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Introduction

- Definition of a Microcontroller
- Difference with a Microprocessor
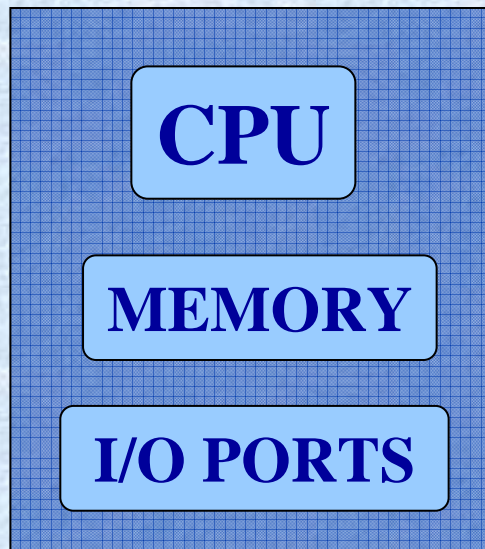- Microcontroller is used where ever

Definition

- It is a single chip

- Consists of Cpu, Memory

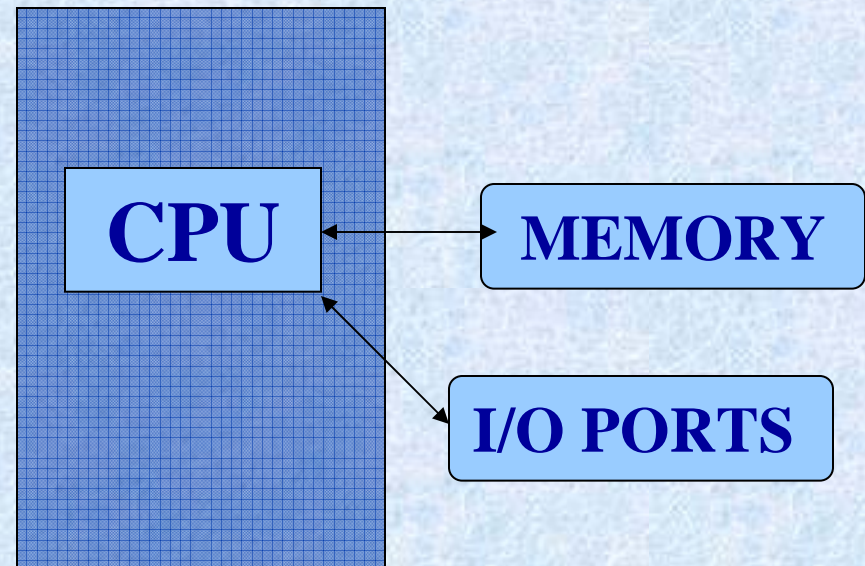- I/O ports, timers and other peripherals

Difference

Micro Controller

- It is a single chip
- Consists Memory,
- I/o ports

CPU

MEMORY

I/O PORTS

Micro Processor

- It is a cpu
- Memory, I/O Ports to be connected externally

CPU ← **MEMORY**

I/O PORTS

Where ever

- Small size
- Low cost
- Low power

Architecture

• Harvard university

The Architecture given by Harvard University has the following advantages:

1: Data Space and Program Space are distinct

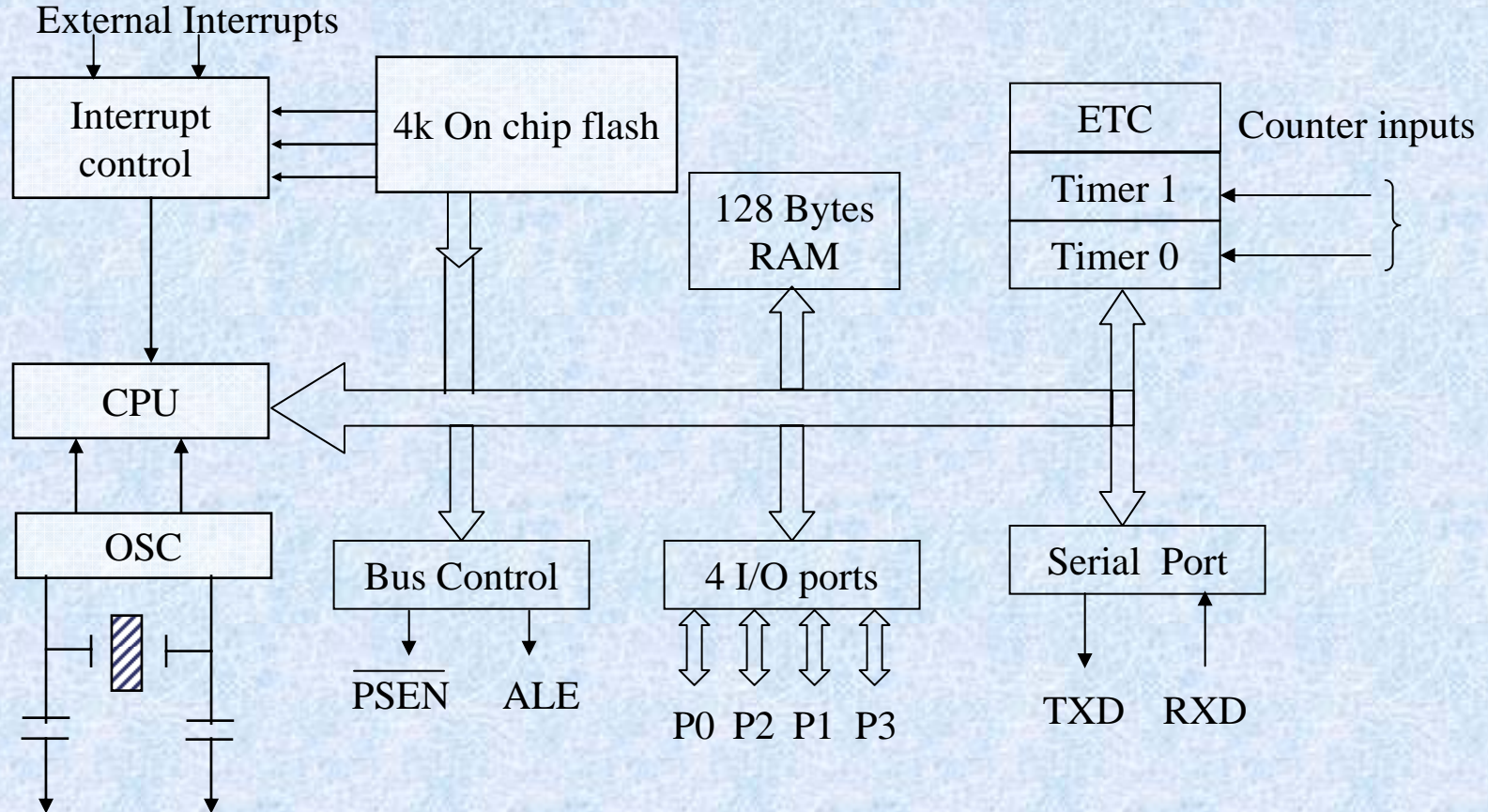2: There is no Data corruption or loss of data

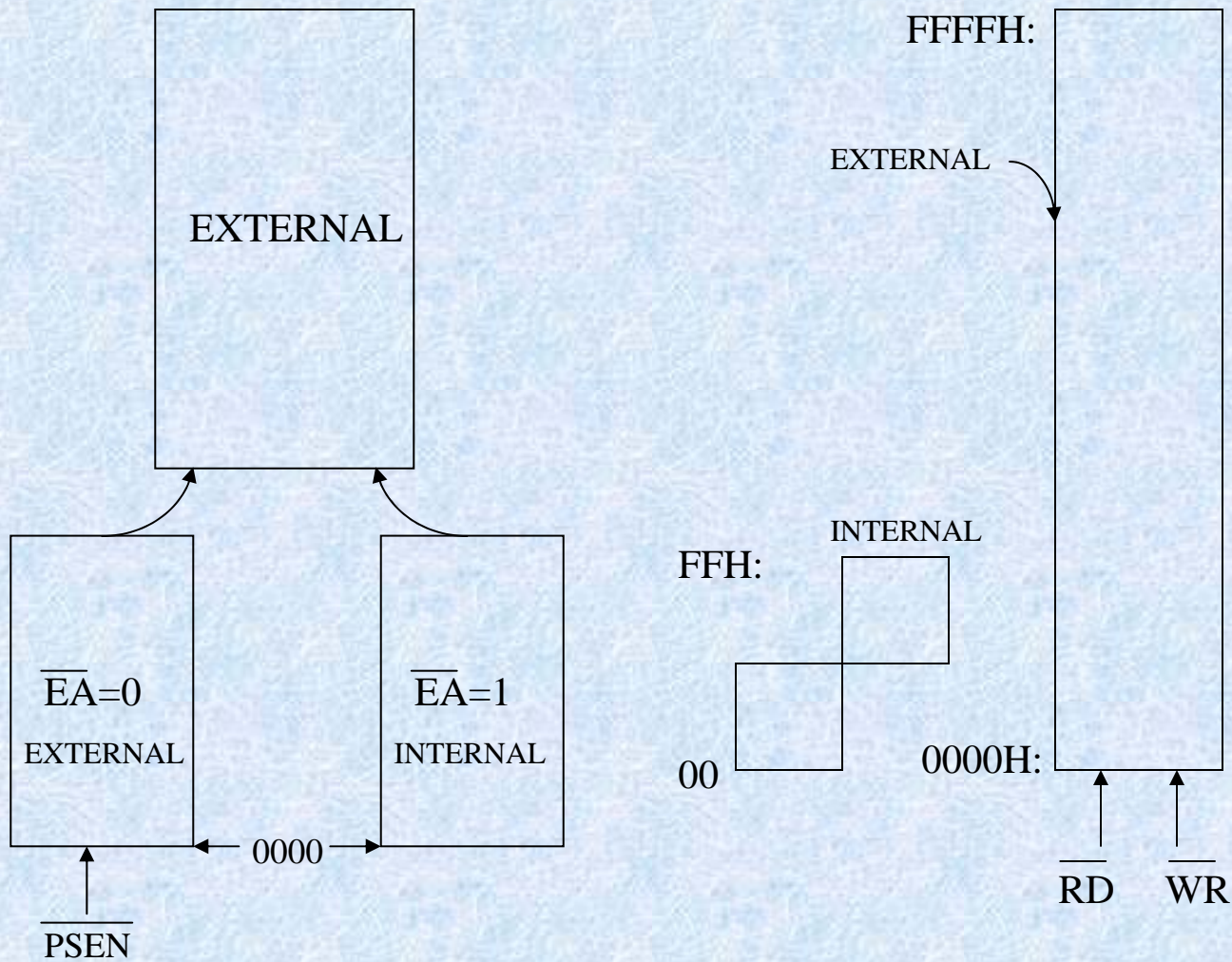Disadvantage is:

1: The circuitry is very complex.

Features

- 8 bit cpu
- 64k Program memory (4k on chip)
- 64k Data memory
- 128 Bytes on chip
- 32   I/O
- Two 16 bit timers
- Full duplex UART
- 6 Source/5 Vector interrupts with
  two level priority levels
- On chip clock Oscillator.

Block Diagram

Memory Architecture

EXTERNAL

FFFFH:

EXTERNAL

$\overline{EA}$=0
EXTERNAL

$\overline{EA}$=1
INTERNAL

0000

INTERNAL

FFH:

00   0000H:

$\overline{RD}$ $\overline{WR}$

$\overline{PSEN}$

SFR Map

				8 BYTES				
F8								**FF**
F0	B							**F7**
E8								**EF**
E0	ACC							**E7**
D8								**DF**
D0	PSW							**D7**
C8								**CF**
C0								**C7**
B8	IP							**BF**
B0	P3							**B7**
A8	IE							**AF**
A0	P2							**A7**
98	SCON	SBUF						**9F**
90	P1							**97**
88	TCON	TMOD	TL0	TL1	TH0	TH1		**8F**
80	P0	SP	DPL	DPH				PCON	**87**

BIT ADDRESSABLE

SU00530

Internal Memory

7FH	Scratch Pad
30H	
	Bit Memory
20H	
	Bank 3 (R0-R7)
18H	
	Bank 2 (R0-R7)
10H	
	Bank 1 (R0-R7)
08H	
	Bank 0 (R0-R7)
00H	

Pin connections