

SUBJECT: Computing

UNIT: Binary and Logic



The central processing unit

The central processing unit of a computer, the CPU, is built from millions of electrical circuits containing logic gates.

When a computer is processing, each one of the millions of electrical circuits compares two items of data (the inputs) and makes a decision (the output).

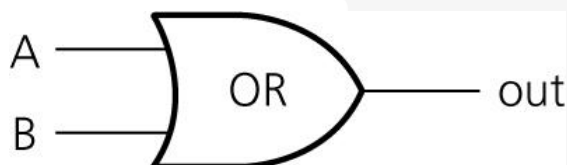
The output from one electrical circuit often becomes one of the inputs for another electrical circuit.

The outputs result in the actions you can see on screen.

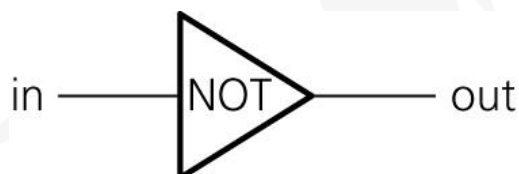
This is the standard symbol for the AND gate:



This is the standard symbol for the OR gate:



This is the standard symbol for the NOT gate:



Truth Table

Logic gates are called logic gates because their operation is entirely logical and predictable.

The operation of a particular gate can, therefore, be summarised in a table, known as a truth table.

Truth tables describe how a computer processes data.

Debugging and testing

An error in a computer program is known as a bug and debugging is the activity of finding and correcting errors.

Once you have fixed the bugs in a program, you should test it to make sure it does exactly what you want it to do.

Bits and bytes

Each 1 and 0 in a binary number is known as a bit.

The term 'bit' comes from the words 'binary' (involving two things) and 'digit' (a number from 0 to 9).

An 8-bit string of data is known as a byte of data. Computers process bytes.

