LAB # 04

DECISIONS

OBJECTIVE

To get familiar with the concept of conditional statement for simple decision making.

THEORY

Decision making statements in programming languages decides the direction of flow of program execution.

The if…elif…else statement is used in Python for decision making.

The *if* Statement

Like most languages, python uses the keyword if to implement the decision control instruction. It is used to decide whether a certain statement or block of statements will be executed or not i.e if a certain condition is true then a block of statement is executed otherwise not. The general form of if statement looks like this:

Syntax:
if condition:
   # Statements to execute if
   # condition is true

As a general rule, we express a condition using python's 'relational' operators. The relational operators allow us to compare two values to see whether they are equal to each other, unequal, or whether one is greater than the other. Here is how they look and how they are evaluated in python.

This expression	Is true if
x==y	x is equal to y
x!=y	x is not equal to y
x<y	x is less than y
x>y	x is greater than y
x<=y	x is less than or equal to y
x>=y	x is greater than or equal to y

Example:

```
# python program to illustrate If statement
```

1

```
i = 10
if (i > 15):
    print (i, "is greater than 15")
print ("I am not greater")
```

Output:
```
>>> %Run task1.py
I am not greater
>>>
```

The *if-else* Statement

We can use the else statement with if statement to execute a block of code when the condition is false.

Syntax

if (condition):
    # Executes this block if
    # condition is true
else:
    # Executes this block if
    # condition is false

Example:
```
# python program to illustrate If else statement
i = 20;
if (i < 15):
    print (i,"is smaller than 15")
    print ("i'm in if Block")
else:
    print (i,"is greater than 15")
    print ("i'm in else Block")
print ("i'm not in if and not in else Block")
```

Output:
```
>>> %Run task2.py
20 is greater than 15
i'm in else Block
i'm not in if and not in else Block
>>>
```

The *if-elif-else* Statement

The elif is short for else if. It allows us to check for multiple expressions. If the condition for if is False, it checks the condition of the next elif block and so on. If all the conditions are False, body of else is executed.

Syntax
if (condition):
   statement
elif (condition):
   statement
.
.
else:
   statement

Example:
```
# Python program to illustrate if-elif-else
i = 30
if (i == 10):
    print ("i is 10")
elif (i == 20):
    print ("i is 20")
elif (i == 30):
    print ("i is 30")
else:
    print ("i is not present")
```
Output:
```
>>> %Run task3.py
i is 30
>>>
```

EXERCISE

A. Point out the errors, if any, in the following Python programs.

1. Code
```
a = 500,b,c;
if ( a >= 400 ):
    b = 300
    c = 200
    print( "Value is:", b, c )
```

2. Code
```
&number = eval(input("Enter an integer: "))
print(type(number))
if number % 5 == 0
    print("HiFive")
else
```

```
        print("No answer")
```

3. Code

```
if score >= 60.0
    grade = 'D'
elif score >= 70.0
    grade = 'C'
elif score >= 80.0
    grade = 'B'
elif score >= 90.0
    grade = 'A'
else:
    grade = 'F'
```

B. What would be the output of the following programs:

1. Code

```
requested_topping = 'mushrooms'
if requested_topping != 'anchovies':
    print("Hold the anchovies!")
```

Output

2. Code

```
num = 3
if num >= 0:
    print("Positive or Zero")
else:
    print("Negative number")
```

Output

3. Code

```
age = 15
if age < 4:
    price = 0
elif age < 18:
    price = 1500
else:
    price = 2000
print("Your admission cost is Rs" + str(price) + ".")
```

Output

C. Write Python programs for the following:

1. Any integer is input through the keyboard. Write a program to find out whether it is an odd number or even number.

2. Write a program that asks for years of service and qualification from the user and calculates the salary as per the following table:

Years of Service	Qualifications	Salary
>= 10	Masters	150,000
>= 10	Bachelors	100,000
< 10	Masters	100,000
< 10	Bachelors	70,000

3. Write an if-elif-else chain that determines a person's stage of life, take input value for the variable age, and then apply these conditions:

• If the person is less than 2 years old, print a message that the person is a baby.
• If the person is at least 2 years old but less than 4, print a message that the person is a toddler.
• If the person is at least 4 years old but less than 13, print a message that the person is a kid.
• If the person is at least 13 years old but less than 20, print a message that the person is a teenager.
• If the person is at least 20 years old but less than 65, print a message that the person is an adult.
• If the person is age 65 or older, print a message that the person is an elder.