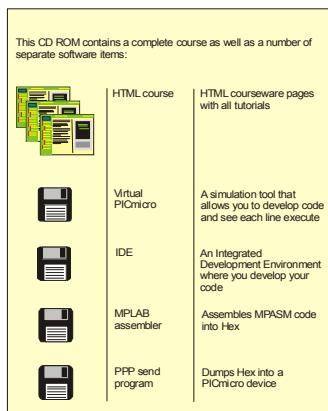


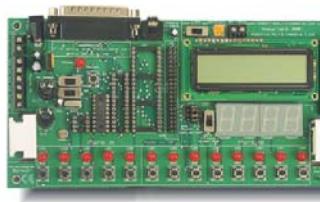
A complete solution for learning and teaching assembly code programming for PICmicro microcontrollers

Assembly for PICmicro® microcontrollers V2.0 (previously known as PICtutor) contains a complete course in programming the PICmicro microcontroller from Arizona Microchip. It starts with fundamental concepts and extends up to complex programs including watchdog timers, interrupts and sleep modes.

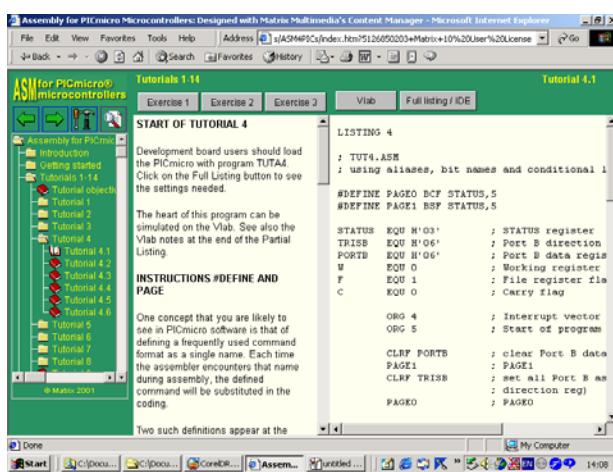
The CD makes use of the latest simulation techniques which provide a superb tool for learning: the Virtual PICmicro microcontroller. This is a simulation tool that allows users to write and execute assembly code for the PIC16F84 microcontroller on-screen. Using this students can actually see what happens inside the PICmicro microcontroller as each instruction is executed. This enhances understanding and retains student interest.



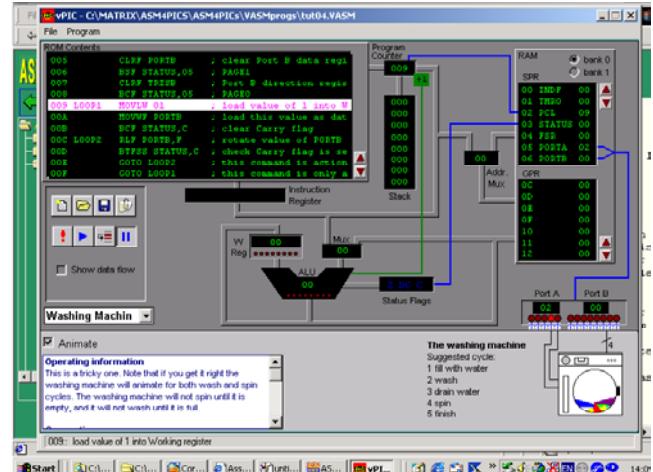
## Contents of the CD ROM



When used with the development board this CD ROM provides a simple working environment for learning and programming PICmicro microcontrollers



Typical tutorial screen



The Virtual PICmicro microcontroller

- Comprehensive instruction through 39 tutorial sections
- Includes a Virtual PICmicro microcontroller: a fully functioning simulator
- Tests, exercises and projects covering a wide range of PICmicro applications
- Includes MPLAB assembler

## Virtual PICmicro

- Visual representation of a PICmicro showing architecture and functions
- Expert system for code entry helps first time users
- Shows data flow and fetch execute cycle and has challenges (washing machine, lift, crossroads etc.)
- Imports MPASM files

## What's new in version 2?

- HTML based course
- Enhanced Virtual PICmicro supports MPASM
- Links to PPP utility and MPLAB

The following pages give further information:

**Matrix Multimedia Limited**

**Tel 0870 700 1831**

**www.matrixmultimedia.co.uk**

**Fax 0870 700 1832**

**sales@matrixmultimedia.co.uk**



See our web site for a range of sensors that work with this product.

"I was very impressed with the Assembly for PICmicros CD ROM (AKA PICtutor) and have no hesitation in recommending it as a powerful method of delivering the PIC programming element of the A level electronics course. C for PICmicro MCUs is the perfect companion."

John Verrill  
Electronics teacher & examiner  
Whitby Community College,  
UK

"The product was designed as a complete teaching package and I believe it has achieved this aim. It will be a useful tool that I intend to use myself in teaching what can be a time consuming topic at A level or higher."

Review of Assembly for PICmicro microcontrollers taken from IEE Electronics Education

"A most impressive suite of products and about half the price of the competition."

Roy Atwood  
Bolton Institute  
UK

A complete solution for learning and teaching assembly code programming for PICmicro microcontrollers

## The contents of the CD ROM are:

### Introduction

An introduction to the PICmicro series of microcontrollers, to the Assembly for PICmicro microcontrollers package and to the structure of the CD ROM.

### Getting started

Information to get you up and running quickly and to let you check out your development kit.

### Section 1: tutorials 1 - 14

Machine code assembler, downloading files to the PICmicro MCU, binary, basic commands, Input and output ports, switch monitoring, flags, loops and control structures.

### Section 2: tutorials 15 - 29

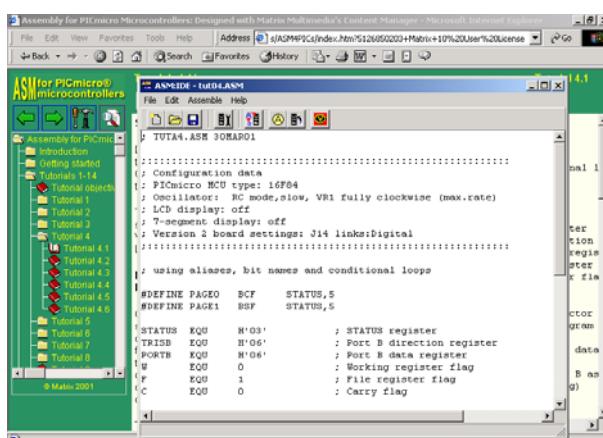
Audio tone generation, subroutines, tables, indirect addressing, timers, driving 7-segment LED displays, simple clocks.

### Section 3: tutorials 30 - 39

LCD displays, 24-hour clock program, burglar alarm (with circuit), EEPROM data memory use, watchdog timer, interrupts, sleep mode.

### Reference

Useful addresses, circuits, PICmicro specifications and op-code summary.



```

; Configuration data
; PICMicro MCU type: 16F84
; Oscillator: RC mode,slow, VRL fully clockwise (max.rate)
; LCD display: off
; 7-segment display: off
; Version 2 board settings: J14 links:Digital
; using aliases, bit names and conditional loops

#DEFINE PAGE0 BCF STATUS,5
#DEFINE PAGE1 BSF STATUS,5

STATUS EQU 'H'03' ; STATUS register
TRISB EQU 'H'06' ; Port B direction register
PORTB EQU 'H'06' ; Port B data register
W EQU 0 ; Working register flag
F EQU 1 ; File register flag
C EQU 0 ; Carry flag

```

The CD even includes a Integrated Development Environment