#### Chapter 12

## Development Tools for Microcontroller Applications

#### Lesson 6

# Emulator, ICE, Target Evaluation/Demonstration board and Device programmer

#### **Emulator**

- Emulates MCU inputs from sensors
- Emulates controlled outputs for the peripheral interfaces/systems
- Emulates target MCU IOs and socket to connect externally MCU

#### **In-Circuit Emulator (ICE)**

- ICE means In-Circuit Emulator
  - Interface COM port of a computer
  - Emulates target MCU IOs and socket to connect externally MCU
- Uses computer developed object files and hex files for the MCU
- Uses debugger at the computer developed files for the MCU application

#### Nohau Emulator



#### **Emulating plus Logic Analyser Circuits**

Emulator Logic Analyser

up to 256 transactions

Collects logic timing diagrams at the IOs at specific instances

Help in Debugging of real time conditions

#### Target/evaluation/Demonstration Board

MCU in a socket

**Target Monitor** 

Connectors for Computer and interfaces

RAM and Interfaces

To have controlled execution of instructions, application loading and codes correction

Microcontrollers-... 2nd Ed. Rai Kama

#### Target Monitor

Computer (PC) interface commands

Command interpreter

Application codes down loaded from PC

Data

#### **Target Commands**

Download into monitor

Execute start address define

Full speed execute

Single step execute

Set breakpoints

Reset breakpoints

Send selected codes/ IOs info for computer display



#### An Evaluation board for a target system

Microcontrollers-... 2nd Ed. Raj Kamal

#### **Device Programmer**

**MCU PROM** 

EEPROM/flash Write

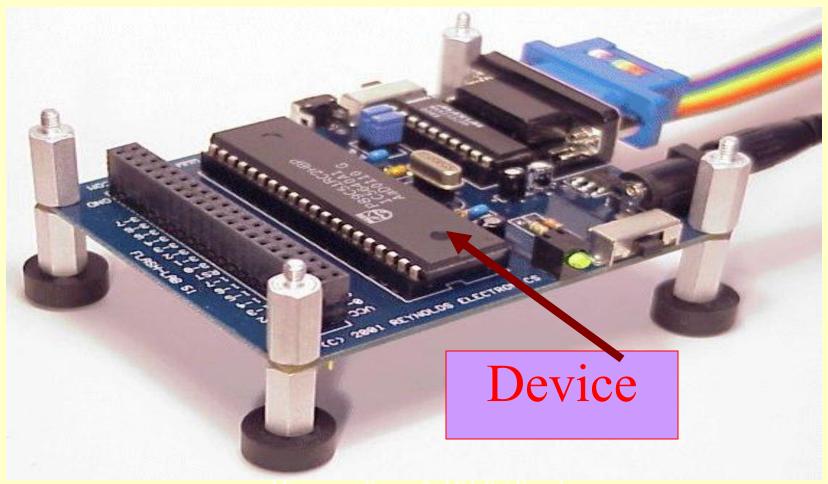
Erasing of EEPROM/flash -Write all 1s

**EPROM** 

Accepts Intel Hex
format or
Motorola Hex
formats from
locator

Connect to Computer COM port

## A device programmer connected to computer



### Summary

#### We learnt

### **Application Emulation and testing on hardware**

- Emulator, ICE
- Target Evaluation/Demonstration Board
- Device programmer

#### End of Lesson 06 on

# Emulator, ICE, Target Evaluation/Demonstration board and Device programmer