LAB ACTIVITY 3(i):
Making Decision In Python

Learning Outcomes:

By the end of this laboratory session, you should be able to:

1. **Display the use of relational operator in simple program**

Hardware/Software: Computer, Phyton 3.5 or above.

Activity 3A

Activity Outcome: Display the use of relational operator in simple program. (Relational Operator)

Procedure:

Step 1: Open Code editor and type the following code:

```
a = 21
b = 10
if ( a == b ):
   print ("Line 1 - a is equal to b")
else:
   print ("Line 1 - a is not equal to b")

if ( a != b ):
   print ("Line 2 - a is not equal to b")
else:
   print ("Line 2 - a is equal to b")

if ( a < b ):
   print ("Line 3 - a is less than b" )
else:
   print ("Line 3 - a is not less than b")

if ( a > b ):
   print ("Line 4 - a is greater than b")
else:
   print ("Line 4 - a is not greater than b")

a,b=b,a #values of a and b swapped. a becomes 10, b becomes 21

if ( a <= b ):
   print ("Line 5 - a is either less than or equal to  b")
else:
   print ("Line 5 - a is neither less than nor equal to  b")

if ( b >= a ):
   print ("Line 6 - b is either greater than  or equal to b")
else:
   print ("Line 6 - b is neither greater than  nor equal to b")
```

Step 2: Save, compile and run the program. Save the program as `Act3A.py`. Write the output in the area below.

Output:

```
Line 1 - a is not equal to b
Line 2 - a is not equal to b
Line 3 - a is not less than b
Line 4 - a is greater than b
Line 5 - a is either less than or equal to b
Line 6 - b is either greater than or equal to b
[Finished in 56ms]
```

Activity 3B

Activity Outcome: Display the use of relational operator in simple program. (Relational Operator)

Procedure:

Step 1: Open code editor and type the following code:

```
a = 9
b = 4
print(" The Output of 9 > 4 is : ", a > b )
print(" The Output of 9 < 4 is : ", a < b )
print(" The Output of 9 <= 4 is : ", a <= b )
print(" The Output of 9 >= 4 is : ", a >= b )
print(" The Output of 9 Equal to 4 is : ", a == b )
print(" The Output of 9 Not Equal To is : ", a != b )
```

Step 2: Save, compile and run the program. Save the program as `Act3B.py`. Write the output in the area below.

Output:

```
The Output of 9>4 is: True
The Output of 9<4 is: False
The Output of 9<=4 is: False
The Output of 9>=4 is: True
The Output of 9 Equal to 4 is: False
The Output of 9 Not Equal to 4 is: True
[Finished in 56ms]
```

Activity 3C

Activity Outcome : Display the use of relational operator in simple program.
(Bitwise Operator)

Procedures:

Step 1: Open code editor and type the following code:

```
a = 60              # 60 = 0011 1100
b = 13              # 13 = 0000 1101
print ("a=",a,":",bin(a),'b=',b,":",bin(b))
c = 0

c = a & b;          # 12 = 0000 1100
print ("result of AND is ", c,":",bin(c))

c = a | b;          # 61 = 0011 1101
print ("result of OR is ", c,":",bin(c))

c = a ^ b;          # 49 = 0011 0001
print ("result of EXOR is ", c,":",bin(c))

c = ~a;             # -61 = 1100 0011
print ("result of COMPLEMENT is ", c,":",bin(c))

c = a << 2;         # 240 = 1111 0000
print ("result of LEFT SHIFT is ", c,":",bin(c))

c = a >> 2;         # 15 = 0000 1111
print ("result of RIGHT SHIFT is ", c,":",bin(c))
```

Step 2: Save, compile and run the program. Save the program as `Act3C.py`. Observe the output.

Output:

```
a = 60 : 0b111100 b = 13 : 0b1101
Result of AND is 12 : 0b1100
Result of OR is 61 : 0b111101
Resukt of EXOR is 49 : 0b110001
Result of COMPLEMENT is -61 : -0b111101
Result of LEFT SHIFT is 240 : 0b11110000
Result of RIGHT SHIFT is 15 : 0b1111
[Finished in 55ms]
```

Activity 3D

Activity Outcome : Display the use of relational operator in simple program.
(Bitwise Operator)

Procedures:

Step 1: Open code editor and type the following code:

```
a = 9
b = 65
print("Bitwise AND Operator On 9 and 65 is = ", a & b)
print("Bitwise OR Operator On 9 and 65 is = ", a | b)
print("Bitwise EXCLUSIVE OR Operator On 9 and 65 is = ", a ^ b)
print("Bitwise NOT Operator On 9 is = ", ~a)
print("Bitwise LEFT SHIFT Operator On 9 is = ", a << 1)
print("Bitwise RIGHT SHIFT Operator On 65 is = ", b >> 1)
```

Step 2: Save, compile and run the program. Save the program as `Act3D.py`. Observe the output.

Output:

```
Bitwise AND Operator on 9 and 65 is = 1
Bitwise OR Operator on 9 and 65 is = 73
Bitwise EXCLUSIVE OR Operator on 9 and 65 is = 72
Bitwise NOT Operator on 9 is = -10
Bitwise LEFT SHIFT Operator on 9 is = 18
Bitwise RIGHT SHIFT Operator on 65 is = 32
[Finished in 57ms]
```

Activity 3E

Activity Outcome : Display the use of relational operator in simple program.
(Logical Operator)

Procedures:

Step 1: Open code editor and type the following code:

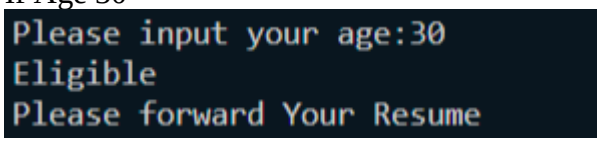
```
age=int(input("Please input your age:"))
# Logical AND Example
if age < 33 and age > =21:
        print ("Eligible")
else:
        print(" Not Eligible ")

# Logical OR Example
if age < 18 or age > 60:
        print(" Not Eligible to Work ")
else:
        print(" Please forward Your Resume ")
```

Step 2: Save, compile and run the program. Save the program as `Act3E.py`. Observe the output.

Output:

If Age 30



If Age 62