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** for 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.**