Student Name: SUNDEEP A

SRN :PES1UG20CS445

SECTION = O

Program 1	Write a program to read 4 characters separately from the user. Convert every character to its next alphabet.
	Algorithm: **Step 1 =** enter the first character **Step 2 =** enter the second character **Step 3 =** enter the third character **Step 4 =** enter the fourth character **Step 5 =** convert the 4 entered characters into their next character by using the formula **Step 6 =** print the 4 new characters .

	Program with appropriate Comments:
	`c1 = input("enter the first character ")`
	`c2 = input("enter the second character ")`
	`c3 = input("enter the third character ")`
	`c4 = input("enter the fourth character ")`
	`ch1 = chr(ord(c1)+1) #converting the entered character into its next character`
	`ch2 = chr(ord(c2)+1)`
	`ch3 = chr(ord(c3)+1)`
	`ch4 = chr(ord(c4)+1)`
	`print("The next alphabet of",c1,"is",ch1)`
	`print("The next alphabet of",c2,"is",ch2)`
	`print("The next alphabet of",c3,"is",ch3)`
	`print("The next alphabet of",c4,"is",ch4)`

	Out Put Screen shot:
	`enter the first character a`
	`enter the second character b`
	`enter the third character c`
	`enter the fourth character d`
	`The next alphabet of a is b`
	`The next alphabet of b is c`
	`The next alphabet of c is d`
	`The next alphabet of d is e`
	`>>>`

Program 2	Write a program to Swap the contents of two memory locations using bitwise XOR operation. Note: Do not use either temporary variable or arithmetic operators.

Algorithm:
Step 1 = enter the values of the 2 variables
Step 2 = print the values of the variable before swapping.
Step 3 = swap the two variables using XOR operator
Step 4 = print the values of the variables after swapping.

Program with appropriate Comments:

```
#swaping contents of two variables using bitwise xor operator
a = int(input("enter the value of a "))#inputing the values of two variables fro
b = int(input("enter the value of b "))
print("the values of a and b before swaping are = \n","a = ",a,"\n","b = ",b)
a = a^b         #swaping the values
b = a^b
a = a^b
print("the values of a and b after swaping are = \n","a = ",a,"\n","b = ",b)
```

Out Put Screen shot:

```
enter the value of a 10
enter the value of b 20
the values of a and b before swaping are =
 a =  10
 b =  20
the values of a and b after swaping are =
 a =  20
 b =  10
>>>
```

Program 3

Python Program to Clear the Rightmost Set Bit of a Number

Algorithm:
Step 1 = enter the number
Step 2 = Clear the Rightmost Set Bit using the bitwise AND operator by applying the formula
Step 3 = print the new number.

Program with appropriate Comments:

```
#clear the right most set bit
n = int(input("enter the number "))
new = n & (n-1) #clearing the right most set bit
print("The number obtained after clearing the right most bit is ",new)
```

Out Put Screen shot:

```
enter the number 12
The number obtained after clearing the right most bit is  8
>>>
```

Program 4	Write a Python program A) To get a single random character from a specified string. B) Write a program to: i) shuffle roll no in a class. (Assume no of students in a class are 10) ii) to choose one student who would become a Class representative. iii) to create an random sample of size 2 from the available number of population who are the potential candidates to become event coordinators. C) Calculate multiplication of two random float numbers D) To generate a floating-point number within a range. E) Generates a random integer number from the given range. F) To generate the same random number every time. G) Roll a dice in such a way that every time you get the same number.
	Program with appropriate Comments:

```
#A
import random
name = input("enter the string ")
ran = random.choice(name)
print("A single random character from string\"",name,"\" is",ran)
print()
#B
import random
students = [1,2,3,4,5,6,7,8,9,10]
print("Roll numbers in a class before shuffling are",students)
random.shuffle(students)
print("Roll numbers in a class after shuffling are",students)
a = random.choice(students)
print("The class representative is",a)
b=random.sample(students,2)
print("two random students are",b)
print()
#C
import random
num1 = random.random()
print("first random number ",num1)
num2 = random.random()
print("second random number ",num2)
result = num1*num2
print("multiplication the two random float numbers is ",result)
print()
```

```
#D
import random
n1 = int(input("enter th starting number "))
n2 = int(input("enter th ending number "))
num = random.uniform(n1,n2)
print("The random floating point number within a range is",num)
print()
#E
import random
n1 = int(input("enter th starting number "))
n2 = int(input("enter th ending number "))
num = random.randint(n1,n2)
print("a random integer number from the given range",num)
print()
#F
random.seed(7)
print("generating the same random number every time",random.random())
print()
#G
random.seed(8)
number = random.randint(1,6)
print("The same number obtained on rolling a dice is",number)
```

Out Put Screen shot:

```
enter the string sundeep
A single random character from string" sundeep " is u

Roll numbers in a class before shuffling are [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
Roll numbers in a class after shuffling are [3, 9, 8, 2, 4, 1, 7, 10, 6, 5]
The class representative is 9
two random students are [9, 3]

first random number  0.7748575611857468
second random number  0.6853925930345286
multiplication the two random float numbers is  0.5310816330935099

enter th starting number 1
enter th ending number 5
The random floating point number within a range is 3.9607115894672473

enter th starting number 1
enter th ending number 5
a random integer number from the given range 4

generating the same random number every time 0.32383276483316237

The same number obtained on rolling a dice is 2
>>>
```

Program 5	Write a program to: //math A) To calculate wind chill index. B) To Convert radian to degree. C)To calculate distance between two points using latitude and longitude. D)Write a program i) To round the value of -4.3 and then takes the absolute value of that result. ii) That takes the ceiling of sine of 34.5. ii) To produces the floor of -2.8.
	Algorithm: **11 A)** **Step 1 =** enter the temperature in Celsius **Step 2 =** enter the wind velocity **Step 3 =** find the wind chill index using the formula **Step 4 =** print the wind chill index. **11 C)** **Step 1 =** enter the latitude of the first location **Step 2 =** enter the longitude of the first location **Step 3 =** enter the latitude of the second location **Step 4 =** enter the longitude of the second location **Step 5 =** convert them into radians **Step 6 =** Apply the formula to find the distance between two locations **Step 7 =** print the distance between two locations.

	Program with appropriate Comments:
	11 A)
	`from math import pow`
	`t = float(input("enter the temperature in celsius "))#taking inputs from the user`
	`v = float(input("enter the wind velocity "))`
	`wind = 13.12 + 0.6215*t - 11.37*pow(v,0.16)+0.3965*t*pow(v,0.16)#applying formula`
	`print("The wind chill index is ",wind)`
	
	11 C)
	`from math import radians, sin,cos,acos`
	`print("Input coordinates of two points: ")`
	`lat1 = float(input("enter the latitude of the first location ")) #inputing the coordinates`
	`log1 = float(input("enter the longitude of the first location "))`
	`lat2 = float(input("enter the latitude of the second location "))`
	`log2 = float(input("enter the longitude of the second location "))`
	`log1 = radians(log1) #converting degree into radian`
	`log2 = radians(log2)`
	`lat1 = radians(lat1)`
	`lat2 = radians(lat2)`
	`dist = 6371.01 * acos(sin(lat1)*sin(lat2) + cos(lat1)*cos(lat2)*cos(log2 - log1))#applying formula`
	`print("distance between the two coordinates is ",dist)`

11 B,D(i,ii,iii)

```
#B
rad = float(input("enter the angle in radians "))
degrees = rad*(180*7)/22
print ("the equivalent result in degrees is",degrees)


#D
from math import sin,ceil,floor
print('The absolute value after rounding the number "-4.3" is',abs(round(-4.3)))
print("the ceiling of sine of 34.5 is",ceil(sin(34.5)))
print("the floor of -2.8",floor(-2.8))
```

Output

11 A)

```
enter the temperature in celsius 25
enter the wind velocity 50
The wind chill index is  25.932015201191792
>>>
```

11 C)

```
Input coordinates of two points:
enter the latitude of the first location 25.5
enter the longitude of the first location 67.5
enter the latitude of the second location 27.5
enter the longitude of the second location 69.5
distance between the two coordinates is  298.4298645819369
>>>
```

11 B,D(I,ii,iii)

```
enter the angle in radians 3.142
the equivalent result in degrees is 179.9509090909091
The absolute value after rounding the number "-4.3" is 4
the ceiling of sine of 34.5 is 1
the floor of -2.8 -3
>>>
```