Flowcode™ is a powerful language that uses flowcharts and macros for developing microcontroller applications. The use of macros allows students and engineers to control highly complex electronic devices without getting bogged down in understanding the programming involved. Flowcode™ is used in education as a means of introducing students to the concepts of programming. Flowcode™ is used in industry for rapid development and as a means of managing large projects.

The great advantage of Flowcode™ is that it allows those with little or no programming experience to create complex electronic and robotic systems.

- Flowchart objects: Input, Output, Decision, Delay, Loop, Connection, Formula, String, Interrupt, C Code, Macro
- Predefined components for RS232, I2C, SPI, ZigBee®, Can, IrDA, LIN, Bluetooth, TCP/IP and Web Server
- Predefined components for LCD, LED, 7-Segment, Keypad, Switch, ADC, EEPROM, PWM, Motor, and many others
- Underlying C code for advanced capabilities, C Code Customization, Floating Point support.
- Supported by BiPOM’s MINI-MAX/AVR, MINI-MAX/P18, MINI-MAX/ARM-S, Pololu 3pi robot and many other microcontroller systems.

- Flowcode for ARM
- Flowcode for PIC™
- Flowcode for AVR™
- Flowcode for dsPIC and PIC24

Flowcode Support Package for AVR™:
This support package provides Flowcode™ examples for the MINI-MAX/AVR-C microcontroller board.
Micro C 8051 Development System: The ultimate 8051/52 Development system at a very affordable price. This fully integrated system includes:

- Micro-IDE - a Windows-based Integrated Development Environment
- Micro C - Optimizing 8051/52 C Compiler, assembler, linker
- Built-in serial loaders and terminal
- Complete online documentation, C Tutorial, Technical Manual
- Project examples

Micro C 8051 Development System Site License: Micro C Site License for up to 25 installations.

8051 Training Kit: 8051 Training Kit gives students, engineers, technicians, hobbyists and other users experience with microcontrollers by allowing to develop practical applications using C and 8051 Assembly language. The 8051 Training Kit lab book consists of several labs that vary from simple to complicated. For more information please see “MicroTRAK - Universal Training Kit for Microcontrollers” section.

8051 Simulator for Micro-IDE:
Powerful, yet easy to use and affordable 8051 simulator for Micro-IDE. 8051 Simulator simplifies code development with Micro C, BASCOM51, SDCC and Micro-IDE. Errors in user programs can be found and fixed quickly in simulation mode by avoiding time consuming downloads to the target board.

- Integrated Development Environment to edit, build, download, simulate and debug within the same program.
- Simulation of 8051 programs in C, Assembly or mixed level.
- Variable window to watch C variable names, values and addresses.
- Register window to watch the simulated special function registers including 8051 ports.
- Memory window to watch and modify up to 64K of simulated program memory or 256-byte internal RAM.
- Call stack window to view list of function calls that lead to current program line (traces all jumps and calls)
- Terminal window to simulate 8051’s serial port (both receive and transmit are simulated)
- Output Window Debug Tab to watch debug messages
- Fully customizable window layout with dockable or floating debug windows.
- Stop Debugging button to stop simulation at any point
- Go button to start execution
- Step Into, Step Over and Step Out buttons to single-step through the source code at C or Assembly level
- Unlimited number of breakpoints to stop execution on any C or Assembly source line.
- Windows® 2000/XP/Vista/7/8 compatible Multi-file Editor to create and modify C or Assembly source code.
- Support for hardware ports in simulation. Use real I/O ports from your target boards while simulating the program on your PC.

Supports Micro C Compiler, SDCC C Compiler and BASCOM51 BASIC Compiler for 8051.

MINI-MAX/51-C2 Debugger: Powerful, yet easy to use and affordable 8051 Debugger for our MINI-MAX/51-C2, MINI-MAX/51-D and MINI-MAX/51-E boards. MINI-MAX/51-C2 Debugger kernel occupies only 2K on the MINI-MAX/51-C2 board and allows you to watch your program as it runs on the actual hardware. Put breakpoints, single-step, change registers, reset the board. Code modifications are downloaded automatically every time you start the debugger.

- Debug/view 8051 programs in C, Assembly or mixed level.
- Watch C variables, special function registers, ports, memory, UART
- Trace back all jumps and calls
- Single-step through the source code at C or Assembly level
- Set and clear breakpoints.

*All Development Tools (except Micro C) support 64-bit Windows® Vista, 7 and 8
### BASCOM-AVR

Powerful, easy-to-use BASIC Compiler for the ATML® AVR® microcontrollers. Fully integrated into Micro-IDE.

- Structured BASIC with labels
- Structured programming with IF-THEN-ELSE-END IF, DO-LOOP, WHILE-WEND, SELECT-CASE
- Fast machine code instead of interpreted code
- Bit, Byte, Integer, Word, Long, Single and String variables
- Compiled programs work with all AVR™ microprocessors that have internal memory
- Special commands for LCD-displays, I2C chips and 1WIRE chips, PC keyboard, matrix keyboard, RC5 reception, software UART, SPI master and slave, IR remote code, graphical LCD's
- Local variables, user functions, library support
- Object file is ATMEL compatible. Use free AVR Studio from ATMEL website to simulate code
- Integrated terminal emulator
- Integrated ISP programmer (application note AVR910.ASM)
- DEMO version compiles 2KB of code. Well suited for the ATTINY2313
- Support for TCP/IP

### BASCOM51

BASIC Compiler for the 8051 family of microcontrollers also available.

### AVR Development System with Arduino Support

- Includes WinAVR and Arduino language compilers
- Downloader for MINI-MAX/AVR-C
- Allows running C and Arduino programs on MINI-MAX/AVR-C
- Many C and Arduino examples
- Online help for language, libraries and examples

### BASCOM51 Book

Introduction to microcontroller programming using BASCOM51. This book is full of illustrated microcontroller projects from the simplest to the most advanced using BASCOM51 BASIC compiler and the AT89C2051 microcontroller.

### Site Licenses are available

Other development systems are also available at very affordable prices (some are free). Each development system includes Micro-IDE, Micro C Compiler, Assembler, Linker, Serial downloader, Terminal, complete online documentation including C Tutorial, Technical Manual and project examples. All Micro C Development Systems have a Site License option for up to 25 installations.
Complete Development Systems

**CodeMaster-52**
A configurable set of software and hardware tools for developing 8051 applications under control of one easy-to-use integrated development environment. A full configuration includes a C compiler of your choice, macro assembler, software simulator and either an in-circuit emulator or an on-chip (JTAG) debugger.

Windows-based front-end for the chosen CodeMaster debugger configures compiler components to allow symbolic debugging and configures debugger resources for the selected target MCU.

**MCA-51 Macro Assembler:** Supports all 8051 derivatives, strict operand type checking, extensive set of 32-bit arithmetic operators, local labels in functions (subroutines), powerful macro capabilities, special library eases the programmer's tasks.

**8051 Simulator:** Free component of the CodeMaster-52 integrated development environment, provides precise simulation of the 8051 command set and 8051 core, source-level debugging for the attached MCA-51, source-level debugging for third-party C compilers and assemblers, watching variables and other program objects in the source code, watching subroutine and function call stack, unlimited number of unconditional breakpoints, unlimited number of memory access breakpoints, program code performance analyzer.

**Project-96**
Project-96 is a set of hardware and software tools for developing applications for 80196 microcontrollers under control of one integrated development environment. A full toolset includes the MCA-96 macro assembler, MCC-96 C compiler and PDS-96 software debugger/simulator. The IDE includes an embedded editor, project manager and macro assembler. This toolset provides a full development cycle: From editing source texts to getting debugged code and "burning" it into a target microcontroller or memory device.

**MCC-96 C Compiler:** Supports all 80C196 derivatives, conforms to the ANSI/ISO 9899-1990 standard, produces fast and reentrant code, allows writing interrupt routines in C language, fast floating-point operations, provides 120+ standard C library functions.

**MCA-96 Macro Assembler:** Supports all 80C196 derivatives, strict operand type checking, easy integration with the MCC-96 C compiler and PDS-96 source-level debugger/simulator, extensive set of 32-bit arithmetic operators, powerful macro capabilities, special library eases the programmer's tasks.

**PDS-96 Debugger/Simulator:** Provides accurate simulation of the instruction set and peripherals for 8XC196KB/KC/KD and UT89C196KD derivatives, provides only instruction-set simulation for all other 16-bit 80C196 MCUs (MC, MD, MH, NT, CA, CB, etc.), high-level debugging for the MCC-96 and MCA-96 compilers, high-level debugging for the TASKING, IAR Systems, and Intel C compilers, function call list and stack tracing, performance analyzer.

**Project-SE**
Project-SE is a set of hardware and software tools for developing applications for RSC-4x microcontrollers and VR Stamps produced by Sensory, Inc. and working under control of one IDE. A full package includes MCA-SE macro assembler, PDS-SE software debugger/simulator, MCC-SE C compiler and PICE-SE in-circuit emulator. This toolset provides a full development cycle: From editing source texts to getting debugged code and "burning" it into a memory device.

**MCC-SE C Compiler:** Supports all RSC-4x derivatives, conforms to the ANSI/ISO 9899-1990 standard, supports in-line MCC-SE assembly and intrinsic functions, allows writing interrupt routines in C language, allows flexible variable allocation, supports four different memory models, code memory banking for programs up to 128K, more than 100 ANSI C library functions and RSC-4x runtime support libraries, software floating point library for single precision operation.

**MCA-SE Macro Assembler:** Supports all RSC-4x derivatives, extensive set of 32-bit arithmetic and logical operators, powerful macro capabilities, code memory banking support, RAM bank mapping support to access the full RSC-4x on-chip SRAM, generates symbolic debug information for PICE-SE emulator and PDS-SE debugger/simulator.

**PDS-SE Debugger/Simulator:** Provides command set and interrupt simulation for all RSC-4x derivatives, source-level and symbolic debugging for the MCC-SE C compiler and MCA-SE macro assembler, context variable viewing in source window, maintains precise time counter, function call list and stack tracing, performance analyzer.