Sensor

A transducer device that converts one form of energy (pressure) into another (electrical) is known as 'sensor'. The two major application domains of a sensor are measurement and control.

A sensor is connected to the input port of an embedded system in order to sense the changes in the system environment.

Example

A hall effect sensor placed at the top of a "custioning element' in a 'smart running shoe' is used to measure the distance from top to bottom of mid-sole.

Actuator

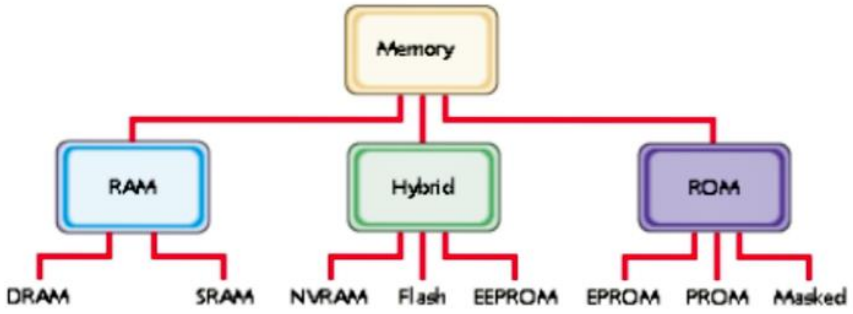
An actuator is a transducer device which converts an electrical signal into its equivalent physical action (motion) and serves as an output device. It is connected at the output port of an embedded system to control the variations in the controlling variable.

For instance, consider an embedded system used in a particular controlling application. In order to achieve a specified control value, the controlling variable is varied as desired. This desired variation is accomplished by using an actuator in the system.

Example

The micro-stepper motor used in the 'smart running shoe' is a typical example for an actuator. The purpose of using this actuator is to either lengthen or shorten the positions of a 'plastic-custioning element'.

Memory



TYPICAL EMBEDDED SYSTEMS

Memory

Three Main Types

- **RAM** (Random Access Memory) It is read write memory.
  - Data at any memory location can be read or written.
  - It is volatile memory, i.e. retains the contents as long as electricity is supplied.
- **ROM** (Read Only Memory) It is read only memory.
  - Data at any memory location can be only read.
  - It is non-volatile memory, i.e. the contents are retained even after electricity is switched off and available after it is switched on. Data access to ROM is slow compared to RAM.
- **HYBRID** It is combination of RAM as well as ROM
  - It has certain features of RAM and some of ROM
  - Like RAM the contents to hybrid memory can be read and written Like ROM the contents of hybrid memory are non volatile.