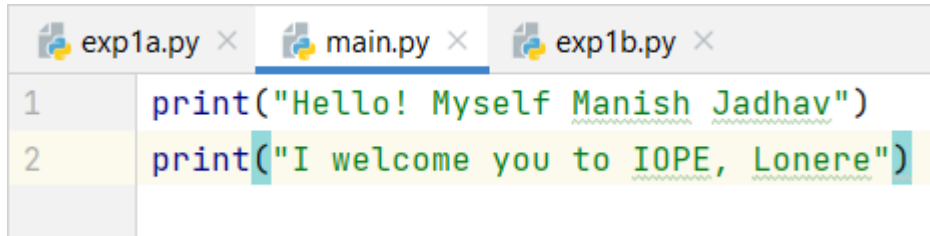


Experiment No.1

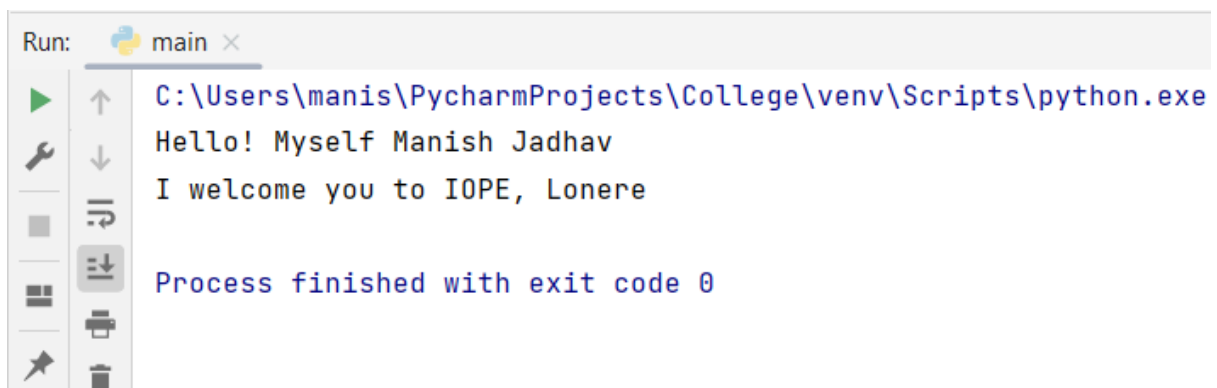
Aim: Edit/Compile/run a program to display the statements on two different lines.

Program A:



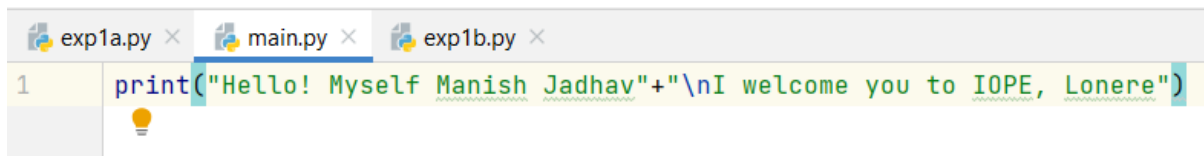
```
1 print("Hello! Myself Manish Jadhav")
2 print("I welcome you to IOPE, Lonere")
```

Output:



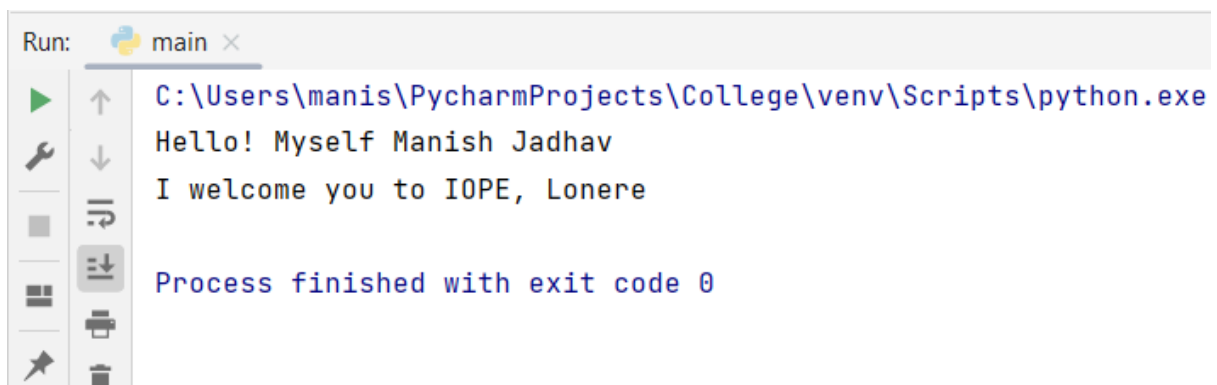
```
Run: main x
C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe
Hello! Myself Manish Jadhav
I welcome you to IOPE, Lonere
Process finished with exit code 0
```

Program B:



```
1 print("Hello! Myself Manish Jadhav"+"\\nI welcome you to IOPE, Lonere")
```

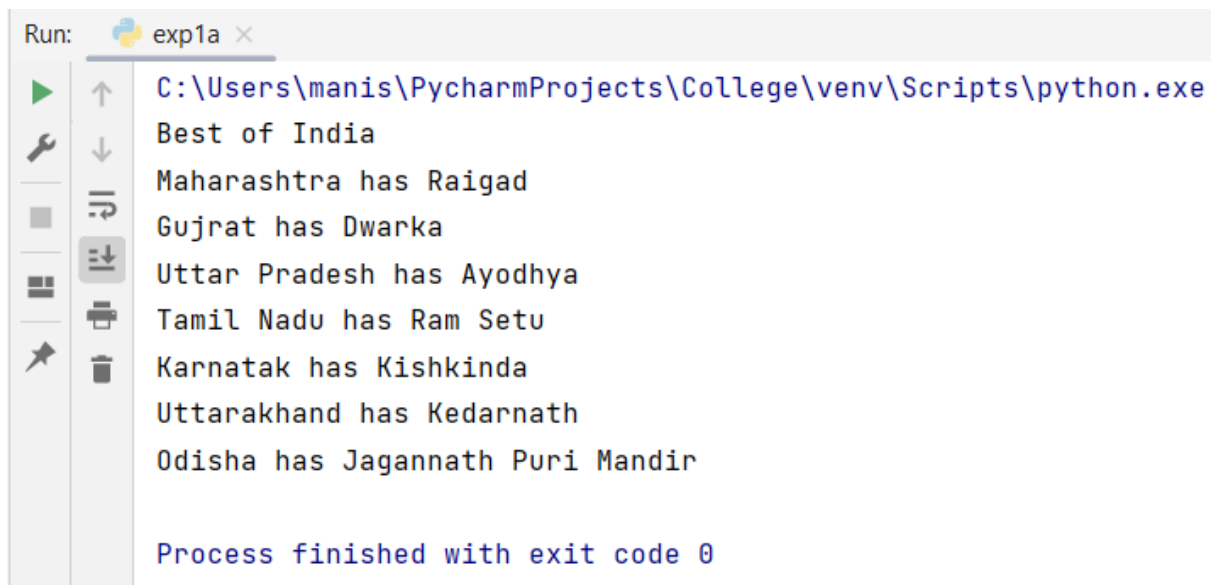
Output:



```
Run: main x
C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe
Hello! Myself Manish Jadhav
I welcome you to IOPE, Lonere
Process finished with exit code 0
```

Program C:

```
1 print("Best of India")
2 a="Maharashtra has "
3 b="Gujrat has "
4 c="Uttar Pradesh has "
5 d="Tamil Nadu has "
6 e="Karnatak has "
7 f="Uttarakhand has "
8 g="Odisha has "
9 print(a + "Raigad")
10 print(b + "Dwarka")
11 print(c + "Ayodhya")
12 print(d + "Ram Setu")
13 print(e + "Kishkinda")
14 print(f + "Kedarnath")
15 print(g + "Jagannath Puri Mandir")
```

Output:

```
Run: C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe
Best of India
Maharashtra has Raigad
Gujrat has Dwarka
Uttar Pradesh has Ayodhya
Tamil Nadu has Ram Setu
Karnatak has Kishkinda
Uttarakhand has Kedarnath
Odisha has Jagannath Puri Mandir

Process finished with exit code 0
```

Program D:

```
exp1a.py x exp1b.py x
1 print("TopMost Gaming Industries are as follows")
2 print("S8UL Esports"+"\\nGodlike Esports"+"\\nGlobal Esports"+"\\nOrangutan Esports"
3     +"\\nTeam X0"+"\\nTeam IND"+"\\nTSM Entity"+"\\nTeam XSpark"+"\\n7Sea Esports")
```

Output:

```
Run: exp1b x
C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe
TopMost Gaming Industries are as follows
S8UL Esports
Godlike Esports
Global Esports
Orangutan Esports
Team X0
Team IND
TSM Entity
Team XSpark
7Sea Esports

Process finished with exit code 0
```

Writeup & Oral (4)	Practical Performance (4)	Attendance (2)	Total (10)

Experiment No.2

Aim: Edit/compile/run a program to display the statements on two different lines.

Program A:

```
exp2a.py x
1 print('Hello World!')
2 print('Welcome to Python Programming!')
3 print("""This is the strangest
4     way to print over
5     multiple lines I know""")
6
```

Output:

```
Run: exp2a x
C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe
Hello World!
Welcome to Python Programming!
This is the strangest
    way to print over
        multiple lines I know

Process finished with exit code 0
```

Program B:

```
exp2a.py x exp2b.py x
1 multiline_str = ("Hello World! \n"
2     "Welcome to Python Programming! \n"
3     "I'm learning Python.\n"
4     "I refer to Lectures, Notes & Tutorials given by \n Subject Teacher: Prof. K. R. Korpe.\n"
5     "If you want a line break in the STRING, then you can use \"\n\" as a string literal wherever you need it.")
6 print(multiline_str)
```

Output:

```
Run: exp2b x
C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe
Hello World!
Welcome to Python Programming!
I'm learning Python.
I refer to Lectures, Notes & Tutorials given by
Subject Teacher: Prof. K. R. Korpe.
If you want a line break in the STRING, then you can use
as a string literal wherever you need it.

Process finished with exit code 0
```

Program C:

```
exp2a.py x exp2b.py x exp2c.py x
1 print('MahaShivratri')
2 print('The Great Night of Shiva is the most significant event in India's spiritual calendar')
3 print("""The fourteenth day of every lunar month or the day before the new moon is known as Shivratri.
4 This is a day when nature is pushing one towards one's spiritual peak.
5 On the one hand, Shiva is known as the destroyer.
6 On the other, he is also known to be the greatest of the givers.""")
```

Output:

```
Run: exp2c x
C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe C:\Users\manis\PycharmProjects\College\exp2c.py
MahaShivratri
The Great Night of Shiva is the most significant event in India's spiritual calendar
The fourteenth day of every lunar month or the day before the new moon is known as Shivratri.
This is a day when nature is pushing one towards one's spiritual peak.
On the one hand, Shiva is known as the destroyer.
On the other, he is also known to be the greatest of the givers.

Process finished with exit code 0
```

Program D:

```
exp2a.py x exp2b.py x exp2c.py x exp2d.py x
1 multiline_str=("      Shiv Jayanti\n"
2      "Shiv Jayanti is the birth anniversary of great Maratha ruler Shivaji Maharaj.\n"
3      "Shivaji Maharaj was born on February 19, 1630, in Shivneri Fort.\n"
4      "At the young age of 16, Shivaji Maharaj seized the Torna fort and \n by the age of 17 had seized the Raigad and"
5      "Kondana forts.\n"
6      "Shivaji Maharaj is considered as the greatest Maratha ruler.\n"
7      )
8 print(multiline_str)
9
```

Output:

```
Run: exp2d x
C:\Users\manis\PycharmProjects\College\venv\Scripts\python.exe C:\Users\manis\Pychar
      Shiv Jayanti
Shiv Jayanti is the birth anniversary of great Maratha ruler Shivaji Maharaj.
Shivaji Maharaj was born on February 19, 1630, in Shivneri Fort.
At the young age of 16, Shivaji Maharaj seized the Torna fort and
by the age of 17 had seized the Raigad and Kondana forts
Besides study I love to play sports
Such as Cricket, Kabaddi!

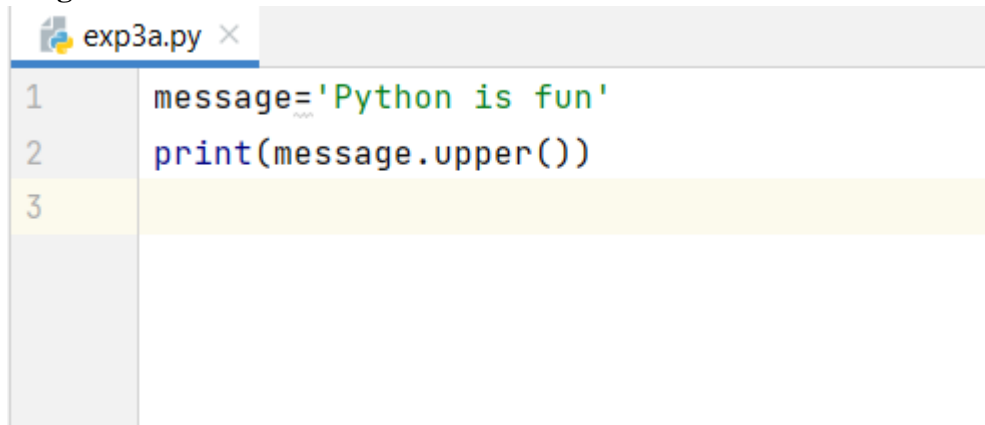
Process finished with exit code 0
```

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

Experiment No.3

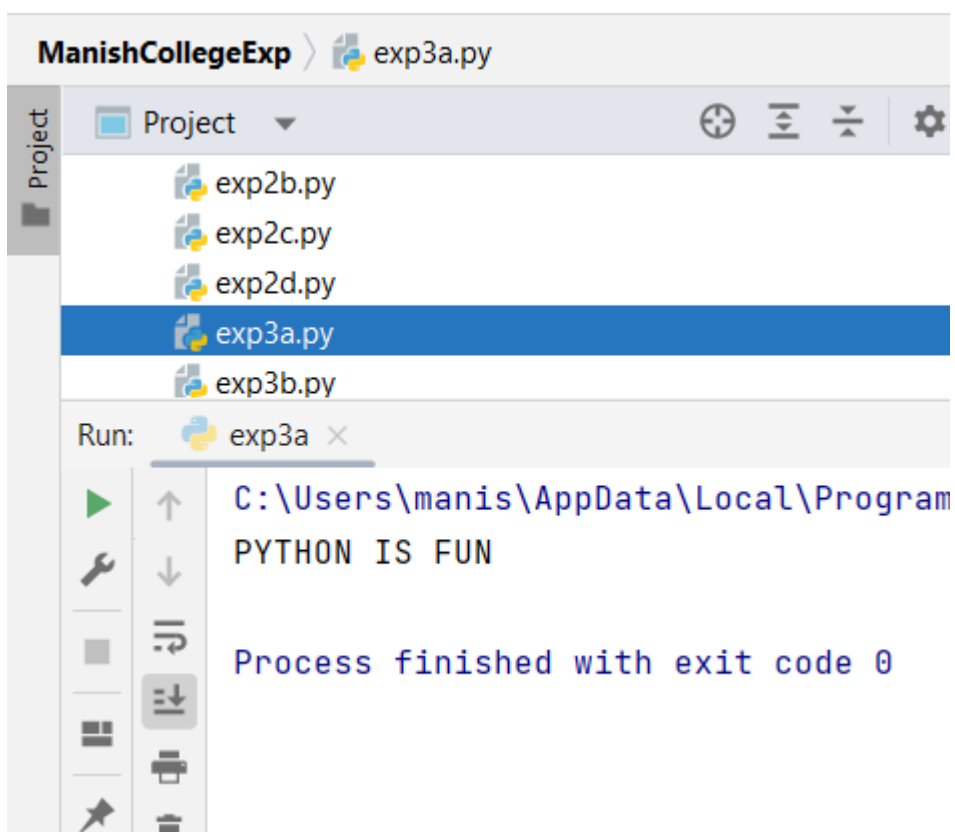
Aim: Edit/compile/run a program to initialize the string “hello world!” to a variable Str1 and convert the string into uppercase.

Program A:



```
exp3a.py x
1 message='Python is fun'
2 print(message.upper())
3
```

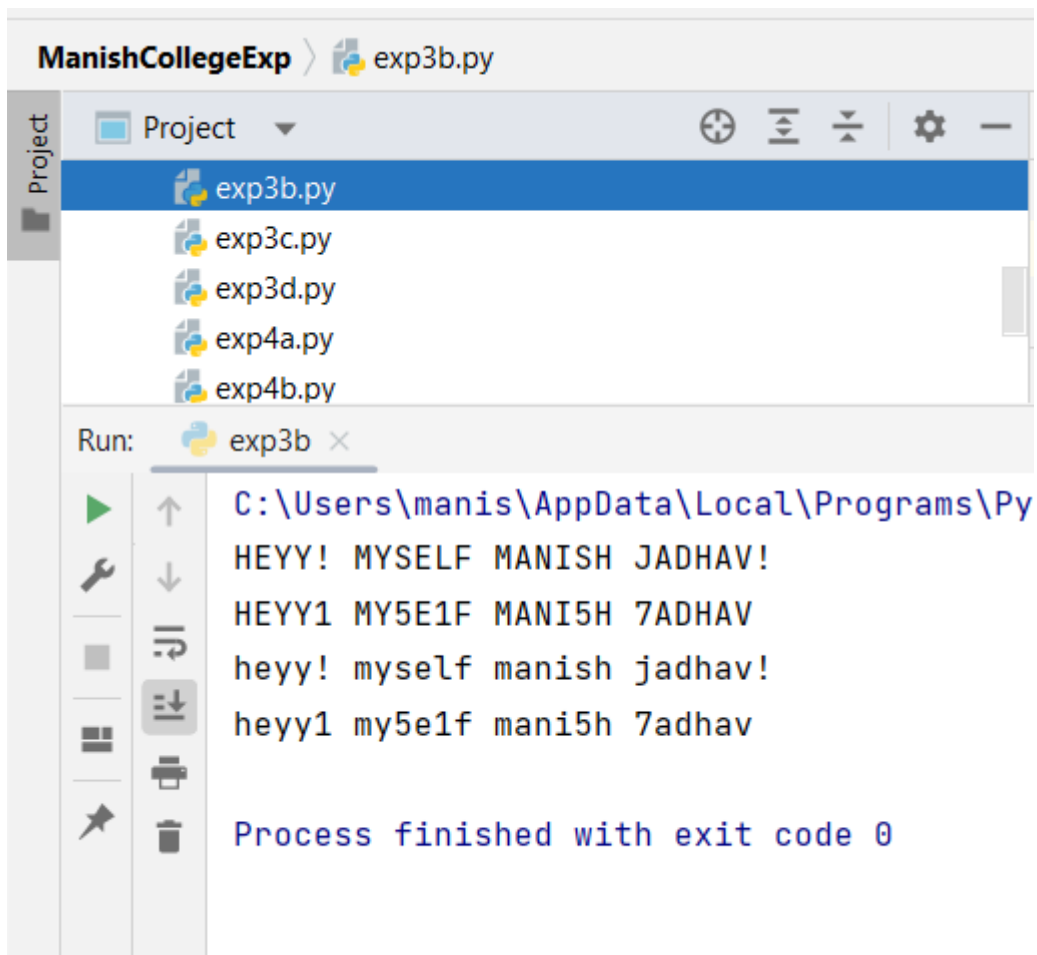
Output:



```
ManishCollegeExp > exp3a.py
Project
  exp2b.py
  exp2c.py
  exp2d.py
  exp3a.py
  exp3b.py
Run: exp3a x
C:\Users\manis\AppData\Local\Program
PYTHON IS FUN
Process finished with exit code 0
```

Program B:

```
exp3a.py x exp3b.py x
1 string = "heyy! myself manish jadhav!"
2 print(string.upper())
3 string = "heyy1 my5e1f mani5h 7adhav"
4 print(string.upper())
5
6 string = "HEYY! MYSELF MANISH JADHAV!"
7 print(string.lower())
8 string = "HEYY1 MY5E1F MANI5H 7ADHAV"
9 print(string.lower())
```

Output:

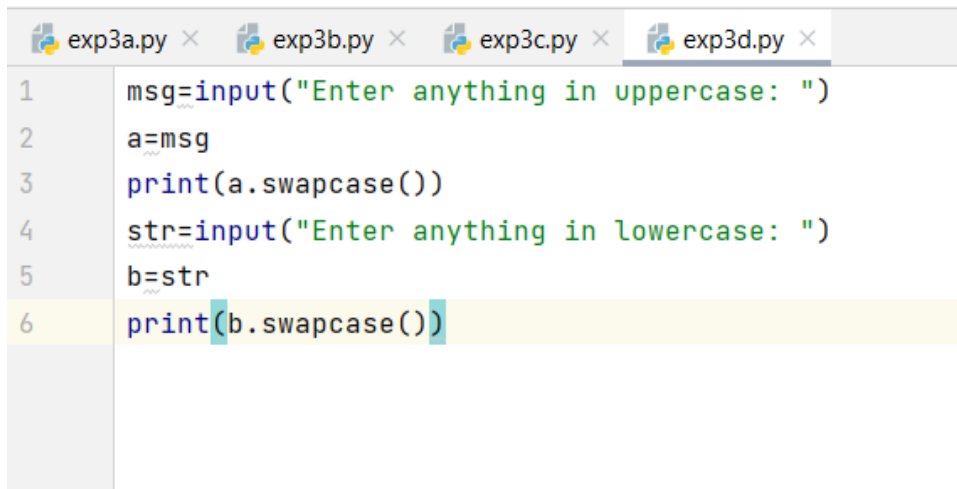
```
ManishCollegeExp > exp3b.py
Project
  exp3b.py
  exp3c.py
  exp3d.py
  exp4a.py
  exp4b.py
Run: exp3b x
C:\Users\manis\AppData\Local\Programs\Py
HEYY! MYSELF MANISH JADHAV!
HEYY1 MY5E1F MANI5H 7ADHAV
heyy! myself manish jadhav!
heyy1 my5e1f mani5h 7adhav
Process finished with exit code 0
```


Program C:

```
exp3a.py x exp3b.py x exp3c.py x exp3d.py x
1 firstString = "heyy! myself manish jadhav!"
2 secondString = "hEYy! mySelF maNIsh jadHAV!"
3 if(firstString.upper() == secondString.upper()):
4     print("The strings are same.")
5 else:
6     print("The strings are not same.")
7
8 firstString1 = "heyy! myself manish j adhav!"
9 secondString1 = "hEYy! mySelF maNIsh jadHAV!"
10 if(firstString1.upper() == secondString1.upper()):
11     print("The strings are same.")
12 else:
13     print("The strings are not same.")
14
```

Output:

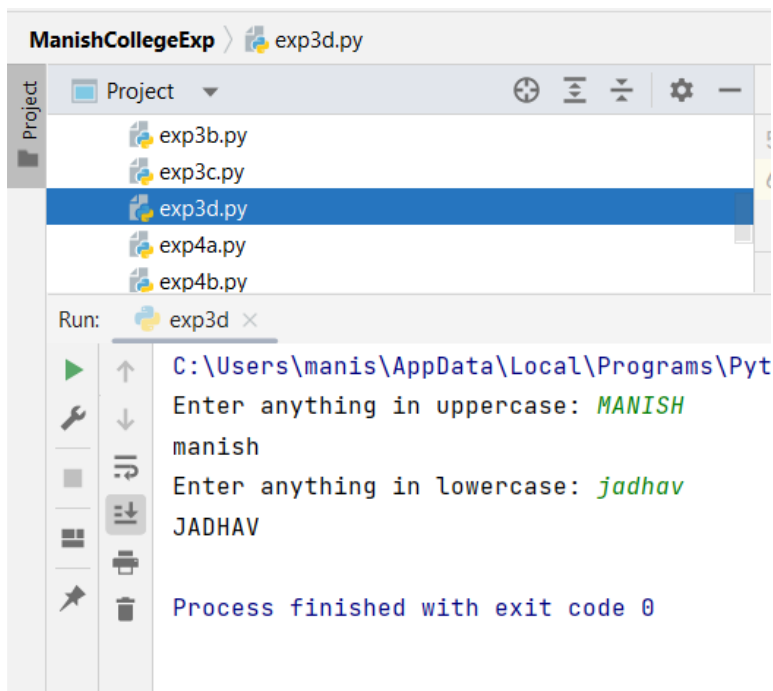
```
ManishCollegeExp > exp3c.py
Project
  exp3b.py
  exp3c.py
  exp3d.py
  exp4a.py
  exp4b.py
Run: exp3c x
C:\Users\manis\AppData\Local\Program
The strings are same.
The strings are not same.
Process finished with exit code 0
```

Program D:


```

1 msg=input("Enter anything in uppercase: ")
2 a=msg
3 print(a.swapcase())
4 str=input("Enter anything in lowercase: ")
5 b=str
6 print(b.swapcase())

```

Output:


```

ManishCollegeExp > exp3d.py
Project
  exp3b.py
  exp3c.py
  exp3d.py
  exp4a.py
  exp4b.py
Run: exp3d
C:\Users\manis\AppData\Local\Programs\Pyt
Enter anything in uppercase: MANISH
manish
Enter anything in lowercase: jadhav
JADHAV
Process finished with exit code 0

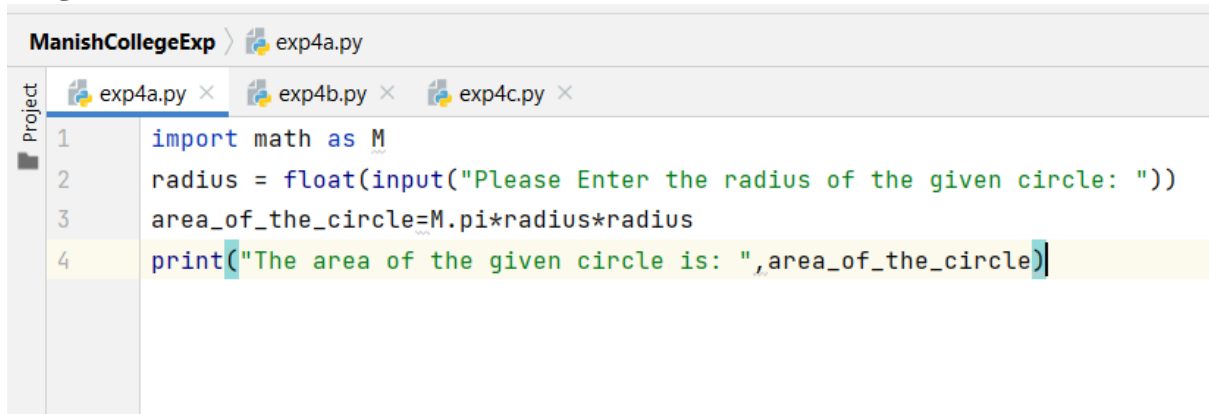
```

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

Experiment No.4

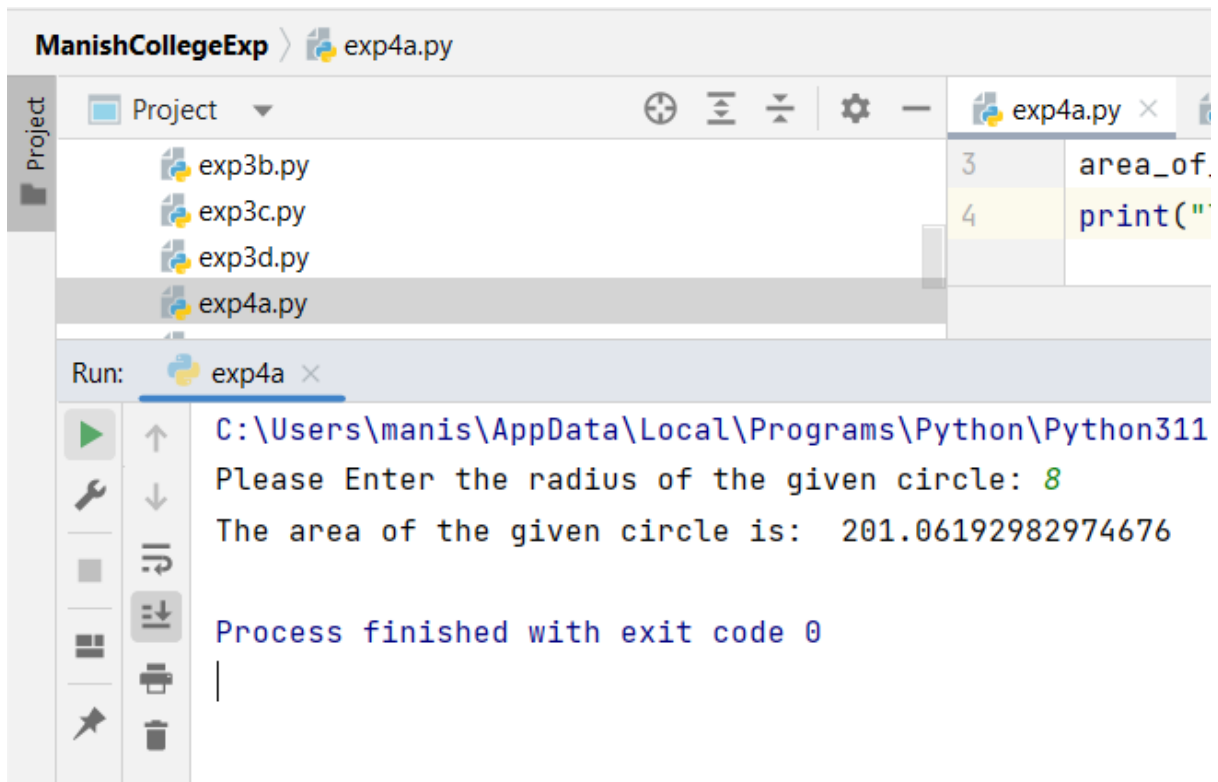
Aim: Edit/compile/run a program to read the radius of a circle and print the area of the circle.

Program A:

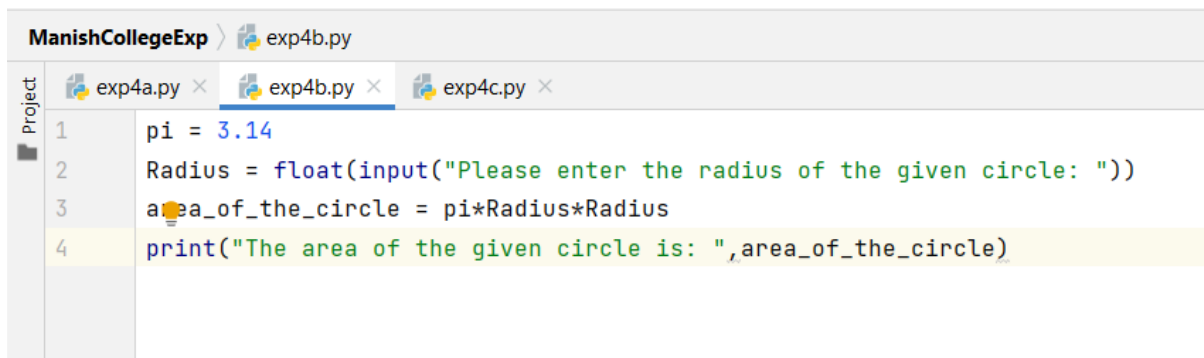


```
ManishCollegeExp > exp4a.py
exp4a.py x exp4b.py x exp4c.py x
1 import math as M
2 radius = float(input("Please Enter the radius of the given circle: "))
3 area_of_the_circle=M.pi*radius*radius
4 print("The area of the given circle is: ",area_of_the_circle)
```

Output:



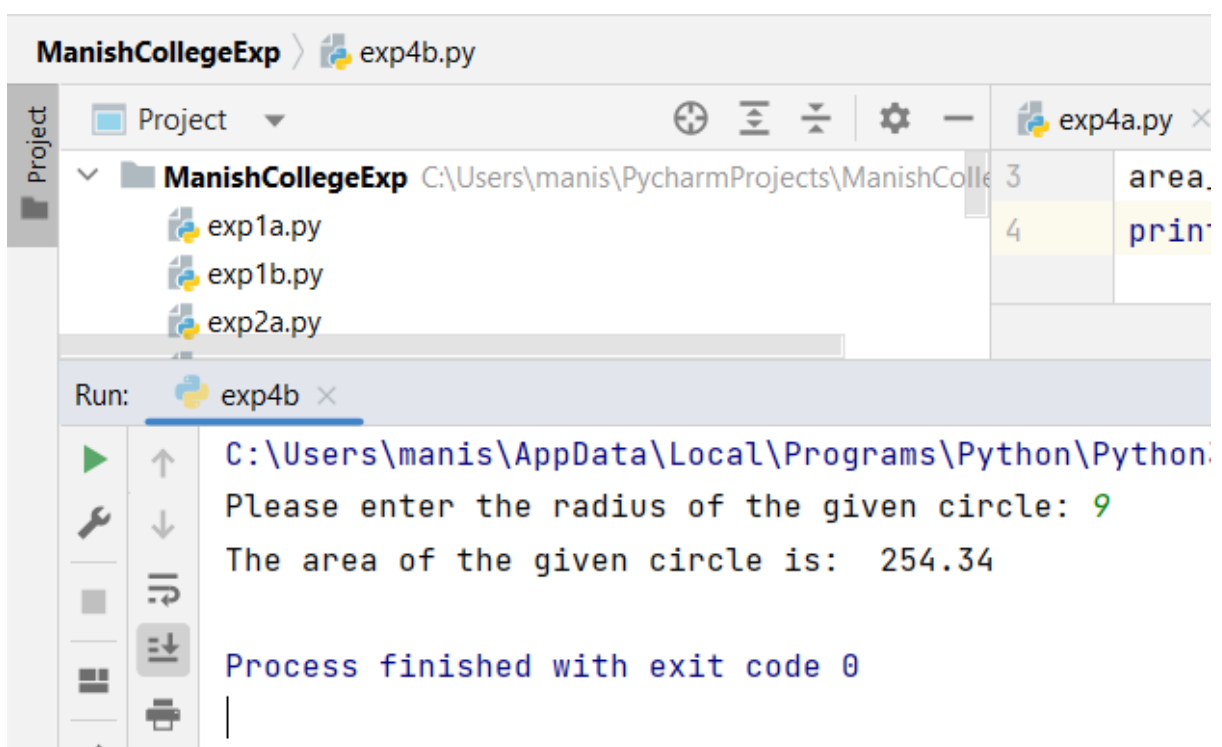
```
ManishCollegeExp > exp4a.py
Project exp3b.py 3 area_of.
exp3c.py 4 print("
exp3d.py
exp4a.py
Run: exp4a x
C:\Users\manis\AppData\Local\Programs\Python\Python311
Please Enter the radius of the given circle: 8
The area of the given circle is: 201.06192982974676
Process finished with exit code 0
```

Program B:


```

ManishCollegeExp > exp4b.py
exp4a.py x exp4b.py x exp4c.py x
1 pi = 3.14
2 Radius = float(input("Please enter the radius of the given circle: "))
3 area_of_the_circle = pi*Radius*Radius
4 print("The area of the given circle is: ",area_of_the_circle)

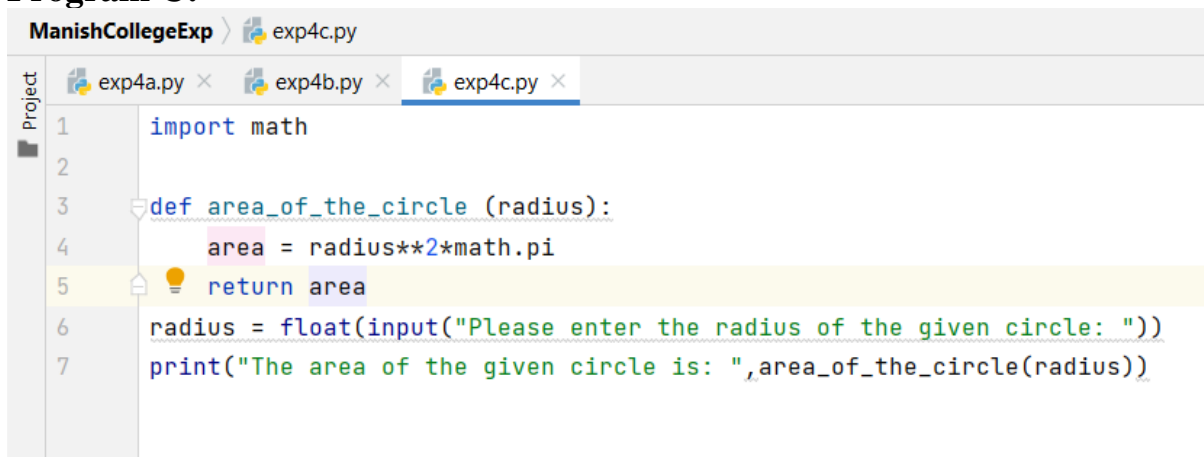
```

Output:


```

ManishCollegeExp > exp4b.py
Project
ManishCollegeExp C:\Users\manis\PycharmProjects\ManishCollegeExp
exp1a.py
exp1b.py
exp2a.py
Run: exp4b x
C:\Users\manis\AppData\Local\Programs\Python\Python38\python.exe
Please enter the radius of the given circle: 9
The area of the given circle is: 254.34
Process finished with exit code 0

```

Program C:


```

ManishCollegeExp > exp4c.py
exp4a.py x exp4b.py x exp4c.py x
1 import math
2
3 def area_of_the_circle (radius):
4     area = radius**2*math.pi
5     return area
6 radius = float(input("Please enter the radius of the given circle: "))
7 print("The area of the given circle is: ",area_of_the_circle(radius))

```

Output:

ManishCollegeExp > exp4c.py

Project

- exp4b.py
- exp4c.py
- main.py
- External Libraries

Run: exp4c

```
C:\Users\manis\AppData\Local\Programs\Python\Python311
Please enter the radius of the given circle: 4
The area of the given circle is: 50.26548245743669
Process finished with exit code 0
```

Program D:

ManishCollegeExp > exp4d.py

Project

- exp4a.py
- exp4b.py
- exp4c.py
- exp4d.py

```
1 pi=3.14
2 d=12
3 r=d/2
4 area_of_the_circle = pi*r*r
5 print("The area of the given circle is: ",area_of_the_circle)
```

Output:

The screenshot shows a Python IDE interface. The top bar indicates the project is 'ManishCollegeExp' and the active file is 'exp4d.py'. The left sidebar shows a project view with files 'exp4b.py', 'exp4c.py', 'exp4d.py' (selected), and 'main.py'. The right pane shows the code for 'exp4d.py' with lines 1 and 2 visible: 'pi=3.14' and 'd=12'. Below the code editor, the 'Run' button is active, and the output console displays the execution path 'C:\Users\manis\AppData\Local\Programs\Python\Python311\p' and the message 'The area of the given circle is: 113.03999999999999'. The process finished with exit code 0.

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

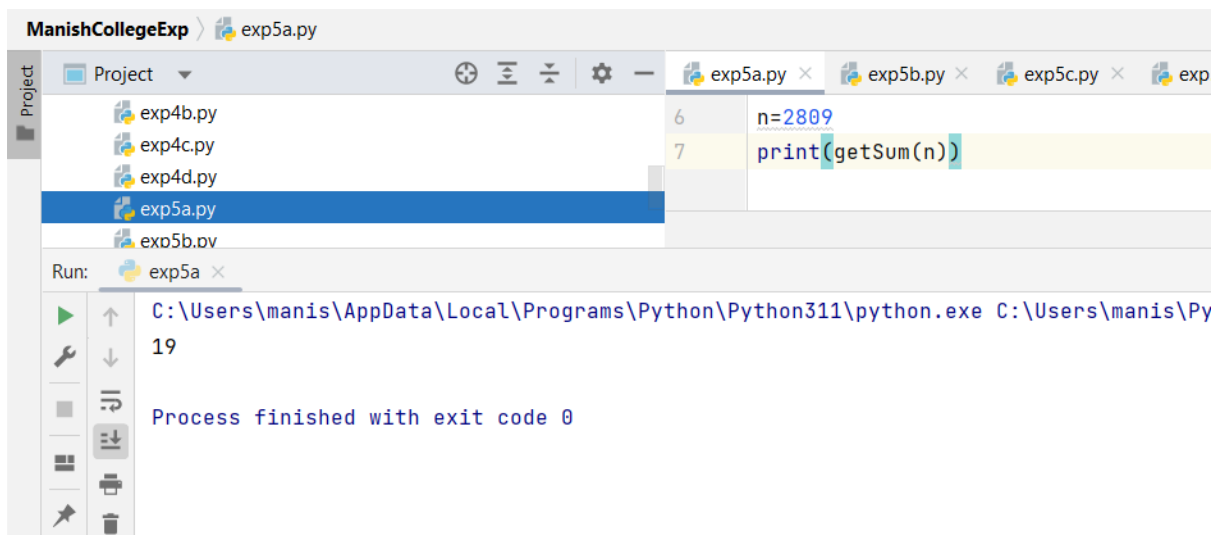
Experiment No.5

Aim: Edit/compile/run a program to read a four digit number through the keyboard and calculate the sum of its digit.

Program A:

```
def getSum(n) :  
    sum=0  
    for digit in str(n):  
        sum += int(digit)  
    return sum  
n=2809  
print(getSum(n))
```

Output:



Program B:

```
def getSum(n) :  
    sum =0  
    while (n!=0) :  
        sum=sum+(n%10)  
        n=n//10  
    return sum  
n=2542  
print(getSum(n))
```

Output:

```

ManishCollegeExp > exp5b.py
Project
  exp5b.py
  exp5c.py
  exp5d.py
  exp5e.py
  main.py
Run: exp5b
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe
13
Process finished with exit code 0
  
```

Program C:

```

def sumDigits(no):
    return 0 if no==0 else int(no%10)+sumDigits(int(no/10))

no= 6842
print(sumDigits(no))
  
```

Output:

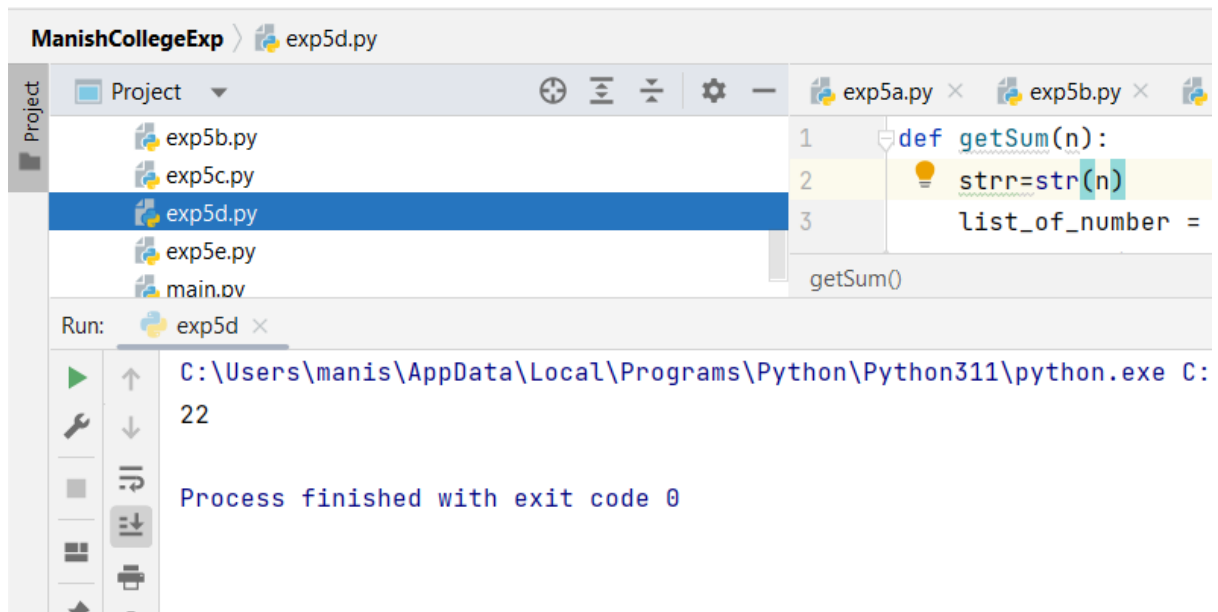
```

ManishCollegeExp > exp5c.py
Project
  exp5b.py
  exp5c.py
  exp5d.py
  exp5e.py
  main.py
Run: exp5c
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe
20
Process finished with exit code 0
  
```


Program D:

```
def getSum(n):
    strr=str(n)
    list_of_number = list(map(int, strr.strip()))
    return sum(list_of_number)

n = 2587
print(getSum(n))
```

Output:**Program E:**

```
number = input("Enter a four-digit number: ")
if len(number) == 4:
    sum_of_digits = int(number[0]) + int(number[1]) +
int(number[2]) + int(number[3])
    print("The sum of the digits is:", sum_of_digits)
else:
    print("Error: You must enter a four-digit number.")
```

Output: If 4 digits are entered correctly:

The screenshot shows a Python IDE with a project named 'ManishCollegeExp'. The file explorer on the left lists several files: exp5b.py, exp5c.py, exp5d.py, exp5e.py (selected), and main.py. The main editor displays the code for exp5e.py:

```
1 number = input("Enter a four-digit number: ")
2 if len(number) == 4:
3     sum_of_digits = int(number[0]) + int(number[1]) + int(number[2]) + int(number[3])
```

The Run console shows the following output:

```
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\ManishCollegeExp\exp5e.py
Enter a four-digit number: 9876
The sum of the digits is: 30
Process finished with exit code 0
```

Output: If 4 digits are not entered:

The screenshot shows the same Python IDE as above. The code in the editor is identical. The Run console shows the following output:

```
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\ManishCollegeExp\exp5e.py
Enter a four-digit number: 28
Error: You must enter a four-digit number.
Process finished with exit code 0
```

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

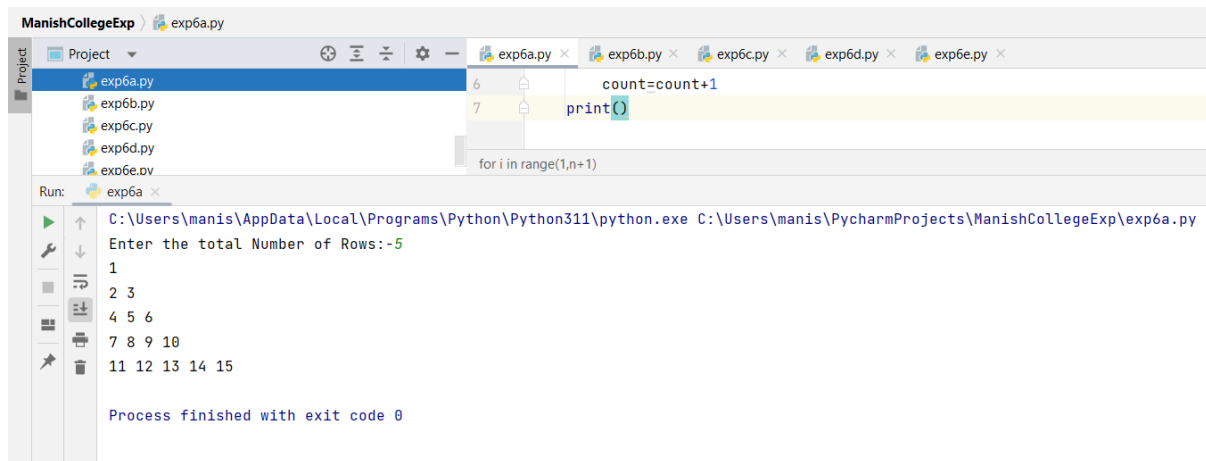
Experiment No.6

Aim: Edit/compile/run a program to display the Floyd Triangle

Program A:

```
n=int(input("Enter the total Number of Rows:-"))
count=1
for i in range(1,n+1):
    for j in range(1,i+1):
        print(count,end= ' ')
        count=count+1
    print()
```

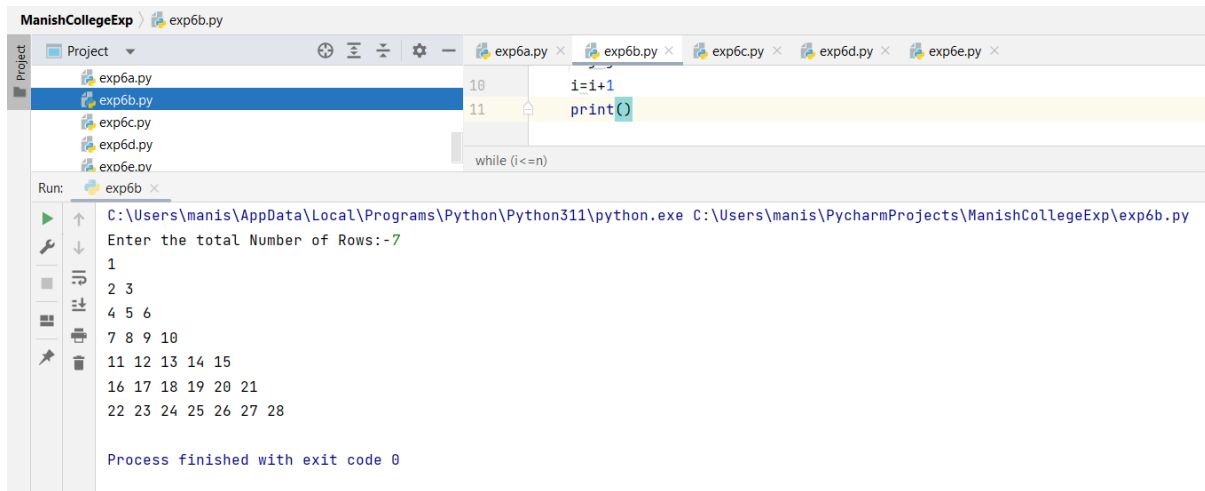
Output:



Program B:

```
n=int(input("Enter the total Number of Rows:-"))
count=1
i=1
while(i<=n):
    j=1
    while(j<=i):
        print(count,end=' ')
        count=count+1
        j=j+1
    i=i+1
    print()
```

Output:



```

ManishCollegeExp > exp6b.py
Project
  exp6a.py
  exp6b.py
  exp6c.py
  exp6d.py
  exp6e.py
  exp6e.py
Run: exp6b
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\PycharmProjects\ManishCollegeExp\exp6b.py
Enter the total Number of Rows:-7
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
16 17 18 19 20 21
22 23 24 25 26 27 28
Process finished with exit code 0

```

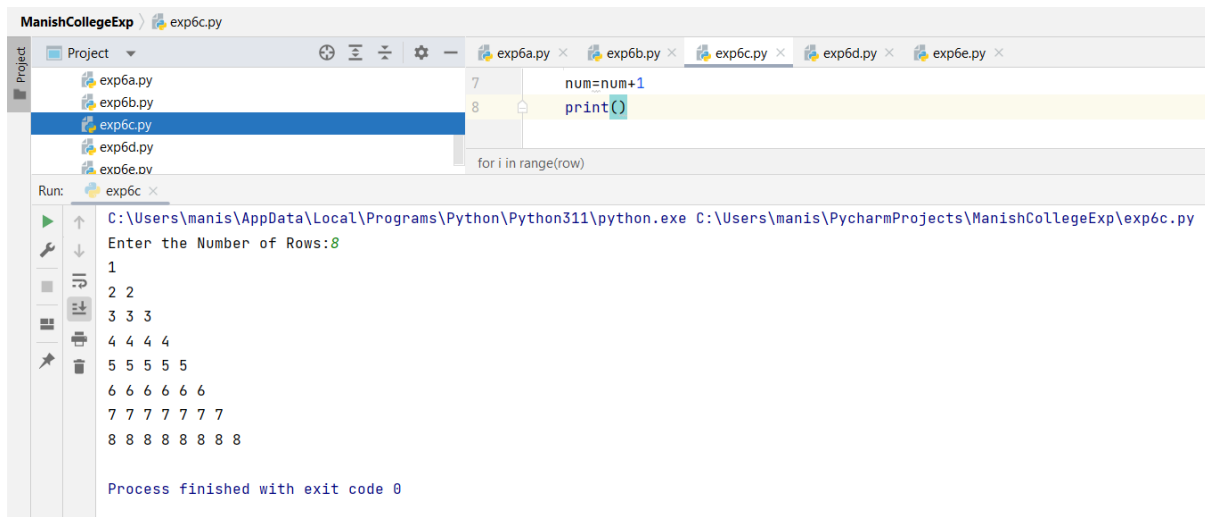
Program C:

```

print("Enter the Number of Rows:",end="")
row=int(input())
num=1
for i in range(row):
    for j in range(i+1):
        print(num,end=' ')
        num=num+1
    print()

```

Output:



```

ManishCollegeExp > exp6c.py
Project
  exp6a.py
  exp6b.py
  exp6c.py
  exp6d.py
  exp6e.py
  exp6e.py
Run: exp6c
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\PycharmProjects\ManishCollegeExp\exp6c.py
Enter the Number of Rows:8
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
6 6 6 6 6 6
7 7 7 7 7 7 7
8 8 8 8 8 8 8 8
Process finished with exit code 0

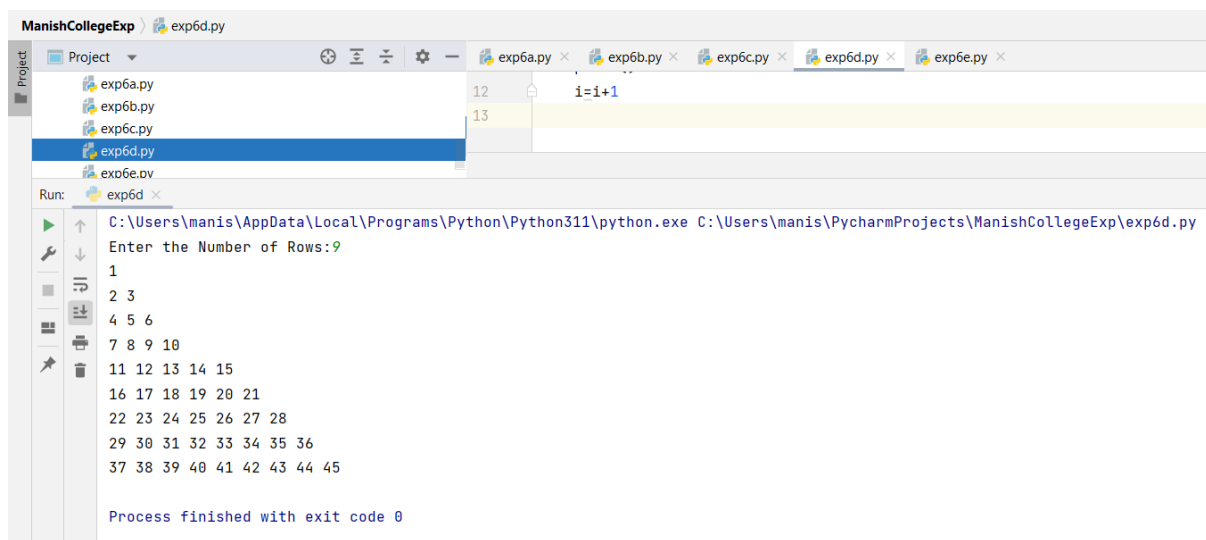
```

Program D:

```

print("Enter the Number of Rows:",end="")
row=int(input())
num=1
i=0
while i<row:
    j=0
    while j<i+1:
        print(num,end=' ')
        num=num+1
        j=j+1
    print()
    i=i+1

```

Output:**Program E:**

```

rows = int(input("Enter the number of rows: "))
# Pattern 1
print("\nPattern 1:")
number = 1
for i in range(1, rows+1):
    for j in range(1, i+1):
        print(number, end=" ")
        number += 1
    print()
    number -= 1
for i in range(rows-1, 0, -1):
    for j in range(i, 0, -1):
        print(number, end=" ")
        number -= 1
    print()

```

Python Experiment No. 6

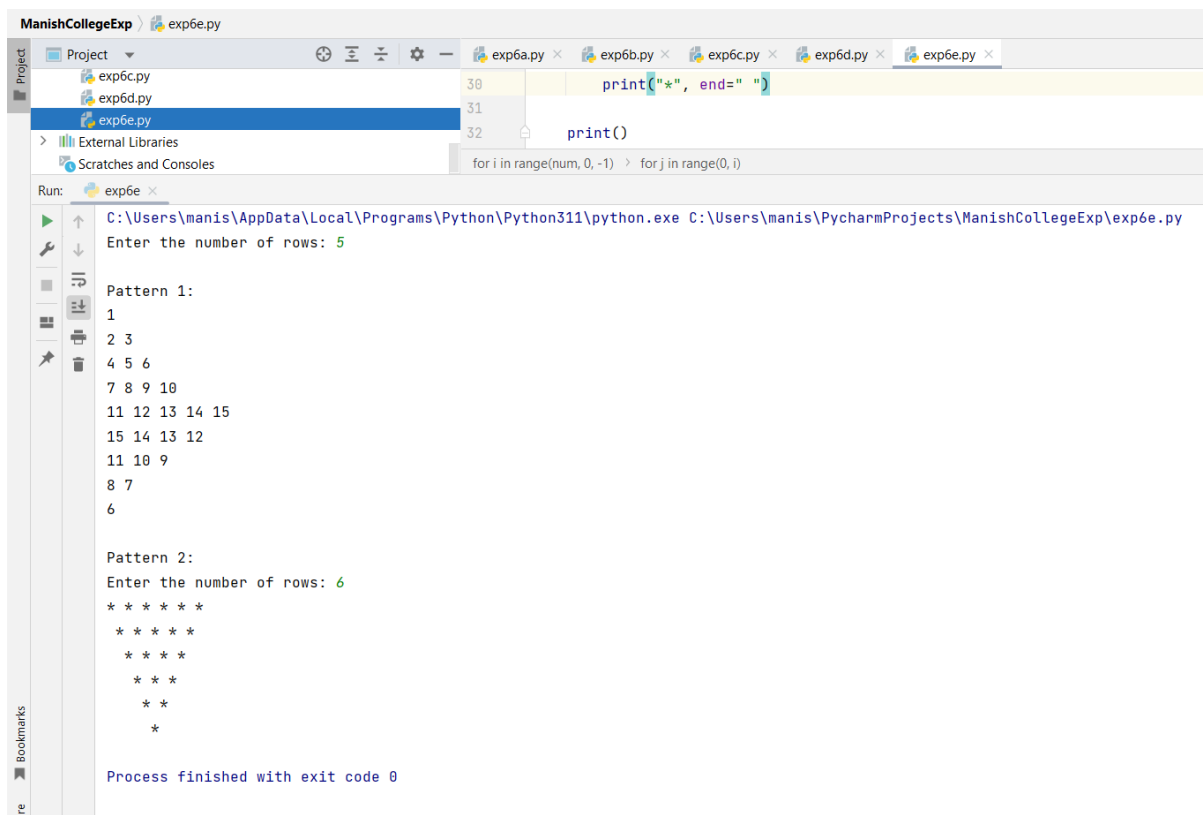
```
#Pattern 2
print("\nPattern 2:")
num = int(input("Enter the number of rows: "))
for i in range(num, 0, -1):

    for j in range(0, num - i):
        print(end=" ")

    for j in range(0, i):
        print("*", end=" ")

    print()
```

Output:



```
ManishCollegeExp > exp6e.py
exp6c.py
exp6d.py
exp6e.py
> External Libraries
Scratches and Consoles
Run: exp6e
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\PycharmProjects\ManishCollegeExp\exp6e.py
Enter the number of rows: 5

Pattern 1:
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15
15 14 13 12
11 10 9
8 7
6

Pattern 2:
Enter the number of rows: 6
* * * * *
* * * * *
* * * *
* * *
* *
*

Process finished with exit code 0
```

Program F:

```
row = int(input("Enter the number of rows: "))
number = 1
for i in range(1, row+1):
    for j in range(1, i+1):
        print(number, end=" ")
        number += 1
    print()
    number -= 1
for i in range(row-1, 0, -1):
    for j in range(i, 0, -1):
        print(number, end=" ")
        number -= 1
    print()
    number = 1
for i in range(1, row+1):
    for j in range(1, i+1):
        print(number, end=" ")
        number += 1
    print()
```

Output:

The screenshot shows the PyCharm IDE interface. The top toolbar includes icons for file operations and settings. The 'Project' view on the left shows the file structure. The 'Run' view at the bottom displays the console output of the program. The output shows a diamond-shaped pattern of numbers for 5 rows: Row 1: 1; Row 2: 2 3; Row 3: 4 5 6; Row 4: 7 8 9 10; Row 5: 11 12 13 14 15. The pattern is symmetric, with the bottom half decreasing from 10 back to 1. The console also shows the input 'Enter the number of rows: 5' and the message 'Process finished with exit code 0'.

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

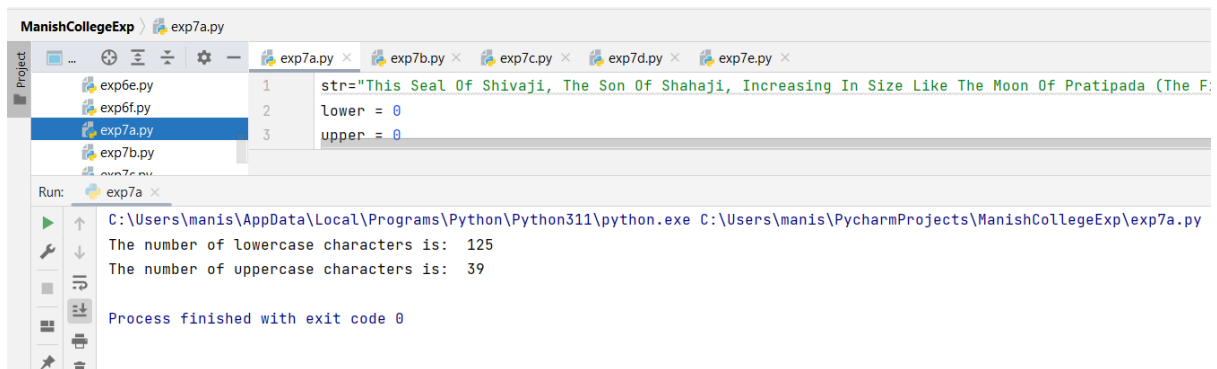
Experiment No.7

Aim: Edit/compile/run a program to read a string and display the total number of uppercase and lowercase letters.

Program A:

```
str="This Seal Of Shivaji, The Son Of Shahaji, Increasing In  
Size Like The Moon Of Pratipada (The First Day After The  
Moonless Night), It Will Be Worshipped By The World & It Will  
Shine Only For Well Being Of People."  
lower = 0  
upper = 0  
for i in str:  
    if (i.islower()):  
        lower+=1  
  
    elif(i.isupper()):  
        upper+=1  
print("The number of lowercase characters is: ", lower)  
print("The number of uppercase characters is: ",upper)
```

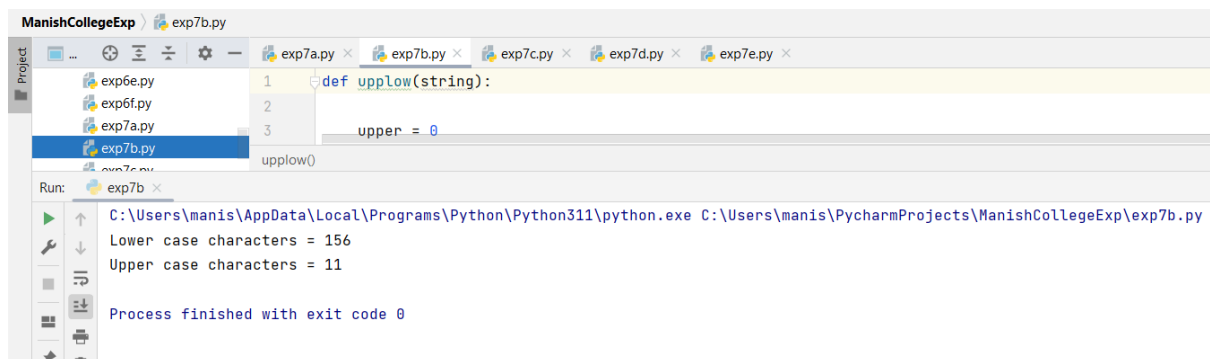
Output:



Program B:

```
def upplow(string):  
  
    upper = 0  
    lower = 0  
    for i in range(len(string)):  
        if(ord(string[i]) >=97 and  
           ord(string[i]) <=122):  
            lower+=1  
  
        elif(ord(string[i]) >=65 and  
            ord(string[i]) <=90):  
            upper+=1  
    print('Lower case characters = %s' %lower, "\n"  
          'Upper case characters = %s' %upper)  
  
string = "The Royal Seal of Shambho (Sambhaji), the son of  
Shiv (Shivaji) is shining with glory and is limitless as the  
sky. Under the shelter of this Rajmudra, everyone is  
protected. Nothing is superior to this Rajmudra."  
upplow(string)
```

Output:

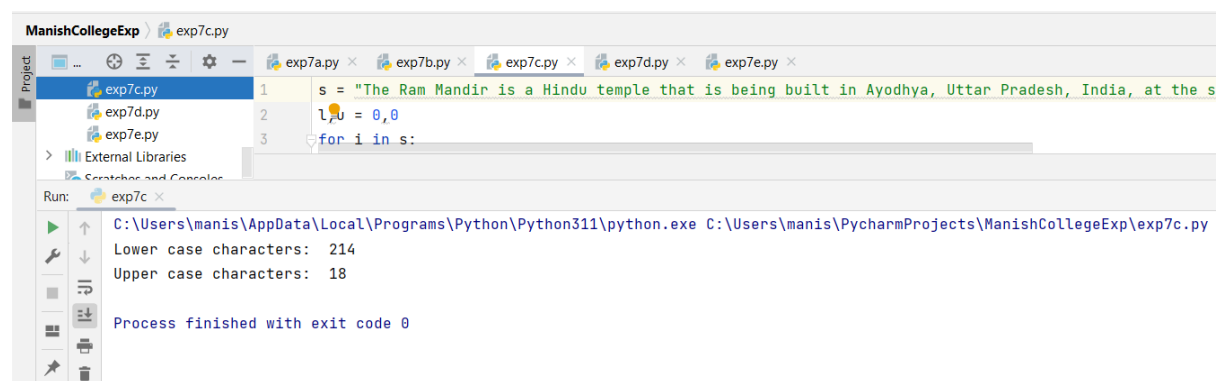


Program C:

s = "The Ram Mandir is a Hindu temple that is being built in Ayodhya, Uttar Pradesh, India, at the site of Ram Janmabhoomi, according to the Ramayana the birthplace of Rama, a principal deity of Hinduism. The temple construction is being supervised by the Shri Ram Janmabhoomi Teerth Kshetra."

```
l,u = 0,0
for i in s:
    if(i >= 'a' and i <= 'z'):
        l=l+1
    if(i>'A' and i<='Z'):
        u=u+1
print('Lower case characters: ',l)
print('Upper case characters: ',u)
```

Output:



Program D:

string = "Appearing in its present form about 400 CE, the Mahabharata consists of a mass of mythological and didactic material arranged around a central heroic narrative that tells of the Struggle for Sovereignty between Two Groups of Cousins, The Kauravas (Sons of Dhritarashtra, The Descendant of Kuru) and The Pandavas (Sons of Pandu)."

```
upper = 0
lower = 0
up = "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
lo = "abcdefghijklmnopqrstuvwxyz"
for i in string:
    if i in up:
        upper+=1
    elif i in lo:
        lower+=1
print('Lower case characters = %s' %lower)
print('Upper case characters = %s' %upper)
```

Output:



```
ManishCollegeExp > exp7d.py
1 string = "Appearing in its present form about 400 CE, the Mahabharata consists of a mass of mytholo
2 upper = 0
3 lower = 0

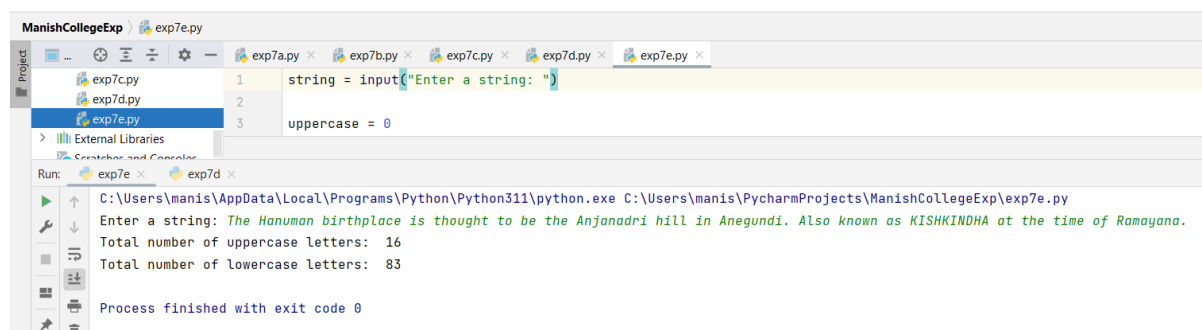
Run: exp7e x exp7d x
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\PycharmProjects\ManishCollegeExp\exp7d.py
Lower case characters = 246
Upper case characters = 20

Process finished with exit code 0
```

Program E:

```
string = input("Enter a string: ")
uppercase = 0
lowercase = 0
for char in string:
    if char.isupper():
        uppercase += 1
    elif char.islower():
        lowercase += 1
print("Total number of uppercase letters: ", uppercase)
print("Total number of lowercase letters: ", lowercase)
```

Output:



```
ManishCollegeExp > exp7e.py
1 string = input("Enter a string: ")
2
3 uppercase = 0

Run: exp7e x exp7d x
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\PycharmProjects\ManishCollegeExp\exp7e.py
Enter a string: The Hanuman birthplace is thought to be the Anjanadri hill in Aneundi. Also known as KISHKINDHA at the time of Ramayana.
Total number of uppercase letters: 16
Total number of lowercase letters: 83

Process finished with exit code 0
```

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

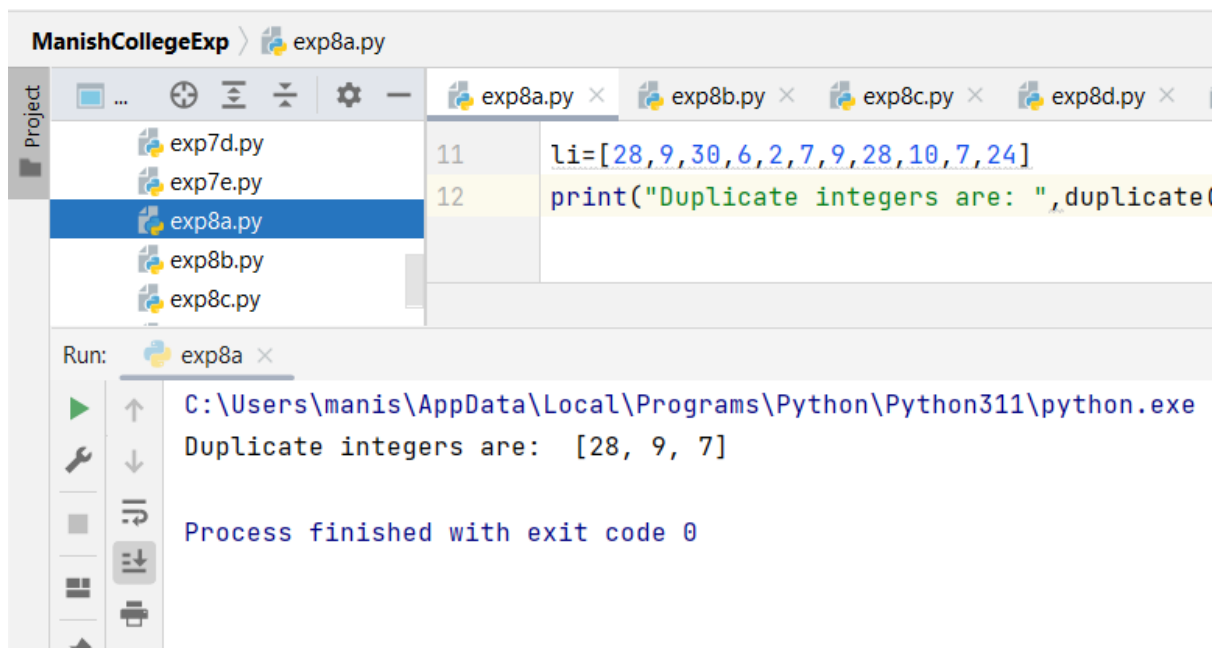
Experiment No.8

Aim: Edit/compile/run a program to duplicate all the elements of a list.

Program A: Brute force approach

```
def duplicate(li):  
    n=len(li)  
    dup=[]  
    for i in range (n):  
        k = i+1  
        for j in range(k,n):  
            if li[i] == li[j] and li[i] not in dup:  
                dup.append(li[i])  
    return dup  
  
li=[28,9,30,6,2,7,9,28,10,7,24]  
print("Duplicate integers are: ",duplicate(li))
```

Output:



Program B: Counter function

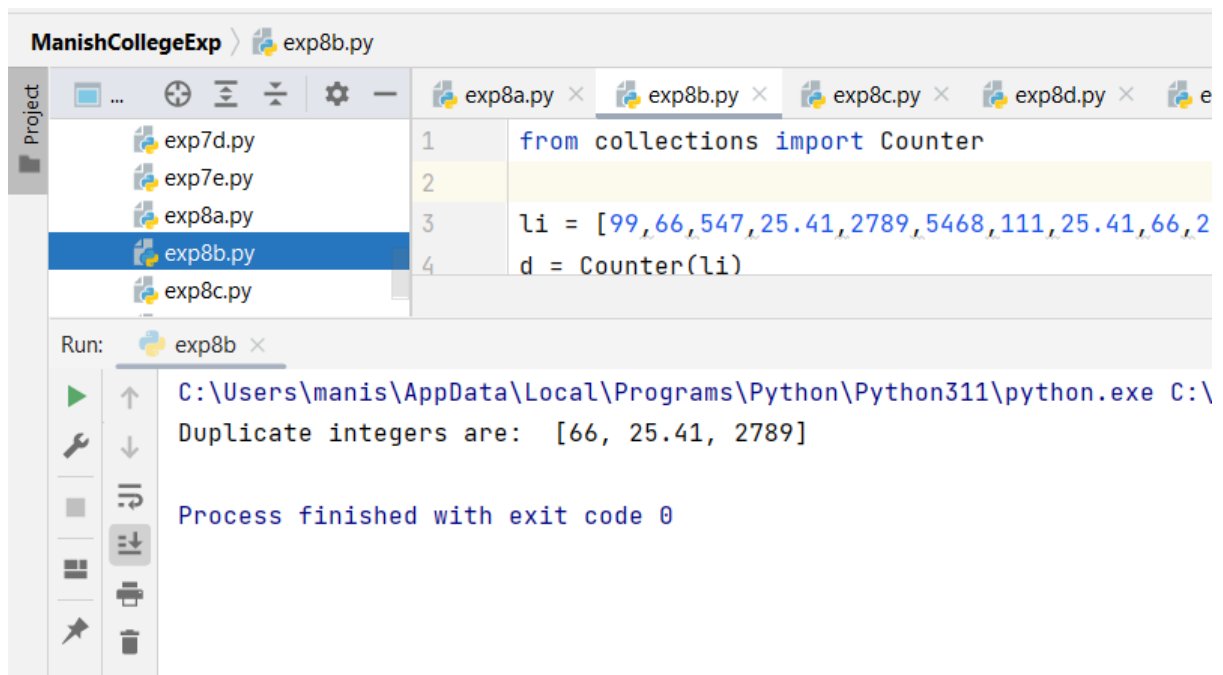
```

from collections import Counter

li = [99,66,547,25.41,2789,5468,111,25.41,66,2789]
d = Counter(li)

repeated_list = list([num for num in d if d[num]>1])
print("Duplicate integers are: ",repeated_list)

```

Output:**Program C: Using a single for loop**

```

list=[24,28,357,159,862,248,862,159,357]
uniqueList = []
duplicateList = []

for i in list:
    if i not in uniqueList:
        uniqueList.append(i)
    elif i not in duplicateList:
        duplicateList.append(i)

print(duplicateList)

```

Output:

```

ManishCollegeExp > exp8c.py
exp8a.py x exp8b.py x exp8c.py x exp8d.py x
1 list=[24,28,357,159,862,248,862,159,357]
2 uniqueList = []
3 duplicateList = []
4
Run: exp8c x
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\
[862, 159, 357]
Process finished with exit code 0

```

Program D: To find duplicate characters in a list

```

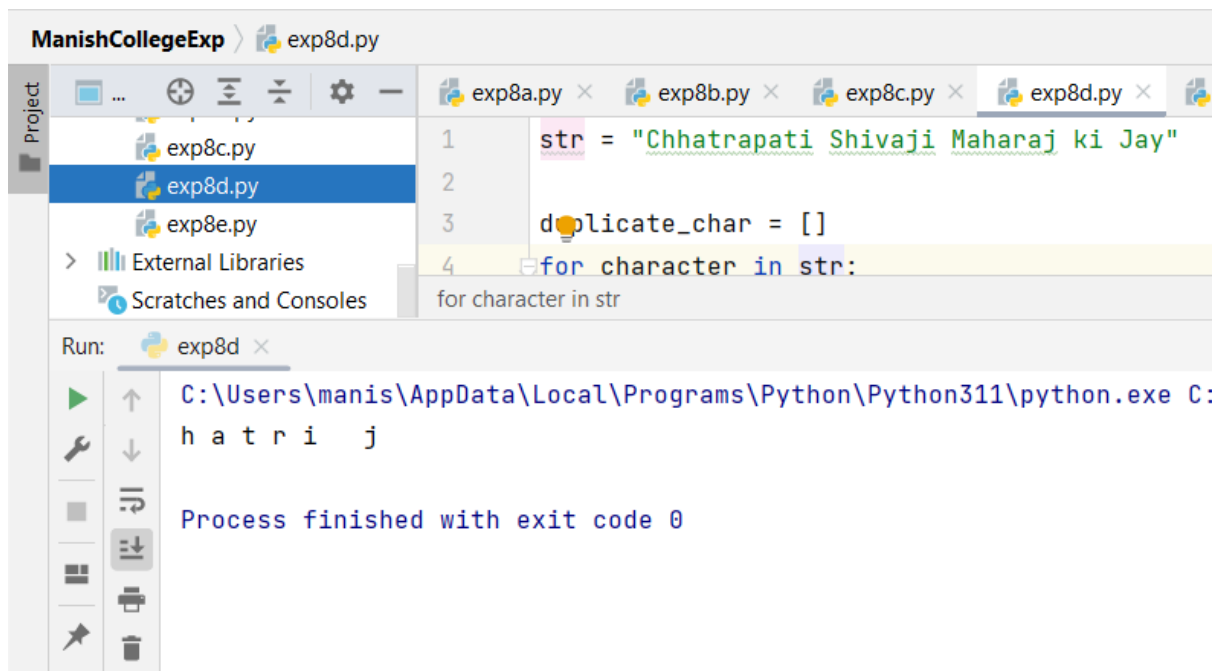
str = "Chhatrapati Shivaji Maharaj ki Jay"

duplicate_char = []
for character in str:

    if str.count(character) > 1:

        if character not in duplicate_char:
            duplicate_char.append(character)
print(*duplicate_char)

```

Output:**Program E: To find duplicate characters from list using Counter function.**

```

from collections import Counter

def find_dup_char(input):
    WC = Counter(input)

    for letter, count in WC.items():
        if (count > 1):
            print(letter)

if __name__ == "__main__":
    input = 'Yada yada hi dharmasya glanirbhavati bhāratah'
    find_dup_char(input)

```

Output:

The screenshot shows an IDE window titled 'ManishCollegeExp' with a file named 'exp8e.py' open. The code in the editor is as follows:

```

1  from collections import Counter
2
3
4  def find_dup_char(input):

```

The 'Run' console shows the execution of the script using the command:

```
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\Pr
```

The output of the script is:

```

a
d
y
h
i
r
m
b
t

```

Below the output, it states: 'Process finished with exit code 0'.

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

Experiment No.9

Aim: Edit/compile/run a program to implement quick sort/ merge sort/ bubble sort.

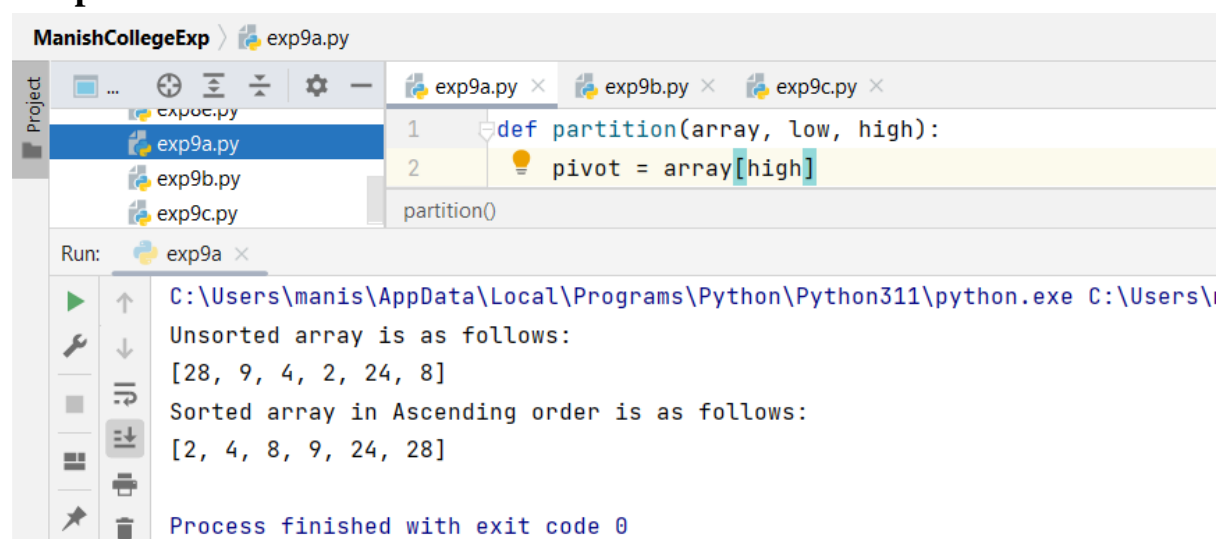
Program A: QUICK SORT ALGORITHM:

```
def partition(array, low, high):
    pivot = array[high]
    i = low - 1
    for j in range(low, high):
        if array[j] <= pivot:
            i = i + 1
            (array[i], array[j]) = (array[j], array[i])
    (array[i+1], array[high]) = (array[high], array[i+1])
    return i+1

def quickSort(array, low, high):
    if low < high:
        pi = partition(array, low, high)
        quickSort(array, low, pi-1)
        quickSort(array, pi+1, high)

data = [28,9,4,2,24,8]
print("Unsorted array is as follows: ")
print(data)
size = len(data)
quickSort(data, 0, size-1)
print('Sorted array in Ascending order is as follows: ')
print(data)
```

Output:



Program B: MERGE SORT ALGORITHM

```
def mergeSort(arr):
    if len(arr) > 1:
        mid = len(arr)//2
        L=arr[:mid]
        R=arr[mid:]
        mergeSort(L)
        mergeSort(R)
        i=j=k=0
        while i<len(L) and j<len(R):
            if L[i] <= R[j]:
                arr[k] = L[i]
                i+=1
            else:
                arr[k] = R[j]
                j+=1
            k+=1

        while i<len(L):
            arr[k] = L[i]
            i+=1
            k+=1

        while j<len(R):
            arr[k] = R[j]
            j+=1
            k+=1

def printList(arr):
    for i in range(len(arr)):
        print(arr[i], end=" ")
    print()

if __name__ == '__main__':
    arr=[248,904,477,289,245,]
    print("Given array is: ", end="\n")
    printList(arr)
    mergeSort(arr)
    print("Sorted array is: ", end="\n")
    printList(arr)
```

Output:

The screenshot shows an IDE window titled 'ManishCollegeExp' with a file explorer on the left containing 'exp9a.py', 'exp9b.py', and 'exp9c.py'. The main editor shows code from 'exp9b.py' with line numbers 38, 39, and 40. Line 39 contains the statement `print("Sorted array is: ")`. Below the editor, the 'Run' console shows the execution output for 'exp9b.py':

```

C:\Users\manis\AppData\Local\Programs\Python\Python311\python.
Given array is:
248 904 477 289 245
Sorted array is:
245 248 289 477 904
Process finished with exit code 0

```

Program C: BUBBLE SORT ALGORITHM

```

def bubbleSort(arr):
    n = len(arr)
    for i in range(n):
        swapped = False

        for j in range(0, n-i-1):
            if arr[j] > arr[j+1]:
                arr[j], arr[j+1] = arr[j+1], arr[j]
                swapped = True
            if (swapped == False):
                break

if __name__ == "__main__":
    arr = [951, 753, 654, 258, 359, 751, 153]
    print("Given array is: ", end="\n")
    print(arr)

    bubbleSort(arr)

    print("Sorted Array is: ")
    for i in range(len(arr)):
        print("%d" % arr[i], end=" ")

```

Output:

```

ManishCollegeExp > exp9c.py
exp9a.py
exp9b.py
exp9c.py
> External Libraries
Run: exp9c
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis
Given array is:
[951, 753, 654, 258, 359, 751, 153]
Sorted Array is:
258 359 654 153 751 753 951
Process finished with exit code 0

```

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

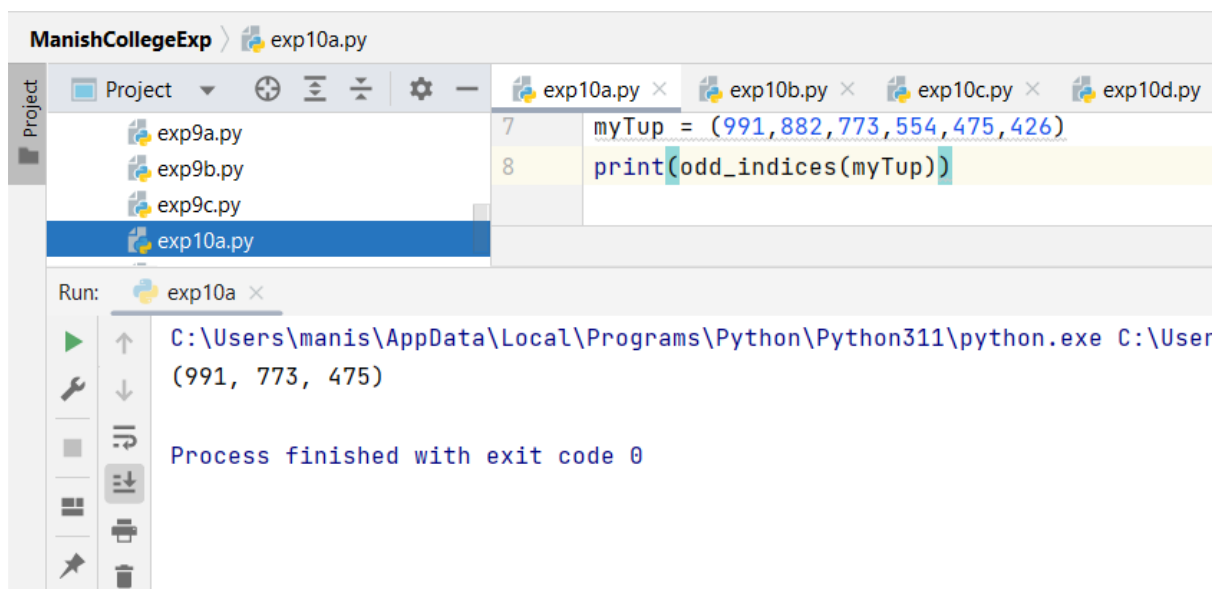
Experiment No.10

Aim: Write a function which takes a tuple as a parameter and returns a new tuple as the output, where every other element of the input tuple is copied, starting from the first one.

Program A:

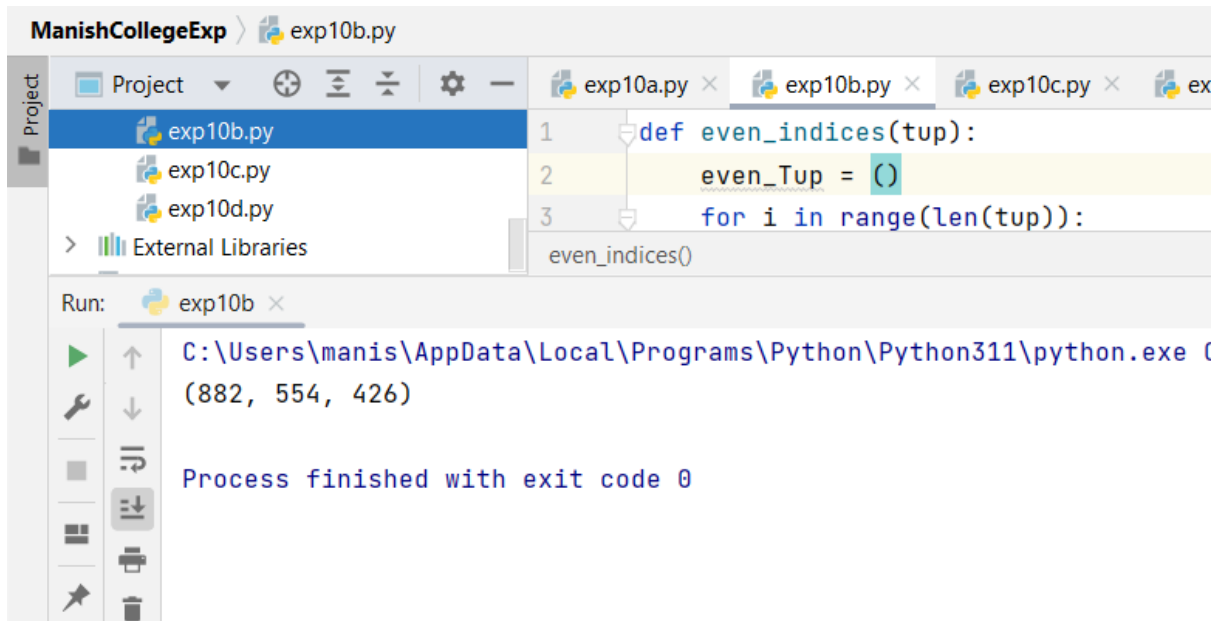
```
def odd_indices(tup):
    Odd_Tup = ()
    for i in range(len(tup)):
        if i % 2 != 1:
            Odd_Tup += (tup[i],)
    return Odd_Tup
myTup = (991, 882, 773, 554, 475, 426)
print(odd_indices(myTup))
```

Output:



Program B:

```
def even_indices(tup):
    even_Tup = ()
    for i in range(len(tup)):
        if i % 2 != 0:
            even_Tup += (tup[i],)
    return even_Tup
myTup = (991, 882, 773, 554, 475, 426)
print(even_indices(myTup))
```

Output:


```

ManishCollegeExp > exp10b.py
Project
  exp10b.py
  exp10c.py
  exp10d.py
  External Libraries
Run: exp10b x
  C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe (
  (882, 554, 426)
  Process finished with exit code 0
  
```

Program C: Exercise:

```

def indices(tup):
    even_Tup = ()
    for i in range(len(tup)):
        if i % 2 == 0:
            even_Tup += (tup[i],)
    return even_Tup
myTup = ('Hello', 'Are', 'You', 'Loving', 'Python?')
print(indices(myTup))
  
```

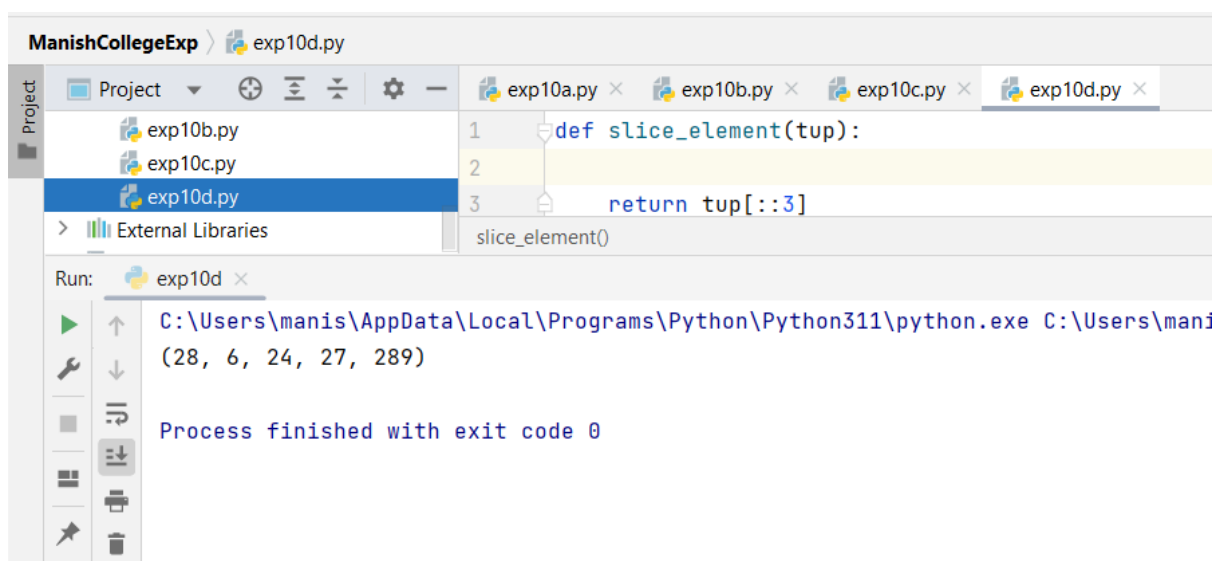
Output:


```

ManishCollegeExp > exp10c.py
Project
  exp10b.py
  exp10c.py
  exp10d.py
  External Libraries
Run: exp10c x
  C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis
  ('Hello', 'You', 'Python?')
  Process finished with exit code 0
  
```

Program D: Accessing Values in Tuples using Splice Operation:

```
def slice_element(tup):  
    return tup[::3]  
  
input_tuple = (28,9,30,6,2,7,24,8,10,27,3,16,289)  
output_tuple = slice_element(input_tuple)  
print(output_tuple)
```

Output:**Program E: Concatenating Tuples:**

```
tuple1 = (28, 11, 2)  
tuple2 = ('Manish', 'Aaryan', 'Pranay')  
  
tuple3 = tuple1 + tuple2  
  
print(tuple3)
```

Output:

The screenshot shows an IDE window titled 'ManishCollegeExp' with a file 'exp10e.py' open. The code in the editor is:

```
5
6 print(tuple3)
7
```

The Run console shows the following output:

```
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\mani
(28, 11, 2, 'Manish', 'Aaryan', 'Pranay')

Process finished with exit code 0
```

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)

Experiment No.11

Aim: Write a function which takes a tuple as a parameter and returns a new tuple as the output, where every other element of the input tuple is copied, starting from the first one.

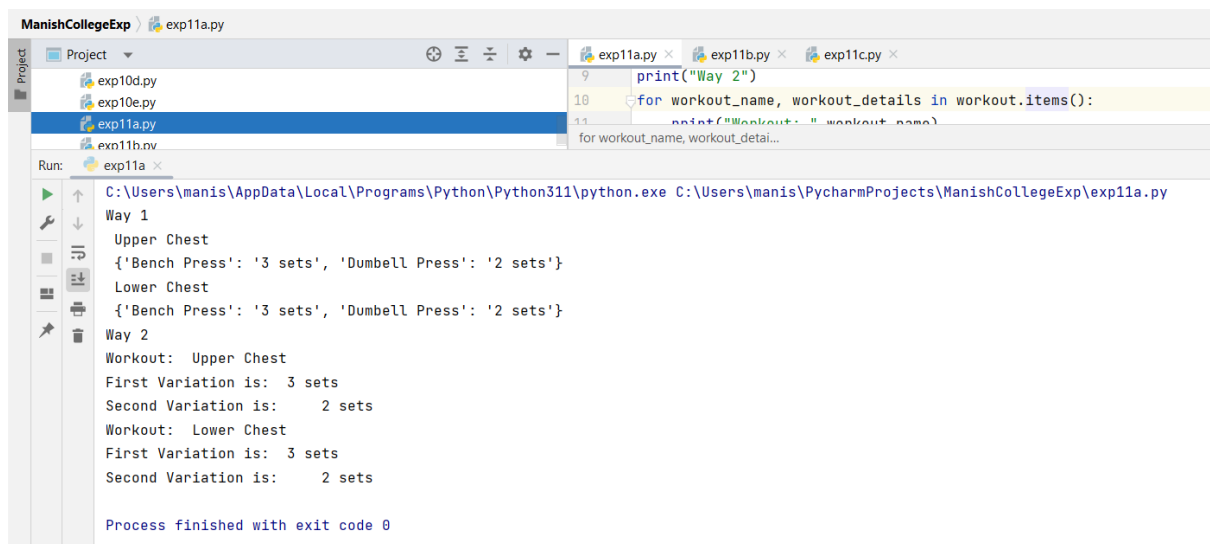
Program A:

```
workout = {"Upper Chest": {"Bench Press": "3 sets", "Dumbbell Press": "2 sets"},
           "Lower Chest": {"Bench Press": "3 sets", "Dumbbell Press": "2 sets"}}

print("Way 1")
for workout_name, workout_details in workout.items():
    print("", workout_name)
    print("", workout_details)

print("Way 2")
for workout_name, workout_details in workout.items():
    print("Workout: ", workout_name)
    print("First Variation is:\t", workout_details["Bench Press"])
    print("Second Variation is:\t", workout_details["Dumbbell Press"])
```

Output:



```
ManishCollegeExp exp11a.py
Project
exp10d.py
exp10e.py
exp11a.py
exp11b.py
exp11c.py
Run: exp11a
C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\PycharmProjects\ManishCollegeExp\exp11a.py
Way 1
Upper Chest
{'Bench Press': '3 sets', 'Dumbbell Press': '2 sets'}
Lower Chest
{'Bench Press': '3 sets', 'Dumbbell Press': '2 sets'}
Way 2
Workout: Upper Chest
First Variation is: 3 sets
Second Variation is: 2 sets
Workout: Lower Chest
First Variation is: 3 sets
Second Variation is: 2 sets
Process finished with exit code 0
```

Program B:

```
def orangecap(d):
    total = {}
    for k in d.keys():
        for n in d[k].keys():
            if n in total.keys():
                total[n] = total[n] + d[k][n]
            else:
                total[n] = d[k][n]
    print('Total Run Scores By Each Player in 2 Tests: ')
    print(total)

    print('Player with Highest Score')
    maxtotal = -1
    for n in total.keys():
        if total[n]>maxtotal:
            maxname = n
            maxtotal = total[n]
    return (maxname, maxtotal)

d=orangecap({'Test 1':{'MS Dhoni': 10,'Virat Kohli':300},
'Test 2':{'MS Dhoni':1,'Virat Kohli':150,'Rohit Sharma':99}})
print(d)
```

Output:

The screenshot shows a Python IDE with a project named 'ManishCollegeExp'. The file 'exp11b.py' is open and selected. The console output shows the following:

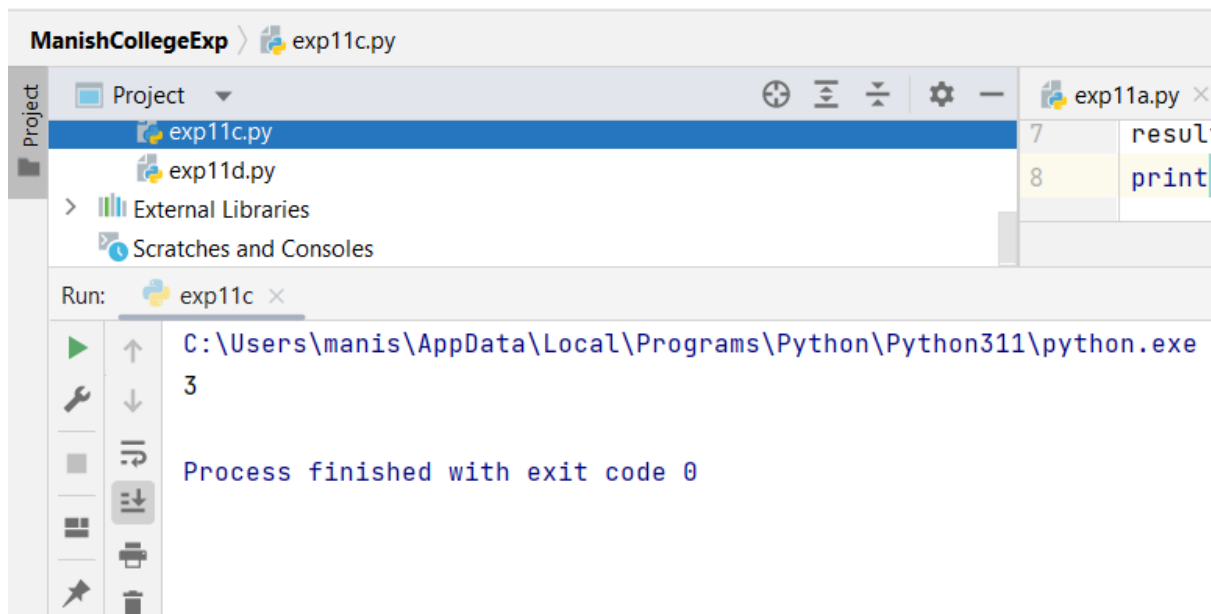
```

C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\Py...
Total Run Scores By Each Player in 2 Tests:
{'MS Dhoni': 11, 'Virat Kohli': 450, 'Rohit Sharma': 99}
Player with Highest Score
('Virat Kohli', 450)
Process finished with exit code 0

```

Program C: Exercise:

```
def how_many(animals):
    count = 0
    for i in animals:
        count += len(animals[i])
    return count
animals = {'L':['Lion'], 'D':['Donkey'], 'E':['Elephant']}
result = how_many(animals)
print(result)
```

Output:**Program D:**

```
def how_many(workout):
    count = 0
    for i in workout:
        count += len(workout[i])
    return count
workout = {
    'Monday': ['Chest'], 'Tuesday': ['Tricep+Leg'], 'Wednesday': ['Back'],
    'Thursday': ['Bicep'], 'Friday': ['Shoulder'], 'Saturday': ['Legs']}
print("List of Workout Split for Beginners is as follows:\n", workout)
result = how_many(workout)
print("Total Days of Workout Split in a week for Beginners:", result)
```

Output:

```

def how_many(workout):
    count = 0
    how_many()

```

Run: exp11d (1) ×

C:\Users\manis\AppData\Local\Programs\Python\Python311\python.exe C:\Users\manis\PycharmProjects\ManishCollegeExp\exp11d.py

List of Workout Split for Beginners is as follows:

```
{'Monday': ['Chest'], 'Tuesday': ['Tricep+Leg'], 'Wednesday': ['Back'], 'Thursday': ['Bicep'], 'Friday': ['Shoulder'], 'Saturday': ['Legs']}
```

Total Days of Workout Split in a week for Beginners: 6

Process finished with exit code 0

Practical Performance (4)	Writeup & Oral (4)	Attendance (2)	Total (10)