Experiment # 09

**Introduction to Algorithms and Flowcharts**

**Objective**

* Learning symbols used to draw a flow chart
* Drawing of flow chart of any given task before coding to demonstrate a non-technical person.

**Theory**

A flowchart is a type of diagram that represents an algorithm, workflow or process, showing the steps as boxes of various kinds, and their order by connecting them with arrows. This diagrammatic representation illustrates a solution model to a given problem.

**Types of Flowcharts**

There are generally four types of flowcharts.

* **Document flowcharts**: showing controls over a document-flow through a system.
* **Data flowcharts:** showing controls over a data-flow in a system.
* **System flowcharts:** showing controls at a physical or resource level.
* **Program flowchart** showing the controls in a program within a system.

The following are some of the commonly used shapes used in flowcharts. Generally, flowcharts flow from top to bottom and left to right.

**Flow Line:** An arrow coming from one symbol and ending at another symbol represents that control passes to the symbol the arrow points to. The line for the arrow can be solid or dashed. The meaning of the arrow with dashed line may differ from one flowchart to another and can be defined in the legend.

**On-Page Connector:** Generally represented with a circle, showing where multiple control flows converge in a single exit flow. It will have more than one arrow coming into it, but only one going out. In simple cases, one may simply have an arrow point to another arrow instead. These are useful to represent an [iterative](https://en.wikipedia.org/wiki/Iteration) process.

**Terminal:** Represented as circles, ovals, [stadiums](https://en.wikipedia.org/wiki/Stadium_(geometry)) or rounded (fillet) rectangles. They usually contain the word "Start" or "End", or another phrase signaling the start or end of a process, such as "submit inquiry" or "receive product".

**Decision:** Represented as a diamond ([rhombus](https://en.wikipedia.org/wiki/Rhombus)) showing where a decision is necessary, commonly a Yes/No question or True/False test. The conditional symbol is peculiar in that it has two arrows coming out of it, usually from the bottom point and right point, one corresponding to Yes or True, and one corresponding to No or False.

**Input/Output:** Represented as a [parallelogram](https://en.wikipedia.org/wiki/Parallelogram). Involves receiving data and displaying processed data. Can only move from input to output and not vice versa.

**Process:** Represented as [rectangles](https://en.wikipedia.org/wiki/Rectangles). This shape is used to show that something is performed.

**Lab Tasks**

1. Read any number and check if it is a prime number or even/odd no or both. Write pseudo code as well as flow chart.
2. Draw flow chart of the following Algorithm.

Read in three numbers, call them A, B and C.

* If A is bigger than B, then if A is bigger than C, print out A, otherwise print out C.
* If B is bigger than A, then if B is bigger than C, print out B, otherwise print out C.
* If A is equal to B, then if B is equal to C, print equal, otherwise print not equal,

**Conclusion**

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