An introduction to Flowcharts

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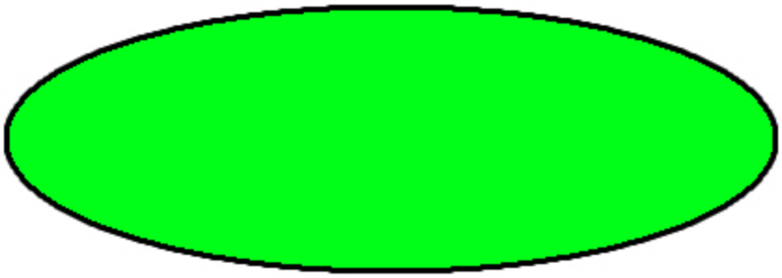
What is a Flowchart?

Flowchart is a graphical representation of an algorithm. Programmers often use it as a program-planning tool to solve a problem. It makes use of symbols which are connected among them to indicate the flow of information and processing.

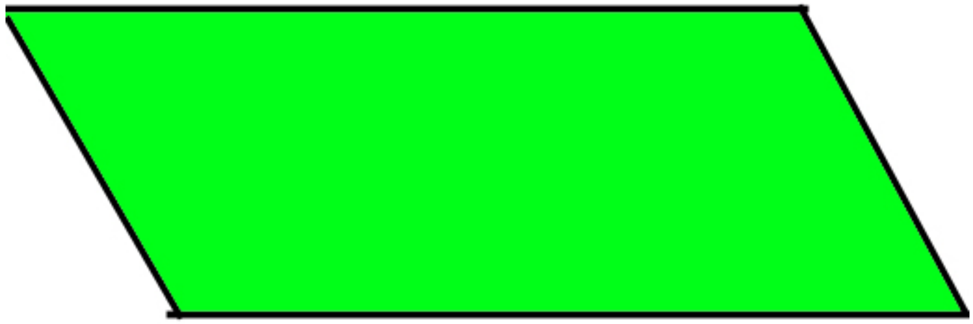
The process of drawing a flowchart for an algorithm is known as “flowcharting”.

Basic Symbols used in Flowchart Designs

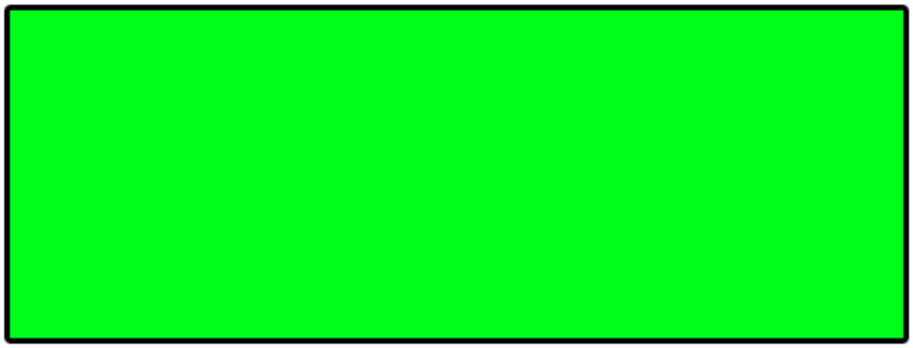
1. **Terminal:** The oval symbol indicates Start, Stop and Halt in a program’s logic flow. A pause/halt is generally used in a program logic under some error conditions. Terminal is the first and last symbols in the flowchart.



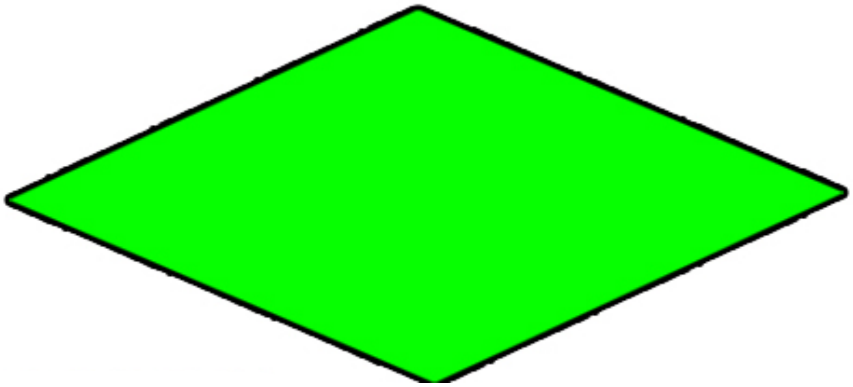
- **Input/Output:** A parallelogram denotes any function of input/output type. Program instructions that take input from input devices and display output on output devices are indicated with parallelogram in a flowchart.



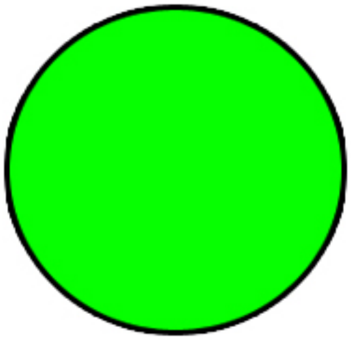
- **Processing:** A box represents arithmetic instructions. All arithmetic processes such as adding, subtracting, multiplication and division are indicated by action or process symbol.



- **Decision** Diamond symbol represents a decision point. Decision based operations such as yes/no question or true/false are indicated by diamond in flowchart.



- **Connectors:** Whenever flowchart becomes complex or it spreads over more than one page, it is useful to use connectors to avoid any confusions. It is represented by a circle.



- **Flow lines:** Flow lines indicate the exact sequence in which instructions are executed. Arrows represent the direction of flow of control and relationship among different symbols of flowchart.

Rules For Creating Flowchart :

A flowchart is a graphical representation of an algorithm.it should follow some rules while creating a flowchart
Rule 1: Flowchart opening statement must be ‘start’ keyword.
Rule 2: Flowchart ending statement must be ‘end’ keyword.
Rule 3: All symbols in the flowchart must be connected with an arrow line.
Rule 4: The decision symbol in the flowchart is associated with the arrow line.

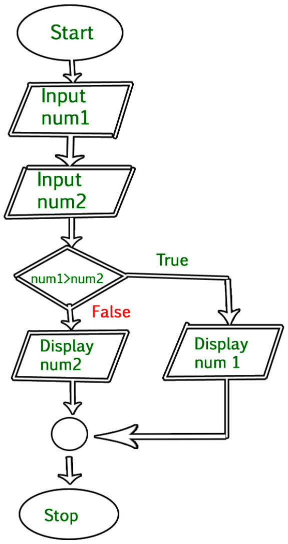
Advantages of Flowchart:

- Flowcharts are a better way of communicating the logic of the system.
- Flowcharts act as a guide for blueprint during program designed.
- Flowcharts help in debugging process.
- With the help of flowcharts programs can be easily analyzed.
- It provides better documentation.
- Flowcharts serve as a good proper documentation.
- Easy to trace errors in the software.
- Easy to understand.
- The flowchart can be reused for inconvenience in the future.
- It helps to provide correct logic.

Disadvantages of Flowchart:

- It is difficult to draw flowcharts for large and complex programs.
- There is no standard to determine the amount of detail.
- Difficult to reproduce the flowcharts.
- It is very difficult to modify the Flowchart.
- Making a flowchart is costly.
- Some developer thinks that it is waste of time.
- It makes software processes low.
- If changes are done in software, then the flowchart must be redrawn

Example : Draw a flowchart to input two numbers from the user and display the largest of two numbers



C++

```
// C++ program to find largest of two numbers
#include <iostream>
using namespace std;
int main()
{
    int num1, num2, largest;

    /*Input two numbers*/
    cout << "Enter two numbers:\n";
    cin >> num1;
    cin >> num2;

    /*check if a is greater than b*/
    if (num1 > num2)
        largest = num1;
    else
        largest = num2;

    /*Print the largest number*/
    cout << largest;

    return 0;
}
```

C

```
// C program to find largest of two numbers

#include <stdio.h>

int main()
{
    int num1, num2, largest;

    /*Input two numbers*/
    printf("Enter two numbers:\n");
    scanf("%d%d", &num1, &num2);

    /*check if a is greater than b*/
    if (num1 > num2)
        largest = num1;
    else
        largest = num2;

    /*Print the largest number*/
    printf("%d", largest);

    return 0;
}
```

Java

```
// Java program to find largest of two numbers
import java.util.Scanner;
public class largest {
    public static void main(String args[])
    {
        int num1, num2, max;

        /*Input two numbers*/
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter two numbers:");

        num1 = sc.nextInt();
        num2 = sc.nextInt();

        /*check whether a is greater than b or not*/
        if (num1 > num2)
            max = num1;
        else
            max = num2;

        /*Print the largest number*/
        System.out.println(max);
    }
}
```

Python3

```
# Python program to find largest of two numbers

# Input two numbers
num1 = int(input("Enter first number: "))
num2 = int(input("Enter second number: "))

# Check whether num1 is greater than num2 or not
if num1 > num2:
    max_num = num1
else:
    max_num = num2

# Print the largest number
print("The largest number is:", max_num)
```

C#

```
// C# program to find largest of two numbers
using System;
using System.IO;

class GFG
{
    static public void Main ()
    {

        int num1, num2, max;

        /*Input two numbers*/
        Console.WriteLine("Enter two numbers:");

        num1 = Convert.ToInt32(Console.ReadLine());
        num2 = Convert.ToInt32(Console.ReadLine());

        /*check whether a is greater than b or not*/
        if (num1 > num2)
            max = num1;
        else
            max = num2;

        /*Print the largest number*/
        Console.WriteLine(max);
    }
}

// This code is contributed by NamrataSrivastava1
```

Output

```
Enter two numbers:
10 30
30
```