

Chapter 1

Types, Selection, and Applications of Microcontrollers

Lesson 2

CPU, Microcomputer and Microcontroller

CPU

Program-flow control Section

Fetch Unit

Control unit

Internal Buses

Instruction Execution Section

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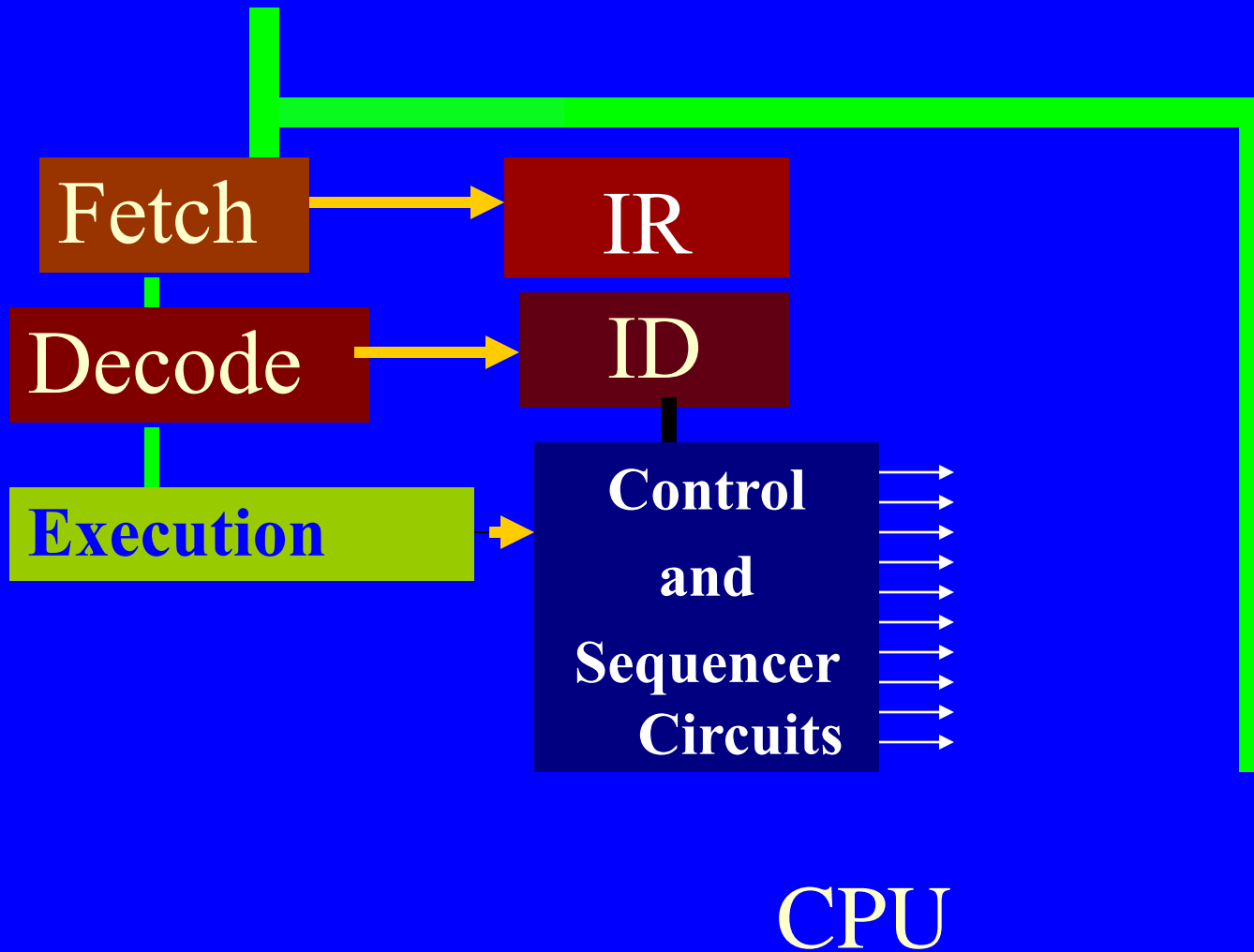
**XOR, OR,
AND, NOT**

**Arithmetic
and Logic
Unit**

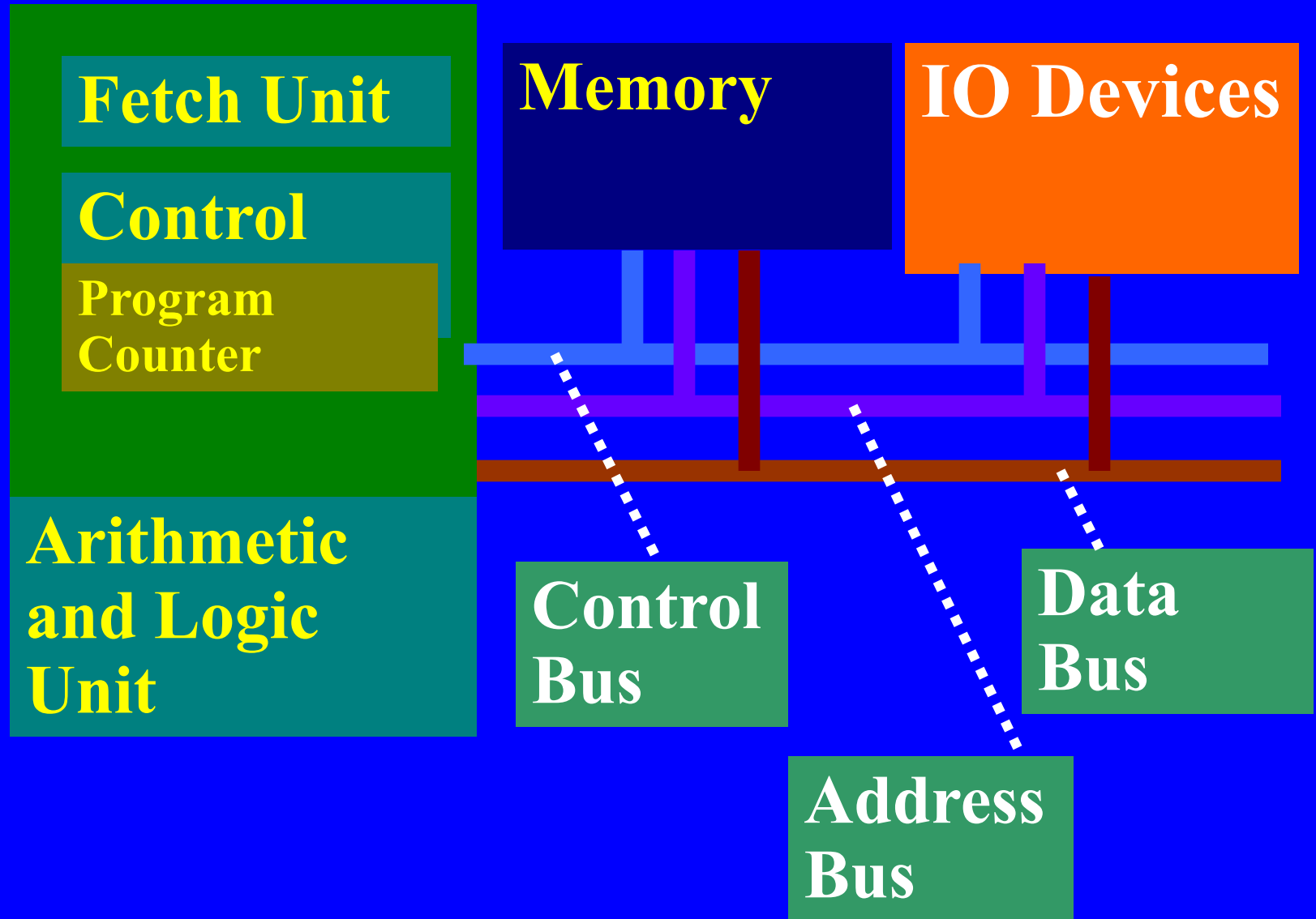
Rotate

Shift

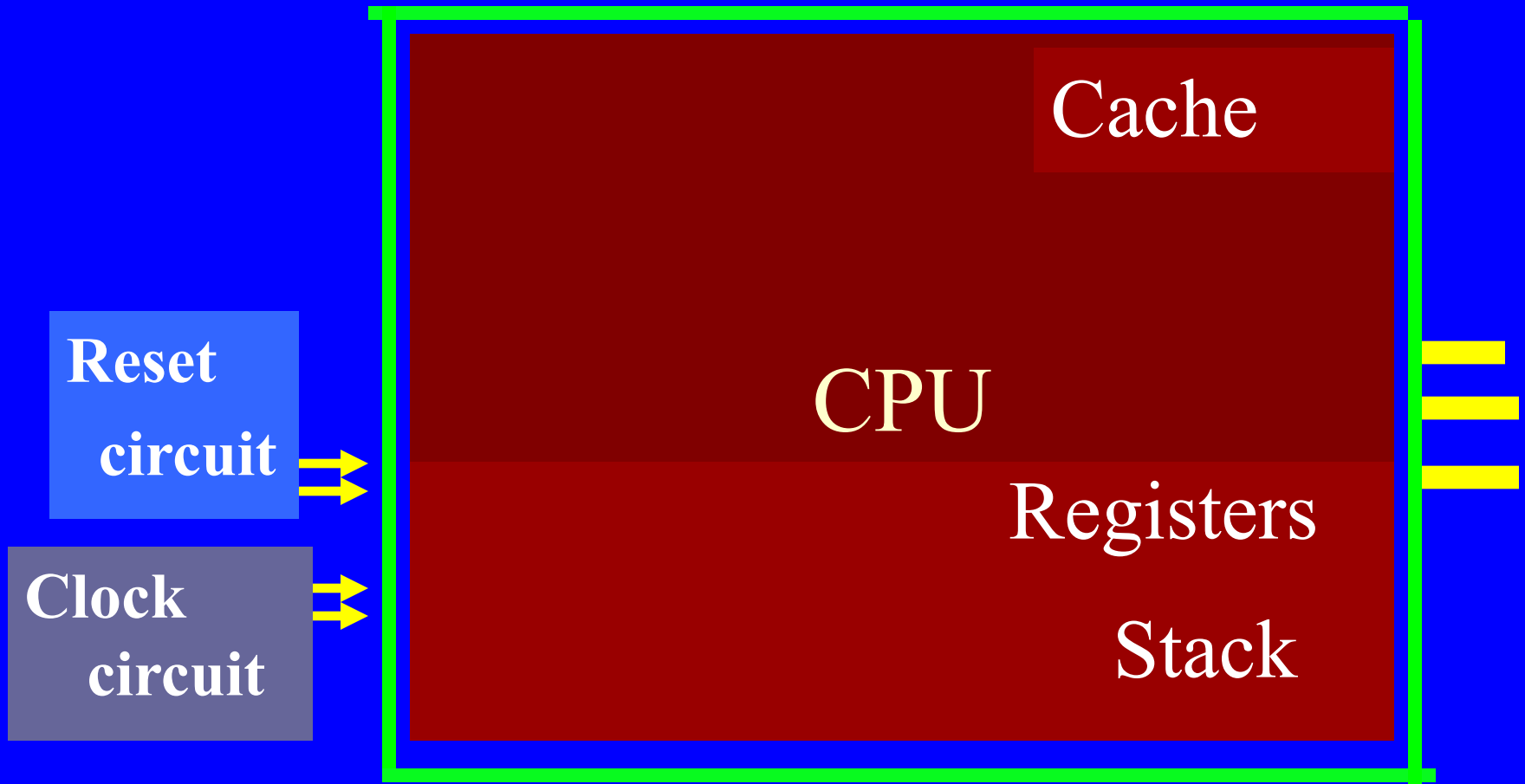
Internal bus



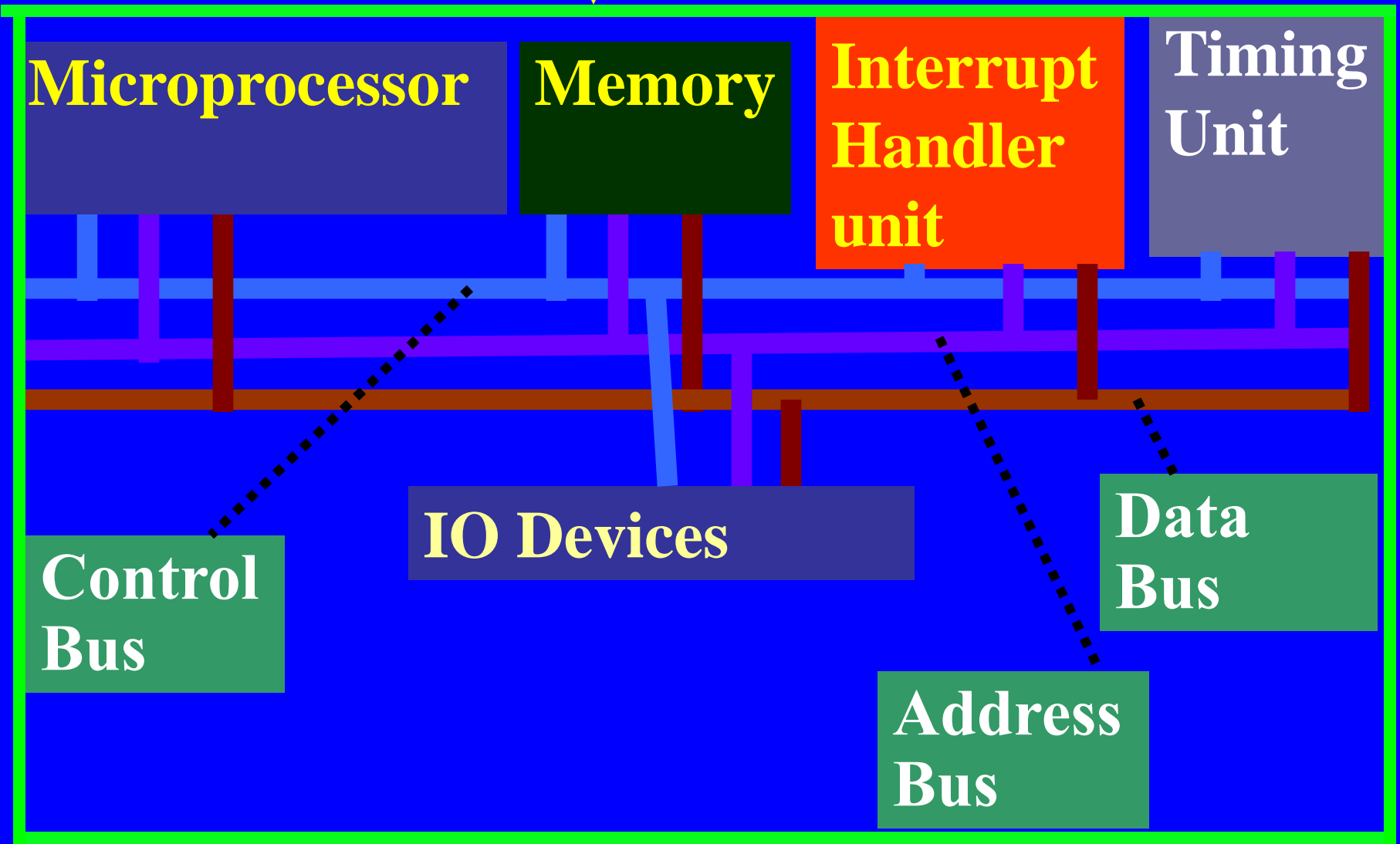
CPU and Buses



Microprocessor - Chip or VLSI Section



Microcomputer Chip or VLSI Core



Computer System

Microprocessor

Memory

Interrupt Handler unit

Timing Unit

**Micro-
computer**

Ports

**CD
drive**

Hard Disk

Keyboard

Peripherals

Microcontroller Chip or VLSI Core

CPU

Memory

Interrupt Handler unit

Timing Devices

**Micro-
computer**

Ports

**Serial
Devices**

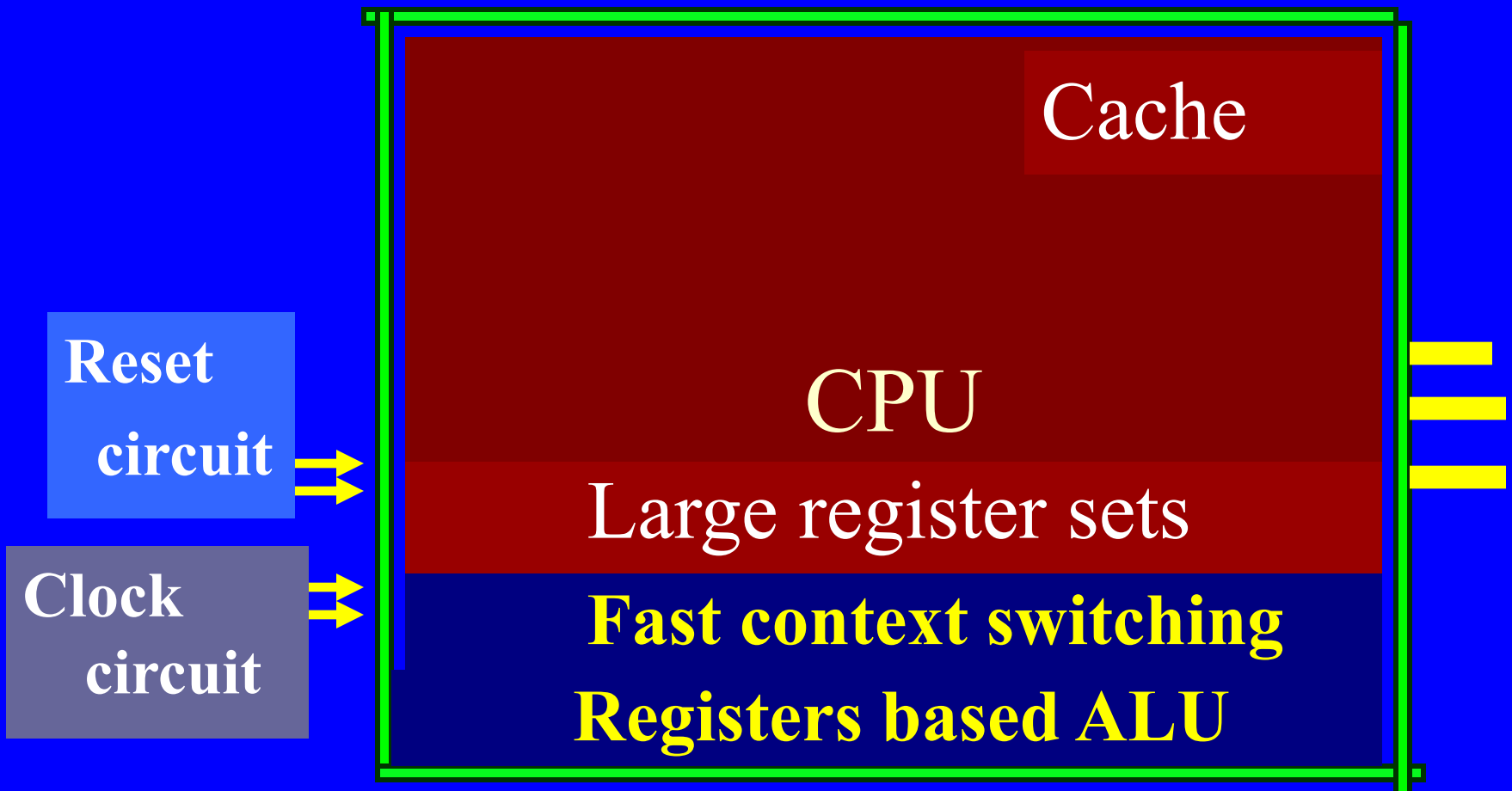
Watchdog Timer

**Application
specific Devices**

PWM

ADC

Embedded processor - Chip or VLSI Core



Embedded Microcontroller

Embedded Microcontroller

CPU

Memory

Interrupt Handler unit

Timing Devices

**Micro-
computer**

Ports

**Serial
Devices**

**Application
specific Devices**

Watchdog Timer

PWM

ADC

**No external memory or devices based
system**

External Memory Expanded Microcontroller

CPU

Memory

Interrupt Handler unit

Timing Devices

**Micro-
computer**

Ports

**Internal
Devices**

**External memory or devices based
system**

External Ports

**External
RAM/ROM**

Summary

We learnt

- Microprocessor— CPU with program flow control unit and execution unit

We learnt

- Microcomputer— A Microprocessor with timing unit, interrupt handling unit and memory

We learnt

- Microcontrollers— A CPU with on-chip Ports, Memory, Special Function Registers, timers and other registers, serial interface, ADC, PWM and application specific devices