Introduction

The microcontroller is an exciting new device in the field of electronics control. It is a complete computer control system on a single chip. microcontrollers include EPROM program memory, user RAM for storing program data, timer circuits, an instruction set, special function registers, power on reset, interrupts, low power consumption and a security bit for software protection. Some microcontrollers like the 16F818/9 devices include on board A to D converters.

The microcontroller is used as a single chip control unit for example in a washing machine, the inputs to the controller would be from a door catch, water level switch, temperature sensor. The outputs would then be fed to a water inlet valve, heater, motor and pump. The controller would monitor the inputs and decide which outputs to switch on i.e. close the door – water inlet valve open – monitor water level, close valve when water level reached. Check temperature, turn on heater, switch off heater when the correct temperature is reached. Turn the motor slowly clockwise for 5 seconds, anticlockwise for 5 seconds, repeat 20 times, etc. If you are not that maternal maybe you prefer discos to washing – then you can build your own disco lights.

The microcontroller because of its versatility, ease of use and cost will change the way electronic circuits are designed and will now enable projects to be designed which previously were too complex. Additional components such as versatile interface adapters (VIA), RAM, ROM, EPROM and address decoders are no longer required.

One of the most difficult hurdles to overcome when using any new technology is the first one – getting started! It was my aim when writing this book to explain as simply as possible how to program and use the PIC microcontrollers. I hope I have succeeded.

Code examples in this book are available to download from:
http://books.elsevier.com/uk//newnes/uk/subindex.asp?maintarget=companions/
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