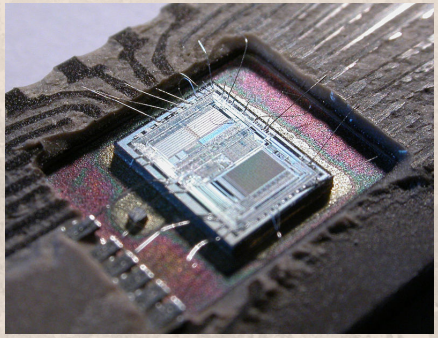
Electronic Technocrat
Techie Guy

Micro-Controller Snippets



History

- The origins of both the microprocessor and the microcontroller can be traced back to the invention of the MOSFET (metal-oxide-semiconductor field-effect transistor), also known as the MOS transistor.
- It was invented by Mohamed M. Atalla and Dawon Kahng at Bell Labs in 1959, and first demonstrated in 1960.
- The same year, Atalla proposed the concept of the MOS integrated circuit, which was an integrated circuit chip fabricated from MOSFETs.

- By 1964, MOS chips had reached higher transistor density and lower manufacturing costs than bipolar chips.
- MOS chips further increased in complexity at a rate predicted by Moore's law, leading to large-scale integration (LSI) with hundreds of transistors on a single MOS chip by the late 1960s.
- The application of MOS LSI chips to computing was the basis for the first microprocessors, as engineers began recognizing that a complete computer processor could be contained on a single MOS LSI chip.
- The first multi-chip microprocessors, the Four-Phase Systems AL1 in 1969 and the Garrett AiResearch MP944 in 1970, were developed with multiple MOS LSI chips.

- The first single-chip microprocessor was the Intel 4004, released on a single MOS LSI chip in 1971.
- It was developed by Federico Faggin, using his silicon-gate MOS technology, along with Intel engineers Marcian Hoff and Stan Mazor, and Busicom engineer Masatoshi Shima.
- It was followed by the 4-bit Intel 4040, the 8-bit Intel 8008, and the 8-bit Intel 8080. All of these processors required several external chips to implement a working system, including memory and peripheral interface chips.

- As a result, the total system cost was several hundred (1970s US) dollars, making it impossible to economically computerize small appliances.
- MOS Technology introduced sub-$100 microprocessors, the 6501 and 6502, with the chief aim of addressing this economic obstacle, but these microprocessors still required external support, memory, and peripheral chips which kept the total system cost in the hundreds of dollars.