EX.NO: 02	CONTROL STATEMENTS
DATE:	

PROGRAM 1:

1.Develop a python program for finding the absolute value of a given number. This is always measured as positive number. This number is the distance of given number from the 0(Zero). The input value may be integer, float or complex number in Python. The absolute value of given number may be integer or float.

```
n = input("enter the number:")
value = eval(n)
absolute_value=abs(value)
print("Absolute value:", absolute_value)
```

OUTPUT:

```
enter the number:3+4j
Absolute value: 5.0
```

PROGRAM 2:

2.Calculate the Total selling price after levying the GST (Goods and Service Tax) as CGST and SGST on sale. CGST (Central Govt. GST), SGST (State Govt. GST) .

Sale amount	CGST Rate	SGST Rate
0-50000	5%	5%
Above 50000	18%	18%

```
price=int(input("Enter the selling price:"))
if(0<price<=50000):
  CGST=price*5/100
  SGST=price*5/100
  total_price=price+CGST+SGST
  print("Total selling price:",total_price)
elif(price>50000):
  CGST=price*18/100
  SGST=price*18/100
  total_price=price+CGST+SGST
  print("Total selling price:",total_price)
else:
 print("No tax")
```

OUTPUT:

```
Enter the selling price:34000
Total selling price: 37400.0
```

PROGRAM 3:

3.Write a Python program to construct the following pattern, using a nested for loop.

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

```
for i in range(1, 6):
    for j in range(i):
        print("*", end=" ")
    print()

for i in range(4, 0, -1):
    for j in range(i):
        print("*", end=" ")
    print()
```

OUTPUT:

```
*
* *
* * *
* * * *
* * * * *
* * * *
* * *
* *
*
```

PROGRAM 4:

4.Write a Python program to guess a number between 1 and 9.
Note: The User is prompted to enter a guess. If the user guesses wrong, then the prompt appears again until the guess is correct. On a successful guess, the user will get a "Well guessed!" message, and the program will exit.

```
def guess_number():
    s_n=4
    n=int(input("Guess a number between 1 to 9:"))
    while(n!=s_n):
        n=int(input("Guess a number between 1 to 9:"))
    else:
        print("Well guessed!")
guess_number()
```

OUTPUT:

```
Guess a number between 1 to 9:5
Guess a number between 1 to 9:7
Guess a number between 1 to 9:6
Guess a number between 1 to 9:4
Well guessed!
```

PROGRAM 5:

5.You have two streaming subscriptions and want to find out how much you spend each month and how much you could save if you switch to paying annually. Each subscription has a monthly cost and offers a discounted annual rate.

Write a Python program to calculate the total monthly cost for both subscriptions, the total annual cost if you continue paying monthly, and compare this with the yearly rates you would pay if you switch to annual payments. Finally, choose the yearly payment option to see how much you could save.

Test Case:

Input:

Service 1 = $10/month
Service 2 = $12/month
Annual Discount for Service 1 = $100
Annual Discount for Service 2 = $120

Expected Output:

Monthly Total: $22.00
Total Annual Cost without Discount: $264.00
Total Annual Discounted Cost: $220.00
Total Savings: $44.00

```
s_1=int(input("Enter the monthly cost of service 1:"))
s_2=int(input("Enter the monthly cost of service 2:"))
a_1=int(input("Enter the annual discount for service 1:"))
a_2=int(input("Enter the annual discount for service 2:"))
monthly_total=s_1+s_2
total_annual_cost=monthly_total*12
total_annual_discounted_cost=total_annual_cost-a_1-a_2
total_savings=a_1+a_2
print("Monthly Total:",monthly_total)
print("Total Annual Cost without Discount:",total_annual_cost)
print("Total Annual Discounted Cost:",total_annual_discounted_cost)
print("Total Savings:",total_savings)
```

OUTPUT:

```
Enter the monthly cost of service 1:100
Enter the monthly cost of service 2:100
Enter the annual discount for service 1:20
Enter the annual discount for service 2:20
Monthly Total: 200
Total Annual Cost without Discount: 2400
Total Annual Discounted Cost: 2360
Total Savings: 40
```

PROGRAM 6:

6.Write a Python program that iterates through integers from 1 to 50. For each multiple of three, print "Fizz" instead of the number; for each multiple of five, print "Buzz". For numbers that are multiples of both three and five, print "FizzBuzz"

```
for i in range(51):
  if(i%3==0 and i%5==0):
    print("FizzBuzz")
  elif(i%3==0):
    print("Fizz")
  elif(i%5==0):
    print("Buzz")
  else:
    print(i)
```

OUTPUT:

```
FizzBuzz
1
2
Fizz
4
Buzz
Fizz
7
8
Fizz
Buzz
11
Fizz
13
14
FizzBuzz
16
17
Fizz
19
Buzz
Fizz
22
23
Fizz
Buzz
26
Fizz
28
29
FizzBuzz
31
32
```

```
FizzBuzz
31
32
Fizz
34
Buzz
Fizz
37
38
Fizz
Buzz
41
Fizz
43
44
FizzBuzz
46
47
Fizz
49
Buzz
```

PROGRAM 7:

7.Write a Python program that takes two digits, m (row) and n (column) as input and generates a two-dimensional array. The element value in the i-th row and j-th column of the array should be i*j.

Note :
i = 0,1.., m-1
j = 0,1, n-1.
Test Data : Rows = 3, Columns = 4
Expected Result : [[0, 0, 0, 0], [0, 1, 2, 3], [0, 2, 4, 6]]

```
m=int(input("Enter the number of rows:"))
n=int(input("Enter the number of columns:"))
array=[]
for i in range(m):
    row=[]
    for j in range(n):
        row.append(i*j)
     array.append(row)
 print(array)
```

OUTPUT:

```
Enter the number of rows:3
Enter the number of columns:4
[[0, 0, 0, 0], [0, 1, 2, 3], [0, 2, 4, 6]]
```

PROGRAM 8:

8.Write a Python program for Grade Classification
Scenario: A school system classifies grades as follows:
A (90 and above)
B (70 to 89)
C (50 to 69)
D (below 50)
Question: What grade will be assigned to a student who scores 85?
If the score is 92, what grade will the program output

```
n=int(input("Enter the marks you scored:"))
if(n>=90):
  print("Your grade is A")
elif(n>=70):
  print("Your grade is B")
elif(n>=50):
  print("Your grade is C")
else:
  print("Your grade is D")
```

OUTPUT:

```
Enter the marks you scored:85
Your grade is B
```

PROGRAM 9:

9.Write a program that prints the multiplication table of a user-entered number up to 10.

```
n = int(input("Enter the number: "))
for i in range(11):
    print(n, "*", i, "=", n * i)
```

OUTPUT:

```
Enter the number: 2
2 * 0 = 0
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
```

PROGRAM 10:

10.Write a Python program to check the validity of passwords input by users.

Validation :
At least 1 letter between [a-z] and 1 letter between [A-Z].
At least 1 number between [0-9].
At least 1 character from [$#@].
Minimum length 6 characters.
Maximum length 16 characters.

```
password=input("Enter the password:")
if(len(password)<6 or len(password)>16):
  print("Invalid password")
else:
  has_lower = False
  has_upper = False
  has_digit = False
  has_special = False


  for char in password:
      if char.islower():
         has_lower = True
      elif char.isupper():
         has_upper = True
```

```
    elif char.isdigit():
        has_digit = True
    elif char in "$#@":
        has_special = True


if has_lower and has_upper and has_digit and has_special:
    print("Valid password")
else:
    print("Invalid password (Missing required character types)")
```

OUTPUT:

```
Enter the password:Dheena52$
Valid password
```

DEPARTMENT OF CSE		
Program	10	
Output	5	
Viva-Voce	5	
Total	20	