Ho Chi Minh City University of Technology

Smart Home

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Day Month Year

Abstract

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Acknowledgements

I want to thank...

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Acronym and Abbreviation

ALU   Arithmetic Logic Unit
CU   Control Unit
MCU   Microcontroller Unit
ROM   Read-only memory

Chapter 1

Introduction

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Chapter 2

Background

2.1 Microcontroller

2.1.1 Theory

Microcontroller Unit (MCU) is a small size, special purpose computer. It is small enough in order to be integrated on a small circuit in which will do specified tasks or applications. MCU itself comes with memory, input, output peripherals and processor. Program to run the MCU is stored in Read-only memory (ROM) and usually not change in production. A microcontroller is usually designed to run in small size and at low cost, which is compatible to be embedded in other system in order to control actions of the system automatically.

2.1.2 Microcontroller structure

The following figure demonstrates the basic structure of a microcontroller.
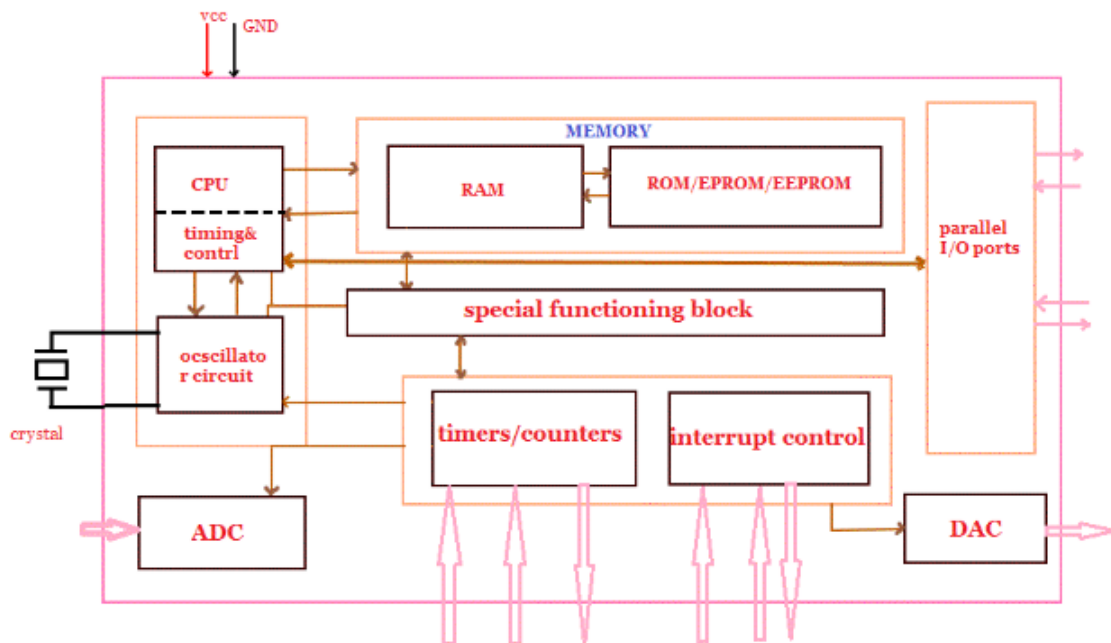

Figure 2.1: Structure of Microcontroller

From the figure, the basic components usually come with the basic design of a microcontroller are listed as:

- CPU: is the central unit which is assemblied with Arithmetic Logic Unit (ALU) and a Control Unit (CU). Its functions are connect parts of the MCU into a single system by doing fetch, decode and execution.

2.1.3 Microcontroller market

There exists many microcontrollers on the market which come in various sizes and capacities. The list is only contains very few popular MCU that the author knows of.

- Intel 8051

- STMicroelectronics STM8S (8-bit), ST10 (16-bit) and STM32 (32-bit)

- Atmel AVR (8-bit), AVR32 (32-bit), and AT91SAM (32-bit)

- Freescale ColdFire (32-bit) and S08 (8-bit)

- PIC (8-bit PIC16, PIC18, 16-bit dsPIC33 / PIC24)

- Renesas Electronics: RL78 16-bit MCU; RX 32-bit MCU; SuperH; V850 32- bit MCU; H8; R8C 16-bit MCU

- PSoC (Programmable System-on-Chip)

- Texas Instruments Microcontrollers MSP430 (16-bit), C2000 (32-bit), and Stellaris (32-bit)

2.2 Communication protocol

Chapter 3

Chapter Three Title

Chapter 4

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Chapter 5

Conclusion