

# COMPUTER SCIENCE

## COMPUTER PROBLEM SOLVING SKILLS AND LOGIC GATE.

### GRAPHIC PACKAGES

Graphic packages are special designed software that are used for graphic production of images, drawing, pictures and other graphic related jobs.

#### EXAMPLE OF GRAPHIC PACKAGES

The common graphic packages:

1. Ms-paint
2. CorelDraw
3. Instant Artist
4. Harvard graphic
5. Logic graphic
6. Corel Dream
7. Logo graphic

Others are Adobe InDesign, QuarkXPress, Adobe illustrator, Macromedia Freehand, Adobe Photoshop, CorelDraw photo - paint and Jasc paint Shop pro.

#### FEATURES OF GRAPHIC PACKAGES.

The main features of all graphics software include but are not restricted to the following:

1. **THE TITLE BAR:** This is always the topmost part of graphic environment. It contains the name of the program, the name of the file and the sizing bars.
2. **The TOOLBAR:** The toolbar is where all the tools needed for graphic jobs are kept. These tools include the select tool, text tool, fill tool, and outline tool.
3. **THE MENU BAR:** The menu bar contains the menu items which contains sub-menu that are commands used to carry out tasks. Examples sub-menu include file, Edit, View, Image, Colour, and Help.
4. **THE PRINTABLE AREA:** This is the rectangular area whose content will be printed. Any object outside its content will not be printed.
5. **THE COLOUR PALETTE:** This tool is used to choose the colour needed to paint objects.
6. **THE STATUS BAR:** This bar gives the position and status of the cursor or mouse pointer. It displays the page number, line number, etc.

### LOGIC GATE

**INTRODUCTION:** Logic gate is a computer circuit with several inputs but one output that can be activated by particular combinations of inputs. A logic gate is an elementary building block of a digital circuit. Most logic gates have two inputs and one output. At any given moment, every terminal is in one of the two binary conditions low (0) or high (1), represented by different voltage levels. The logic state of a terminal can, and generally does, change often, as the circuit processes data. In most logic gates, the low state is approximately zero volts (0V), while the high state is approximately five volts positive (+5 V). Logic gates are the building blocks of combinational logic circuits.

## LOGIC GATE TRUTH TABLES.

The input and output information of any Logic Gate or circuit can be plotted into a table to give a visual representation of the switching function of the system and this is commonly called a Truth Table. A logic gate truth table shows each possible input combination to the gate or circuit with the resultant output depending upon the combination of these input (s).

Then the four possible combination of A and B for a 2 - input logic gate is given as:

- (i) Input Combination 1. - "OFF "- "OFF"-or (00)
- (ii) Input Combination 2. - "OFF"- "ON"(01)
- (iii) Input Combination 3. - "ON"- "OFF" or (10)
- (iv) Input Combination 4. - "ON"- "ON" or (11).

Therefore, 3-input logic circuit would have 8 possible input combinations or  $2^3$  and a 4-input logic circuit would have 16 or  $2^4$ , and so on as the number of inputs increases. Then a logic circuit with "n" number of inputs would have  $2^n$  possible inputs combinations of both "OFF" and "ON". In order to keep things simple to understand, we will only deal with simple 2-input logic gates, but the principals are still the same for gates with more inputs.

## CLASSIFICATION OF LOGIC CIRCUITS

Logic circuits can be classified into two. They are:

- (i) Standard Single Logic Gate
- (ii) Alternative Logic Gate

### STANDARD SINGLE LOGIC GATE

The standard single logic gate are AND, OR and NOT (Inverter).

- (i) AND gate: the AND gate is so named because, if 0 is called "false " and 1 is called "true, " the gate acts in the same way as the logical "and " operator.
- (ii) OR gate: the OR gate gets its name from the fact that it behaves after the fashion of the logical inclusive "or." The output is "true." If either or both of the inputs are "true" If both inputs are "false," then the output is "false."
- (iii) NOT gate (inverter): The NOT gate is an electronic circuit that produces an inverted version of the input at its output. It is also known as an inverter. It reverses the logic state.

### USES OF LOGIC GATES

Logic gates are in fact the building block of digital electronics; they are formed by the combination of transistors (either BJT or MOSFET) to realize some digital operations such as logical OR, AND, INVERT. Every digital product, like computers, mobile, calculators even digital watches, contains logic gates.

## INTRODUCTION TO MICROSOFT PAINT ENVIRONMENT.

Ms-paint is a utility graphic software tool that can be used to create simple or complex drawings. The drawings can be edited, printed and saved. The drawings can be used as the desktop background, or pasted into another document. Ms-paint can also be used to view and edit scanned photos. Ms-paint comes with windows release, i.e. it is loaded along with the windows operating system. Ms-paint can be used to create a plan of your home, a map of your neighbourhood, cartoons in a magazine, etc.

### **STARTING MS-PAINT**

To start Ms-paint, follow the steps below:

- (1) Click on the START button on the window taskbar. The program manager appears.
- (2) Click on PROGRAMS or ALL PROGRAMS (depending on the windows version).
- (3) Click on ACCESSORIES.
- (4) Click on paint. It loads Ms-paint program and opens the paint window on the screen.