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2.7 What others do - the Atmel AT89C2051 2.8 Taking things further - the 16F84A on-chip reset circuit; Summary; References; 3 Parallel ports, power supply and the clock oscillator; 3.1 The main idea - parallel input/output; 3.2 The technical challenge of parallel input/output; 3.2.1 Building a parallel interface; 3.2.2 Port electrical characteristics; 3.2.3 Some special cases; 3.3 Connecting to the parallel port; 3.3.1 Switches; 3.3.2 Light-emitting diodes; 3.4 The PIC 16F84A parallel ports; 3.4.1 The 16F84A Port B; 3.4.2 The 16F84A Port A; 3.4.3 Port output characteristics
3.5 The clock oscillator 3.5.1 Clock oscillator types; 3.5.2 Practical oscillator considerations; 3.5.3 The 16F84A clock oscillator; 3.6 Power supply; 3.6.1 The need for power, and its sources; 3.6.2 16F84A operating conditions; 3.7 The hardware design of the electronic ping-pong; Summary; References; 4 Starting to program - an introduction to Assembler; 4.1 The main idea - what programs do and how we develop them; 4.1.1 The problem of programming and the Assembler compromise; 4.1.2 The process of writing in Assembler; 4.1.3 The program development process
4.2 The PIC 16 Series instruction set, with a little more on the ALU

Sommario/riassunto

This book is a hands-on introduction to the principles and practice of embedded system design using the PIC microcontroller. Packed with helpful examples and illustrations, it gives an in-depth treatment of microcontroller design, programming in both assembly language and C, and features advanced topics such as networking and real-time operating systems. It is accompanied by a CD-ROM containing copies of all programs and software tools used in the text and a 'student' version of the C complier. Designing Embedded Systems with PIC Microcontrollers: Principles and Applications is i