NAME: Adya Singhal

ROLL NO.: 2410110027

NET-ID: as401@snu.edu.in

COURSE: CCC634 (A Gentle Intro to Python)

ASSIGNMENT: 3

Ques 1:

Vijaya takes input of any two numbers and then she writes code to perform Bitwise operators and then prints output of 6 lines where (without using third variable):

1. First print bitwise AND operation
2. Second print bitwise OR operation
3. Third print bitwise NOT operation
4. Fourth print bitwise XOR operation
5. Fifth print bitwise right shift operation
6. Sixth print bitwise left shift operation

```
def bitwise_operations(a, b):
    print("Bitwise AND:", a & b)
    print("Bitwise OR:", a | b)
    print("Bitwise NOT:", ~a)
    print("Bitwise XOR:", a ^ b)
    print("Bitwise Right Shift:", a >> 2)
    print("Bitwise Left Shift:", a << 2)

num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))

bitwise_operations(num1, num2)
```

```
Enter first number: 12
Enter second number: 2
Bitwise AND: 0
Bitwise OR: 14
Bitwise NOT: -13
Bitwise XOR: 14
Bitwise Right Shift: 3
Bitwise Left Shift: 48
```

Ques 2:

Ivary must select a partner for his hackathon, He is given ID number from -100 to 100. The hackathon has a condition for partner selection that is the ID numbers should have opposite signs. Ivary must make a program to detect if two input ID have opposite signs using Bitwise operators.

```
def oppsigns(id1, id2):
    return (id1 ^ id2) < 0

def idrange(idnum):
    return -100 <= idnum <= 100

def partners_id():
    id1 = int(input("Enter first ID (-100 to 100): "))
    id2 = int(input("Enter second ID (-100 to 100): "))

    # Validate IDs
    if not (idrange(id1) and idrange(id2)):
        return "Invalid ID numbers. Please enter numbers between -100 and 100."

    # Check if IDs have opposite signs
    if oppsigns(id1, id2):
        return f"IDs {id1} and {id2} are valid hackathon partners!"
    return f"IDs {id1} and {id2} cannot be partners - signs are not opposite."


print(partners_id())
```

```
Enter first ID (-100 to 100): -78
Enter second ID (-100 to 100): 45
IDs -78 and 45 are valid hackathon partners!
```

Ques 3:

You are studying in the MIT and some of your friends want you to check if they can get admission in MIT. But you got so many requests and at the same moment you have shortage of time, so you decided to make a Python program to find the eligibility of admission for a professional course based on the following criteria.

Eligibility Criteria :

Marks in Maths >=85 and

Marks in Phy >=75 and

Marks in Chem>=70 and

Total in all three subjects >=210 or Total in Maths and Physics >=140

```
maths=int(input("Enter marks in maths: "))
phy=int(input("Enter marks in phy: "))
chem=int(input("Enter marks in chem: "))

if maths>=85 and phy>=75 and chem>=70:
  if (maths+chem+phy)>=210 or (maths+phy)>=140:
    print("Eligible for admission in MIT")
else:
  print("Not eligible")
```

```
Enter marks in maths: 85
Enter marks in phy: 55
Enter marks in chem: 31
Not eligible
```

Ques 4:

Given a parameter "X". Show the output as an area of a circle if the choice is the letter "c" or the area of the square if the choice is "s". Round off to 2 decimal places.

```
X=input("Enter character (c or s)")

if X=='c':
  rad=float(input("Enter radius of circle: "))
  print("Area of circle: %.2f" % (3.14*rad*rad))

elif X=='s':
  side=float(input("Enter side of square: "))
  print("Area of square: %.2f" % (side*side))

else:
  print("Input is not valid")
```

```
Enter character (c or s)s
Enter side of square: 12.54
Area of square: 157.25
```

Ques 5:

Write a program to take the sides of a triangle as input and determine whether it is an equilateral, isosceles or scalene triangle.

```
s1=int(input("Enter side 1: "))
s2=int(input("Enter side 2: "))
s3=int(input("Enter side 3: "))

if (s1==s2) and (s2==s3):
  print("It is an equilateral triangle")

elif (s1==s2) or (s2==s3) or (s1==s3):
  print("It is an isosceles triangle")

else:
  print("It is a scalene triangle")
```

```
Enter side 1: 3
Enter side 2: 4
Enter side 3: 5
It is a scalene triangle
```

Ques 6:

Sam’s dog Binary hears frequencies starting from 45 Hertz to 45000 Hertz (both inclusive). If Sam’s commands have a frequency of XX Hertz (take this as an input), find whether Binary can hear them or not.

```
sam_freq=eval(input("Enter frequency of Sam's commands (in Hertz): "))

if sam_freq>=45 and sam_freq<=45000:
  print("The dog can hear his commands")

else:
  print("The dog can't hear his commands")
```

```
Enter frequency of Sam's commands (in Hertz): 600000
The dog can't hear his commands
```

Ques 7:

Take a character as input from the user and determine whether the input character is in Uppercase, Lowercase, or is it a special character or a digit.

[Hint: use ord() function to get the ASCII value of characters and use that value to differentiate between types of characters]

```
c=input("Enter character: ")
ascval=ord(c)
print("ASCII value:" , ascval)

if ascval>=97 and ascval<=122:
  print("It is a lowercase character")

elif ascval>=65 and ascval<=90:
  print("It is an uppercase character")

elif ascval>=48 and ascval<=57:
  print("It is a digit")

else:
  print("It is a special character")
```

```
Enter character: *
ASCII value: 42
It is a special character
```

Ques 8:

A person goes to the US Embassy to apply for a tourist visa. The embassy management grants a visa if it fulfils the following three conditions:

The person is enrolled full-time in a University. Or

The person is fully employed. and

The duration of tour is greater than 1 and not more than 15 days.

```
uni=int(input("Is the person enrolled in a university? (0 for No , 1 for Yes) "))
emp=int(input("Is the person fully employed? (0 for No , 1 for Yes) "))
dur=int(input("Enter the duration of tour in number of days: "))

if uni or emp:
  if dur>1 and dur<=15:
    print("The person is eligible for tourist visa")
else:
  print("Person is not eligible for tourist visa")
```

```
Is the person enrolled in a university? (0 for No , 1 for Yes) 1
Is the person fully employed? (0 for No , 1 for Yes) 0
Enter the duration of tour in number of days: 15
The person is eligible for tourist visa
```