PYTHON JOURNAL

Name: **Rashi Sawardekar** Roll No: **31010924093** FYIT- B

PRACTICAL 1

all files

Variables

Aim:

Declare Variables and implement Implicit and Explicit Typecasting, understand errors.

Source Code:

```
print("IMPLICIT TYPE Casting")
a=19
print(type(a))
b=19.5
print(type(b))
c="raya"
print(type(c))
d=True
print(type(d))
e=3+5j
print(type(e))
print("EXPLICIT TYPE CASTING")
R="21"
print(type(R))
print(chr(89))
J=int(R)
print(type(J))
M=float(R)
print(M)
```

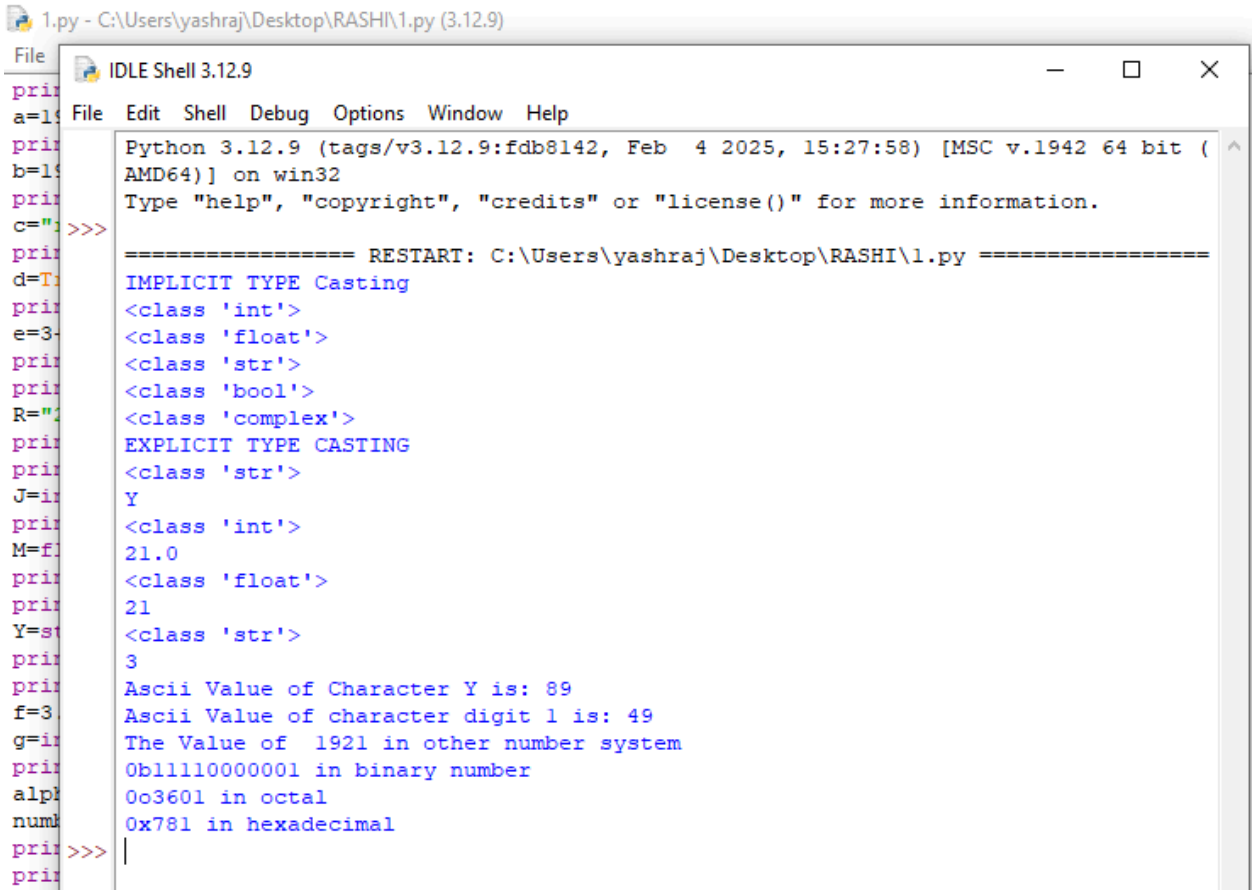
```
print(type(M))
Y=str(R)
print(Y)
print(type(Y))
f=3.143
g=int(f)
print(g)
alphabet=ord('Y')
number=ord('1')
print("Ascii Value of Character Y is:" ,alphabet)
print("Ascii Value of character digit 1 is:" ,number)
dec=1921
print("The Value of ",dec, "in other number system")
print(bin(dec),"in binary number")
print(oct(dec),"in octal")
print(hex(dec),"in hexadecimal")
```

Output;

1.py - C:\Users\yashraj\Desktop\RASHI\1.py (3.12.9)

File Edit Format Run Options Window Help

```
print("IMPLICIT TYPE Casting")
a=19
print(type(a))
b=19.5
print(type(b))
c="raya"
print(type(c))
d=True
print(type(d))
e=3+5j
print(type(e))
print("EXPLICIT TYPE CASTING")
R="21"
print(type(R))
print(chr(89))
J=int(R)
print(type(J))
M=float(R)
print(M)
print(type(M))
Y=str(R)
print(Y)
print(type(Y))
f=3.143
g=int(f)
print(g)
alphabet=ord('Y')
number=ord('1')
print("Ascii Value of Character Y is:" ,alphabet)
print("Ascii Value of character digit 1 is:" ,number)
dec=1921
print("The Value of ",dec, "in other number system")
print(bin(dec),"in binary number")
print(oct(dec),"in octal")
print(hex(dec),"in hexadecimal")
```



Conclusion:

The code is executed successfully.

PRACTICAL 2

Conditions

A.

Aim:

Write a Python program that:

a. Declares an int type variable num.

b. Assign a random value to the num between 1-100.

c. Program should check and displays the following messages.

if:

i. The num is an even number

ii. The num is multiple of 4

iii. The num is greater than 50

Source Code:

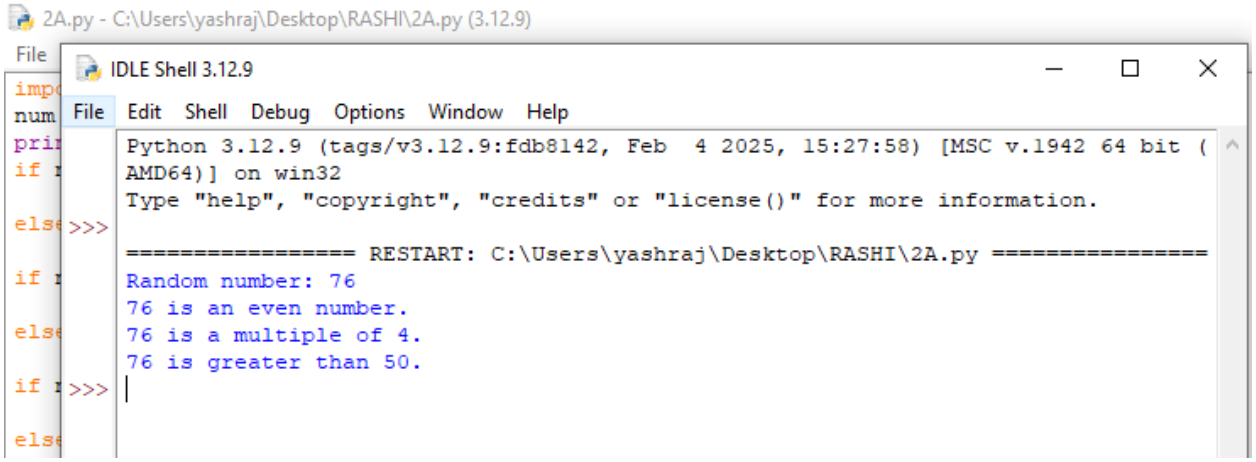
```
import random
num = random.randint(1, 100)
print(f"Random number: {num}")
if num % 2 == 0:
    print(f"{num} is an even number.")
else:
    print(f"{num} is not an even number.")
if num % 4 == 0:
    print(f"{num} is a multiple of 4.")
else:
    print(f"{num} is not a multiple of 4.")
if num > 50:
    print(f"{num} is greater than 50.")
else:
    print(f"{num} is not greater than 50.")
```

Output:

2A.py - C:\Users\yashraj\Desktop\RASHI\2A.py (3.12.9)

File Edit Format Run Options Window Help

```
import random
num = random.randint(1, 100)
print(f"Random number: {num}")
if num % 2 == 0:
    print(f"{num} is an even number.")
else:
    print(f"{num} is not an even number.")
if num % 4 == 0:
    print(f"{num} is a multiple of 4.")
else:
    print(f"{num} is not a multiple of 4.")
if num > 50:
    print(f"{num} is greater than 50.")
else:
    print(f"{num} is not greater than 50.")
```



Conclusion:

The code is executed successfully.

B.

Aim:

Write a program in python to find whether a string is PALINDROME or not.

Source Code:

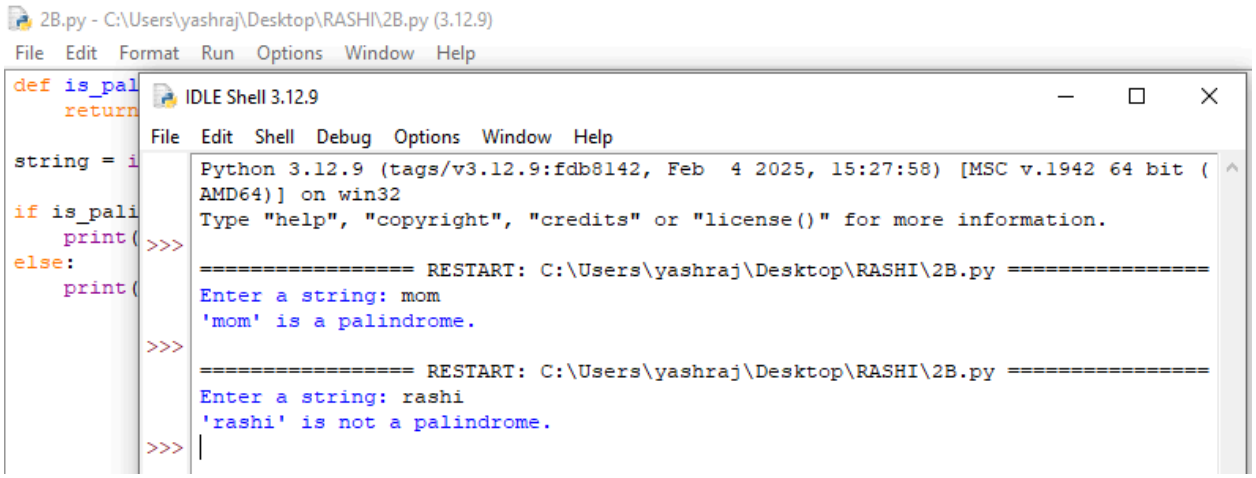
```
def is_palindrome(s):
    return s == s[::-1]

string = input("Enter a string: ")

if is_palindrome(string):
    print(f"'{string}' is a palindrome.")
else:
    print(f"'{string}' is not a palindrome.")
```

Output:

2B.py - C:\Users\yashraj\Desktop\RASHI\2B.py (3.12.9)

File Edit Format Run Options Window Help

```
def is_palindrome(s):
    return s == s[::-1]

string = input("Enter a string: ")

if is_palindrome(string):
    print(f"'{string}' is a palindrome.")
else:
    print(f"'{string}' is not a palindrome.")
```



Conclusion:

The code is executed successfully.

PRACTICAL 3

Loops

A.

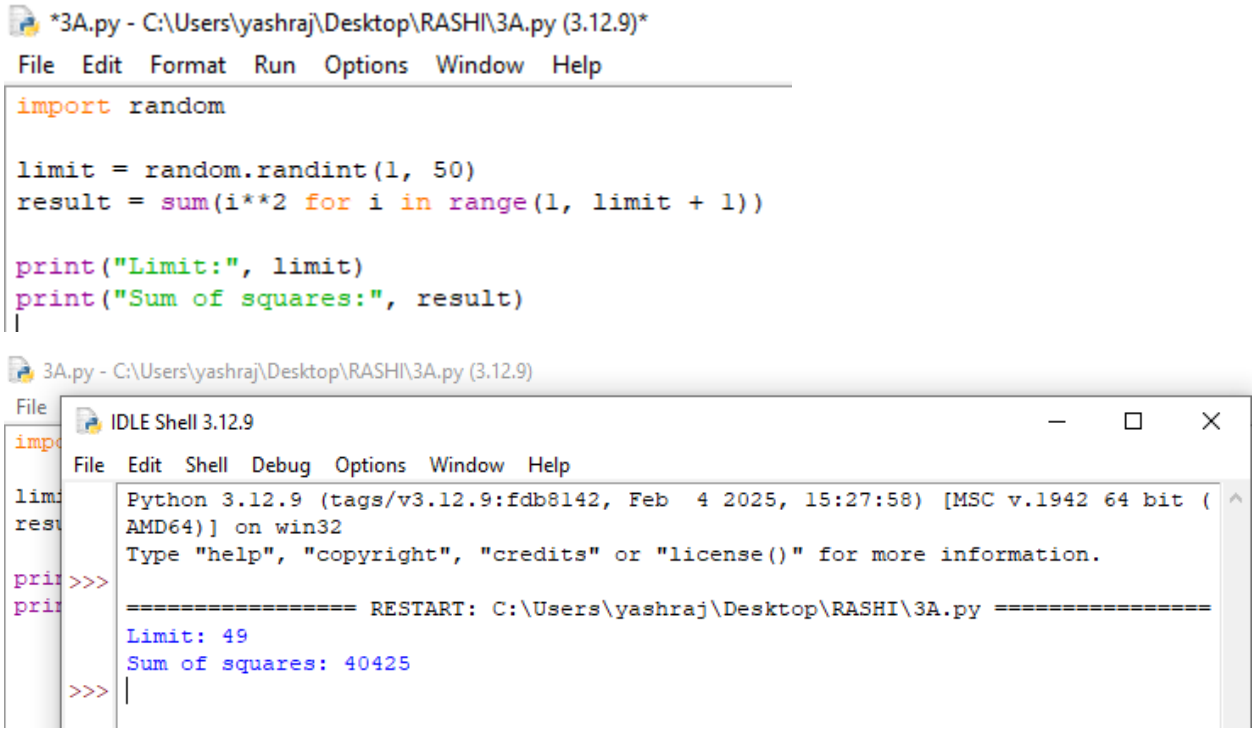
Aim:

Write Processing code that declares an integer variable called limit and assigns a random value between 1 and 50. Your program should, then, calculate the sum of all the squares of the integers from 1 to limit (inclusive) using a loop. The result should be assigned to a variable named result. Print the value of both variables limit and result to check the correctness of your program.

Source Code:

```
import random

limit = random.randint(1, 50)
result = sum(i**2 for i in range(1, limit + 1))

print("Limit:", limit)
print("Sum of squares:", result)
```

Output:



Conclusion:

The code is executed successfully.

B.

Aim:

A common mathematical problem is to find a solution of arithmetic series. An arithmetic series is the sum of the terms of an arithmetic sequence. Write a Python program to find the answer A of the following arithmetic series.

$A=a0+\sum(a\cos\cos\frac{n\pi x}{L}+b\sin\sin\frac{n\pi x}{L})30n=5$

Where a0= 7.86, a= 16.67, b= 76.667, L=99.

Source Code:

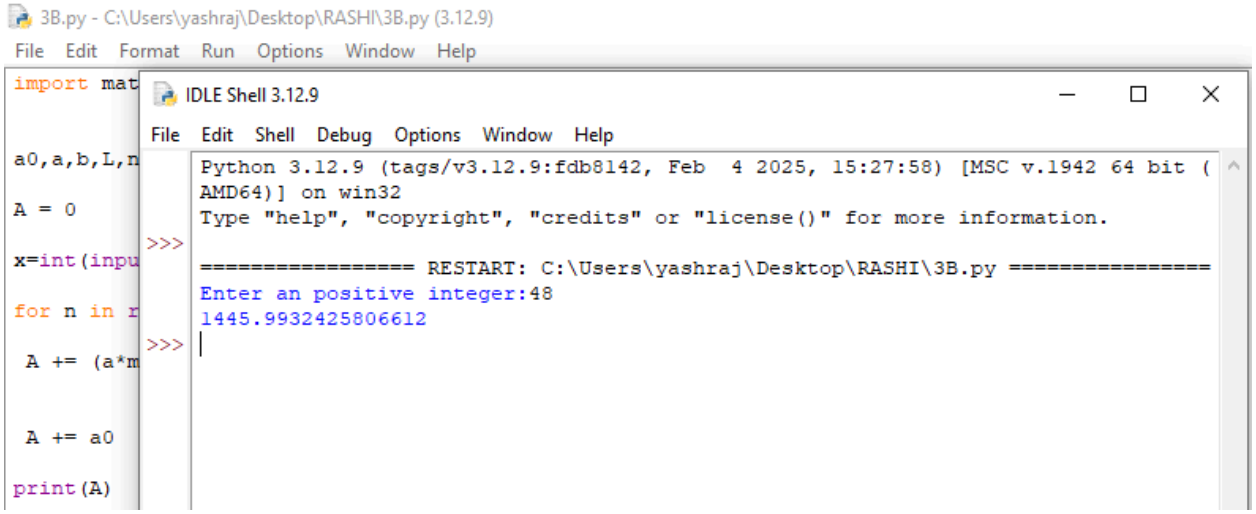
```
import math

a0,a,b,L,n = 7.86,16.67,76.667,99,5

A = 0

x=int(input("Enter an positive integer:"))

for n in range(5,31):

 A += (a*math.cos((n*math.pi*x)/L)**2 +
b*math.sin((n*math.pi*x)/L)**2)

 A += a0

print(A)
```

Output:

3B.py - C:\Users\yashraj\Desktop\RASHI\3B.py (3.12.9)

File Edit Format Run Options Window Help

```
import math


a0,a,b,L,n = 7.86,16.67,76.667,99,5

A = 0

x=int(input("Enter an positive integer:"))

for n in range(5,31):

 A += (a*math.cos((n*math.pi*x)/L)**2 + b*math.sin((n*math.pi*x)/L)**2)


 A += a0

print(A)
```



Conclusion:

The code is executed successfully.

C.

Aim:

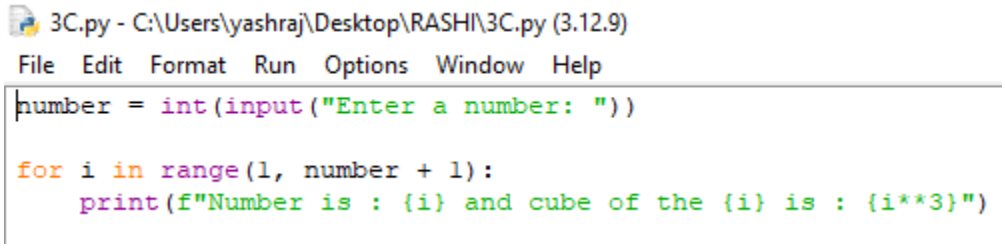
Write a program to declare an integer type variable number. Display the cube of all integers from 1 to number. For example, if a number is 5, then expected output is as:

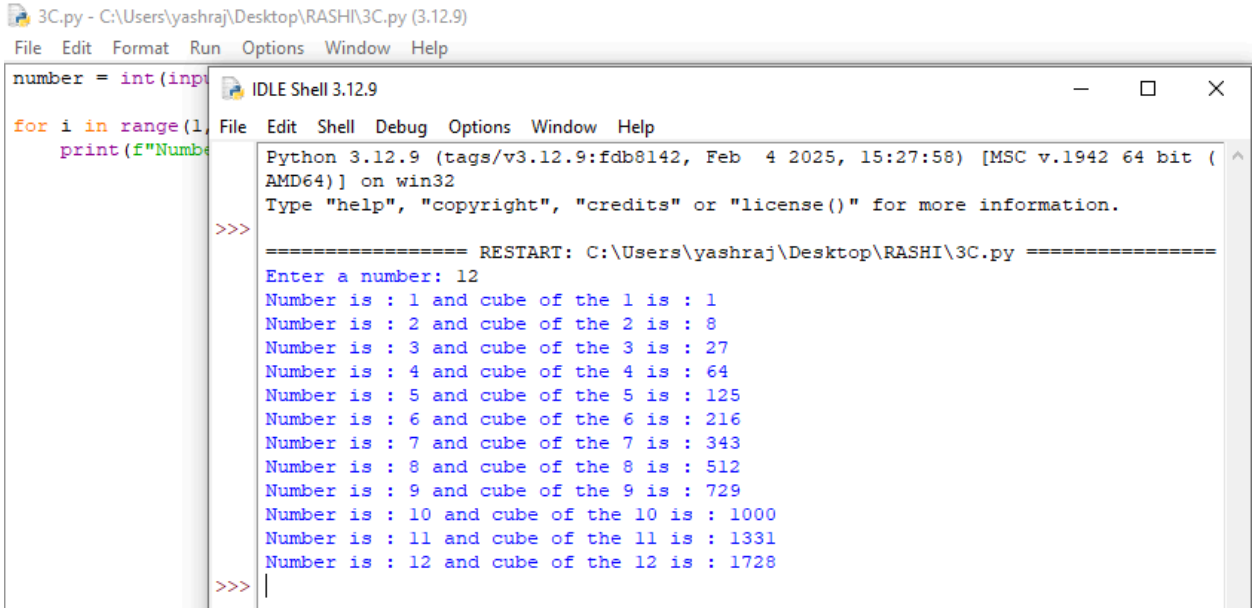
Number is : 1 and cube of the 1 is :1
Number is : 2 and cube of the 2 is :8
Number is : 3 and cube of the 3 is :27
Number is : 4 and cube of the 4 is :64
Number is : 5 and cube of the 5 is :125

Source Code:

```
number = int(input("Enter a number: "))

for i in range(1, number + 1):
    print(f"Number is : {i} and cube of the {i} is : {i**3}")
```

Output:





Conclusion:

The code is executed successfully.

D.

Aim:

Trace how many times the statement will be executed in each of the following the following loops? Afterwards, replace the statement with println(j) and type the statements to check how many times the value of the variable j was printed. Note: convert into python from java.

1. for(int i=1;i<=10;i++)

   for (int j = 1; j <= 10; j++)
   statement;
2. for(int i=1;i<=10;i++)

   for (int j = 1; j <= i; j++)
   statement;
3. for(int i=1;i<=5;i++)

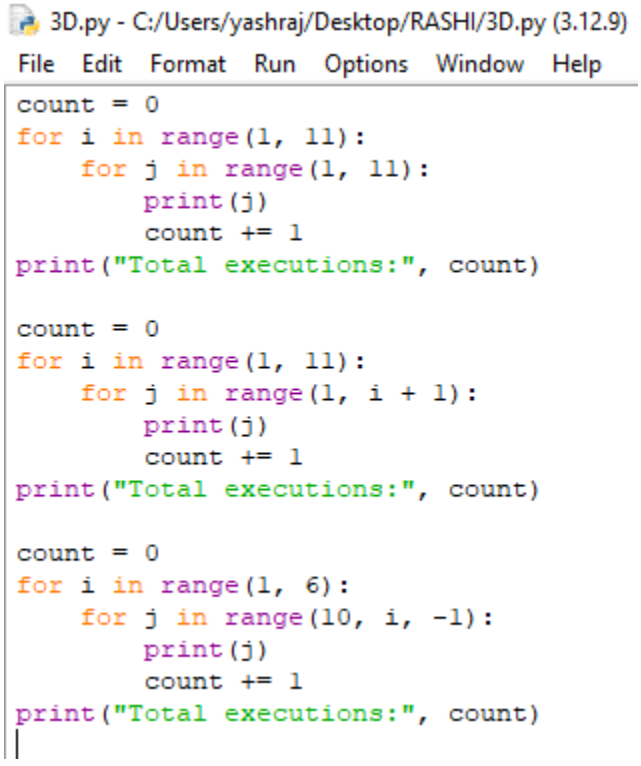
   for (int j = 10; j > i; j--)
   statement

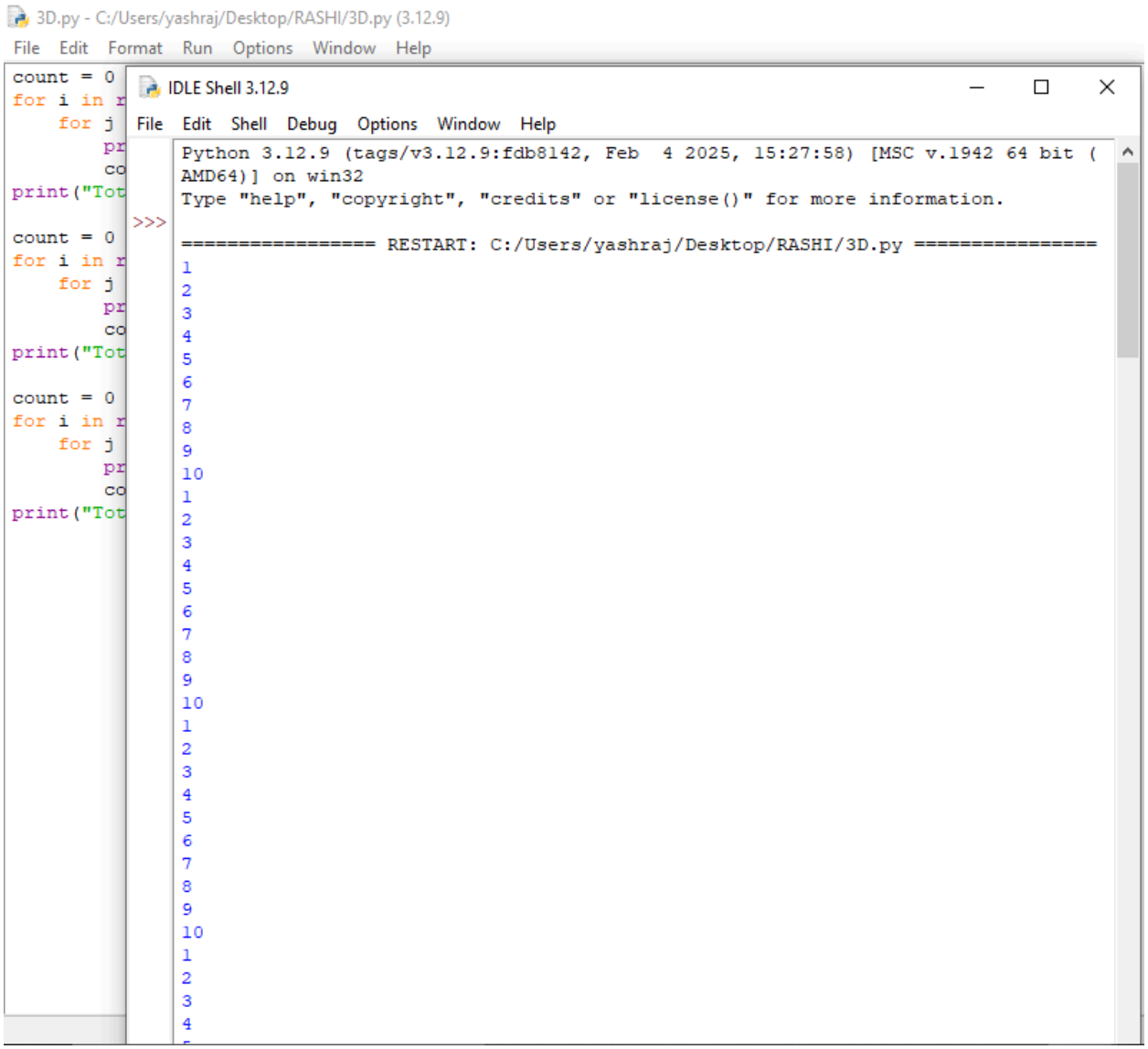
Source Code:

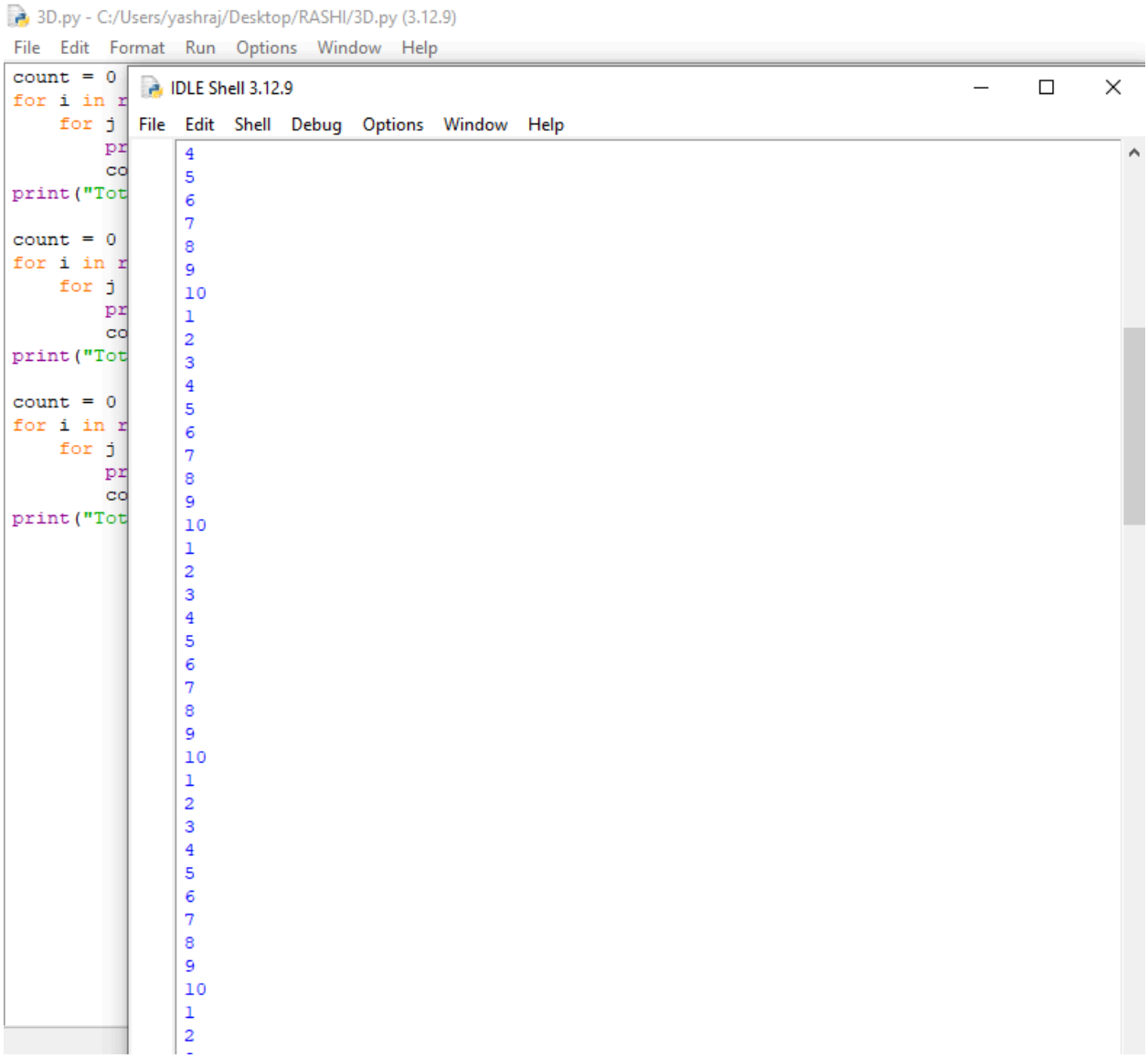
```
count = 0
for i in range(1, 11):
    for j in range(1, 11):
        print(j)
        count += 1
print("Total executions:", count)

count = 0
for i in range(1, 11):
    for j in range(1, i + 1):
```

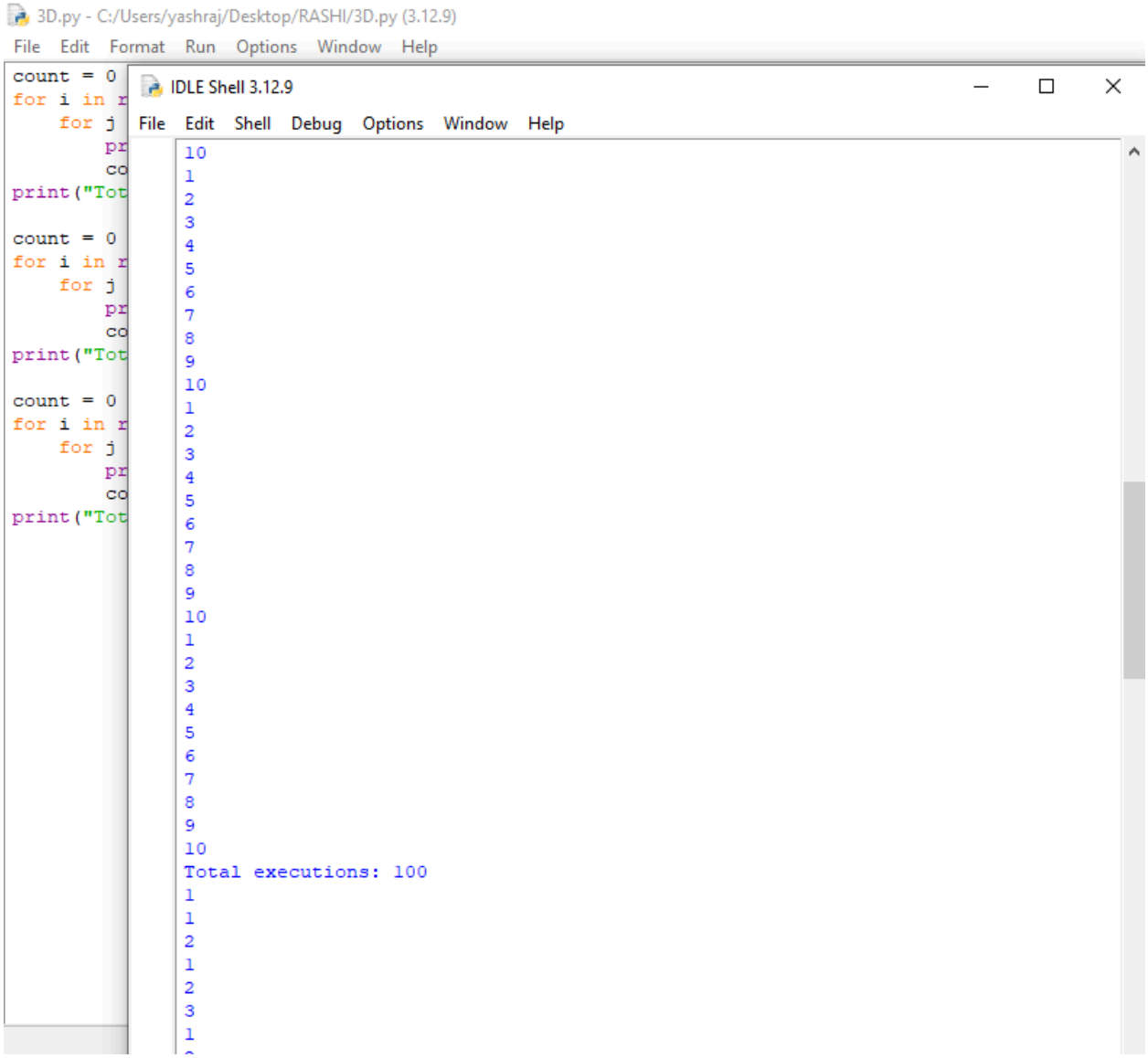
```
        print(j)
        count += 1
print("Total executions:", count)

count = 0
for i in range(1, 6):
    for j in range(10, i, -1):
        print(j)
        count += 1
print("Total executions:", count)
```

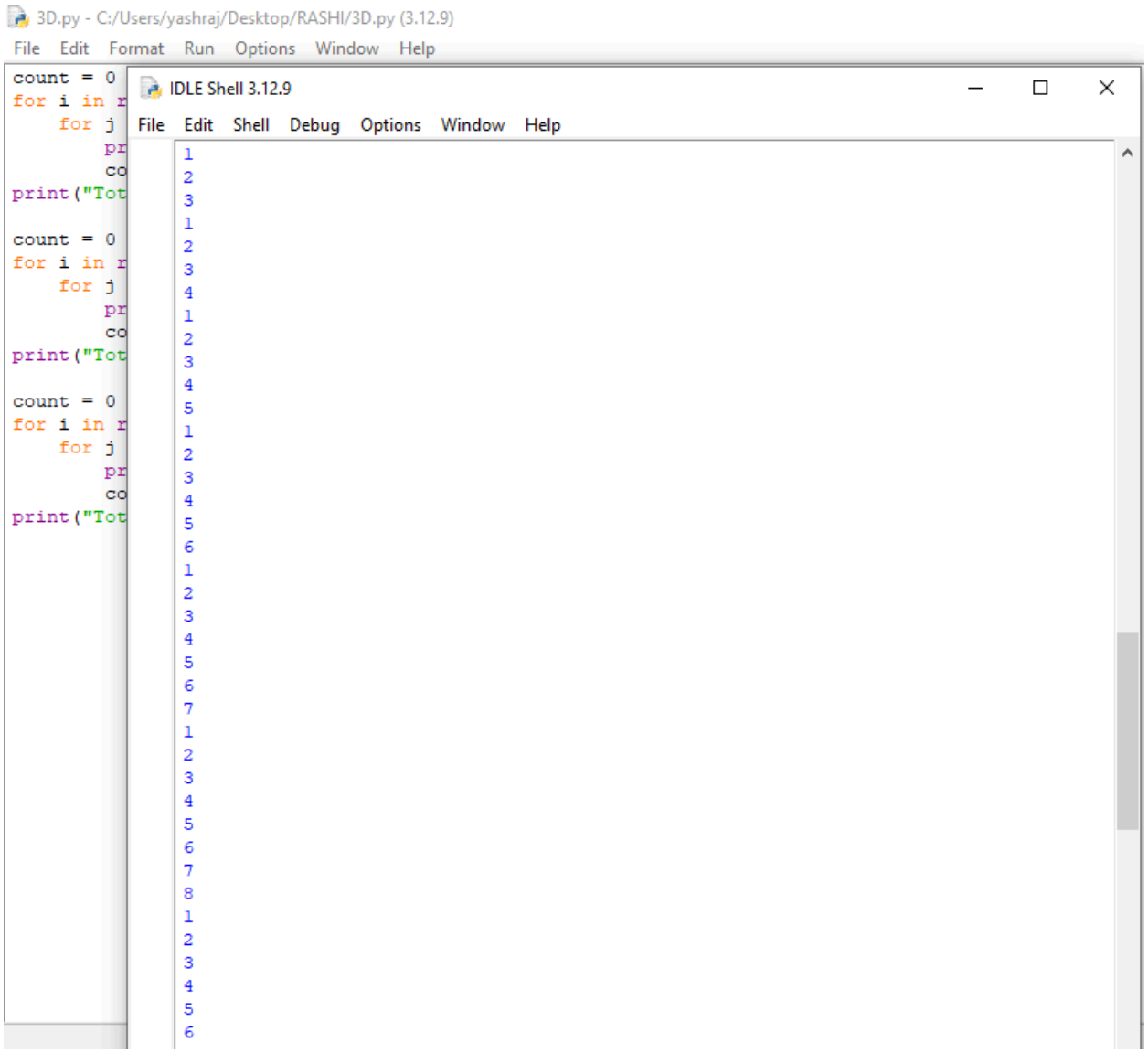
Output:

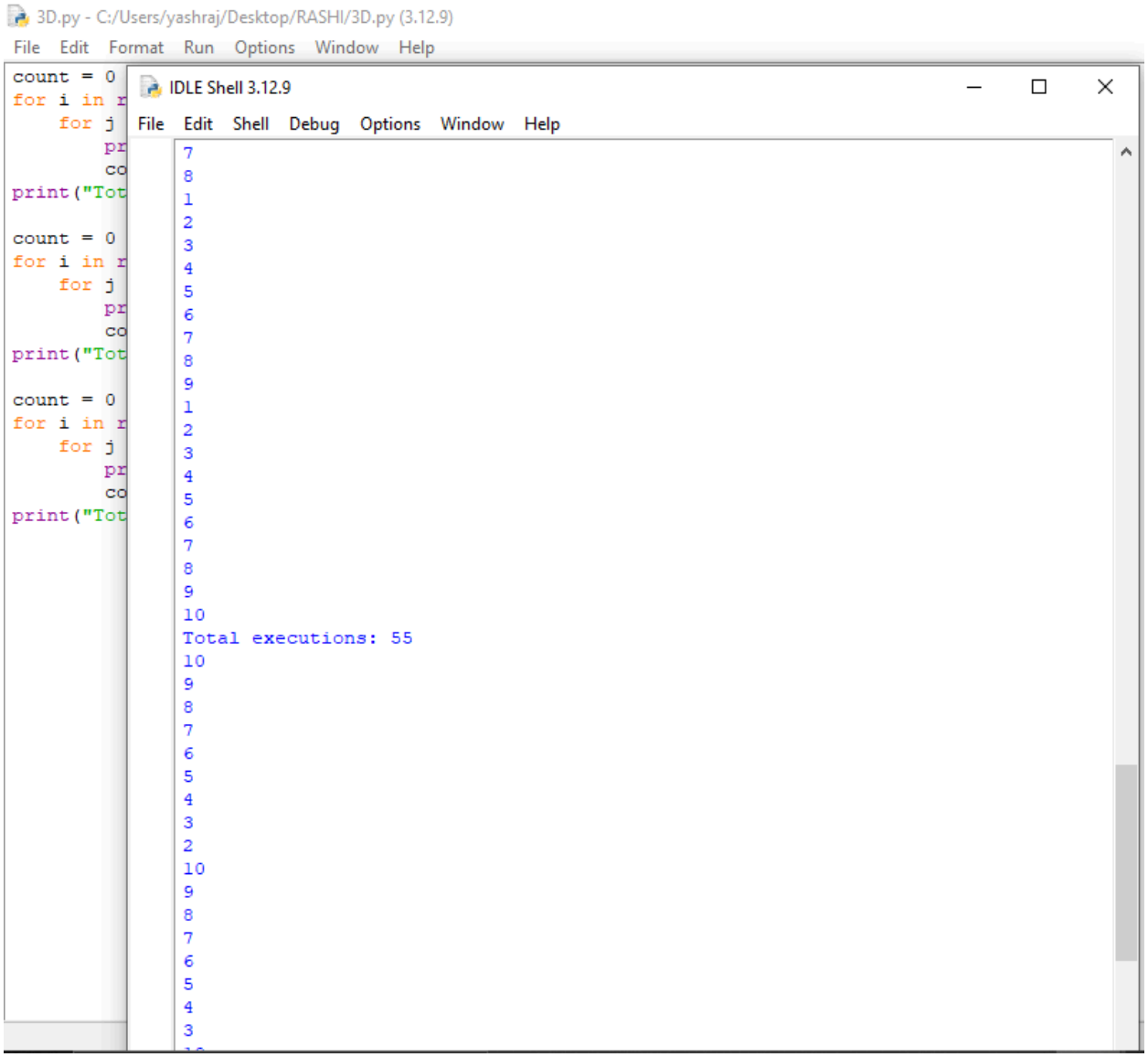


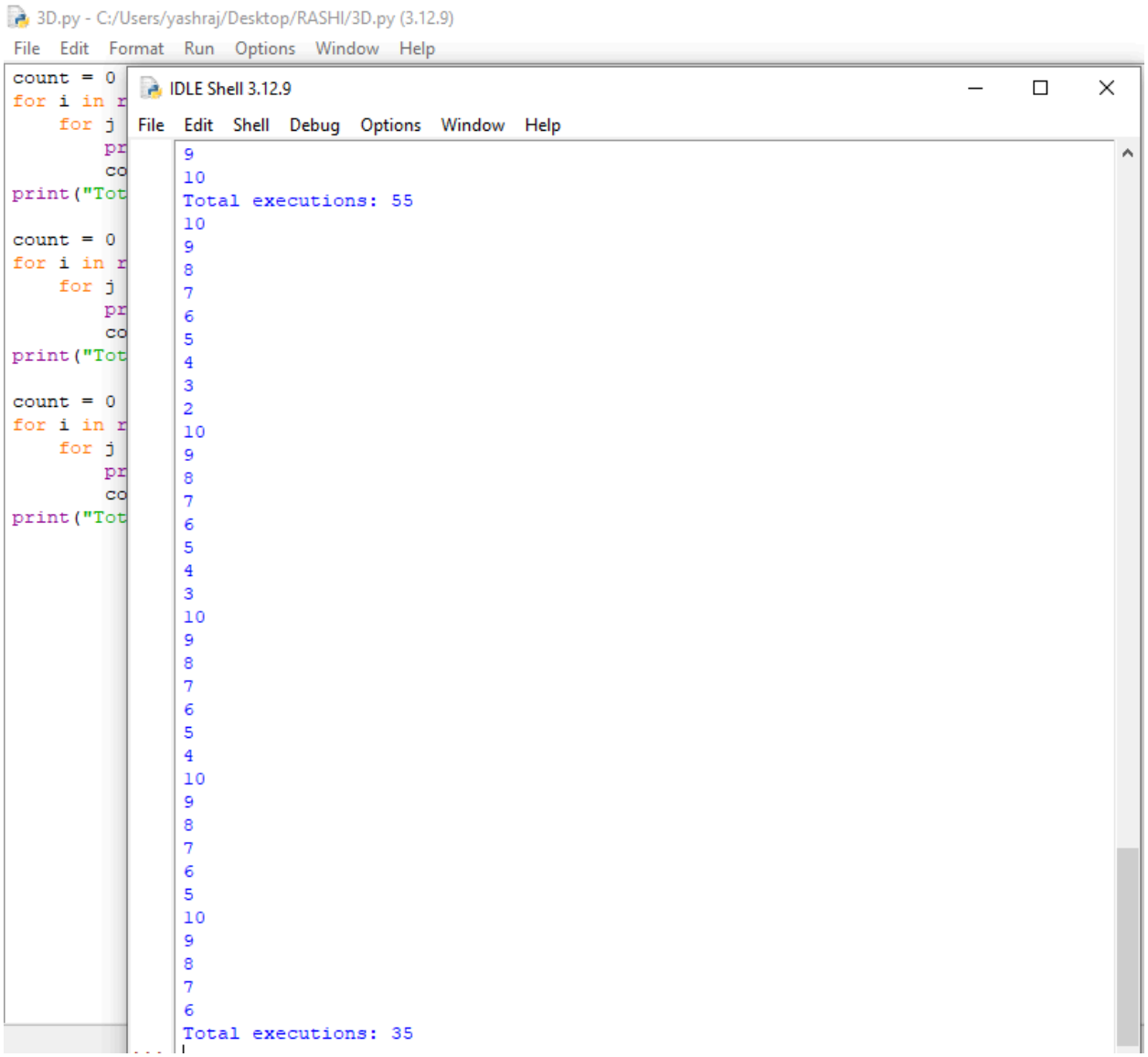

3D.py - C:/Users/yashraj/Desktop/RASHI/3D.py (3.12.9)
File Edit Format Run Options Window Help
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
IDLE Shell 3.12.9
File Edit Shell Debug Options Window Help
Python 3.12.9 (tags/v3.12.9:fdb8142, Feb 4 2025, 15:27:58) [MSC v.1942 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
========== RESTART: C:/Users/yashraj/Desktop/RASHI/3D.py ==========
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
1
2
3
4


3D.py - C:/Users/yashraj/Desktop/RASHI/3D.py (3.12.9)
File Edit Format Run Options Window Help
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
IDLE Shell 3.12.9
File Edit Shell Debug Options Window Help
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
1
2


3D.py - C:/Users/yashraj/Desktop/RASHI/3D.py (3.12.9)
File Edit Format Run Options Window Help
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
IDLE Shell 3.12.9
File Edit Shell Debug Options Window Help
10
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
10
Total executions: 100
1
1
2
1
2
3
1


3D.py - C:/Users/yashraj/Desktop/RASHI/3D.py (3.12.9)
File Edit Format Run Options Window Help
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
IDLE Shell 3.12.9
File Edit Shell Debug Options Window Help
1 2 3 1 2 3 4 1 2 3 4 5 1 2 3 4 5 6 1 2 3 4 5 6 7 1 2 3 4 5 6 7 8 1 2 3 4 5 6


3D.py - C:/Users/yashraj/Desktop/RASHI/3D.py (3.12.9)
File Edit Format Run Options Window Help
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
count = 0
for i in r
for j
pr
co
print("Tot
IDLE Shell 3.12.9
File Edit Shell Debug Options Window Help
7
8
1
2
3
4
5
6
7
8
9
1
2
3
4
5
6
7
8
9
10
Total executions: 55
10
9
8
7
6
5
4
3
2
10
9
8
7
6
5
4
3



Conclusion:

The code is executed successfully.

E.

Aim:

Write a loop that output the following pattern of numbers.

a. 1 2 2 3 3 3 4 4 4 4 5 5 5 5 5 6 6 6 6 6 6

b. 1 1 1 1 1 1 2 2 2 2 2 3 3 3 3 4 4 4 5 5 6

c. 1 1 2 1 2 3 1 2 3 4 1 2 3 4 5 1 2 3 4 5 6

Source Code:

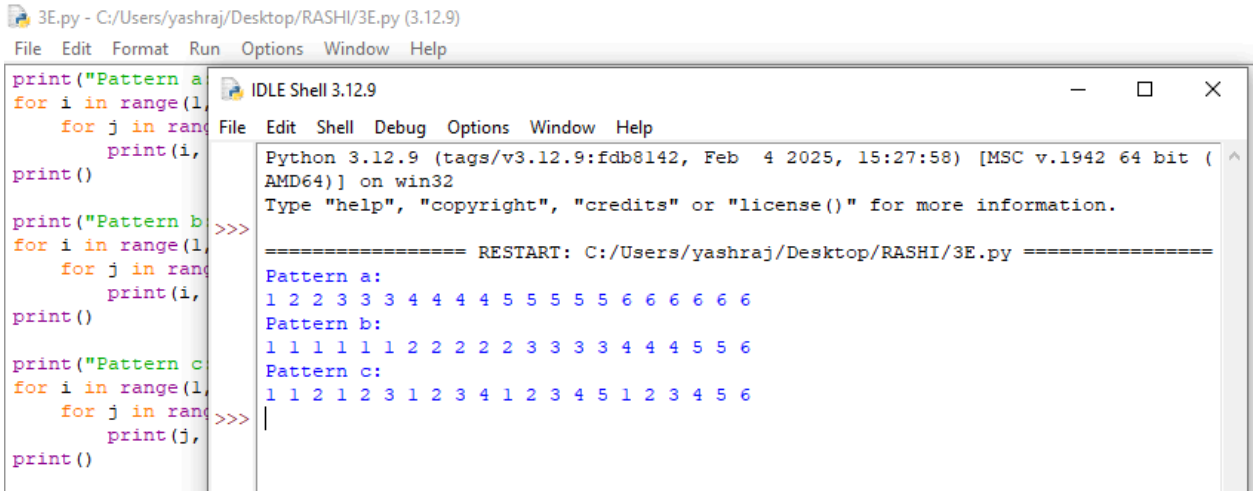
```
print("Pattern a:")
for i in range(1, 7):
    for j in range(i):
        print(i, end=" ")
print()

print("Pattern b:")
for i in range(1, 7):
    for j in range(6 - i + 1):
        print(i, end=" ")
print()

print("Pattern c:")
for i in range(1, 7):
    for j in range(1, i + 1):
        print(j, end=" ")
print()
```

Output:

3E.py - C:/Users/yashraj/Desktop/RASHI/3E.py (3.12.9)

File Edit Format Run Options Window Help

```
print("Pattern a:")
for i in range(1, 7):
    for j in range(i):
        print(i, end=" ")
print()

print("Pattern b:")
for i in range(1, 7):
    for j in range(6 - i + 1):
        print(i, end=" ")
print()

print("Pattern c:")
for i in range(1, 7):
    for j in range(1, i + 1):
        print(j, end=" ")
print()
```



Conclusion:

The code is executed successfully.

PRACTICAL 4

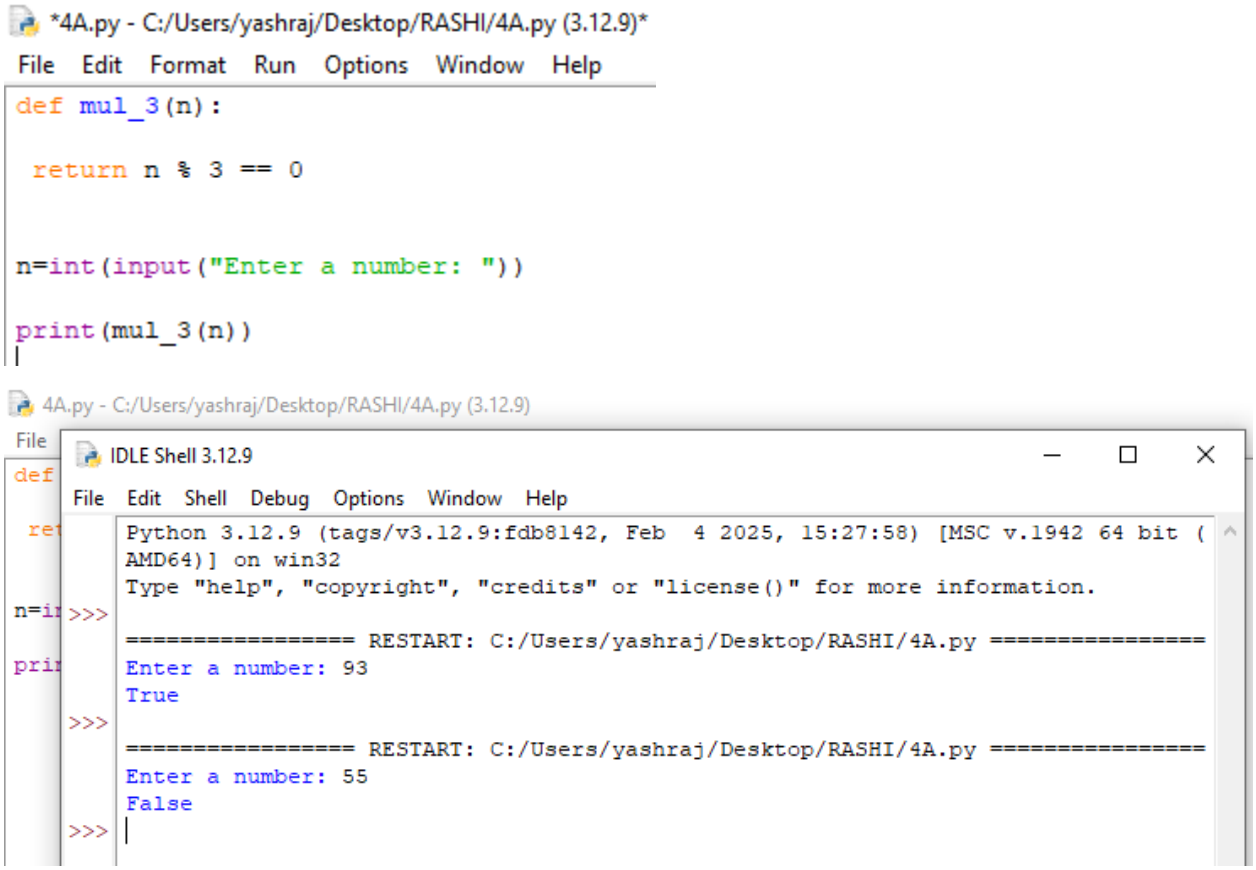
Functions

A.
Aim:
User Defined function
Write a user defined function when passed a value of type int, returns true if the value is multiple of 3 and returns false otherwise. (Multiples of 3 are 3, 6, 9, 12 ……)

Source Code:

```
def mul_3(n):
 return n % 3 == 0
n=int(input("Enter a number: "))
print(mul_3(n))
```

Output:



Conclusion:

The code is executed successfully.

B.

Aim:

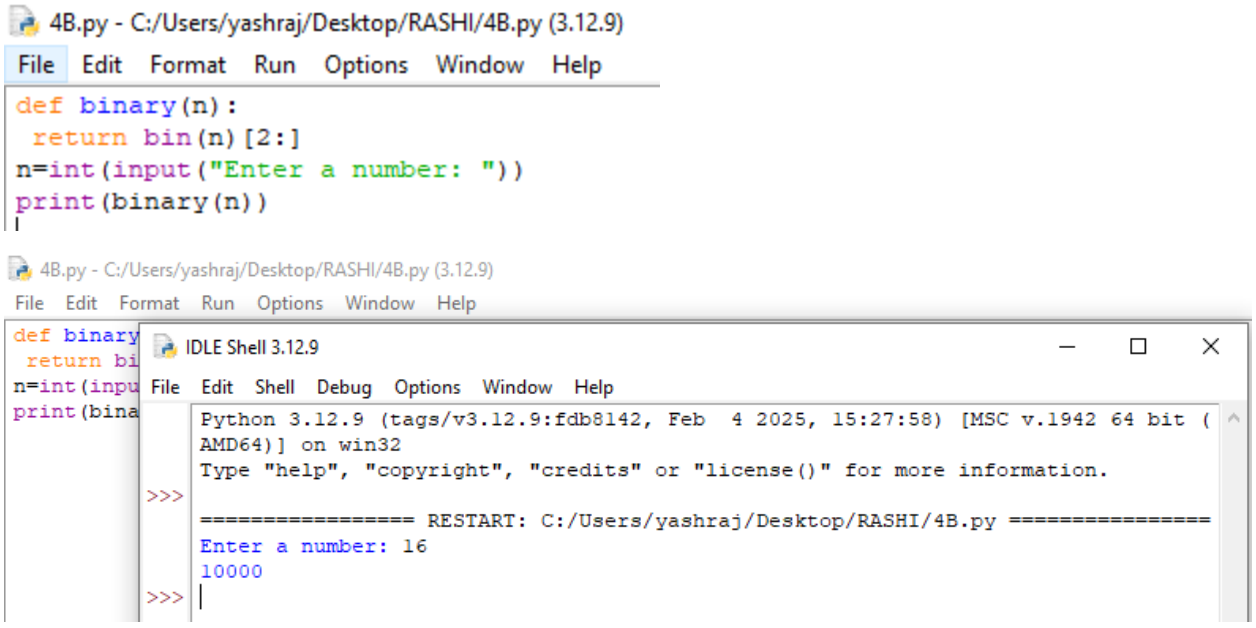
Keyword as Argument

Write a function that when passed an int type number as an argument, returns the binary equivalent as a string of 0s and 1s. For example, if we pass the value 13 to that function, should return “1101”.

Source Code:

```
def binary(n):
 return bin(n)[2:]
n=int(input("Enter a number: "))
print(binary(n))
```

Output:



Conclusion:

The code is executed successfully.

C.

Aim:

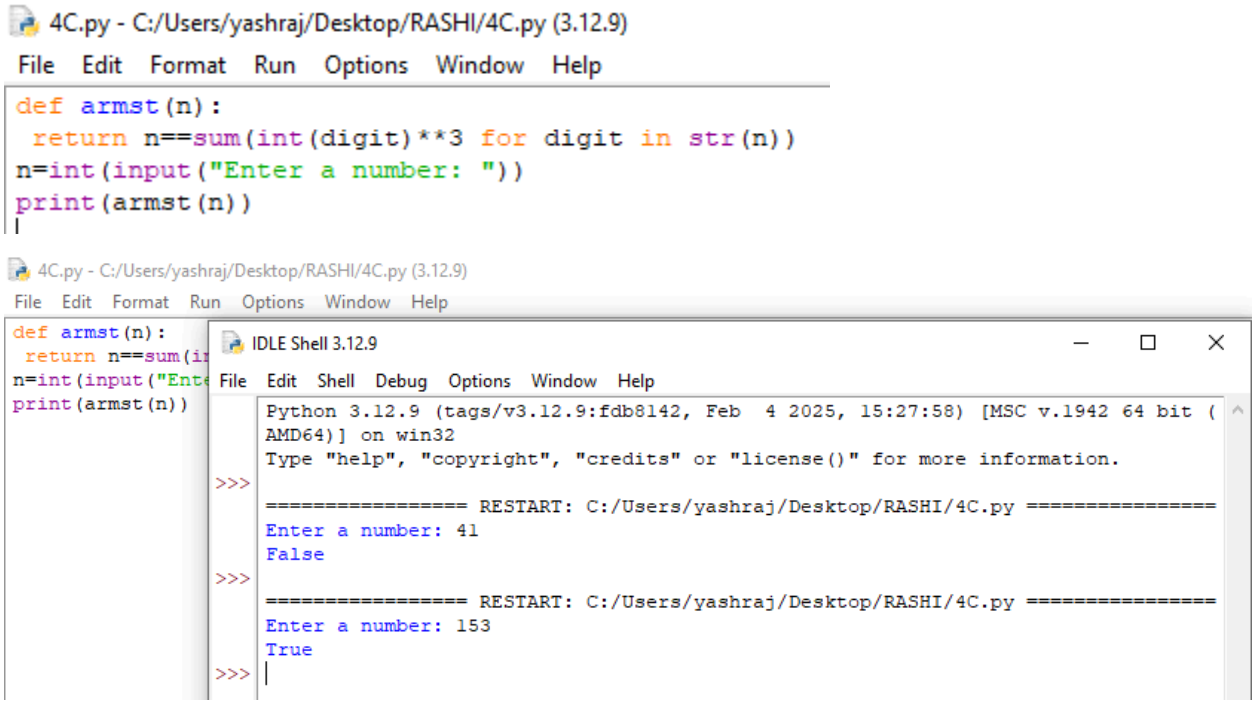
Boolean Function

Write a Boolean function that when passed a number should return wether true or false after checking if that number is an “Armstrong” number or not. An integer number is called Armstrong number if sum of the cubes of its digits is equal to the number itself. For example, 371 is an Armstrong number since 3*3*3 + 7*7*7 + 1*1*1 = 371.
Note: 153, 370, 371, 407 are all Armstrong numbers. You can use these values to check correctness of your function.

Source Code:

```
def armst(n):

 return n==sum(int(digit)**3 for digit in str(n))

n=int(input("Enter a number: "))

print(armst(n))
```

Output:



Conclusion:

The code is executed successfully.

D.

Aim:

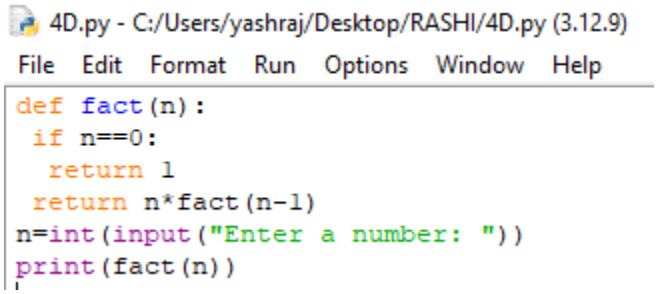
Recursive Function

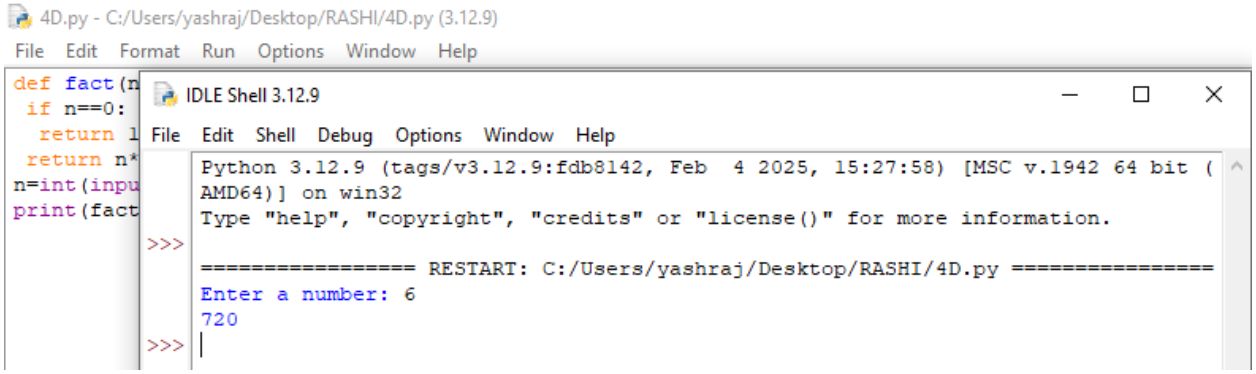
Write a Python Recursive function to calculate the factorial of a number (a non-negative integer). The function accepts the number as an argument

Source Code:

```
def fact(n):
 if n==0:
  return 1
 return n*fact(n-1)
n=int(input("Enter a number: "))
print(fact(n))
```

Output:





Conclusion:

The code is executed successfully.

PRACTICAL 5

Strings

A.

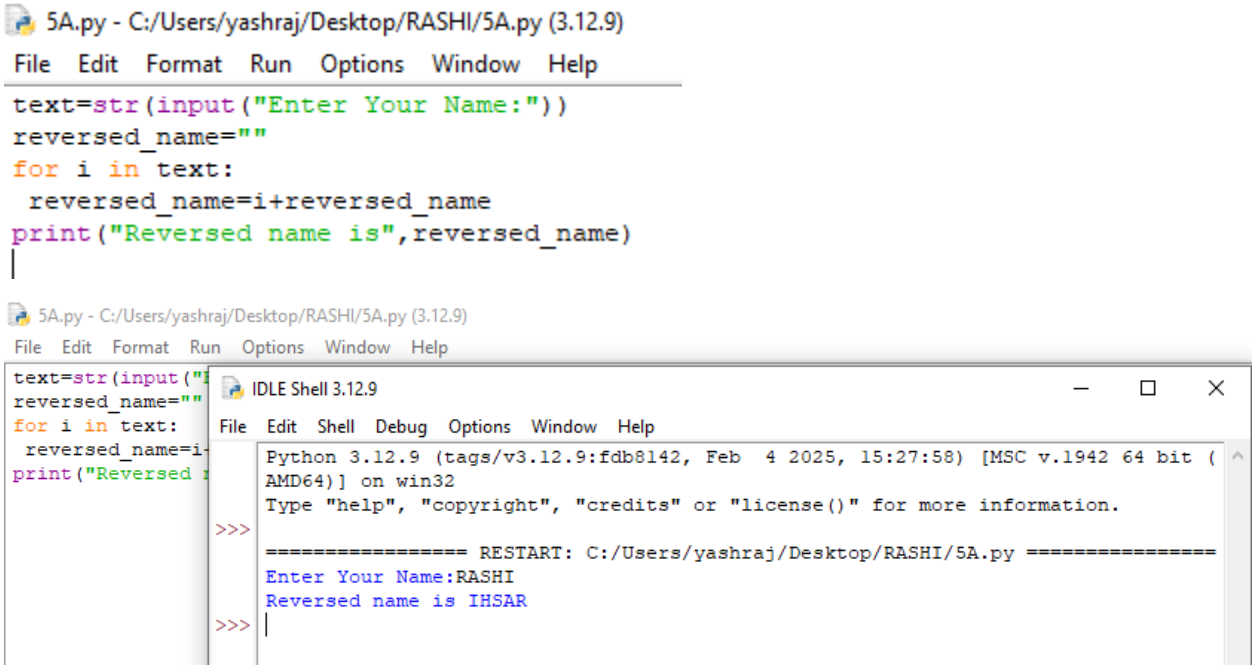
Aim:

Write a program that declares a String variable called name and initializes it with your full name. Print the value of that variable in reverse order using a loop.

Source Code:

```
text=str(input("Enter Your Name:"))
reversed_name=""
for i in text:
 reversed_name=i+reversed_name
print("Reversed name is",reversed_name)
```

Output:



Conclusion:

The code is executed successfully.

B.

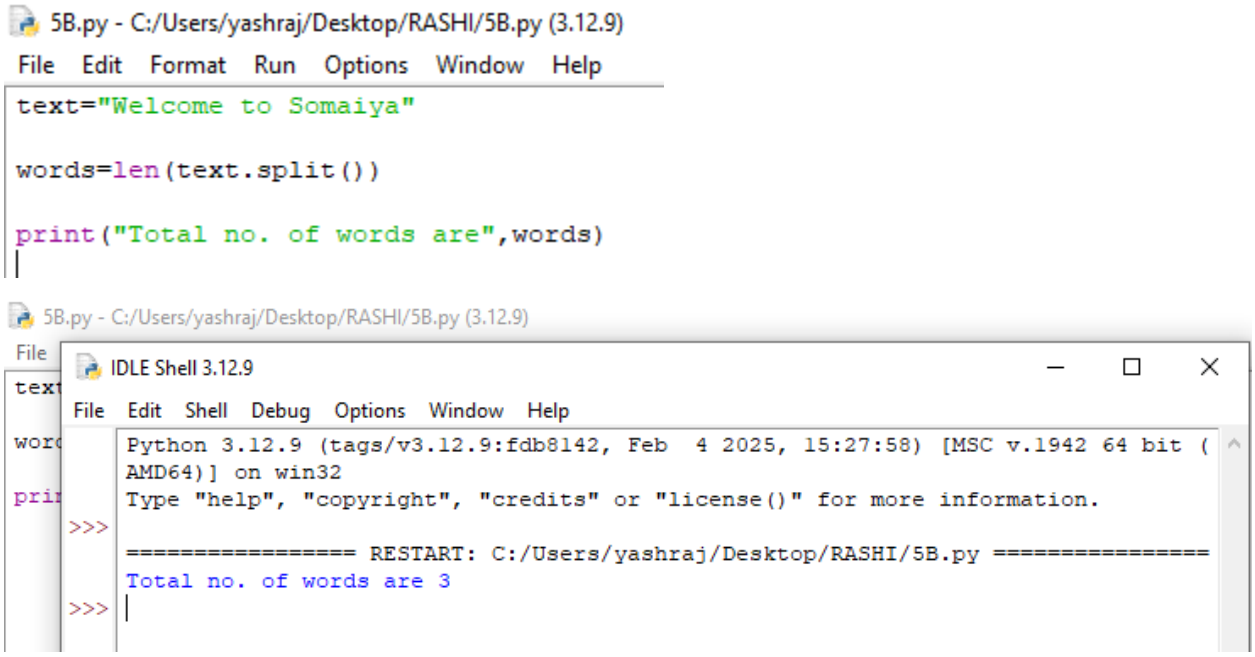
Aim:

Write a program to count the total number of words in a String. For example, the string “Welcome to SOMAIYA” has 3 words.

Source Code:

```
text="Welcome to Somaiya"

words=len(text.split())

print("Total no. of words are",words)
```

Output:



Conclusion:

The code is executed successfully.

C.

Aim:

Write a program that declares a String variable called password and initializes it with some value. The program should then check if the password meets the following criteria or not. The program should print an error message if the password does not meet the criteria.

Criteria-

i. The length of password should be at least 8 characters

ii. The password should have at least 1 digit

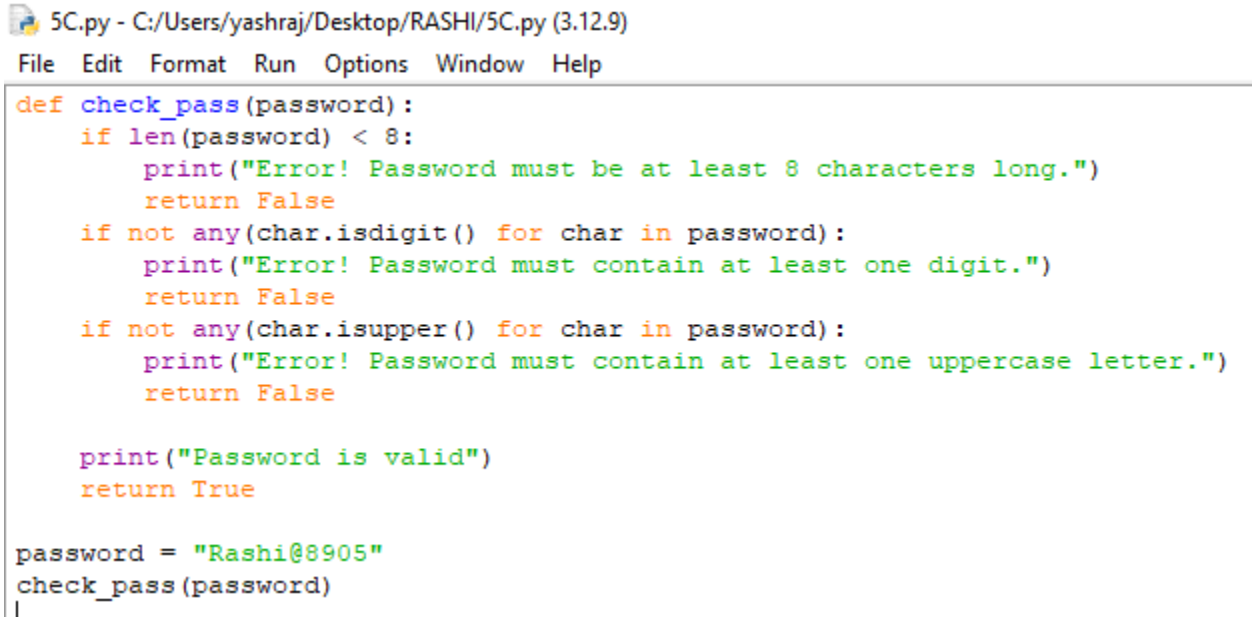
iii. The password should have at least 1 capital letter.

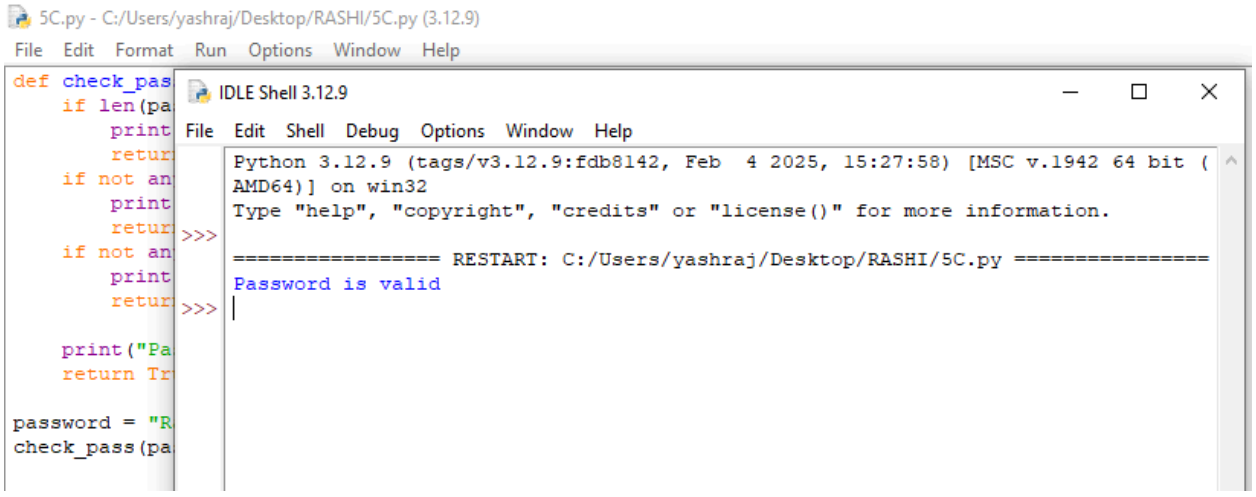
Source Code:

```
def check_pass(password):
    if len(password) < 8:
        print("Error! Password must be at least 8 characters long.")
        return False
    if not any(char.isdigit() for char in password):
        print("Error! Password must contain at least one digit.")
        return False
    if not any(char.isupper() for char in password):
        print("Error! Password must contain at least one uppercase letter.")
        return False
```

```
    print("Password is valid")
    return True
password = "Rashi@8905"
check_pass(password)
```

Output:





Conclusion:

The code is executed successfully.

D.

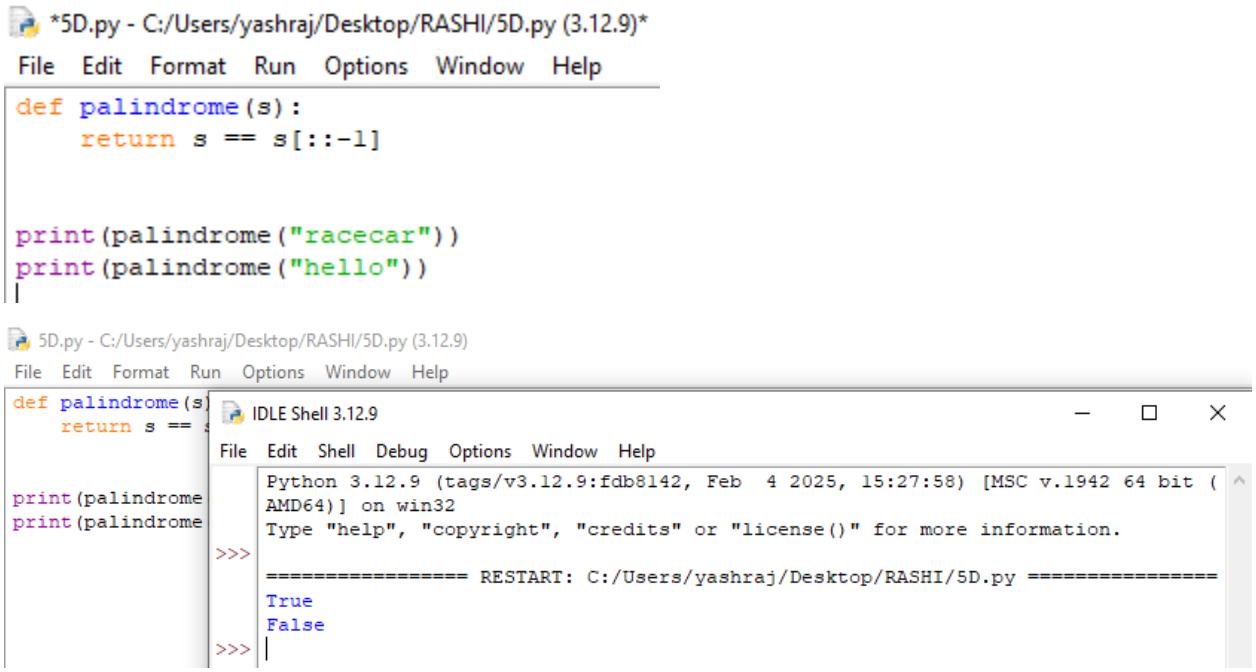
Aim:

Compute a function palindrome that when passed a String value returns true if the value is palindrome and false otherwise.

Source Code:

```
def palindrome(s):
    return s == s[::-1]

print(palindrome("racecar"))

print(palindrome("hello"))
```

Output:



Conclusion:

The code is executed successfully.

PRACTICAL 6

Lists

A.

Aim:

The following java code assigns random values (0-10) to each element of array “myArray”.

```
int[] myArray = new int[8];
for(int i = 0; i < myArray.length; i++) {
myArray[i] = (int)random(11);
}
```

Convert the above base code into **python** and write a piece of code in **python** that computes, and display the following on screen.

i. Print the values of each element in myArray ii. The total of all items in myArray

iii. The number of items in myArray that are greater than 5

iv. The maximum value in array myArray

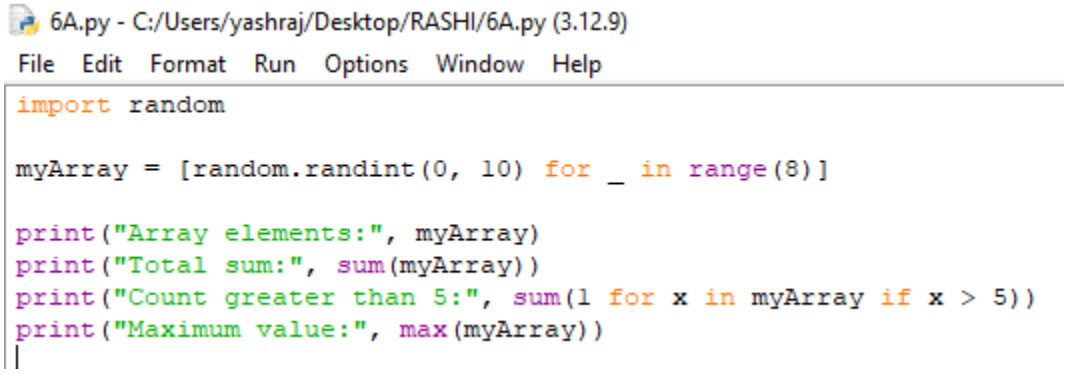
Source Code:

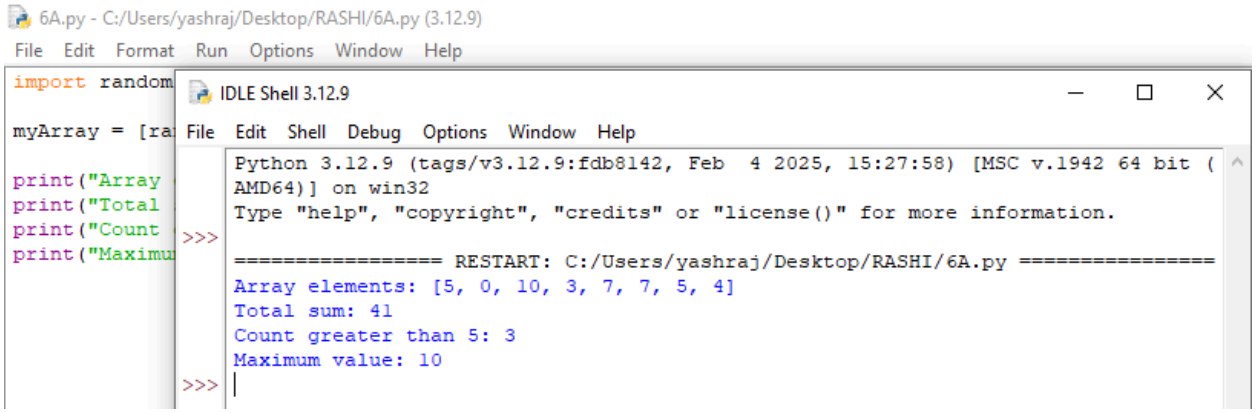
```
import random


myArray = [random.randint(0, 10) for _ in range(8)]


print("Array elements:", myArray)

print("Total sum:", sum(myArray))
```

print("Count greater than 5:", sum(1 for x in myArray if x > 5))

print("Maximum value:", max(myArray))

Output:





Conclusion:

The code is executed successfully.

B.

Aim:

The following java program declares an int array with 10elements, each initialized to a random value between (0-30).

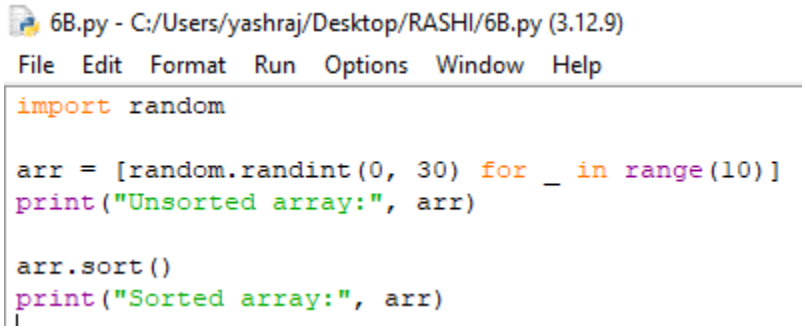
```
int[] arr = new int[10];
for (int i=0; i< arr.length; i++) {
arr[i] = (int)random(31);
print(arr[i]+" ");
}
```

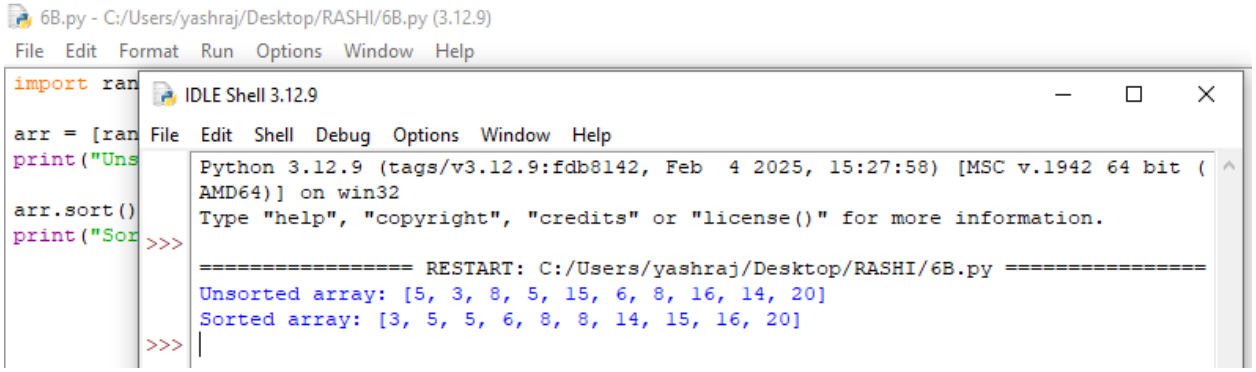
Convert the above base code in **Python** and write a program to sort elements of this array in ascending order.

Source Code:

```
import random


arr = [random.randint(0, 30) for _ in range(10)]

print("Unsorted array:", arr)


arr.sort()

print("Sorted array:", arr)
```

Output:





Conclusion:

The code is executed successfully.

C.

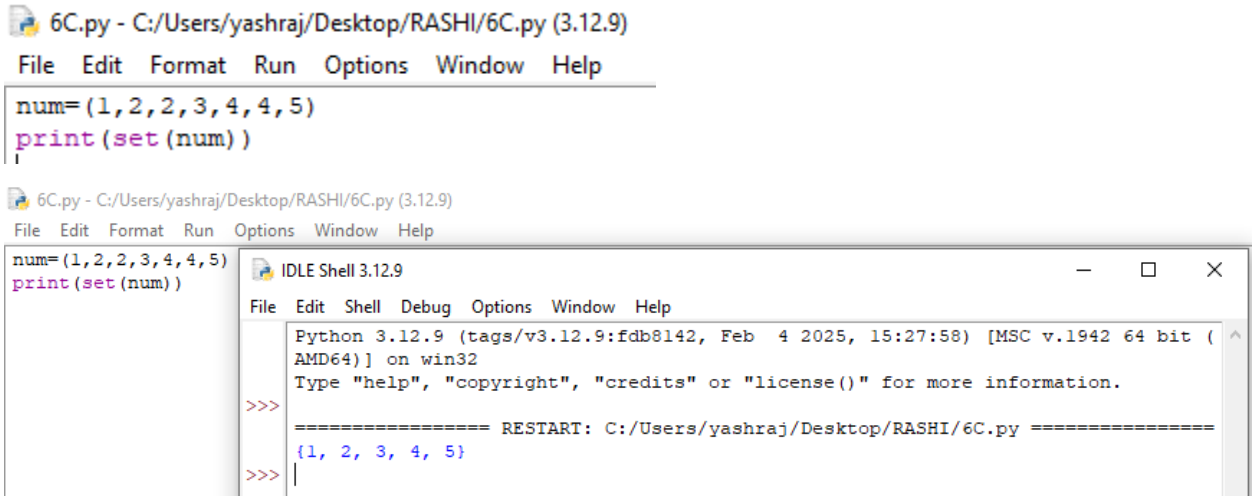
Aim:

Write a program to remove duplicate items from a list.

Source Code:

```
num=(1,2,2,3,4,4,5)

print(set(num))
```

Output:



Conclusion:

The code is executed successfully.

D.

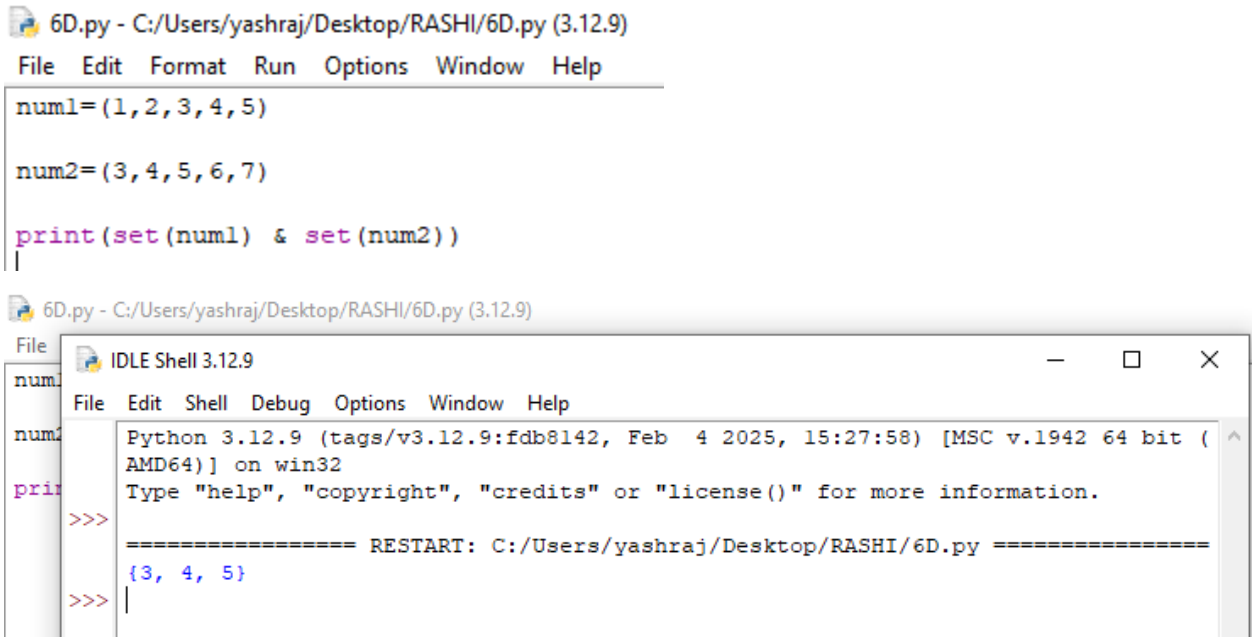
Aim:

Write a program to find common items in 2 lists.

Source Code:

```
num1=(1,2,3,4,5)

num2=(3,4,5,6,7)

print(set(num1) & set(num2))
```

Output:



Conclusion:

The code is executed successfully.

PRACTICAL 7

Tuples and Dictionaries

A.
Aim:
Create and perform the following -

1. An empty tuple
2. Tuple with integers
3. Tuple with mixed data types
4. Nested tuple.
5. Using a while loop print the middle element of the tuple created in 3.

Source Code:

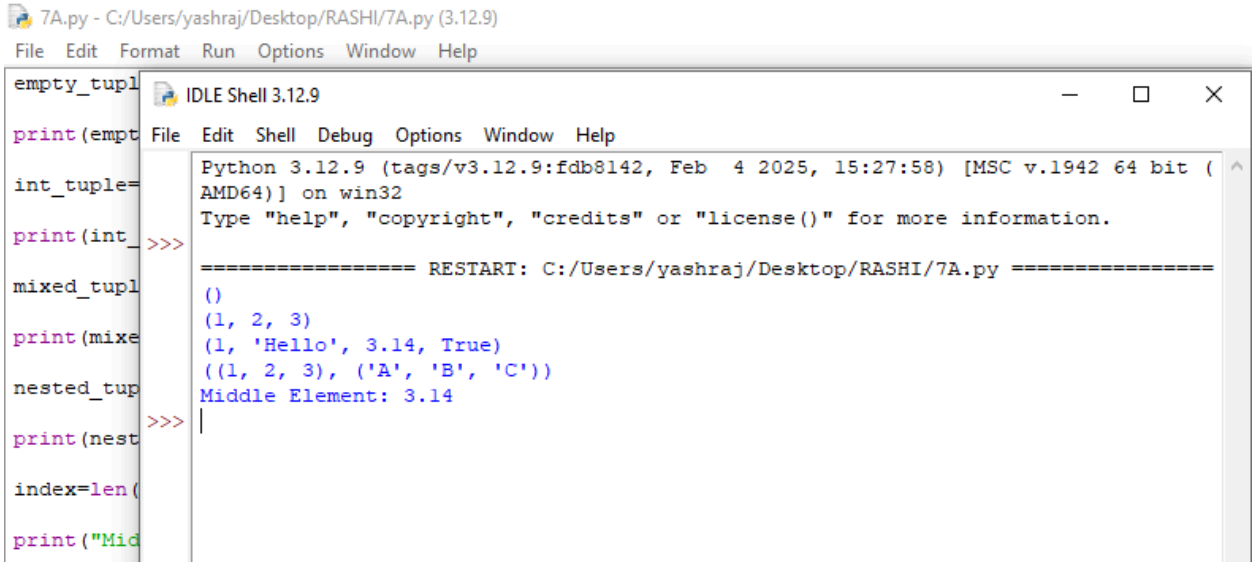
```
empty_tuple=()

print(empty_tuple)

int_tuple=(1,2,3)

print(int_tuple)

mixed_tuple=(1,"Hello",3.14,True)

print(mixed_tuple)

nested_tuple=((1,2,3),("A","B","C"))

print(nested_tuple)

index=len(mixed_tuple)//2

print("Middle Element:",mixed_tuple[index])
```

Output:

7A.py - C:/Users/yashraj/Desktop/RASHI/7A.py (3.12.9)

File Edit Format Run Options Window Help

```
empty_tuple=()

print(empty_tuple)

int_tuple=(1,2,3)

print(int_tuple)

mixed_tuple=(1,"Hello",3.14,True)

print(mixed_tuple)

nested_tuple=((1,2,3),("A","B","C"))

print(nested_tuple)

index=len(mixed_tuple)//2

print("Middle Element:",mixed_tuple[index])
```



Conclusion:

The code is executed successfully.

B.

Aim:

Join 2 tuples after creation. Find the first and last element of the joined tuple. Swap the elements. Perform slicing between 2nd to 2nd last elements.

Source Code:

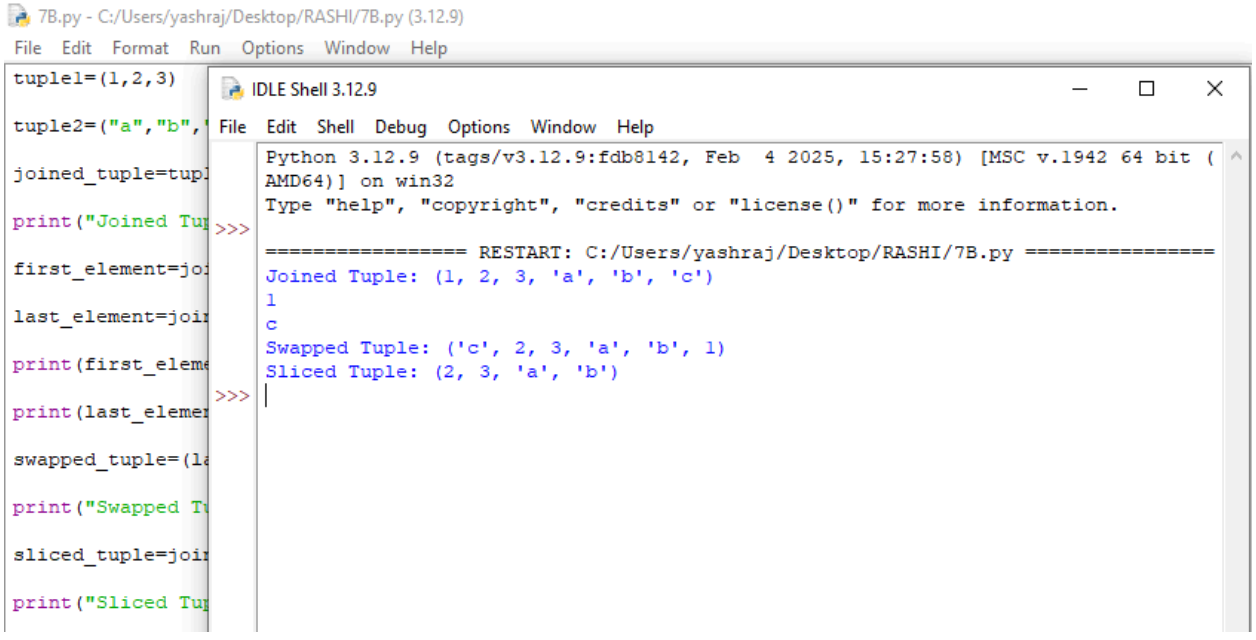
```
tuple1=(1,2,3)

tuple2=("a","b","c")

joined_tuple=tuple1+tuple2

print("Joined Tuple:",joined_tuple)

first_element=joined_tuple[0]

last_element=joined_tuple[-1]

print(first_element)

print(last_element)

swapped_tuple=(last_element,)+joined_tuple[1:-1]+(first_element,
)

print("Swapped Tuple:",swapped_tuple)

sliced_tuple=joined_tuple[1:-1]

print("Sliced Tuple:",sliced_tuple)
```

Output:

7B.py - C:/Users/yashraj/Desktop/RASHI/7B.py (3.12.9)

File Edit Format Run Options Window Help

```
tuple1=(1,2,3)

tuple2=("a","b","c")

joined_tuple=tuple1+tuple2

print("Joined Tuple:",joined_tuple)

first_element=joined_tuple[0]

last_element=joined_tuple[-1]

print(first_element)

print(last_element)

swapped_tuple=(last_element,)+joined_tuple[1:-1]+(first_element,)

print("Swapped Tuple:",swapped_tuple)

sliced_tuple=joined_tuple[1:-1]

print("Sliced Tuple:",sliced_tuple)
```



Conclusion:

The code is executed successfully.

C.

Aim:

Create a dictionary named *dict*-

1. Using a for loop print all the key values one by one.
2. Using a while loop print all *values* in dict.
3. Make 3 more dictionaries inside dict named as dict1, dict2, dict3; add values to it.
4. Remove the last inserted key value pair.
5. Copy the dict to a dictionary named ditto.

Source Code:

```
dict_={"Name":"Rashi","Age":19,"Gender":"Female"}
print("Keys in dictionary:")
for key in dict_:
 print(key)
print("Values in dictionary:")
values=list(dict_.values())
i=0
while i<len(values):
 print(values[i])
 i+=1
dict_["dict1"]={"a":1,"b":2}
dict_["dict2"]={"x":10,"y":20}
dict_["dict3"]={"p":"Hello","q":"World"}
```

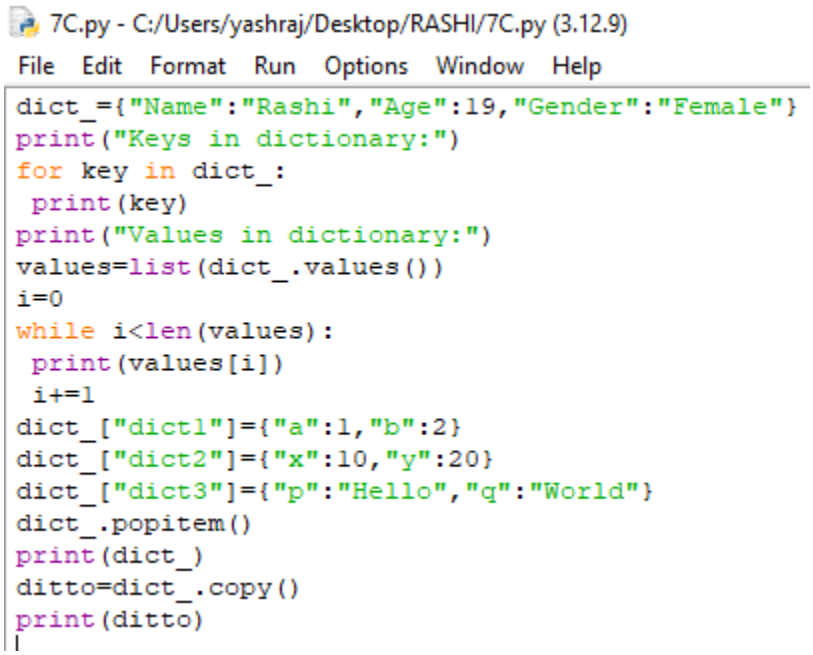
dict_.popitem()

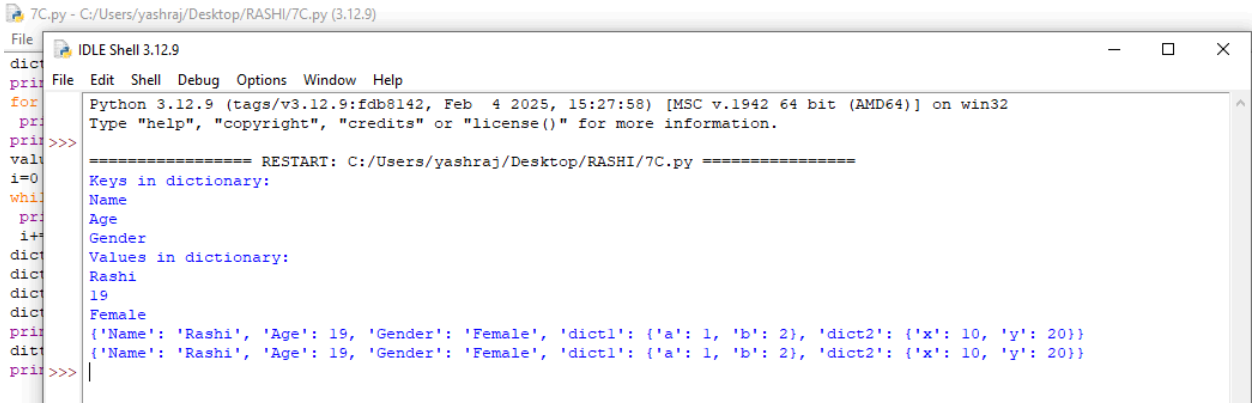
print(dict_)

ditto=dict_.copy()

print(ditto)

Output:





Conclusion:

The code is executed successfully.

D.

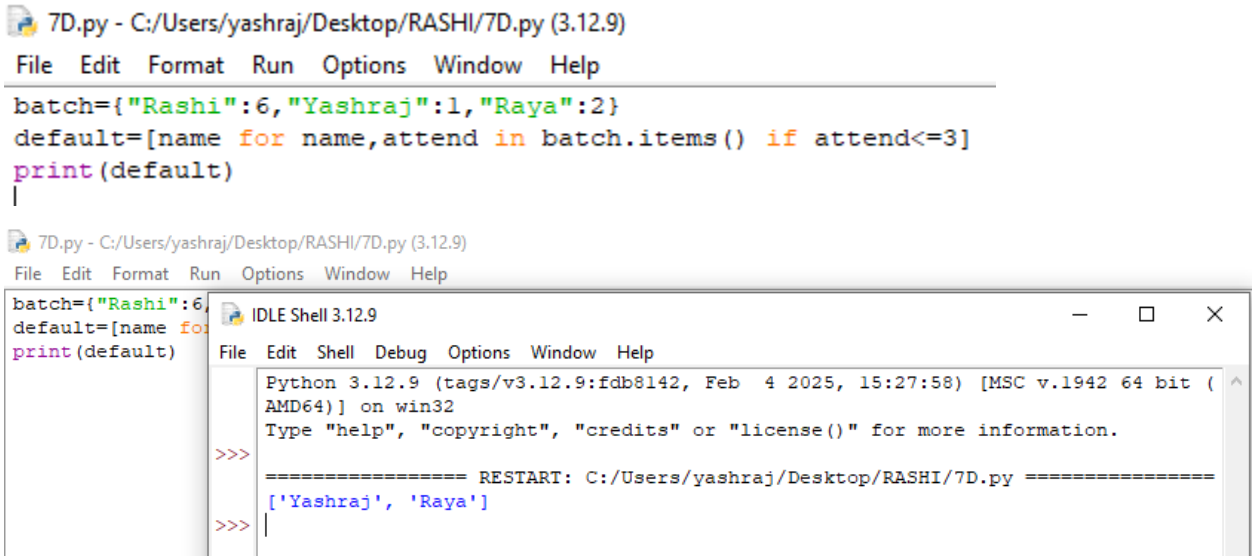
Aim:

Create a dictionary named Batch having the names as keys and Number of practical attended as value, of the students of this Batch of SYIT. Make a list of defaulters named *default*; for the students who have attended 3 or less practicals. Total number of practicals conducted are 6.

Source Code:

```
batch={"Rashi":6,"Yashraj":1,"Raya":2}

default=[name for name,attend in batch.items() if attend<=3]

print(default)
```

Output:



Conclusion:

The code is executed successfully.

PRACTICAL 8

File Handling

A.

Aim:

Create a file named ‘py.txt’ and write the various file handling methods in it such as- x, a, r, w, r+, w+, a+, rb, rb+, wb, wb+, ab, ab+ ; as content to this file. Now perform all these operations on the file py.txt and print the various outputs.

Source Code:

```
with open("py.txt", "w") as f:
    f.write("x, a, r, w, r+, w+, a+, rb, rb+, wb, wb+, ab, ab+")
with open("py.txt", "a") as f:
    f.write("\nAppending some text.")
with open("py.txt", "r") as f:
    print("\nFile content (R mode)")
    print(f.read())
with open("py.txt", "r+") as f:
    f.write("\nAdded using R+ mode")
    f.seek(0)
    print("\nFile content (R+ mode)")
    print(f.read())
with open("py.txt", "a+") as f:
```

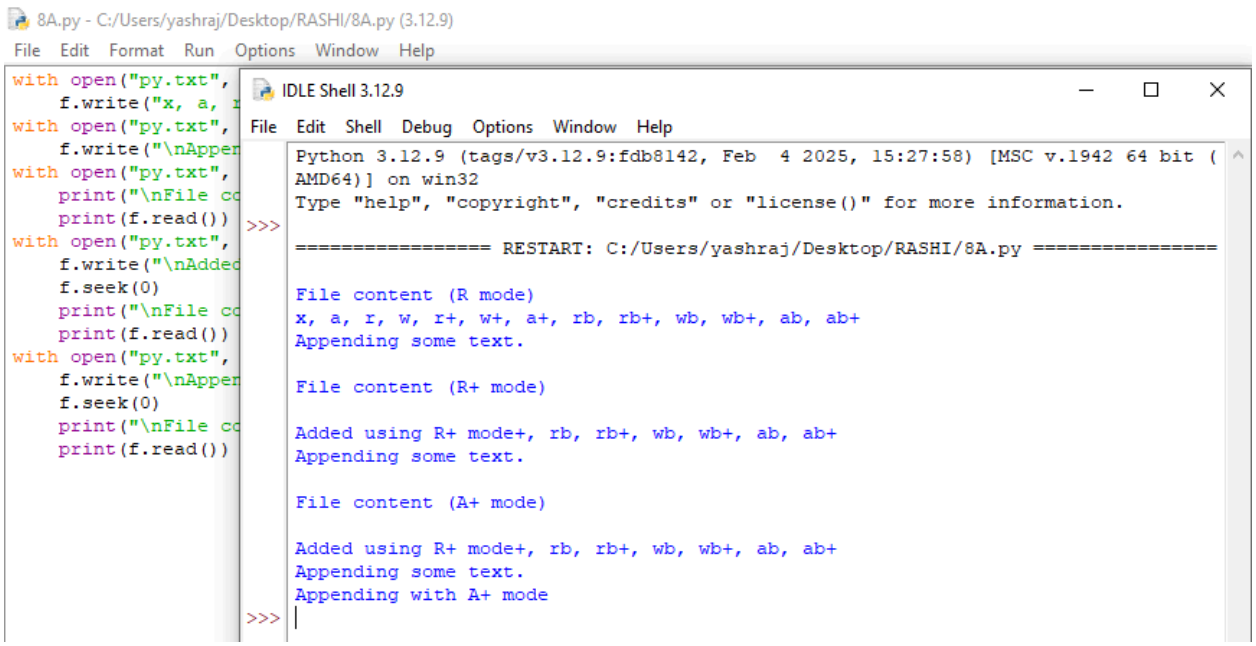
```
    f.write("\nAppending with A+ mode")
    f.seek(0)
    print("\nFile content (A+ mode)")
print(f.read())
```

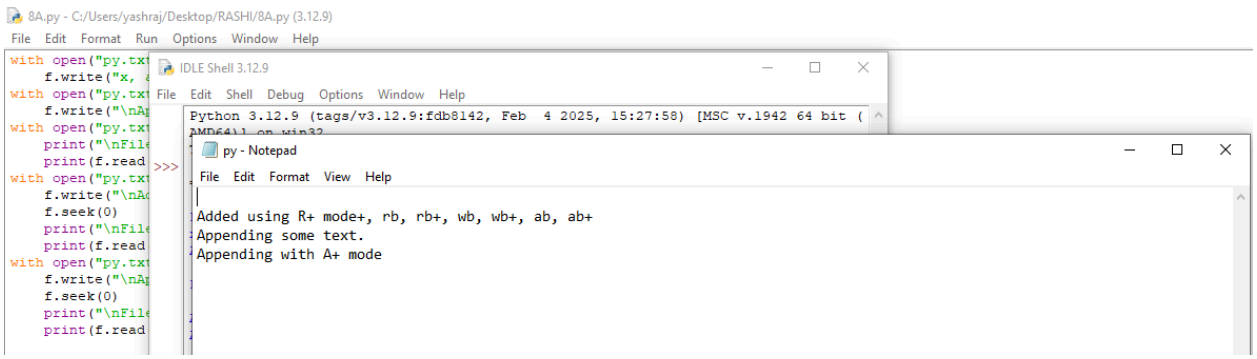
Output:

8A.py - C:/Users/yashraj/Desktop/RASHI/8A.py (3.12.9)

File Edit Format Run Options Window Help

```
with open("py.txt", "w") as f:
    f.write("x, a, r, w, r+, w+, a+, rb, rb+, wb, wb+, ab, ab+")
with open("py.txt", "a") as f:
    f.write("\nAppending some text.")
with open("py.txt", "r") as f:
    print("\nFile content (R mode)")
    print(f.read())
with open("py.txt", "r+") as f:
    f.write("\nAdded using R+ mode")
    f.seek(0)
    print("\nFile content (R+ mode)")
    print(f.read())
with open("py.txt", "a+") as f:
    f.write("\nAppending with A+ mode")
    f.seek(0)
    print("\nFile content (A+ mode)")
    print(f.read())
```





Conclusion:

The code is executed successfully.

B.

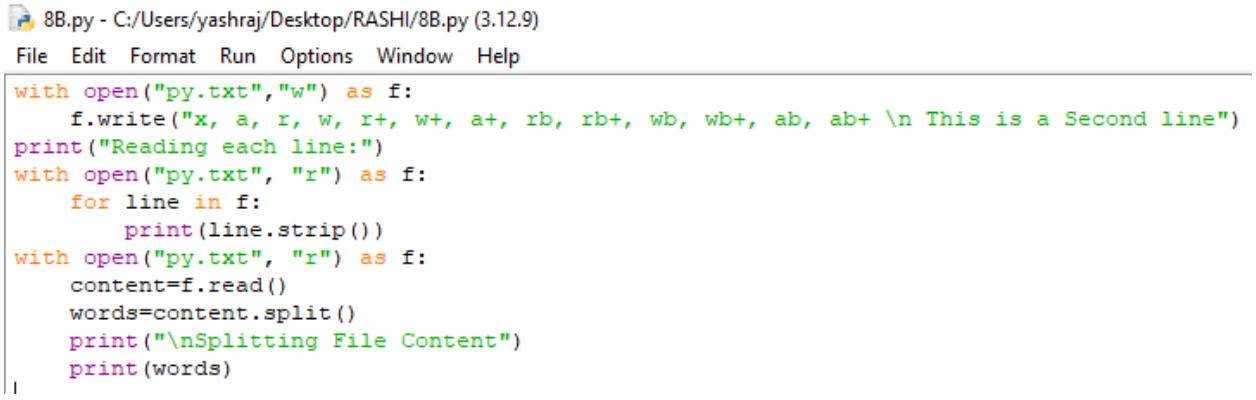
Aim:

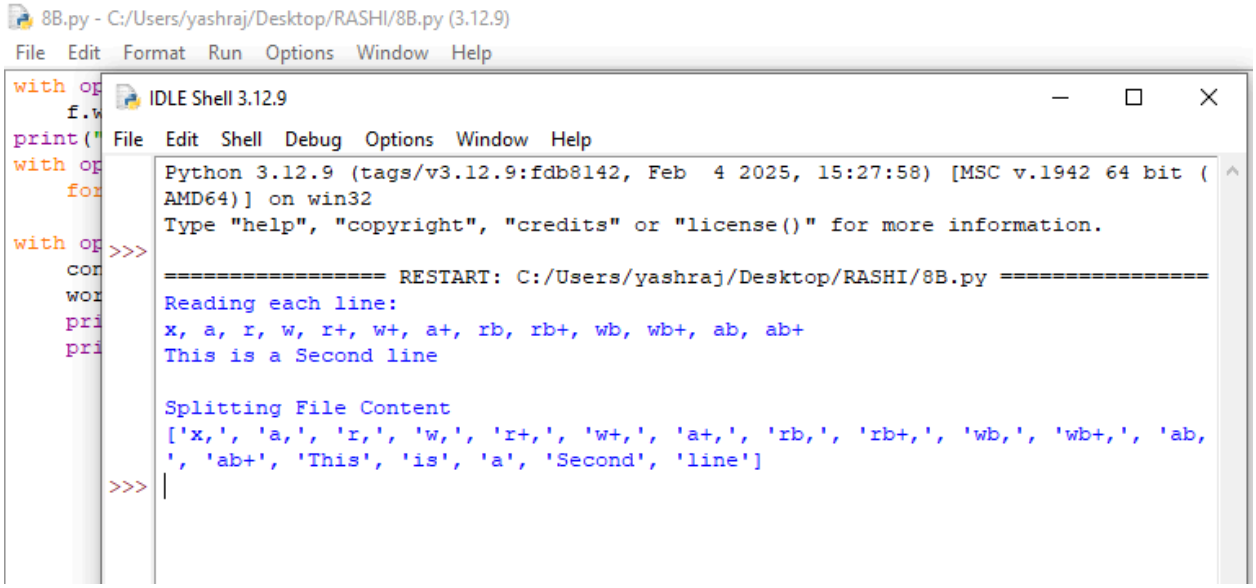
Write on the file above using *with()* function. Use a for loop to print each line in py.txt. Now split the content of the file using *split()* function and print the output.

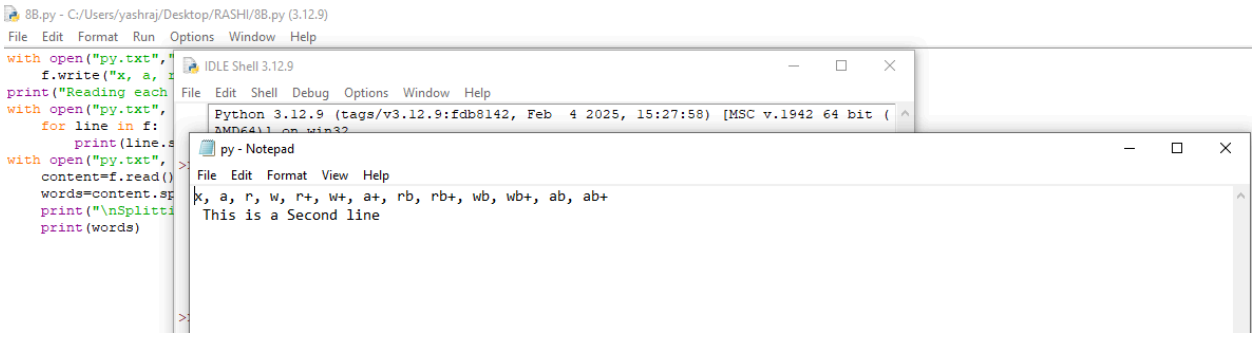
Source Code:

```
with open("py.txt","w") as f:
    f.write("x, a, r, w, r+, w+, a+, rb, rb+, wb, wb+, ab, ab+ \n This is a Second line")
print("Reading each line:")
with open("py.txt", "r") as f:
    for line in f:
        print(line.strip())
with open("py.txt", "r") as f:
    content=f.read()
    words=content.split()
    print("\nSplitting File Content")
    print(words)
```

Output:







Conclusion:

The code is executed successfully.

PRACTICAL 9

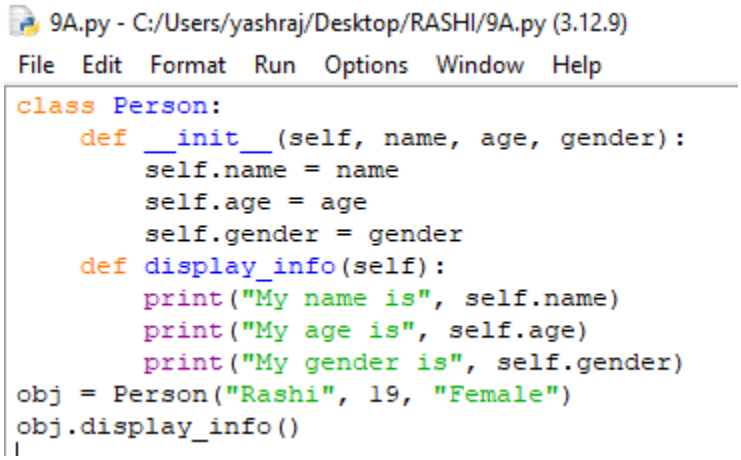
Classes and Objects

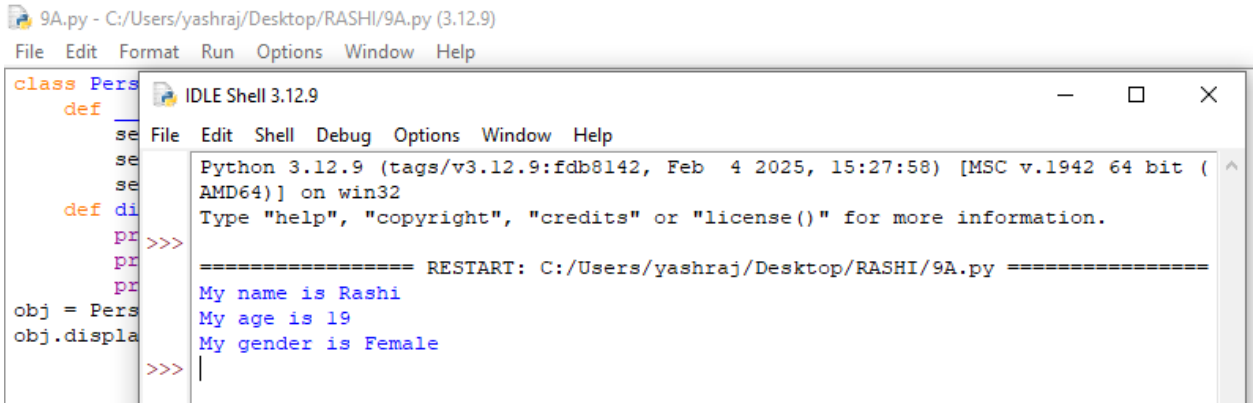
A.
Aim:
Create a Class named Person, use the __init__() function to assign values for name, age and gender Create an object and print the values.

Source Code:

```
    class Person:
        def __init__(self, name, age, gender):
            self.name = name
            self.age = age
            self.gender = gender
        def display_info(self):
            print("My name is", self.name)
            print("My age is", self.age)
            print("My gender is", self.gender)
    obj = Person("Rashi", 19, "Female")
obj.display_info()
```

Output:





Conclusion:

The code is executed successfully.

B.

Aim:

Create a Child Class Student of the above Class Person which will inherit it's properties and methods. Use __init__ () function and add a few properties and methods such as fname and lname to Student Class. Check if the Child Class function overrides the function of Parent Class Person. If this happens then add a call to the parent's __init__() function OR use the super() function for the same task.

Source Code:

```
class Person:
    def __init__(self, name, age, gender):
        self.name = name
        self.age = age
        self.gender = gender

    def display_info(self):
        print("My name is", self.name)
        print("My age is", self.age)
        print("My gender is", self.gender)

class Student(Person):
    def __init__(self, name, age, gender, fname, lname):
        super().__init__(name, age, gender)
```

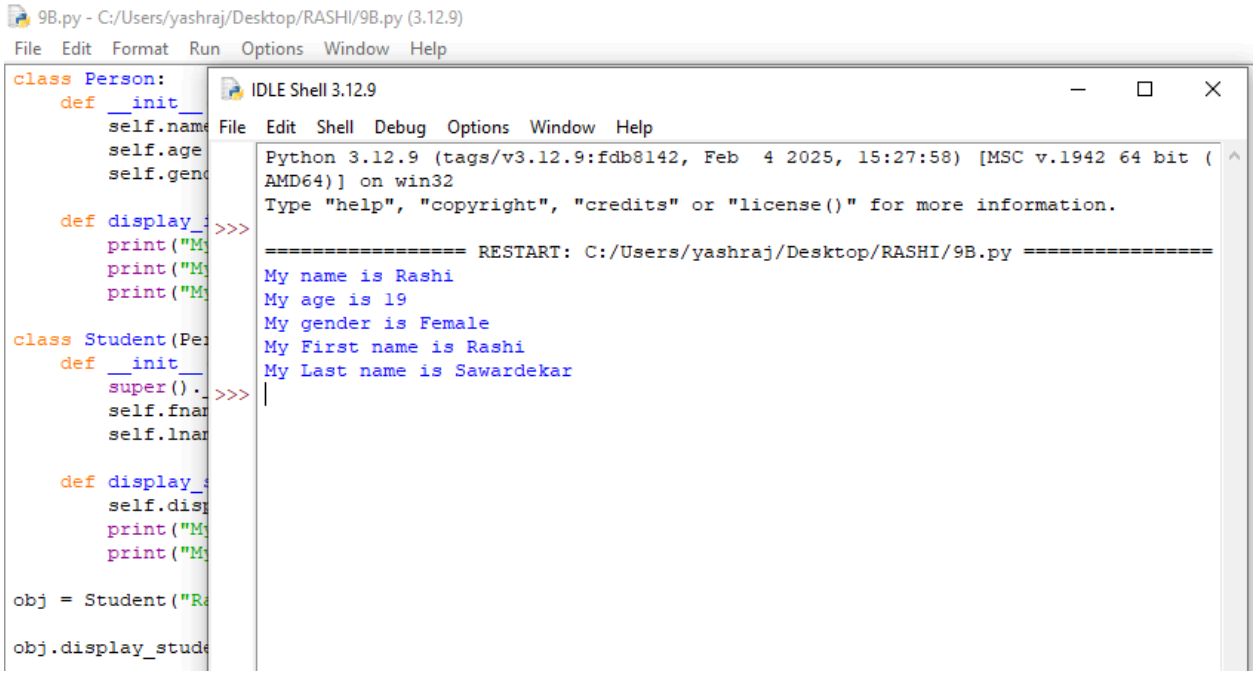
```
        self.fname = fname
        self.lname = lname

    def display_student_info(self):
        self.display_info()
        print("My First name is", self.fname)
        print("My Last name is", self.lname)

obj = Student("Rashi", 19, "Female", "Rashi", "Sawardekar")

obj.display_student_info()
```

Output:

9B.py - C:/Users/yashraj/Desktop/RASHI/9B.py (3.12.9)

File Edit Format Run Options Window Help

```
class Person:
    def __init__(self, name, age, gender):
        self.name = name
        self.age = age
        self.gender = gender

    def display_info(self):
        print("My name is", self.name)
        print("My age is", self.age)
        print("My gender is", self.gender)

class Student(Person):
    def __init__(self, name, age, gender, fname, lname):
        super().__init__(name, age, gender)
        self.fname = fname
        self.lname = lname

    def display_student_info(self):
        self.display_info()
        print("My First name is", self.fname)
        print("My Last name is", self.lname)

obj = Student("Rashi", 19, "Female", "Rashi", "Sawardekar")

obj.display_student_info()
```



Conclusion:

The code is executed successfully.

PRACTICAL 10

Regular Expressions

A.

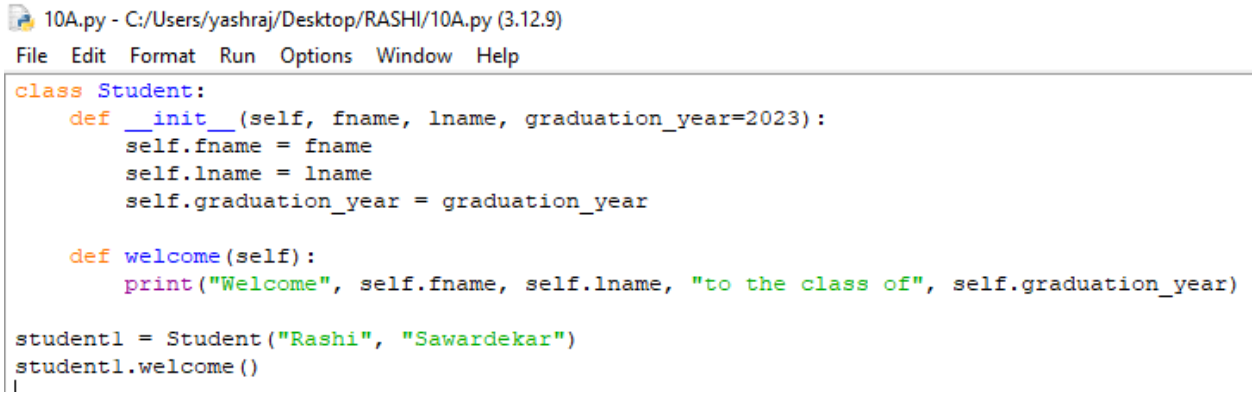
Aim:

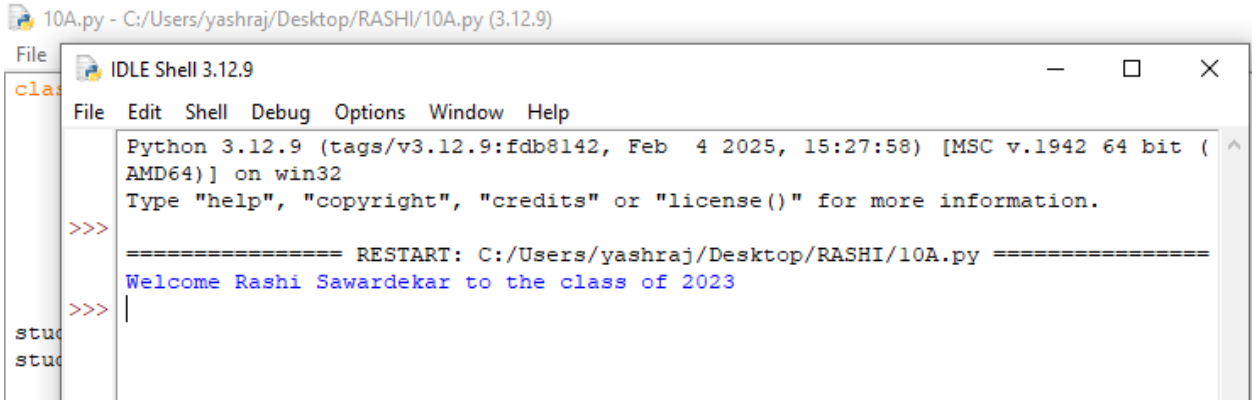
Add a property graduationyear to the student class using self and pass a value 2023 to it. Add a method called *welcome()* to the student class, which prints ("Welcome", fname, lname, "to the class of" , graduationyear)

Source Code:

```
class Student:

    def __init__(self, fname, lname, graduation_year=2023):

        self.fname = fname

        self.lname = lname

        self.graduation_year = graduation_year


    def welcome(self):

        print("Welcome", self.fname, self.lname, "to the class of",
self.graduation_year)


student1 = Student("Rashi", "Sawardekar")

student1.welcome()
```

Output:





Conclusion:

The code is executed successfully.

B.

Aim:

Import re, Use RegEx methods findall(), search() or match() to check and print if the *fname* ot *lname* has 'a' in it, also check if graduationyear has '0' in it.

Source Code:

```
import re

class Student:

    def __init__(self, fname, lname, graduation_year=2023):

        self.fname = fname

        self.lname = lname

        self.graduation_year = str(graduation_year)

    def check_name(self):

        if re.search(r"a",self.fname,re.IGNORECASE) or
re.search(r"a",self.lname,re.IGNORECASE):

            print("The name contains the letter 'a'")

        else:

            print("The name does not contain the letter 'a'")

    def check_num(self):

        if re.findall(r"0",self.graduation_year):

            print("The graduation year contains the digit '0'")

        else:
```

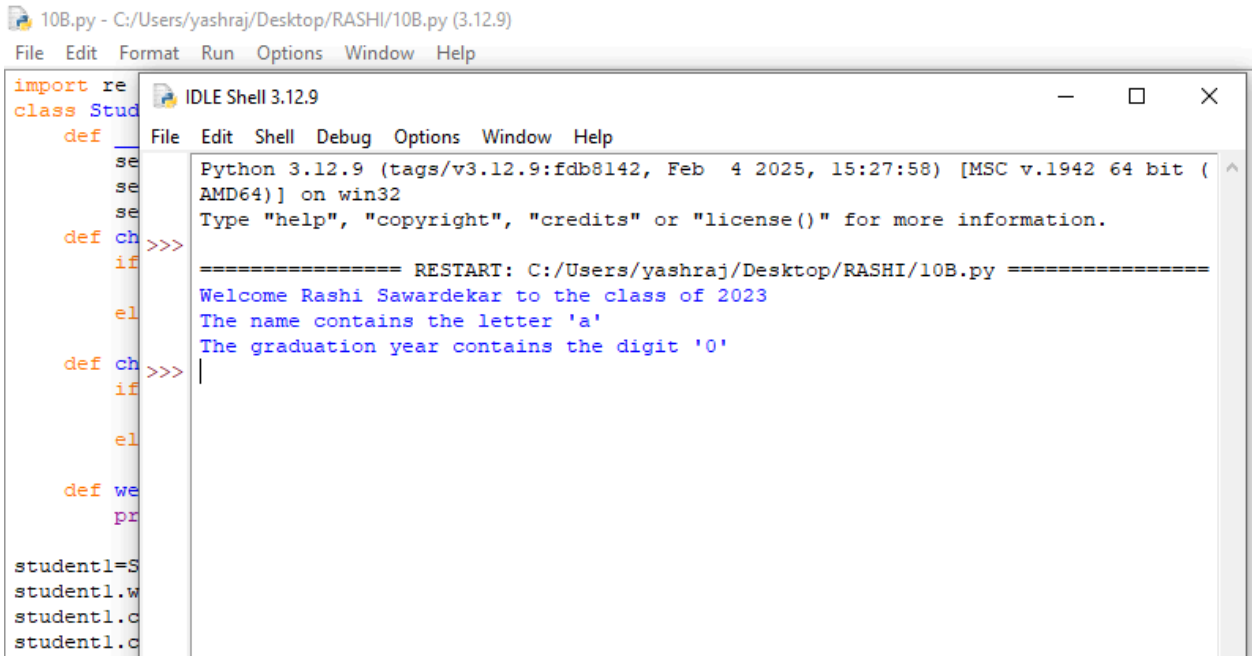
```
            print("The graduation year does not contain the digit
'0'")

    def welcome(self):

        print("Welcome", self.fname, self.lname, "to the class of",
self.graduation_year)


student1=Student("Rashi","Sawardekar")

student1.welcome()

student1.check_name()

student1.check_num()
```

Output:

10B.py - C:/Users/yashraj/Desktop/RASHI/10B.py (3.12.9)

File Edit Format Run Options Window Help

```
import re
class Student:
    def __init__(self, fname, lname, graduation_year=2023):
        self.fname = fname
        self.lname = lname
        self.graduation_year = str(graduation_year)
    def check_name(self):
        if re.search(r"a",self.fname,re.IGNORECASE) or re.search(r"a",self.lname,re.IGNORECASE):
            print("The name contains the letter 'a'")
        else:
            print("The name does not contain the letter 'a'")
    def check_num(self):
        if re.findall(r"0",self.graduation_year):
            print("The graduation year contains the digit '0'")
        else:
            print("The graduation year does not contain the digit '0'")
    def welcome(self):
        print("Welcome", self.fname, self.lname, "to the class of", self.graduation_year)

student1=Student("Rashi","Sawardekar")
student1.welcome()
student1.check_name()
student1.check_num()
```



Conclusion:

The code is executed successfully.

PRACTICAL 11

GUI using Python

Aim:

Create an admission form to display all the elements of tkinter module, validate the user input (password and username through a textbox)

Source Code:

```
import tkinter as tk

from tkinter import messagebox


def validate_login():

    username = user_entry.get()

    password = pass_entry.get()

    if username == "admin" and password == "1234":

        messagebox.showinfo("Login", "Login successful, Welcome to the Admission System")

    else:

        messagebox.showerror("Login", "Invalid username or password")


pl=tk.Tk()
```

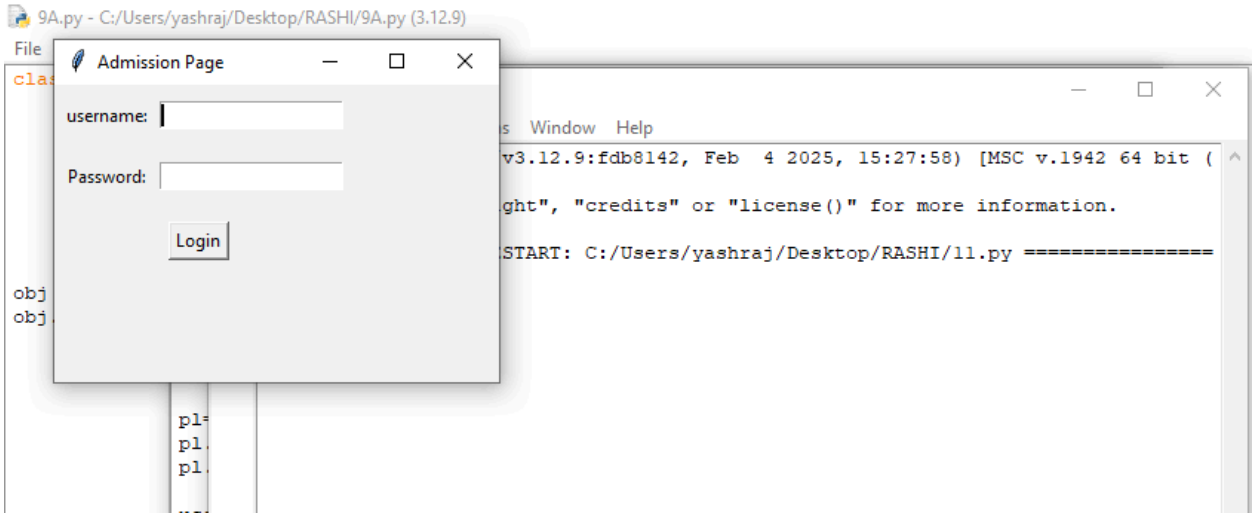
```
pl.title("Admission Page")
pl.geometry("300x200")

user_label=tk.Label(pl,text="username:")
user_label.grid(row=0,column=0,pady=10,padx=5)
user_entry=tk.Entry(pl)
user_entry.grid(row=0,column=1)

pass_label=tk.Label(pl,text="Password:")
pass_label.grid(row=1,column=0,pady=10,padx=5)
pass_entry=tk.Entry(pl,show="*")
pass_entry.grid(row=1,column=1)

btn=tk.Button(pl,text="Login",command=validate_login)
btn.grid(row=2,column=0,columnspan=2,pady=10)

pl.mainloop()
```

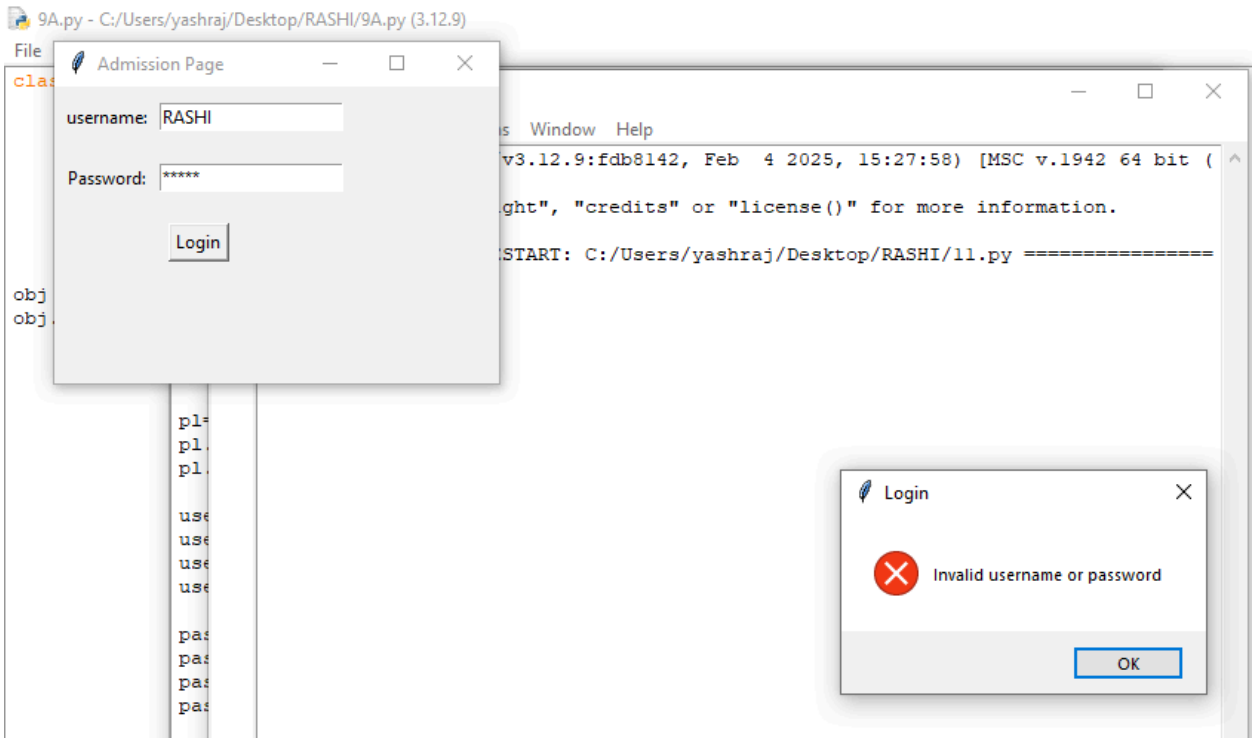
Output:

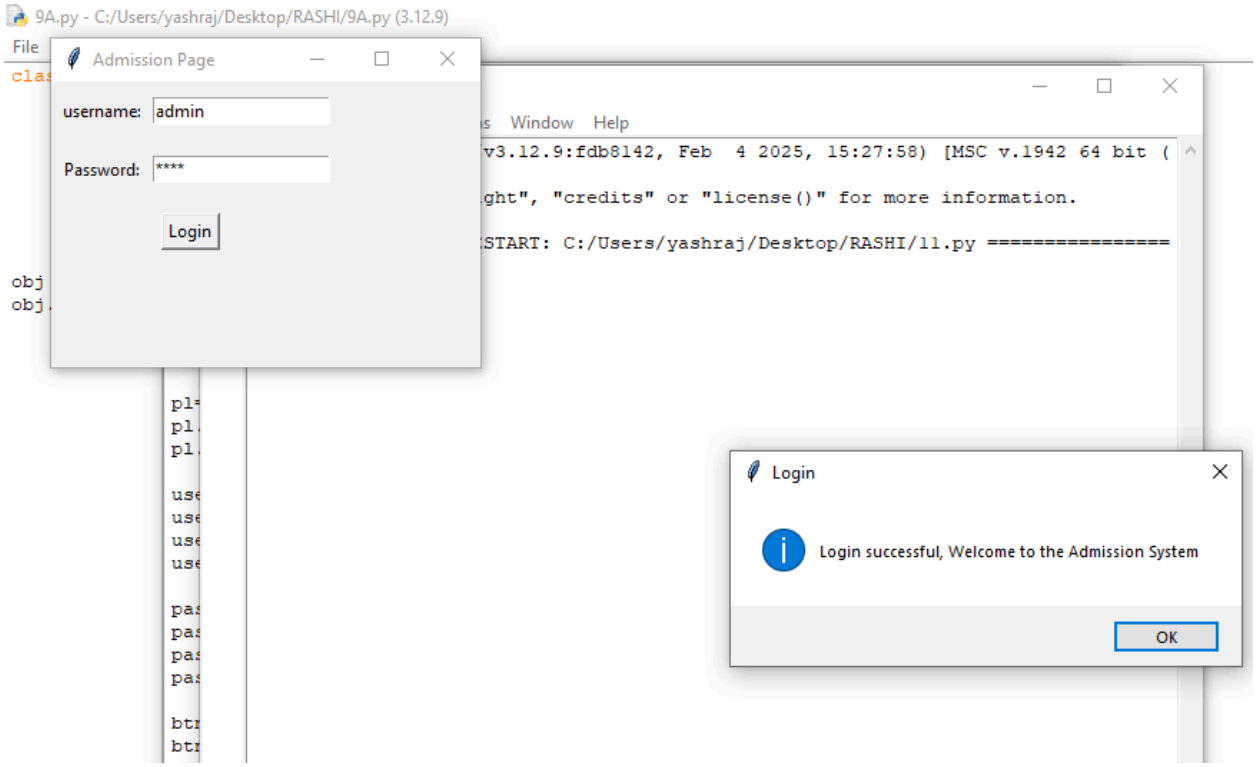
11.py - C:/Users/yashraj/Desktop/RASHI/11.py (3.12.9)

File Edit Format Run Options Window Help

```
import tkinter as tk
from tkinter import messagebox

def validate_login():
    username = user_entry.get()
    password = pass_entry.get()
    if username == "admin" and password == "1234":
        messagebox.showinfo("Login", "Login successful, Welcome to the Admission System")
    else:
        messagebox.showerror("Login", "Invalid username or password")

pl=tk.Tk()
pl.title("Admission Page")
pl.geometry("300x200")

user_label=tk.Label(pl,text="username:")
user_label.grid(row=0,column=0,pady=10,padx=5)
user_entry=tk.Entry(pl)
user_entry.grid(row=0,column=1)

pass_label=tk.Label(pl,text="Password:")
pass_label.grid(row=1,column=0,pady=10,padx=5)
pass_entry=tk.Entry(pl,show="*")
pass_entry.grid(row=1,column=1)

btn=tk.Button(pl,text="Login",command=validate_login)
btn.grid(row=2,column=0,columnspan=2,pady=10)

pl.mainloop()
```







Conclusion:

The code is executed successfully.

PRACTICAL 12

Database Connectivity using Python

Aim:

Using a connector of MySql establish a database connection and using cursor Create, Update, and Delete database entries for Student_id, name, class, year, CGPA, gender.

Source Code:

```
import mysql.connector


conn = mysql.connector.connect(
    host='localhost',
    user='root',
    password='yashraj@123',
    database='testdb'
)


cursor = conn.cursor()


cursor.execute("""
    CREATE TABLE IF NOT EXISTS students (
        student_id INT AUTO_INCREMENT PRIMARY KEY,
```

```
        name VARCHAR(250),
        student_class VARCHAR(250),
        year INT,
        CGPA FLOAT,
        gender VARCHAR(25)
    )
""")
conn.commit()
print("Table 'students' is ready.")


def insert_student(name, student_class, year, cgpa, gender):
    cursor.execute("INSERT INTO students (name,
student_class, year, cgpa, gender) VALUES (%s, %s, %s, %s,
%s)",
                   (name, student_class, year, cgpa, gender))
    conn.commit()
    print(f" Student Record Inserted: {name}")


def update_student(student_id, new_cgpa):
    cursor.execute("UPDATE students SET CGPA = %s WHERE
student_id = %s", (new_cgpa, student_id))
    conn.commit()
```

```
    print(f" Student Record Updated! ID: {student_id}, New
CGPA: {new_cgpa}")


def delete_student(student_id):
    cursor.execute("DELETE FROM students WHERE
student_id = %s", (student_id,))
    conn.commit()
    print(f" Student Record Deleted! ID: {student_id}")


def fetch_students():
    cursor.execute("SELECT * FROM students")
    students = cursor.fetchall()
    print("\n Student Records:")
    for student in students:
        print(student)


insert_student("Rashi", "FYIT", 2025, 9.8, "Female")
insert_student("Raya", "SYCS", 2024, 9.6, "Female")
insert_student("Yashraj", "TYCS", 2023, 9.7, "Male")


update_student(2, 9.85)
delete_student(1)
```

```
delete_student(3)

fetch_students()

cursor.close()
conn.close()
print("Database Connection Closed.")
```

Output:

12.py - C:/Users/yashraj/Desktop/RASHI/12.py (3.12.9)

File Edit Format Run Options Window Help

```
import mysql.connector

conn = mysql.connector.connect(
    host='localhost',
    user='root',
    password='yashraj@123',
    database='testdb'
)

cursor = conn.cursor()

cursor.execute("""
    CREATE TABLE IF NOT EXISTS students (
        student_id INT AUTO_INCREMENT PRIMARY KEY,
        name VARCHAR(250),
        student_class VARCHAR(250),
        year INT,
        CGPA FLOAT,
        gender VARCHAR(25)
    )
""")
conn.commit()
print("Table 'students' is ready.")

def insert_student(name, student_class, year, cgpa, gender):
    cursor.execute("INSERT INTO students (name, student_class, year, cgpa, gender) VALUES (%s, %s, %s, %s, %s)",
                   (name, student_class, year, cgpa, gender))
    conn.commit()
    print(f"Student Record Inserted: {name}")

def update_student(student_id, new_cgpa):
    cursor.execute("UPDATE students SET CGPA = %s WHERE student_id = %s", (new_cgpa, student_id))
    conn.commit()
    print(f"Student Record Updated! ID: {student_id}, New CGPA: {new_cgpa}")

def delete_student(student_id):
    cursor.execute("DELETE FROM students WHERE student_id = %s", (student_id,))
    conn.commit()
    print(f"Student Record Deleted! ID: {student_id}")

def fetch_students():
```

12.py - C:/Users/yashraj/Desktop/RASHI/12.py (3.12.9)

File Edit Format Run Options Window Help

```
""")
conn.commit()
print("Table 'students' is ready.")

def insert_student(name, student_class, year, cgpa, gender):
    cursor.execute("INSERT INTO students (name, student_class, year, cgpa, gender) VALUES (%s, %s, %s, %s, %s)",
                   (name, student_class, year, cgpa, gender))
    conn.commit()
    print(f"Student Record Inserted: {name}")

def update_student(student_id, new_cgpa):
    cursor.execute("UPDATE students SET CGPA = %s WHERE student_id = %s", (new_cgpa, student_id))
    conn.commit()
    print(f"Student Record Updated! ID: {student_id}, New CGPA: {new_cgpa}")

def delete_student(student_id):
    cursor.execute("DELETE FROM students WHERE student_id = %s", (student_id,))
    conn.commit()
    print(f"Student Record Deleted! ID: {student_id}")

def fetch_students():
    cursor.execute("SELECT * FROM students")
    students = cursor.fetchall()
    print("\n Student Records:")
    for student in students:
        print(student)

insert_student("Rashi", "FYIT", 2025, 9.8, "Female")
insert_student("Raya", "SYCS", 2024, 9.6, "Female")
insert_student("Yashraj", "TYCS", 2023, 9.7, "Male")

update_student(2, 9.85)
delete_student(1)
delete_student(3)

fetch_students()

cursor.close()
conn.close()
print("Database Connection Closed.")
```

12.py - C:/Users/yashraj/Desktop/RASHI/12.py (3.12.9)

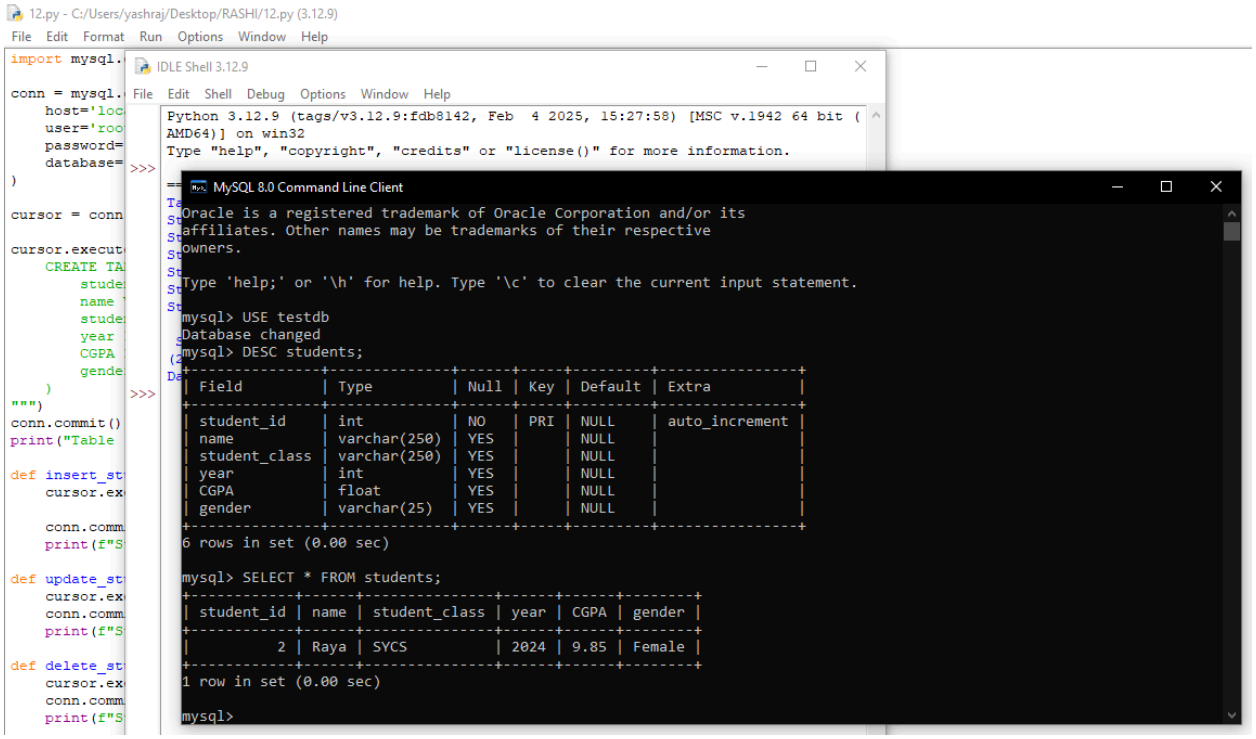
File Edit Format Run Options Window Help

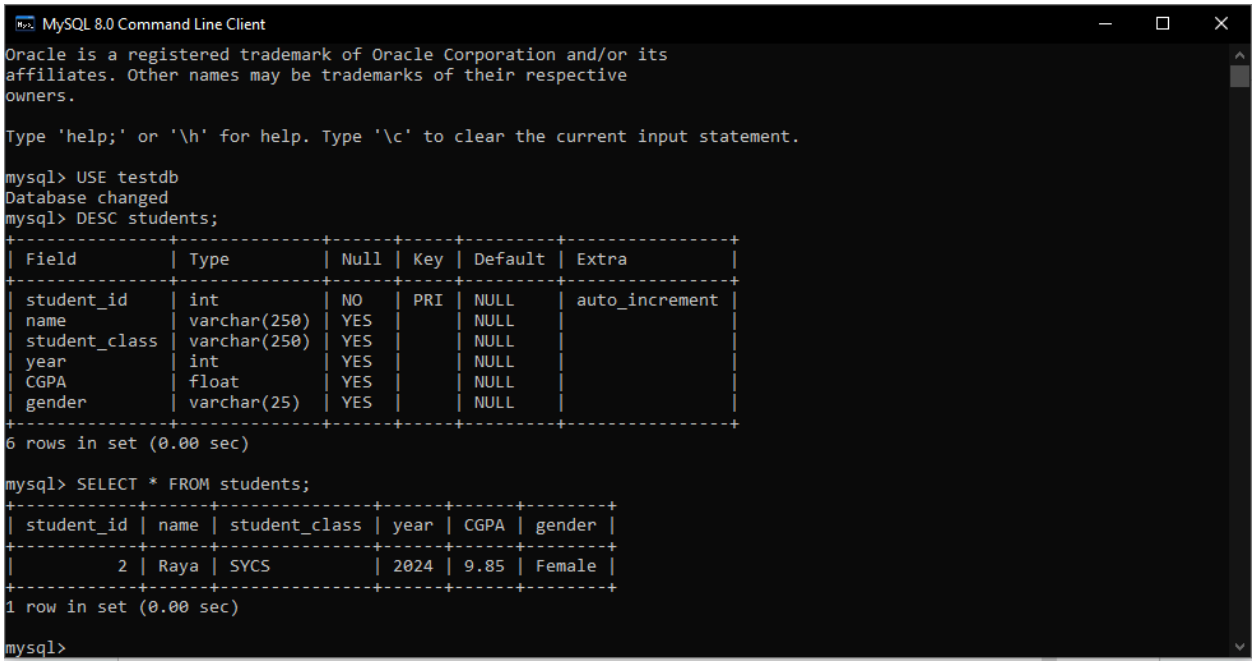
```
import mysql.

conn = mysql.
    host='loc
    user='roo
    password=
    database=
)

cursor = conn

cursor.execut
    CREATE TA
        stude
        name
        stude
        year
        CGPA
        gende
    )
""")
conn.commit()
```

IDLE Shell 3.12.9

File Edit Shell Debug Options Window Help

```
Python 3.12.9 (tags/v3.12.9:fdb8142, Feb  4 2025, 15:27:58) [MSC v.1942 64 bit (
AMD64)] on win32
Type "help", "copyright", "credits" or "license()" for more information.
>>>
================ RESTART: C:/Users/yashraj/Desktop/RASHI/12.py ================
Table 'students' is ready.
Student Record Inserted: Rashi
Student Record Inserted: Raya
Student Record Inserted: Yashraj
Student Record Updated! ID: 2, New CGPA: 9.85
Student Record Deleted! ID: 1
Student Record Deleted! ID: 3

 Student Records:
(2, 'Raya', 'SYCS', 2024, 9.85, 'Female')
Database Connection Closed.
>>>
```





Conclusion:

The code is executed successfully.