EX.NO: 02	CONTROL STATEMENTS
DATE:	

PROGRAM 1:

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

```
choice = int(input("Enter '1 for Integer' '2 for Float' '3 for Complex' : "))
if choice == 1:
    n1 = int(input("Enter a integer:"))
elif choice == 2:
    n1 = float(input("Enter a floating point number :"))
elif choice == 3:
    n1 = complex(input("Enter a complex number:"))
else:
    print("Invalid Choice!")
print(f"Absolute Value : {abs(n1)}")
```

OUTPUT:

```
Enter '1 for Integer' '2 for Float' '3 for Complex' : 2
Enter a floating point number :-245.87
Absolute Value : 245.87
```

PROGRAM 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%

```
selling_price = float(input("Enter the Selling price :"))
if selling_price < 0:
    print("Enter Selling price  in Positive!")
elif selling_price <= 50000:
    CGST = 0.05
    SGST = 0.05
    price = selling_price * (CGST + SGST)
    tot_selling_price = selling_price + price
else:
    CGST = 0.18
```

```
    SGST = 0.18
    price = selling_price * (CGST + SGST)
    tot_selling_price = selling_price + price
print(f"Total Selling Price : {tot_selling_price}")
```

OUTPUT:

```
Enter the Selling price :542
Total Selling Price : 596.2
```

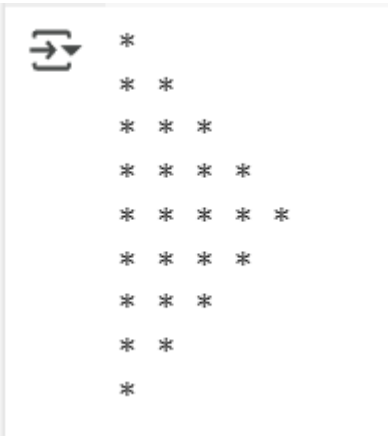
PROGRAM 3:

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

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

```
n = 5
for i in range(1,n+1):
    for j in range(1,i+1):
      print("* ",end = "")
    print()
for i in range(n-1,0,-1):
    for j in range(i):
       print("* ",end = "")
    print()
```

OUTPUT:



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

PROGRAM 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.

```
import random as r
i = r.randint(1,9)
while i:
    a = int(input("Enter a number:"))
    if a == i:
        print("Well Guessed!")
        break
    else:
        print("Try again")
```

OUTPUT:

```
Enter a number:4
Try again
Enter a number:2
Try again
Enter a number:1
Well Guessed!
```

PROGRAM 5:

1. 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

```
Service1 = 10
Service2 = 12
annual_service1 = 100
annual_service2 = 120
tot_mon_ = Service1 + Service2
annual_monthly = tot_mon_ * 12
annual_discount = annual_service1 + annual_service2
savings_tot = annual_monthly - annual_discount
print(f" Monthly Total: ${tot_mon_}\n Total Annual Cost without Discount:
${annual_monthly}\n Total Annual Discounted Cost: ${annual_discount}\n Total Savings:
${savings_tot}\n")
```

OUTPUT:

```
Monthly Total: $22
Total Annual Cost without Discount: $264
Total Annual Discounted Cost: $220
Total Savings: $44
```

PROGRAM 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(1,51):
    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:

```
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
Fizz
```

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

PROGRAM 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]]

```
rows = int(input("Enter the number of rows:"))
columns = int(input("Enter the number of columns:"))
a = [[i * j for j in range(columns)] for i in range(rows)]
print(a)
```

OUTPUT:

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

PROGRAM 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?

```
def grade(score):
    if score >= 90:
        return "A"
    elif score >= 70:
        return "B"
    elif score >= 50:
        return "C"
    else:
        return "D"
score1 = 85
score2 = 92
print(f"The Grade for the score {score1} : {grade(score1)}")
print(f"The Grade for the score {score2} : {grade(score2)}")
```

OUTPUT:

```
The Grade for the score 85 : B
The Grade for the score 92 : A
```

PROGRAM 9:

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

```
num = int(input("Enter a Number:"))
if num < 0:
    print("Enter a Positive Number!")
elif num <= 10:
    for i in range(1,11):
        print(f"{num} x { i } = {num * i}\n")
```

```
else:
    print("Enter number within 10!")
```

OUTPUT:

```
Enter a Number:4
4 x 1 = 4

4 x 2 = 8

4 x 3 = 12

4 x 4 = 16

4 x 5 = 20

4 x 6 = 24

4 x 7 = 28

4 x 8 = 32

4 x 9 = 36

4 x 10 = 40
```

PROGRAM 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.

```
def _password_checker(password):
    if len(password) < 6 or len(password) > 16:
        return False
    _lower = False
    _upper = False
    _num =  False
    _special = False
    for char in password:
        if char.isupper():
            _upper = True
        elif char.islower():
            _lower = True
        elif char.isdigit():
            _num = True
        elif char in "@#$":
            _special = True
    if _upper and _lower and _num and _special :
        return True
    return False
_pass = input("Enter a strong password:")

print(_password_checker(_pass))
```

OUTPUT:

```
Enter a strong passsword:acgjhbb2jh@&
False
```

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Program	10	
Output	5	
Viva-Voce	5	
Total	20	