Basics of ARM Cortex based microcontroller

BASICs.pdf

Size of databus

Bits of data stored on each Address.

Size of address bus

2^n = Size of memory space.
--- Where, n is a total numbers of address bus.

For example,
Memory space is 4096 Bytes with each address of 8 bits.
Size of Databus = 8 bits.
Size of Address bus = 12 bits.
i.e. 2^12 = 4096

External bus

A bus used to connect external peripherals is called as an external bus.

Flags

- Processor flag - Status of result
- Auxilary flag - Carry from LS nibble to Upper side nibble
- Carry flag - Carry out of th MS bit of result
- Negative flag - If MS bit of resultr is set
- Overflow flag - If arithmetic overflow occurs
- Sign flag - Set for negative sign

MS: Most Significant

Interrupts flags

- Interrupt Enable - Ready to serve the incoming interrupt
- Interrupt Masking - Not ready to serve the incoming interrupt

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MicroProcessor

Peripherals, Timers, IOs are seperately connected/interfaced with it.

MicroController

Peripherals, Timers, IOs are combined in it.

Mobile phones have SoC[System on Chip]

Von-Neuman

- Shares same bus for address and data operations.
- Can operate either only Address or Data ata a single time.
- Bottleneck on buses.
- Pin count is less.
- Personal Desktops uses this architecture
- Ex- x86,8086

Harward

- Shares seperate bus for address and data operations.
- Faster in operations
- Ex-8048,PIC,DSPs

- Big Endian processors store the most significant byte (MSB) of data in the lower memory address
- Little Endian machines on the other hand, store the least significant byte (LSB) byte of data in the lower memory address

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