Microprocessors and Embedded Systems

University Electrical Engineering · Vocabulary in context

Word	Example
microprocessors and embedded systems	**Microprocessors and embedded systems** put small computers inside everyday devices.
microcontroller	A **microcontroller** combines a processor, memory and peripheral interfaces.
fetch-decode-execute cycle	The **fetch-decode-execute cycle** is how the processor runs each instruction.
program counter /ˈprəʊgræm ˈkaʊntə/	The **program counter** holds the address of the next instruction.
bus /bʌs/	In a **bus** network, all computers share one cable.
clock /klɒk/	The **clock** sends a pulse at a steady rate.
memory-mapped register	Code accesses a **memory-mapped register** through its assigned address.
assembly	**Assembly** expresses instructions for a particular processor architecture.
polling	**Polling** checks a peripheral's status repeatedly until an event occurs.
GPIO	Configure a **GPIO** pin as an input to read a switch.
memory-mapped I/O	**Memory-mapped I/O** makes a peripheral look like a memory location.
interrupt /ˈɪntərʌpt/	Pressing a key sends an **interrupt** to the processor.

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interrupt service routine /ˈɪntərʌpt ˈsɜːvɪs ruːˈtiːn/	The **interrupt service routine** deals with the key press.
timer	A **timer** can trigger an interrupt after a chosen interval.
prescaler	A divide-by-100 **prescaler** turns 1 MHz into 10 kHz. 100 1 MHz 10 kHz
UART	The **UART** sends asynchronous bytes with no shared clock.
SPI	**SPI** clocks a byte in 0.8 microseconds at 10 MHz. 10 MHz 0.8 microseconds
I2C	**I2C** shares its SDA and SCL signal lines among addressed devices. SDA SCL
baud rate	Set both UART endpoints to the same **baud rate**. UART
ADC /ˌeɪ diː ˈsiː/	An ideal 12-bit **ADC** over 3.3 V has 0.806 mV steps. 3.3 V 12-bit 0.806 mV。
resolution /ˌrezəˈluːʃn/	High **resolution** shows small details.
LSB	Without clipping, ideal rounding keeps quantisation error within half an **LSB**.
DAC /ˌdiː eɪ ˈsiː/	A **DAC** converts a digital code into an analogue output.
watchdog	A **watchdog** can reset the system if software stops responding.

Word	Example
debounce	One **debounce** method accepts a state after several matching samples.

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