



# Algorithms and Flowcharts Section 2

# Find Area and Perimeter of Circle:

## Algorithm

- ▶ R : Radius of Circle
- ▶ AREA : Area of Circle
- ▶ PERIMETER : Perimeter of Circle

**Step-1 Start**

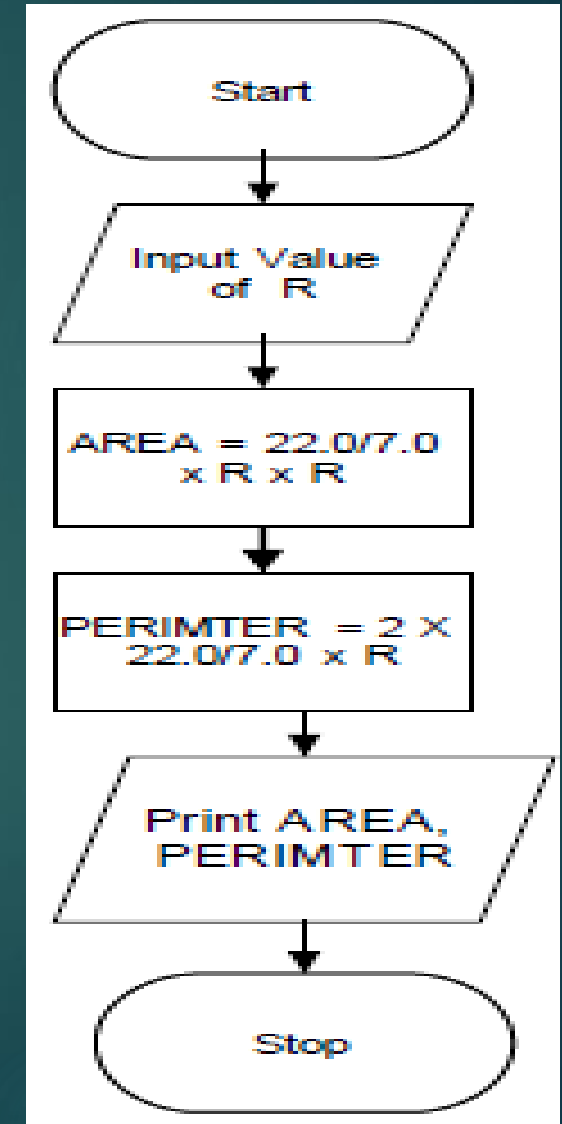
**Step-2 Input Radius of Circle say R**

**Step-3 Area =  $22.0/7.0 \times R \times R$  ( $3.14 \times R \times R$ )**

**Step-4 PERIMETER =  $2 \times 22.0/7.0 \times R$  ( $2 \times 3.14 \times R$ )**

**Step-5 Display AREA, PERIMETER**

**Step-6 Stop**



# Find Area and Perimeter of Triangle:

## Algorithm

- ▶ A : First Side of Triangle
- ▶ B : Second Side of Triangle
- ▶ C : Third Side of Triangle
- ▶ AREA : Area of Triangle
- ▶ PERIMETER : Perimeter of Triangle

**Step-1 Start**

**Step-2 Input Sides of Triangle A,B,C**

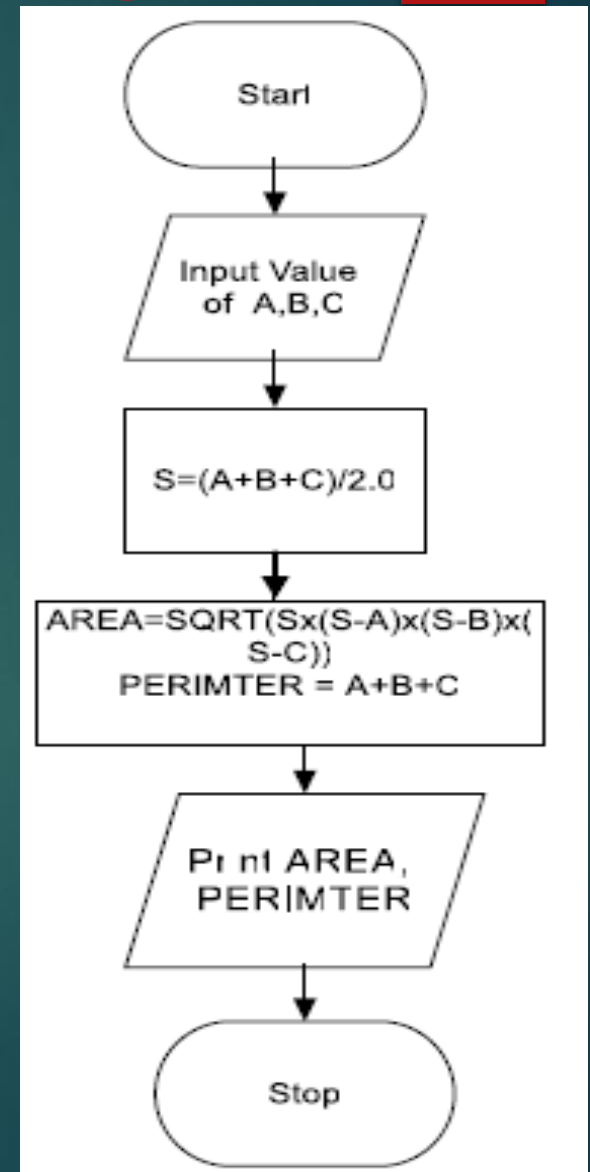
**Step-3  $S = (A + B + C) / 2.0$**

**Step-4  $AREA = \text{SQRT}(S \times (S-A) \times (S-B) \times (S-C))$**

**Step-5  $PERIMETER = A + B + C$**

**Step-6 Display AREA, PERIMETER**

**Step-7 Stop**



# Swap Two Numbers using Temporary Variable :

## Algorithm

Step-1 Start

Step-2 Input Two Numbers Say NUM1, NUM2

Step-3 Display Before Swap Values NUM1, NUM2

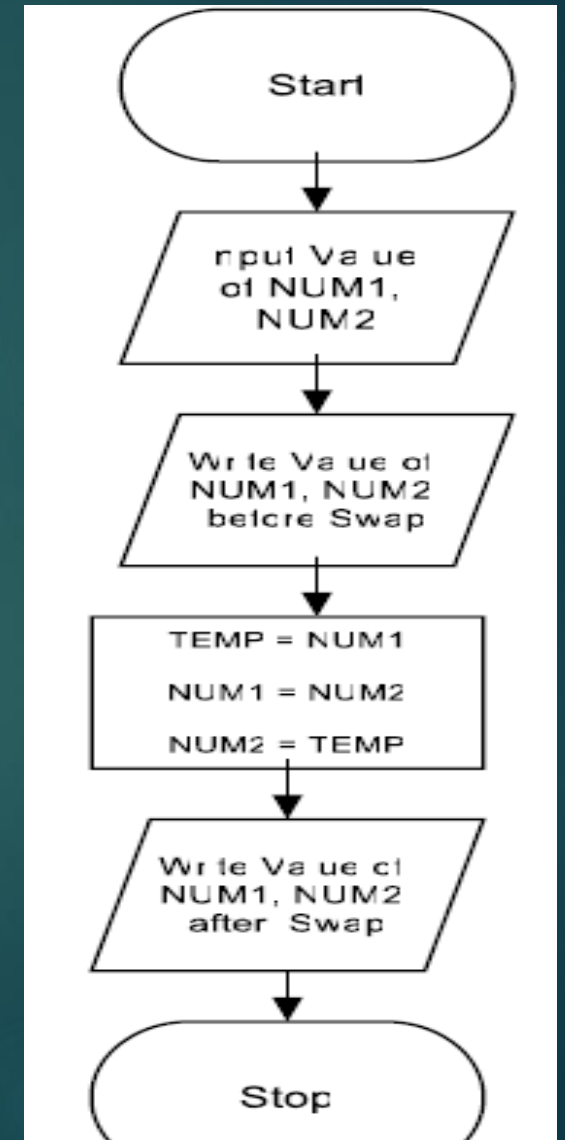
Step-4 TEMP = NUM1

Step-5 NUM1 = NUM2

Step-6 NUM2 = TEMP

Step-7 Display After Swap Values NUM1, NUM2

Step-8 Stop



# Swap Two Numbers without using temporary variable:

## Algorithm

Step-1 Start

Step-2 Input Two Numbers Say A,B

Step-3 Display Before Swap Values A, B

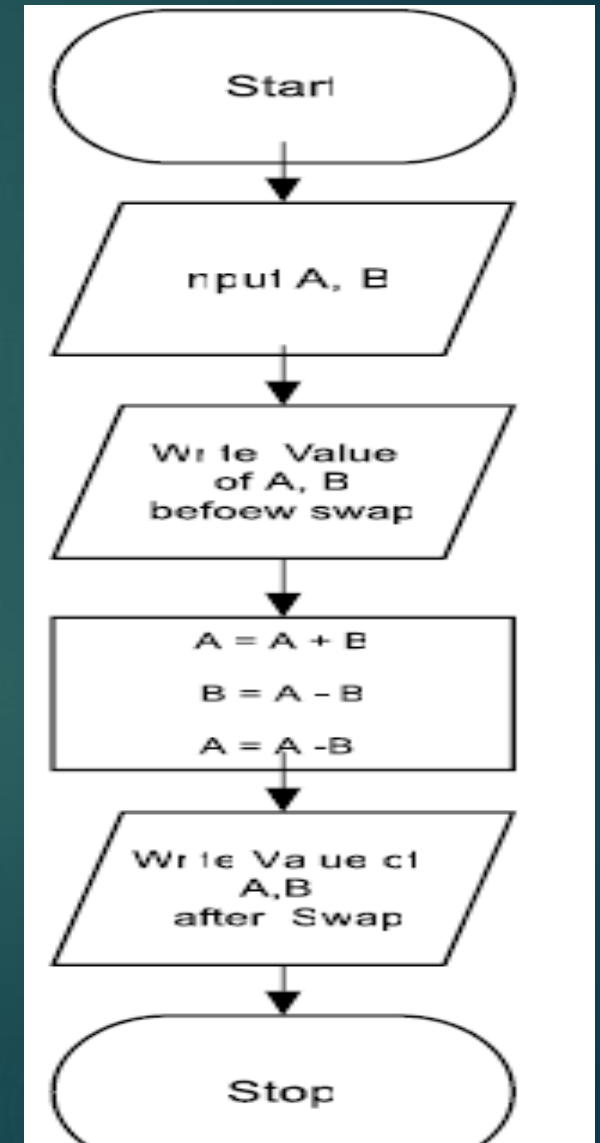
Step-4  $A = A + B$

Step-5  $B = A - B$

Step-6  $A = A - B$

Step-7 Display After Swap Values A, B

Step-8 Stop



# Conditional Statements

- ▶ Conditional statements help you to make a decision based on certain conditions. These conditions are specified by a set of conditional statements having Boolean expressions which are evaluated to a Boolean value true or false.

- ▶ **if statement**
- ▶ **If-Else statement**
- ▶ **Nested If statement**
- ▶ **If-Else If**
- ▶ **Switch statement**

## Remark:

**GO TO** statement also called unconditional transfer of control statement is used to transfer control of execution to another step/statement. . e.g. the statement `GOTO n` will transfer control to step/statement `n`.

# If statement

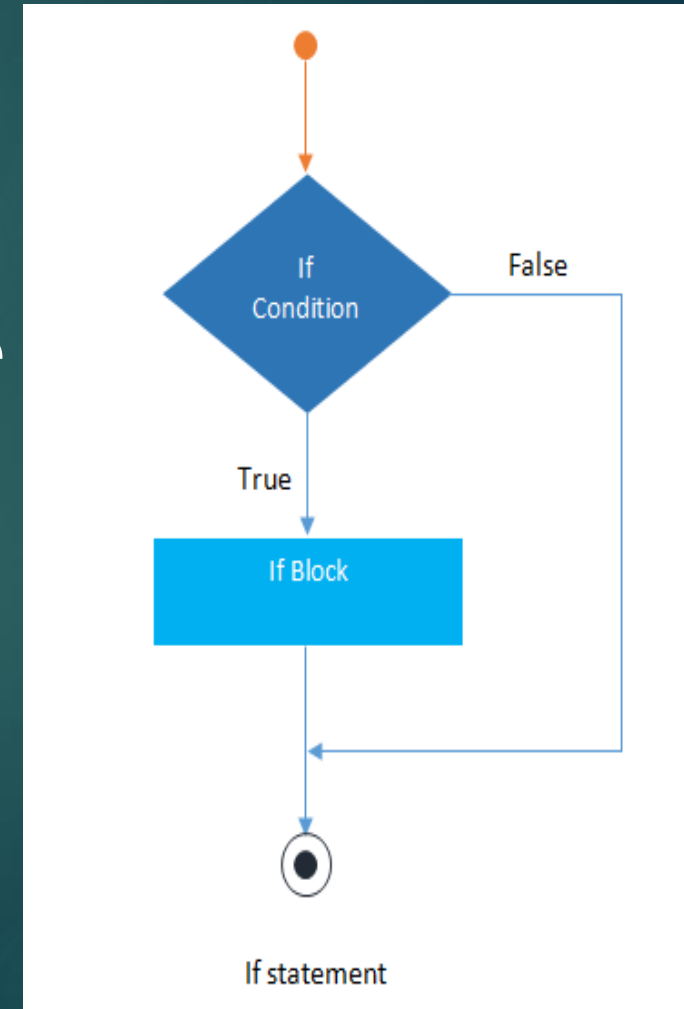
The single if statement is used to execute the code if a condition is true. It is also called one-way selection statement.

## Syntax

**If (condition) Then**

'statement(s) 'will execute if the condition is true

**End If**



# If-else statement

- ▶ The if-else statement is used to execute the code if condition is true or false. It is also called two-way selection statement.

## Syntax

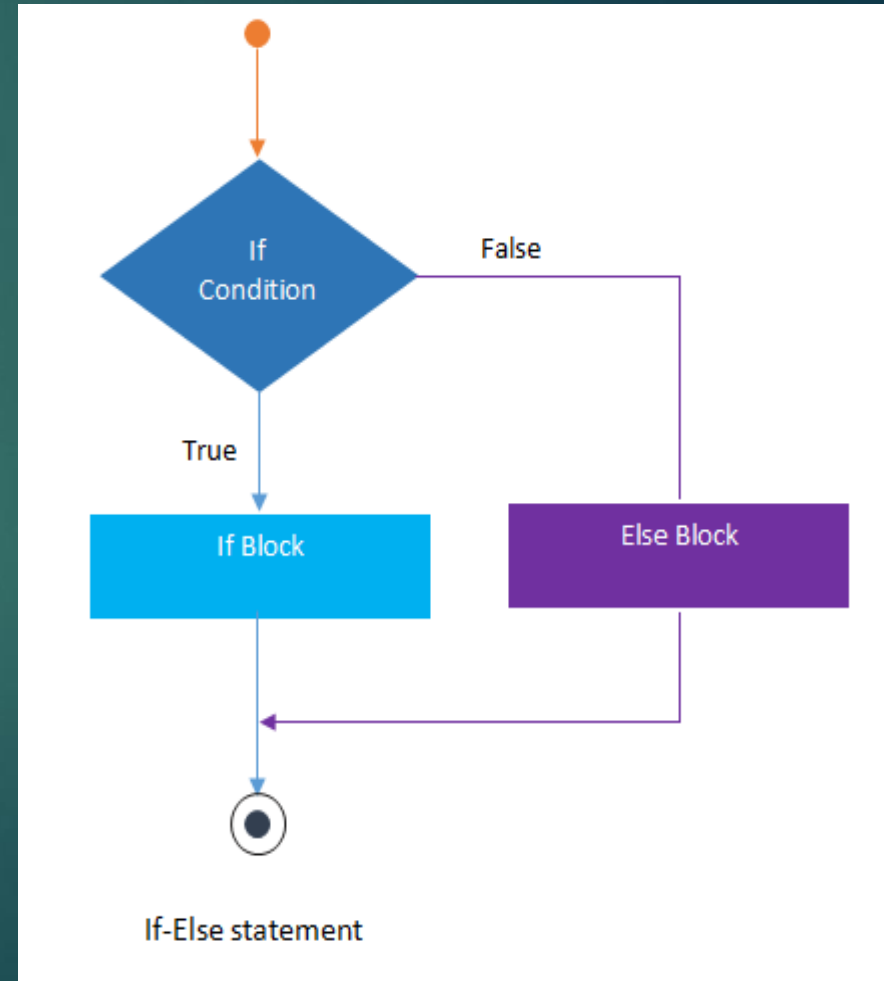
**If (condition) Then**

'statement(s) will execute if the condition is true

**Else**

'statement(s) will execute if the condition is false

**End If**

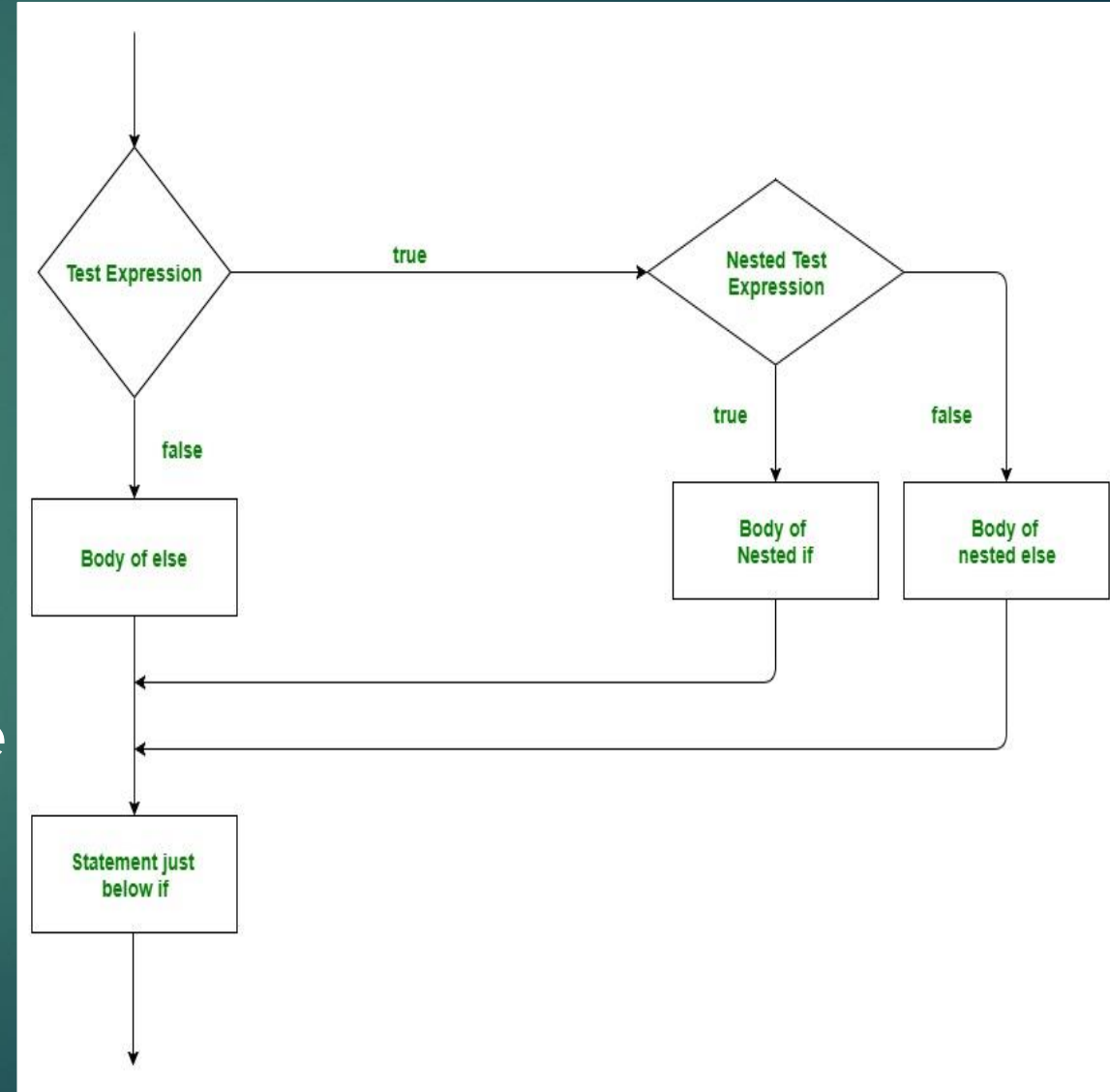




# Nested if Statement

## Syntax

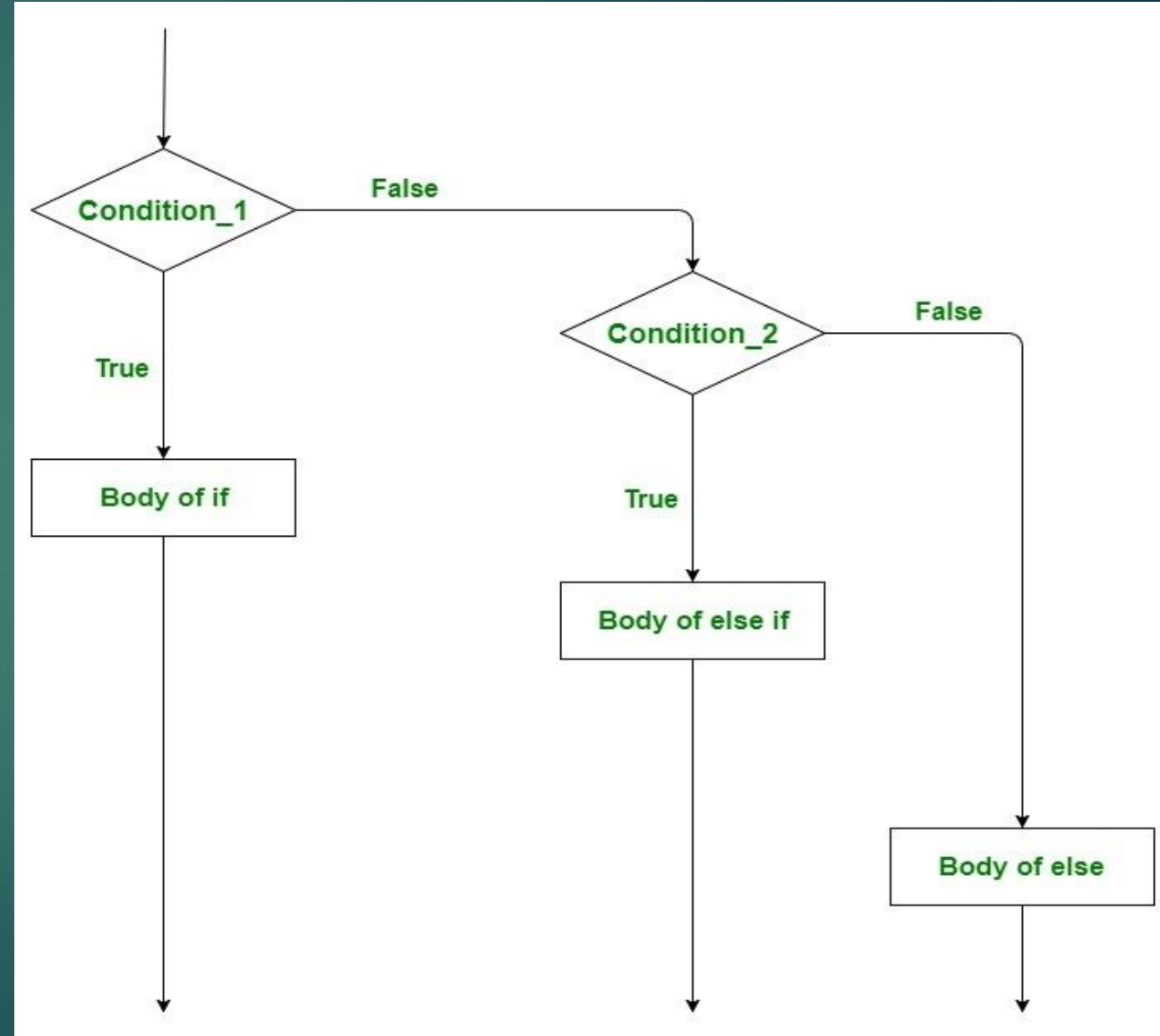
```
if (condition1) {  
    // Executes when condition1 is true  
    if (condition2) {  
        // Executes when condition2 is true  
    }  
}
```



# If-Else If

## Syntax

```
if(condition_1) {  
    // this block will execute  
    // when condition_1 is true  
} else if(condition_2) {  
    // this block will execute  
    // when condition_2 is true  
}  
else {  
    // this block will execute when none  
    // of the condition is true  
}
```



# Example 1: Find the smallest of two numbers

## Algorithm

Step-1 Start

Step-2 Input two numbers say  
NUM1, NUM2

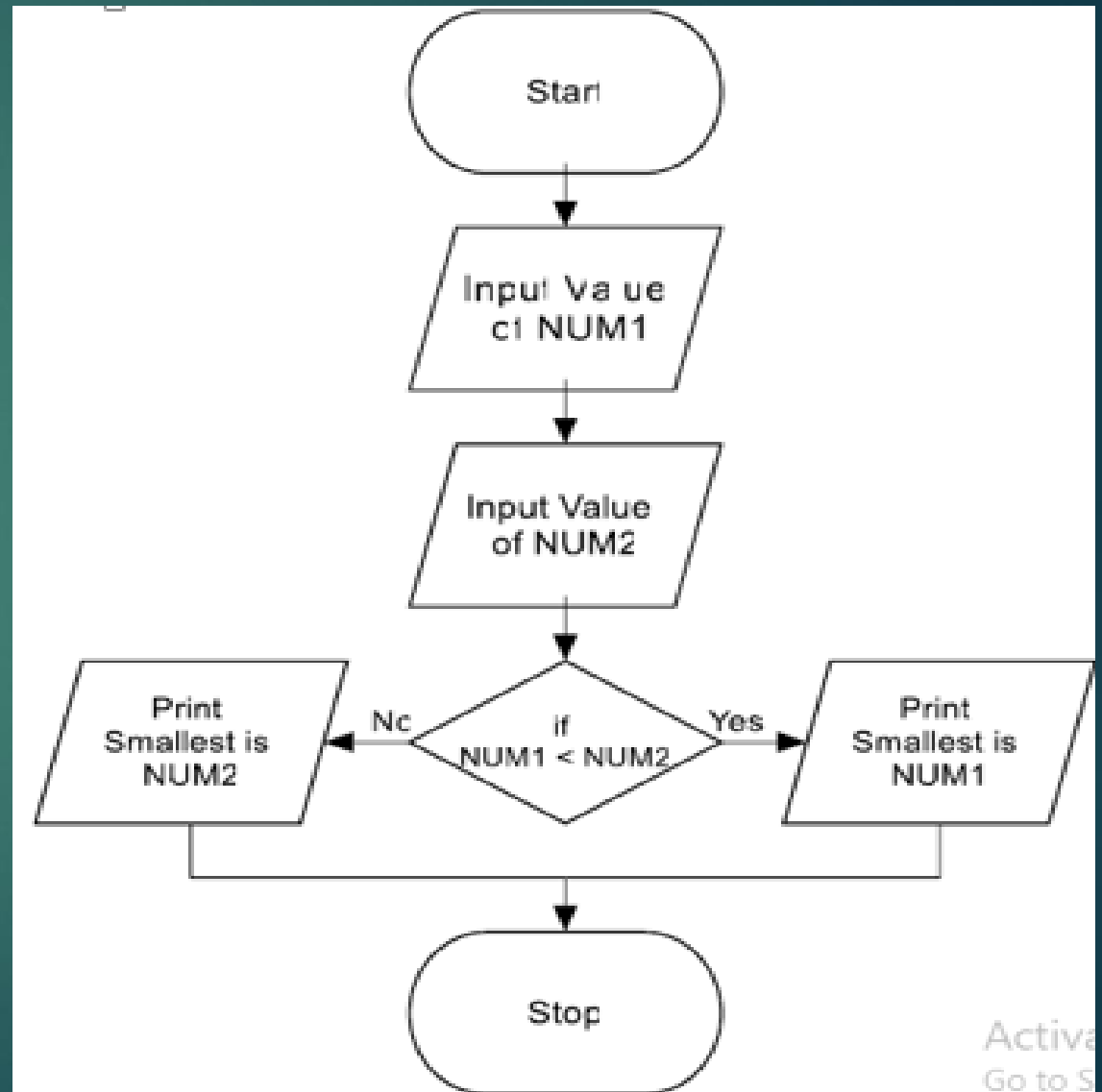
Step-3 IF NUM1 < NUM2 THEN  
    print smallest is NUM1

ELSE

    print smallest is NUM2

ENDIF

Step-4 Stop



# Example 2: Find the largest of two numbers

## Algorithm

Step-1 Start

Step-2 Input two numbers say  
NUM1, NUM2

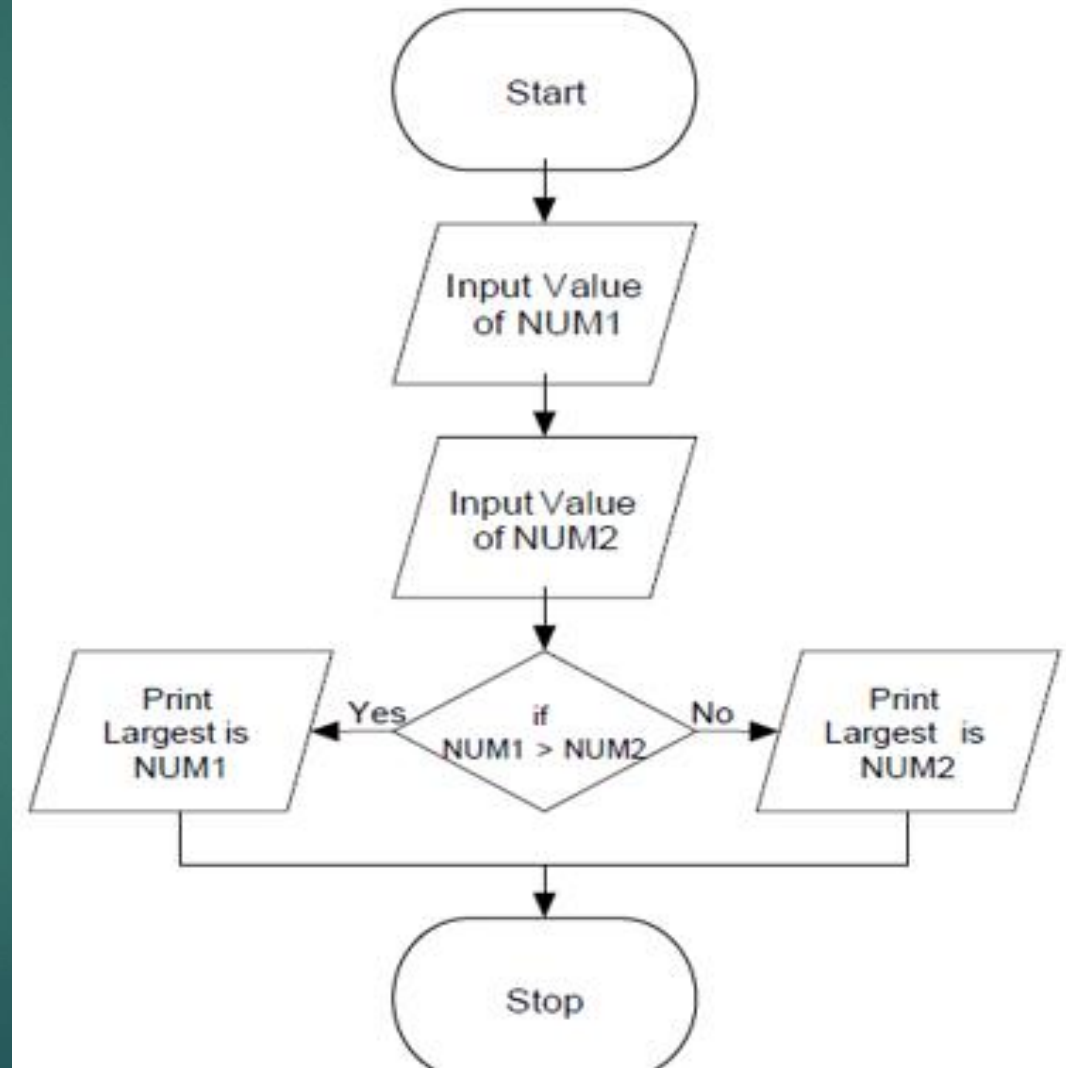
Step-3 IF NUM1 > NUM2 THEN  
    print largest is NUM1

ELSE

    print largest is NUM2

ENDIF

Step-4 Stop



## Example 3: Program To Find Whether A Number Is Odd Or Even.

Step 1: Start.

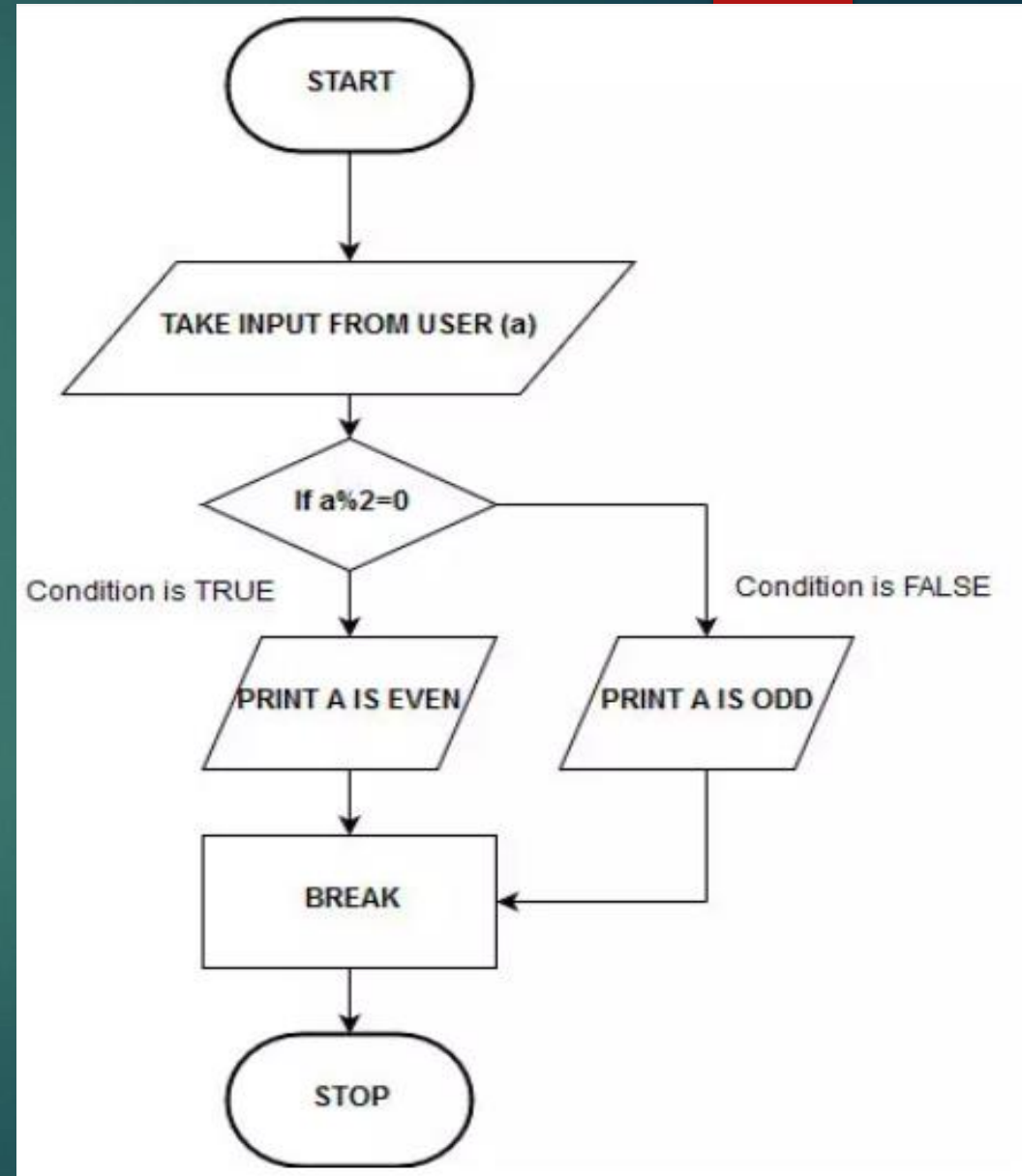
Step 2: Take input (**a**) from the user.

Step 3: Check condition. If remainder is zero go to step 4 else go to step 5

Step 4: Print **a** is even and go to step 6

Step 5: Print **a** is odd

Step 6: Stop



# Example 4: Find the largest of three numbers

**Step 1:** Input N1, N2, N3

**Step 2:** if (N1>N2) then

if (N1>N3) then

MAX N1 [N1>N2, N1>N3]

else

MAX N3 [N3>N1>N2]

End if

else

if (N2>N3) then

MAX N2 [N2>N1, N2>N3]

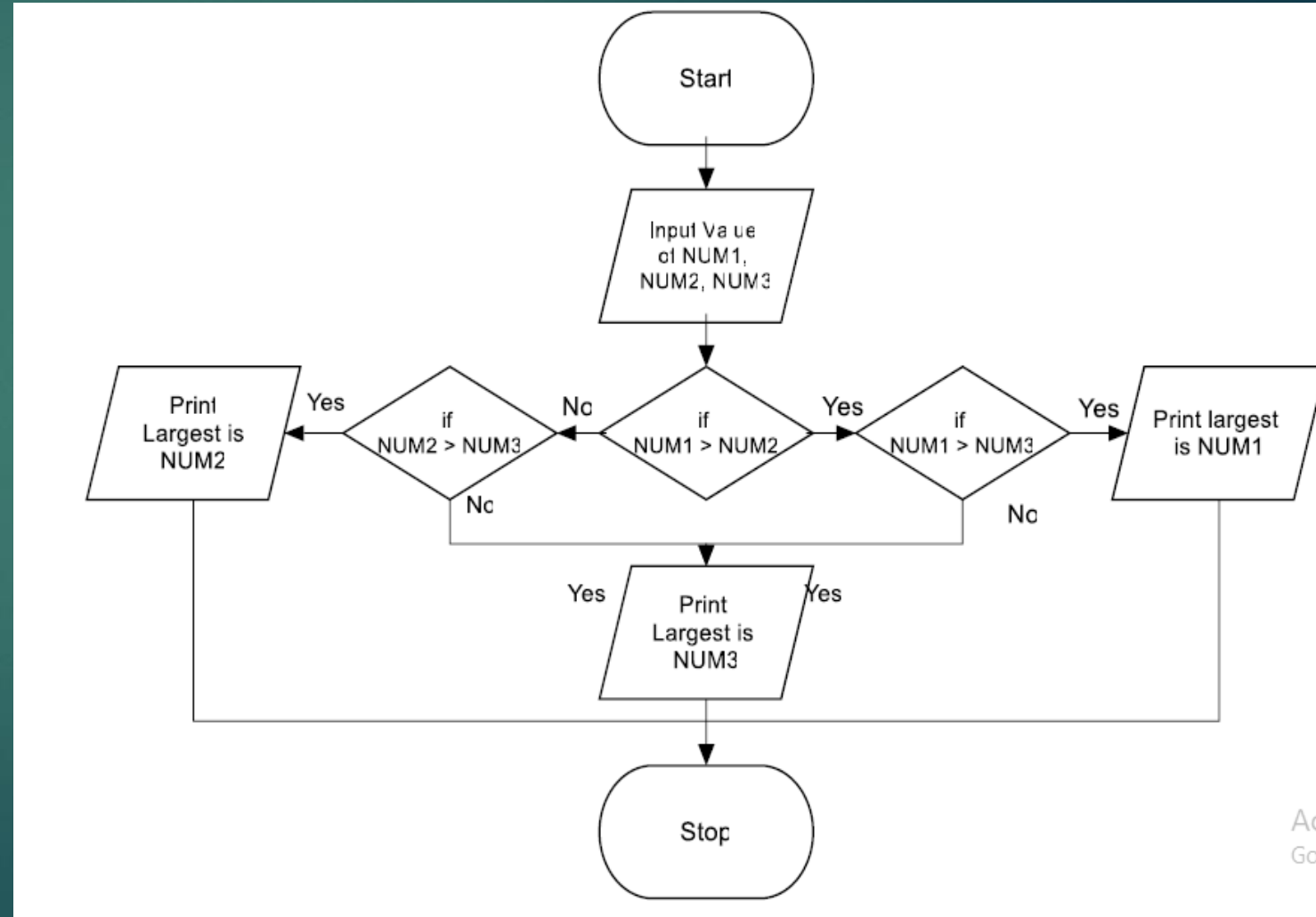
else

MAX N3 [N3>N2>N1]

End if

End if

**Step 3:** Print "The largest number is", MAX



# Another Method

## Algorithm

Step-1 Start

Step-2 Read three numbers say A,B,C

Step-3 BIG = A

Step-4 IF B > BIG THEN

BIG = B

ENDIF

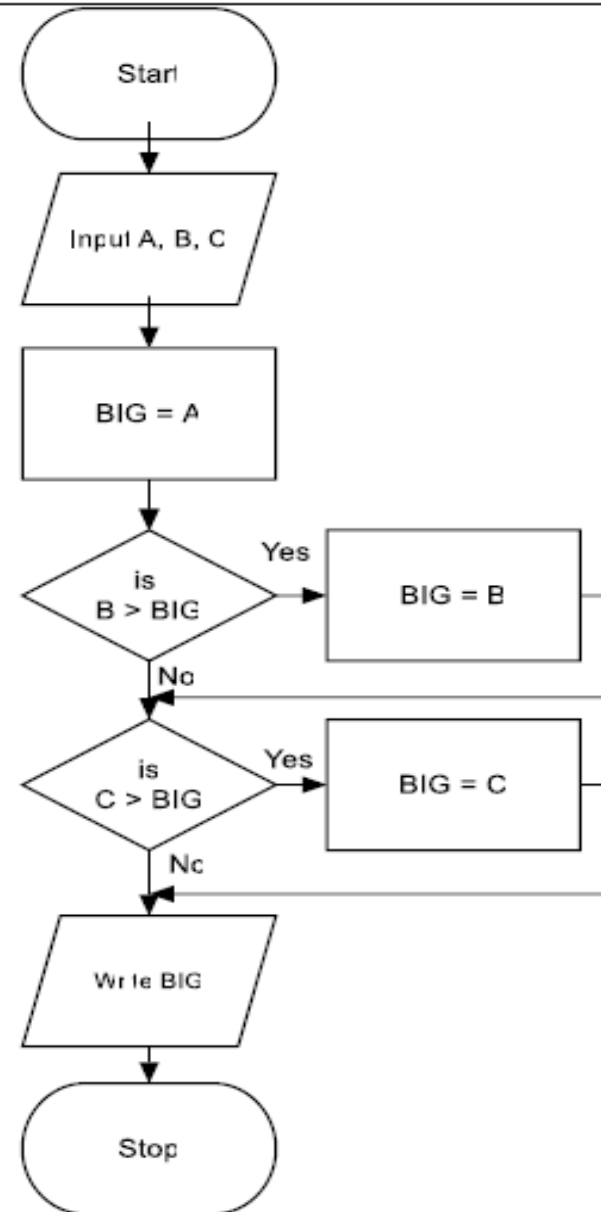
Step-5 IF C >BIG THEN

BIG = C

ENDIF

Step-6 Write BIG

Step-7 Stop



# Task

Find Even numbers between 1 to 50 by using If statement?

