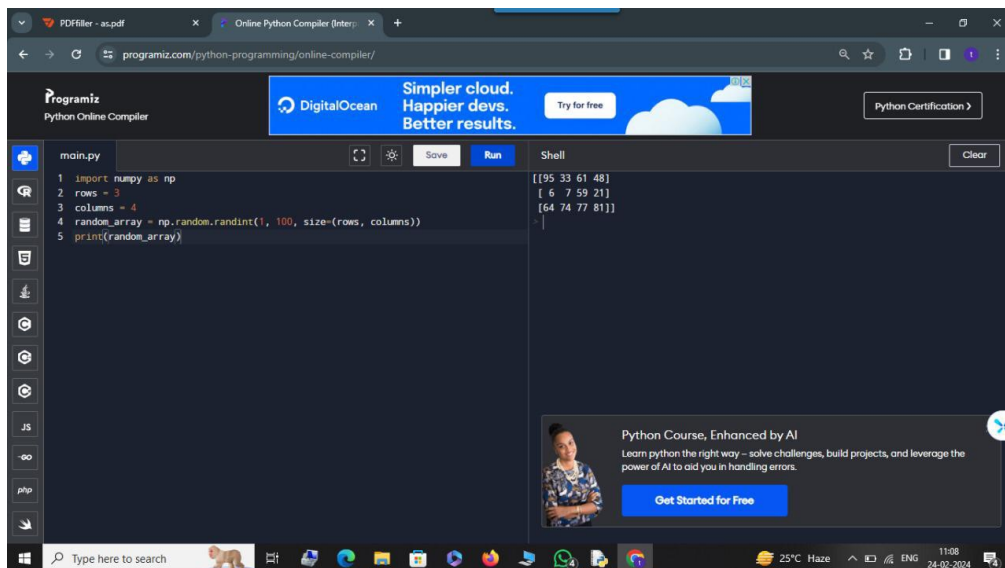
The screenshot shows an online Python compiler interface. The code editor on the left contains the following code:

```
1 import numpy as np
2 array = np.ones(7)
3 print(array)
```

The output window on the right shows the result of the program:

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

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



The screenshot shows a web browser window with the URL `programiz.com/python-programming/online-compiler/`. The page features a dark-themed interface for the Programiz Python Online Compiler. At the top, there's a DigitalOcean advertisement. The main area is divided into two panels. The left panel, titled 'main.py', contains the following Python code:

```
1 import numpy as np
2 rows = 3
3 columns = 4
4 random_array = np.random.randint(1, 100, size=(rows, columns))
5 print(random_array)
```

The right panel, titled 'Shell', displays the output of the code execution:

```
[[95 33 61 48]
 [ 6  7 59 21]
 [64 74 77 81]]
```

Below the code editor, there's a sidebar with icons for various programming languages like C++, Java, JavaScript, PHP, and Python. At the bottom of the page, there's a Windows taskbar showing the system clock as 11:08 on 24-02-2024, and a weather widget indicating 25°C Haze.