



MICROPROCESSOR SYSTEMS

Introduction

Zuhaib A. Shaikh,
Asst. Prof., CSE Deptt., QUEST
Web: zuhaib-shaikh.neocities.org

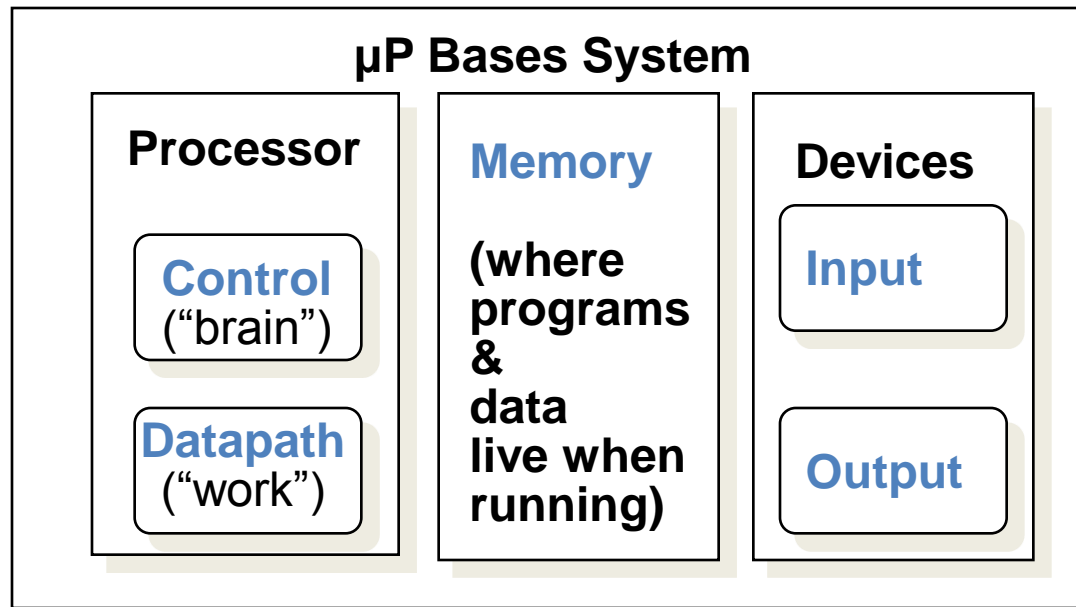


Introduction

- A multi-purpose clock driven, programmable electronic device (IC) which takes digital input, process it according to pre-defined instructions and gives output
- Applications of μ P systems
 - Monitoring tools
 - Electronic Appliances
 - Robots
 - ATMs, etc.
- Advantages
 - Small size
 - Low cost & low power consumption
 - Accuracy & Efficiency
- Required for Electrical Engineer
 - The knowledge of μ P is helpful to integrate it with Electrical field
 - Like electrical control systems, industrial engineering etc.
 - Such as: Universal Data accusation and control system, Unconventional Monitoring system, SCADA systems and many more...

Common Components

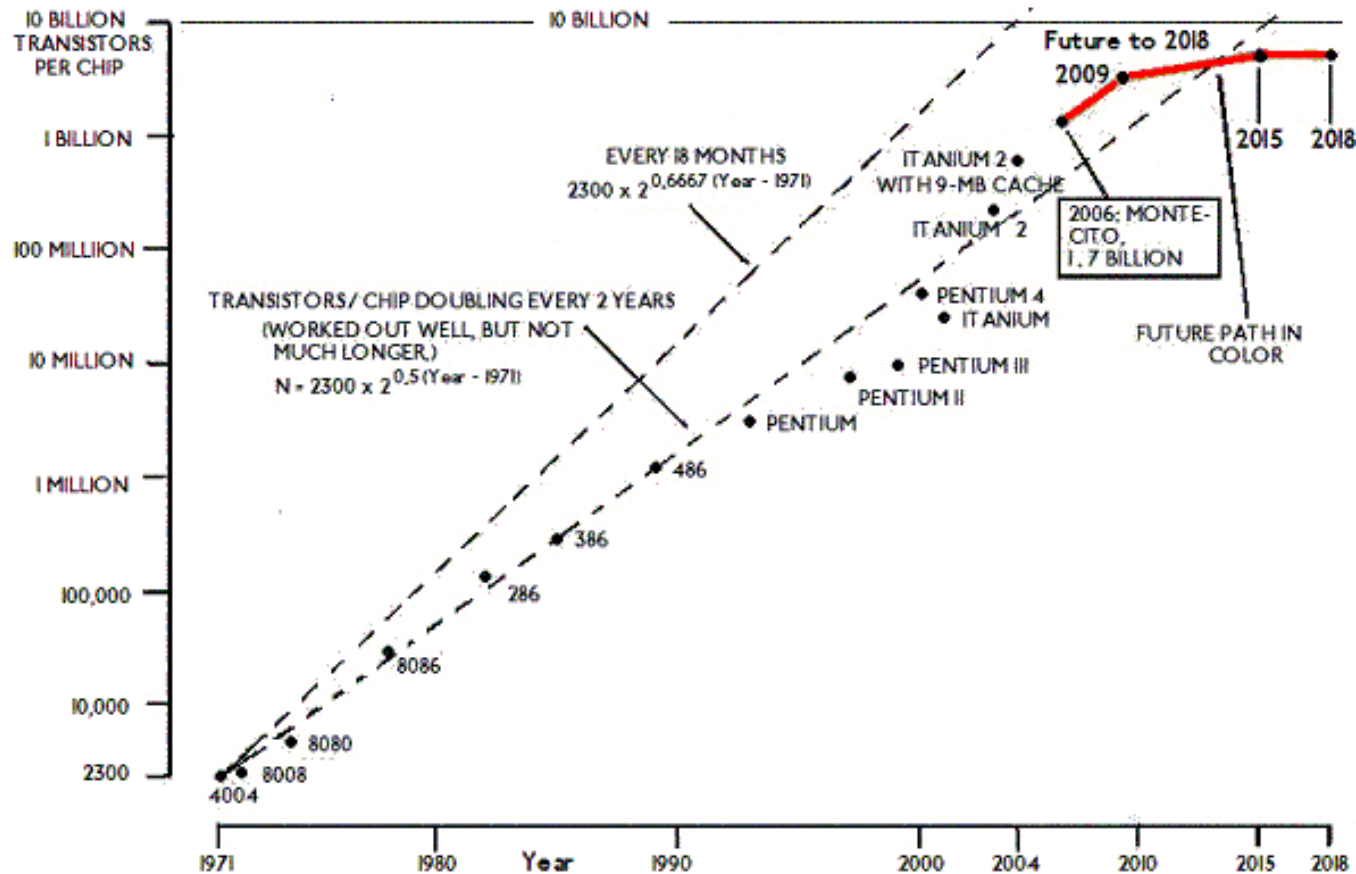
- μ P requires other necessary components to perform its task



- Those components can be part of μ P itself (SoC) or may be separate components/ICs

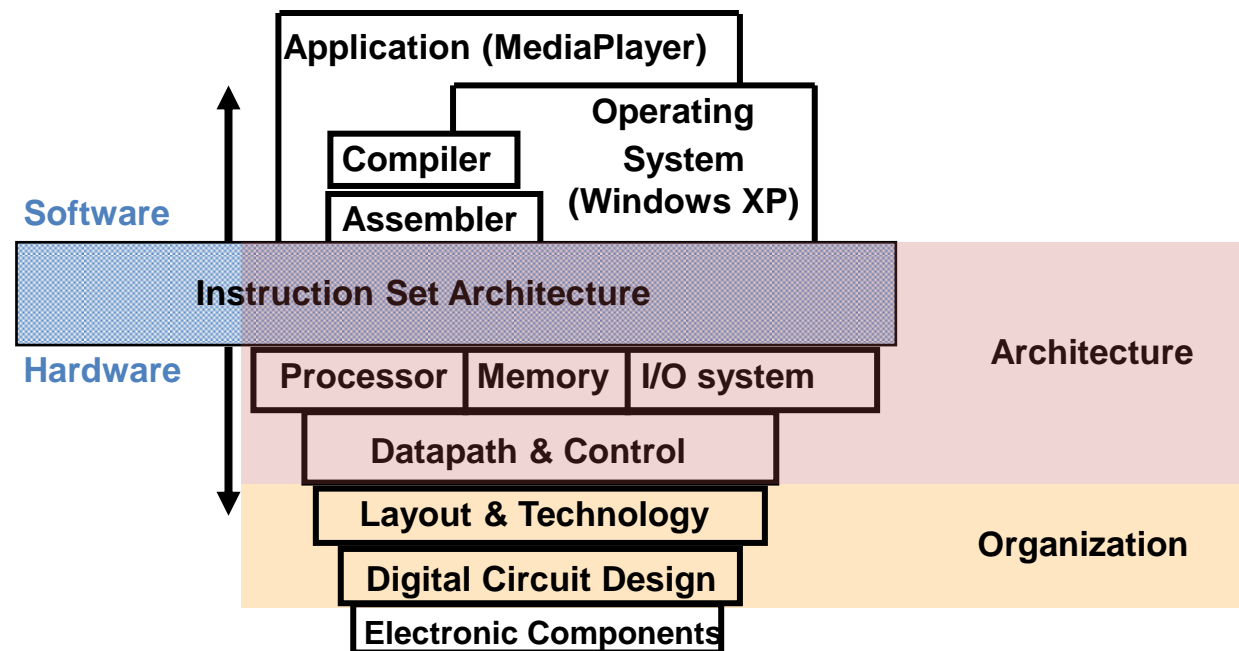
Dramatic Changes in μP

- 2X no. of transistors in approximately every 2 years (Moore's law)
100X performance increase in a decade.
- No longer going at this pace due to technological limitations



μ P Systems Architecture & Organization

- Architecture is those attributes visible to the programmer
 - Instruction set, number of bits used for data representation, I/O mechanisms, addressing techniques.
- Organization is how features are implemented
 - Control signals, components, interfaces, memory technology.





Compatibility b/w μ Ps

- All Intel x86 or x64 family share the similar basic architecture respectively
- The IBM System/370 family share the similar basic architecture
- Similarly, other vendors also share similar basic architecture
- This gives code compatibility
 - At least backwards
- Organization might highly differ between different versions



Course Outline

MICROPROCESSOR FUNDAMNETALS

- Introduction
- Simplified CPU Organization and Instruction Execution
- Instruction set

MICROPROCESSOR ARCHITECTURE AND PROGRAMMING

- Structure and Architecture of Intel ® 8085 Microprocessor
- Pin Diagram and Functions
- Datasheet Description
- Interrupts
- 8085 Instruction set
- Programming Techniques
- Other 8/16 bit Microprocessors
- Debugging

INTERFACING WITH MICROPROCESSOR

- Interfacing Concepts
- Interfacing with RAM and ROMs
- Basics of I/O Interfacing (Serial and Parallel)
- Address Decoding
- A/D and D/A Interfacing

MICROPROCESSOR CONTROLLED SYSTEMS

- A Temperature Monitoring Control System
- Closed Loop Control Systems
- A Washing Machine Control System
- Stepper Motor Control
- Programmable Logic Control
- Diesel Generator Set Control

PREREQUISITES

- Introduction to Computers
- Know how of programming language



Recommended Resources

- Recommended Books:
 - Microprocessor Fundamentals, Roger L. Tokhiem
 - Microprocessor and Interfacing, Douglas V. Hall
 - Assembly Language Organization & Programming by Yu Marut
- Reference Books:
 - Microprocessor Applications & Principles, C. M. Gilmore
 - Applications of Microprocessor, A. P Mathur
- Software/Tools:
 - MAT-385 Microprocessor Trainer Kit
 - Emu8086 Emulator for 8086 microprocessor
 - Microprocessor 8085 Simulator
 - Proteus 7.1



Questions

