**Programming Fundamentals Lab No.2**

**Lab task**

1. You are working in an e-commerce company and need to design a flowchart for processing an online order. The flowchart should include process modules for each step involved in handling an order and decision structures to handle stock availability and payment verification.

Check if stock is available

Order received

No

Stock finished – cancel order

Yes

A

Verify Payment

No

A

Yes

Send order confirmation

Pack and ship order

Process payment

Payment error

**Pseudocodes**

Lab Tasks

1. Find if the number is multiple of 5.

START

//Input

Number

//Process

Divide the number by 5

//Conditional Statement

If answer is a whole number then print “number is a multiple of 5”

Else print “number is not a multiple of 5”

End

2. Check if a character is uppercase or lowercase.

Start

//Input

A, b, C, D

//Conditional Statement

If character is >=A and <=Z then print “character is uppercase”

Else if the character is >=a and <=z, print “character is lowercase”

End

3. Create a small calculator which only does ‘+’ or ‘\*‘Operations. (Hint: Take three variable inputs with one being used for the operator)

Start

//Input

Num1, operator, num2

//Conditional Statement

If operator = “+” then result= num 1 + num2

OR If operator=”\*” then result= num1\*num2

Else print “Invalid operator, only ‘+’ or ‘\*’ allowed”

Print “Result”

End

4. Check whether a given number is positive, negative, or zero.

Start

//Input

Enter number x

//Conditional Statement

If x > 0 Then print “positive”

Else If x < 0 Then print “negative”

Else print “zero”

End

5. Determine if a person is a teenager (between 13 and 19 years old).

Start

//Input

Enter age of person x

//Conditional statement

If age >= 13 and age <= 19 Then print “Teenager”

Else print “Not a teenager”

End

**Algorithms**

Lab Tasks

1. Implement an algorithm to determine if a given year is a leap year. A leap year is divisible by 4, but not divisible by 100, except if it is also divisible by 400.
2. Ask the user to enter the given year.
3. Check if the year is divisible by 100.
4. Else check if it is divisible by 400.
5. If not, else check if it is divisible by 4.
6. If yes then print “Leap year”.
7. Else print “Not a leap year”.

2. Implement an algorithm to count the number of occurrences of each character in a given

string.

1. Ask the user to input a string
2. Loop through the string
3. During each loop check if the current character is equal to the given character
4. Then increment the count variable that stores count of the occurrences of the characters in the string.
5. Display the output.

3. Write an algorithm to calculate x raised to the power y (i.e., x y ) without using built-in power functions.

1. Ask the user to input x and y.
2. Multiply x by itself y times.
3. Display the answer to the user.

4. Calculate the area of a circle given its radius r.

1. Ask the user to enter the Radius r of the circle.
2. Set πr^2 as the formula for area of circle.

III. Calculate Area by substituting the value of radius into πr^2.

IV. Display Area for the user.

5. Find the median of three given numbers.

1. Ask the user to enter the three numbers.
2. Set ((n+1)/2) as the formula for median.
3. Substitute 3 in place of n to work out the median.
4. Display the middle number as the median as the answer would be the 2nd value.