A.Y. 2023-24
Class: SE-ITA/B, Semester: IV

Subject: Python Lab
Experiment – 3: Python Conditional Statements

1.   **Aim:** To implement a Python program to demonstrate conditional statements
i)   if else statement to check if number inputted by user is even or odd
ii)   if else statement to demonstrate use of all comparison and logical operators in conjunction with if statement
iii)   if elif else statement demonstration to check if number inputted by user is positive, negative or zero

2.Objectives: After performing this experiment, the student will be able to understand and write conditional statements in Python.

3.Outcomes: Students shall be able to **understand** the structure, syntax and semantics of a Python program. (LO-404.1).

4.Prerequisite: Knowledge of Python data types, basics of conditional statements
5.Requirements: Personal Computer (PC), Windows /Linux Operating System, Python IDE

1.   **Pre-Experiment Exercise:**

Theory:

Python provides three important conditional statements:

i.   If statement: if statement consists of a Boolean expression followed by one or more statements. When the condition is satisfied, the 'if' block is executed. Otherwise, the control skips the code under the 'if' block and reaches the statement after the 'if' block.

```
Syntax:
if condition:
    Indented statement(s)
```

ii.   If…else statement: if statement can be followed by an optional else statement, which executes when the Boolean expression is FALSE.

```
Syntax:
if condition:
    Indented statement(s)
else:
    Indented statement(s)
```

iii.   Nested if... else statement: You can use one if or elif statement inside another if or elif statement(s). When any of the conditions is 'True', its block of code is executed. Unlike the 'else' statement, there can be any number of 'elif' statements followed by a single 'if'.

```
Syntax:
if condition1:
    Indented statement(s)
elif condition2:
    Indented statement(s)
elif condition3:
    Indented statement(s)
...
else:
    Indented statement(s)
```

2.   **Laboratory Exercise**
A.   **Procedure**
i.   Open IDE for Python programming
ii.   Open new Python file from menu file-new
iii.   Type Python code with proper syntax
iv.   Save file with .py extension
v.   Execute the command statements inside the saved file using
cntr+enter key and explore results in other windows of IDE.

B.   **Program code with comments:**
Write and execute your program code to achieve a given aim and attach it with your own comments with neat indentation.

3.   **Post-Experiments Exercise**
A.   **Extended lab work(Questions/Programs):**
a.   Write a Python program to read marks of 3 subjects of a student and check if the average marks are above 50 then print that student is passed in exam
b.   Write a program to check whether the input year is a leap year or not.
c.   Write a program to calculate electricity bill according to following criteria
       i. first 10 units then no charge
      ii. next 100 units - 5 rs per unit
     iii. next 200 units - 10 rs per unit
   d. Write a program to find the lowest number out of the three numbers

B.   **Results/Observations/Program output:**
Present the program input/output results and comment on the same.

C.   **Conclusion:**
1.   Write what was performed in the experiment/program.
2.   What is the significance of experiment/program?
3.   Mention few applications of what was studied.

D.   **References**
[1]   MT Savaliya, "Programming through Python",StarEdu Solutions India Pvt.
[2]   https://www.python.org/
[3]   www.pythonforbeginners.com

IN-LAB EXERCISE

1.WAP to check if number inputted by user is even or odd using if else statement

Code:

```
#WAP to test Entered Number is Even or Odd
print("\nWAP to test Entered Number is Even or Odd")
num=int(input("Enter the Number to be Checked: "))
if (num %2 ==0):
    print("Entered Number",num,"is even")
else:
    print("Entered Number",num,"is odd")
```

Output:

```
 PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3> python .\even_or_odd.py

 WAP to test Entered Number is Even or Odd
 Enter the Number to be Checked: 63
 Entered Number 63 is odd
 PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3>
```

2.WAP to demonstrate use of all comparison and logical operators in conjunction with if statement

Code:

```
maths=int(input("Enter the marks of Maths: "))
if((maths>=65) and(maths<=75)):
    print("Student with",maths," marks have Grade B")
elif ((maths>=76) and (maths<=85)):
    print("Student with",maths," marks have Grade A")
elif (maths>86):
    print("Student with",maths," marks have Grade O")
else:
    print("Student with",maths," marks have Grade C")

print("\nWAP to determine if the Character enteed is a vowel or
not")
char=input("Enter any character:")
if (char=='A' or char=='E' or char=='I' or char=='O' or
char=='U'):
    print("Entered Char",char,"is vowel")
elif (char=='a' or char=='e' or char=='i' or char=='o' or
char=='u'):
    print("Entered Char",char,"is vowel")
else:
    print("Entered Char",char,"is consonant")
```

Output:

```
Enter the marks of Maths: 70
Student with 70  marks have Grade B

WAP to determine if the Character enteed is a vowel or not
Enter any character:a
Entered Char a is vowel
```

3.WAP to demonstration to check if number inputted by user is positive, negative or zero using If-else

Code:

```
print("\nWAP to test whether a number entered by the user is
negative,positiveor equal to zero")
num=int(input("Enter any number between Positive or Negative:
"))
if(num>0):
    print("Entered Number",num,"is Posititve")
elif(num<0):
    print("Entered Number",num,"is Negative")
else:
    print("Entered Number",num,"is Zero")
```

Output:

```
WAP to test whether a number entered by the user is negative,positiveor equal to zero
Enter any number between Positive or Negative: 63
Entered Number 63 is Posititve
```

```
WAP to test whether a number entered by the user is negative,positiveor equal to zero
Enter any number between Positive or Negative: -63
Entered Number -63 is Negative
```

```
WAP to test whether a number entered by the user is negative,positiveor equal to zero
Enter any number between Positive or Negative: 0
Entered Number 0 is Zero
```

POST-EXPERIMENT EXERCISE

1.Write a Python program to read marks of 3 subjects of a student and check if the average marks are above 50 then print that student is passed in exam

Code:

```
Sub1=int(input("Enter the marks of Subject 1: "))
Sub2=int(input("Enter the marks of Subject 2: "))
Sub3=int(input("Enter the marks of Subject 3: "))

avg=(Sub1+Sub2+Sub3)/3

if(avg>50):
    print("Student is Passed with average ",avg)
else:
    print("Student is Failed with average ",avg)
```

Output:

```
PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3> python .\average_of_3_
Enter the marks of Subject 1: 90
Enter the marks of Subject 2: 75
Enter the marks of Subject 3: 60
Student is Passed with average  75.0
PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3>
```

2.Write a program to check whether the input year is a leap year or not.

Code:

```python
year=int(input("Enter the year to be checked: "))

if (year%4==0):
    if(year%100==0):
        if(year%400==0):
            print(year,"is a Leap Year")
        else:
            print(year,"is not a Leap Year")
    else:
        print(year,"is a Leap Year")
```

Output:

PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3> python .\leap_year
Enter the year to be checked: 2000
2000 is a Leap Year
PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3>

3.Write a program to calculate electricity bill according to following criteria
      i. first 10 units then no charge
      ii. next 100 units - 5 rs per unit
      iii. next 200 units - 10 rs per unit

Code:

```python
units=int(input("Enter the units consumed: "))



if(units<=10):
    print("No Charge")
elif(units<=110):
    print("Bill is ",(units-10)," units * 5 i.e.",(units-10)*5)
elif(units<=310):
    print("Bill is (100 units *5) +",(units-110),"units * 10
i.e.", (100*5)+(units-110)*10)
else:
    print("Enter Units that are less than 310")
```

Output:

```
PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3> python .\bill
Enter the units consumed: 300
Bill is (100 units *5) + 190 units * 10 i.e. 2400
PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3>
```

4.Write a program to find the lowest number out of the three numbers

Code:

```
num1=int(input("Enter the first number: "))
num2=int(input("Enter the second number: "))
num3=int(input("Enter the third number: "))

if(num1<num2 and num1<num3):
    print(num1,"is the lowest number")
elif(num2<num1 and num2<num3):
    print(num2,"is the lowest number")
else:
    print(num3,"is the lowest number")
```

Output:

```
PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3> python .\lowesto
Enter the first number: 63
Enter the second number: 70
Enter the third number: 90
63 is the lowest number
PS F:\College Stuff\Vishal Mahajan SE IT SEM 4\Python Lab\EXP3>
```