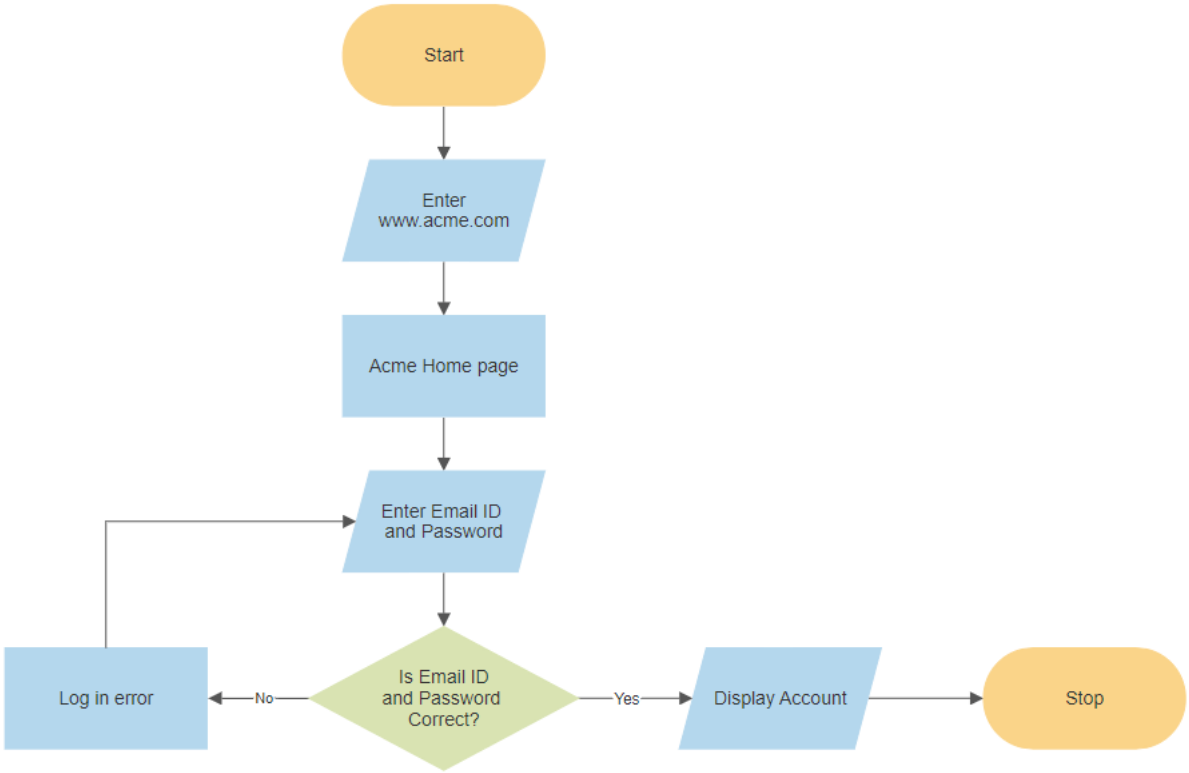
Flowcharts

An **algorithm** is a sequence of steps that must be performed to solve a problem.

A **flowchart** is a way to represent a process or algorithm in a visual, structured and organized way. It is a very useful tool to organize and structure a programming task before jumping directly into the code.

Example of flowchart:

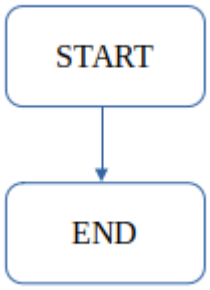


There are various computer programs for creating flowcharts. Most text processors or slideshow software allow it. However, it is advisable to create flowcharts first with **paper and pen, and if appropriate in a collaborative way**, and use the software to simply edit them finally to include as program documentation.

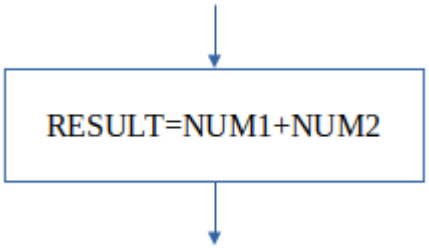
Elements of a flowchart

A flowchart is fundamentally made up of the following elements:

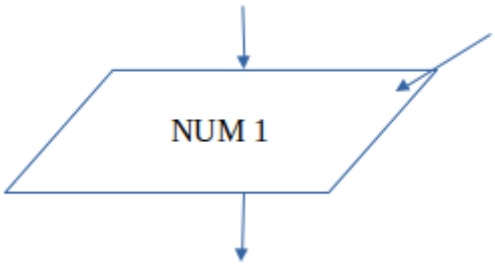
- **Flowline:** Shows the process **order** of operation. It is a *line* coming from one symbol and pointing at another
- **Terminal**: Indicates the **beginning** and **ending** of a program or sub-process. Represented as an *oval or rounded rectangle*. They usually contain the word "Start" or "End".



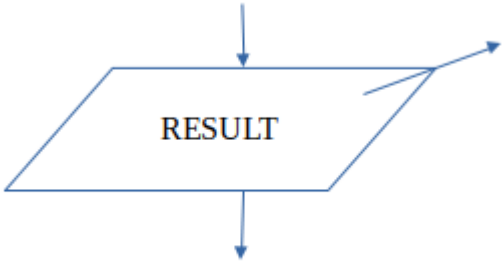
Process: Represents a set of **operations** that changes value, form, or location of data. Represented as a *rectangle*.



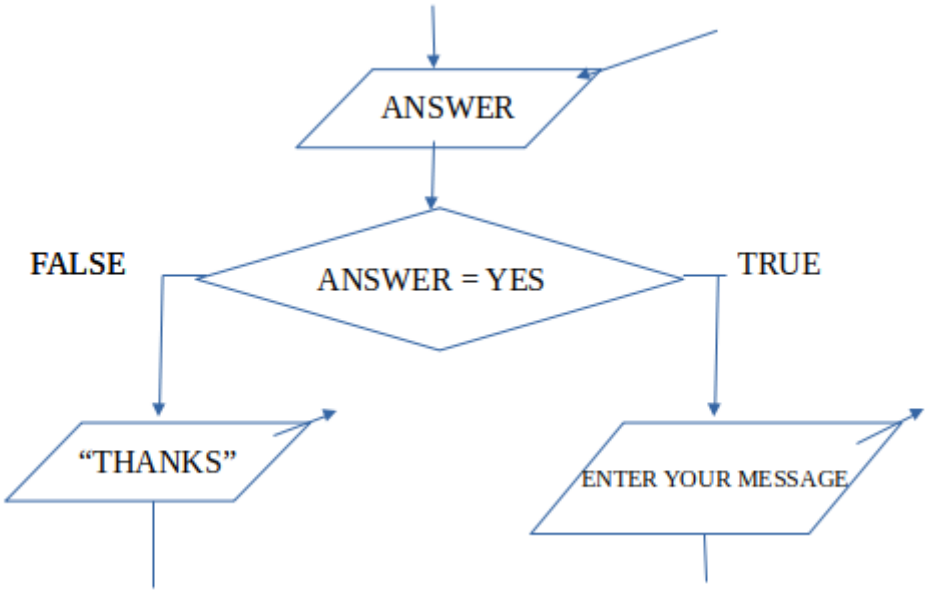
- **Input data**: Indicates the **reception** of data at the input. It is represented by a *rhomboid* and an inward arrow.



- **Output data**: Indicates **printing** data on output. It is represented by a rhomboid and an arrow pointing out.



- **Decision**: Shows a **conditional** operation that determines which one of the two paths the program will take. The operation is commonly a yes/no question or true/false test. Represented as a *diamond*.



- **Other**: Like some types of loops, we will see them later.

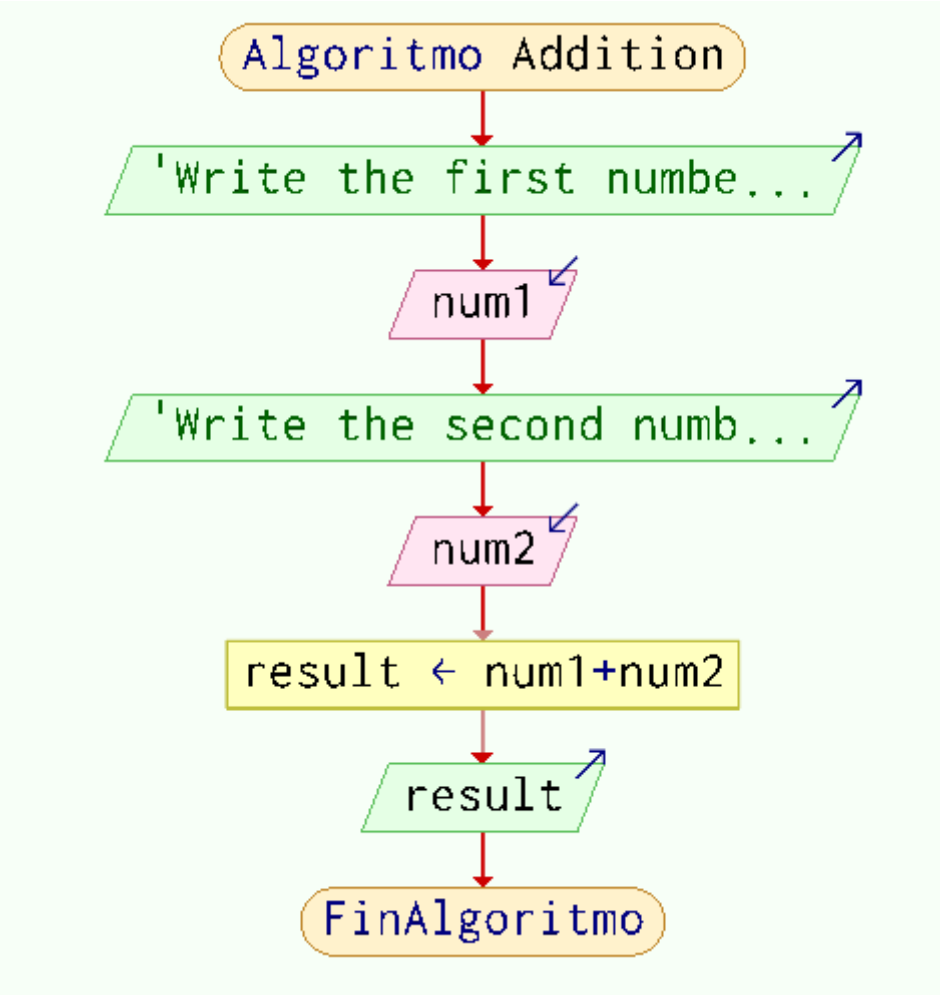
Simple examples of flowcharts

Example 1: Flowchart of a program that takes two numbers, adds them and shows the result on the screen

SOLUTION:

- **Output**: It must ask for the two numbers to add, and then show the result.
- **Input**: the two numbers to add
- **Storage**: two variables to store the two numbers (num1 y num2) , and a third one to store the result (result)
- **Processing**: Addition.

Flowchart



Example 2: Flowchart of a program that compares two numbers which is larger and displays it on the screen.

SOLUTION:

- **Output**: it must ask the two numbers to compare and then show the result of the comparison.
- **Input**: the two numbers to compare
- **Storage**: two variables to store the numbers to compare (num1 y num2)
- **Processing**: logic comparison.

Flowchart:

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