MICROPROCESSORS 8051 & ARM



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Salient Features of 8051:

- 1) A Microcontroller is a **complete computer system** built on a **single chip**.
- 2) It contains all components like Processor (CPU), RAM, ROM, Serial port, Parallel port, Interrupt logic, Timers etc.. on chip.
- 3) A Microcontroller saves cost, saves power consumption and makes the circuit compact.
- 4) Microcontrollers are ideally suited for **appliances** like **remote controllers**, **refrigerators**, microwave ovens, modems etc.
- 5) **8051** is an **8-bit Microcontroller,** it has an 8 bit ALU. This means all arithmetic and logic operations are of 8 bits.
- 6) 8051 has an 8-bit data bus, so all external Data Transfers will be of 8-bits in one cycle.
- 7) It has **internal ROM of 4KB** used for storing **programs**.
- 8) It has internal RAM of 128 bytes used for storing data.
- 9) Since **program memory (ROM) and data memory (RAM) are separate**, 8051 follows **Harvard Model**. In contrast, Processors based on Von Neumann Model store programs and data in a common memory space.
- 10) There are **4, 8bit, bidirectional I/O ports f**or interfacing external devices like **keyboards, displays** etc. These ports can also be used for their **alternate functions** like multiplexed **address data buses** and **control signals**.
- 11) It has a serial port for long distance communication.
 The serial port can perform synchronous and asynchronous transfers.
- 12) 8051 has two, 16bit Timers, which act as 'up' counters.
 They are used to produce hardware delays and for counting external events.
- 13) There are **5 interrupts**, operating at two priority levels.
- 14) 8051 has two power saving modes called "Idle mode" and "Power Down mode".
- 15) In addition to internal memory, **up to 64 KB** of **external RAM and External ROM** can be connected, as per user requirement. The figure 64 KB is due to the **16-bit address bus**.
- 16) 8051 is a 40-pin IC and typically operates at 12 MHz frequency.