AVR Application Development

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Fall 2020

Overview

- Introduction
- Software development
  - CodeVision AVR
- Hardware development
  - Proteus

Design space

- Developing an application via microcontroller
  - Software development
    - We will consider CodeVision AVR
  - Hardware development
    - Simulation
      - We will use Proteus
    - Implementation
      - We introduced ATmega32 in the previous chapters

Creating a project

- Opening Code vision

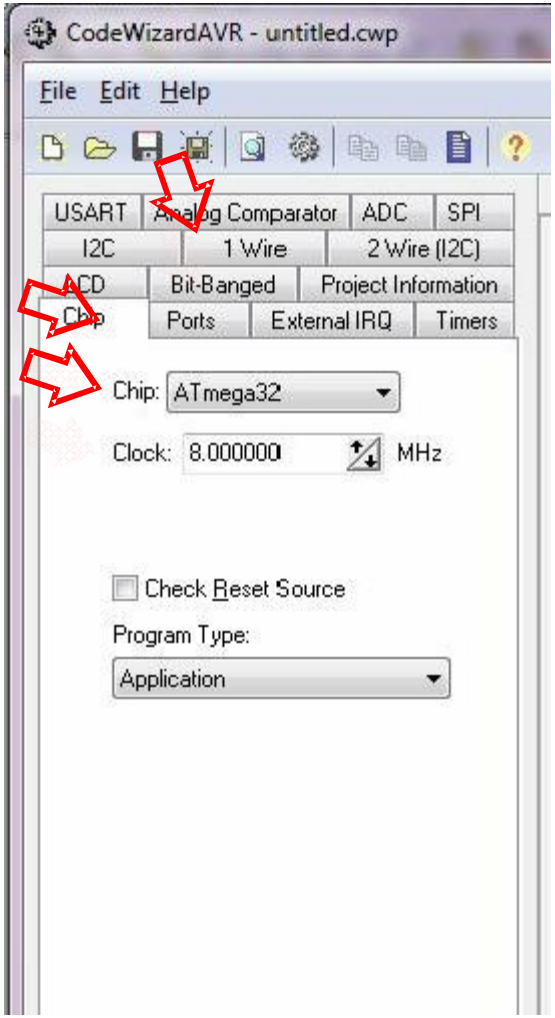
- Creating new project

Figure 3-1. New Project Dialog.

Figure 3-2. Confirmation Dialog.

Project configurations

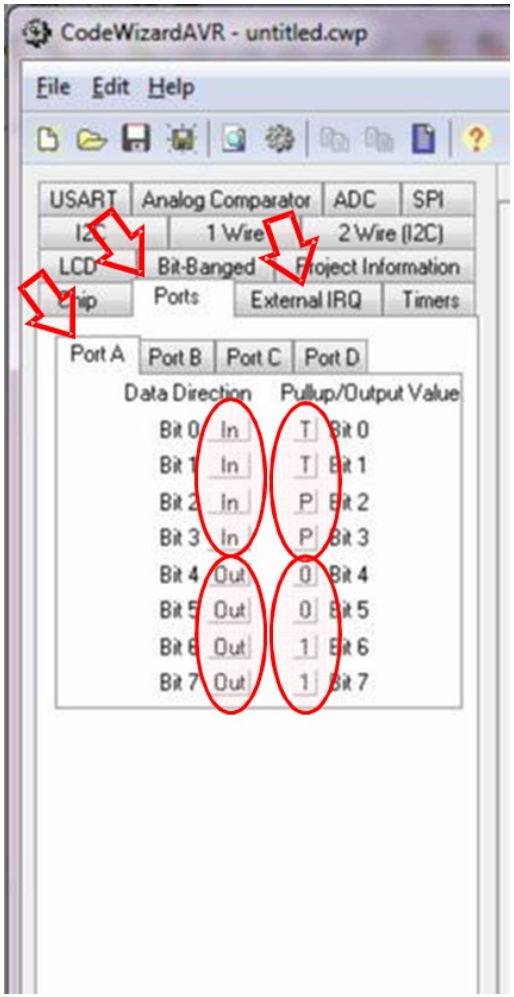
- Chip selection



- Clock setting

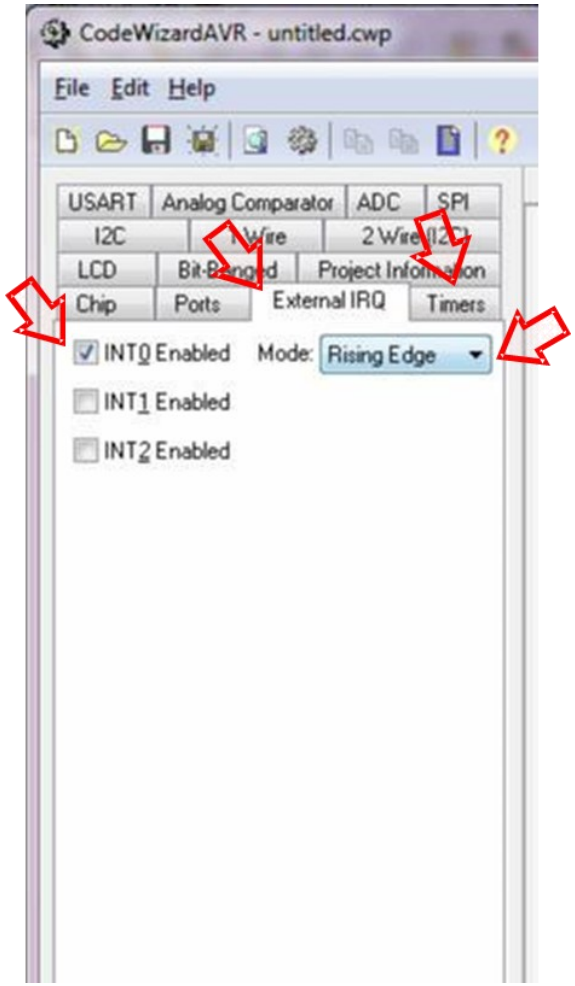
Project configurations

- Port setting
  - Selecting port
  - Input/output selection (DDRx)
  - Pull up / Output value selection (PORTXD)



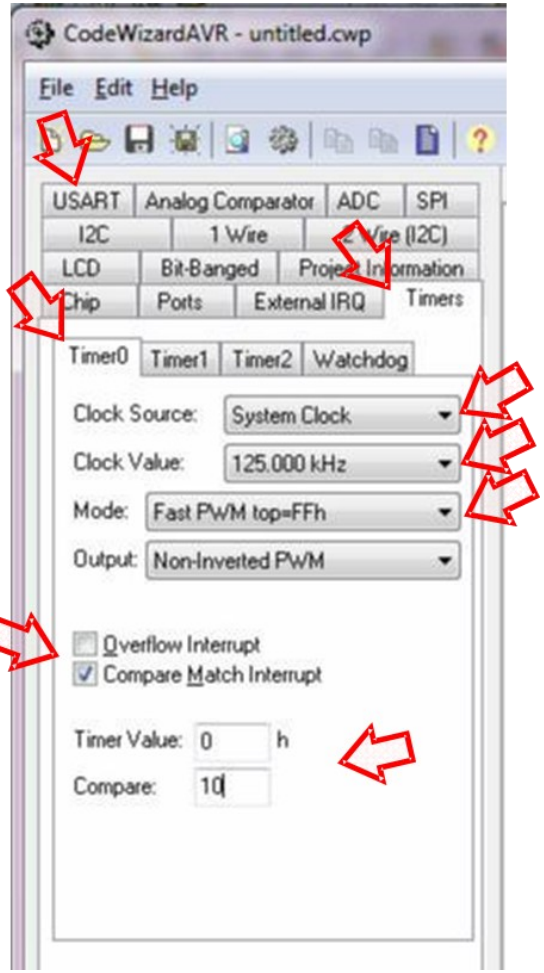
Project configurations

- External interrupt setting
  - Interrupt number selection
  - Interrupt mode determination
    - Low level
    - Any change
    - Falling edge
    - Rising edge



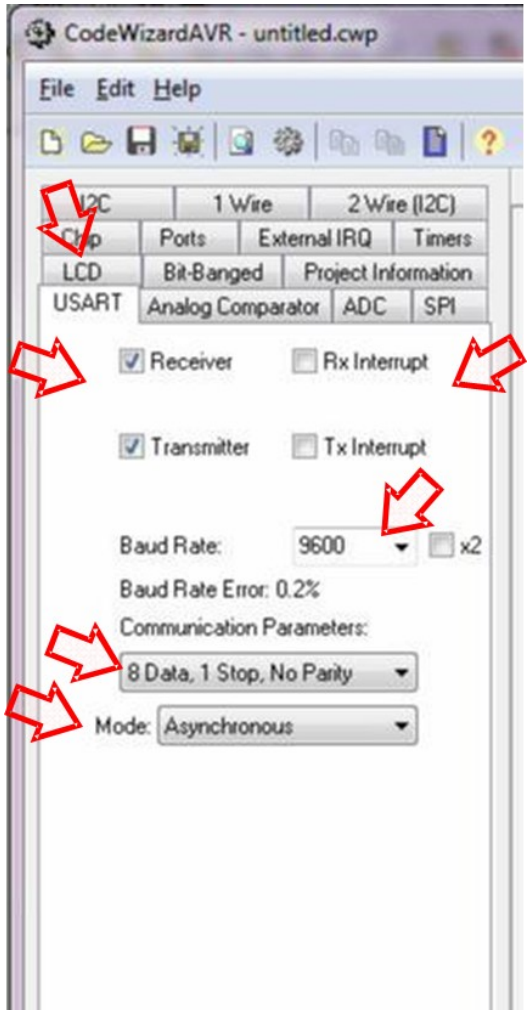
Project configurations

- Timers setting
  - Timer number selection
  - Timer or counter determination
  - Timer frequency determination (CSxx)
  - Timer mode determination (WGMxx)
  - Timer interrupt (OCIEx / TOIEx)
  - Timer initial values (TCNTx / OCRx)



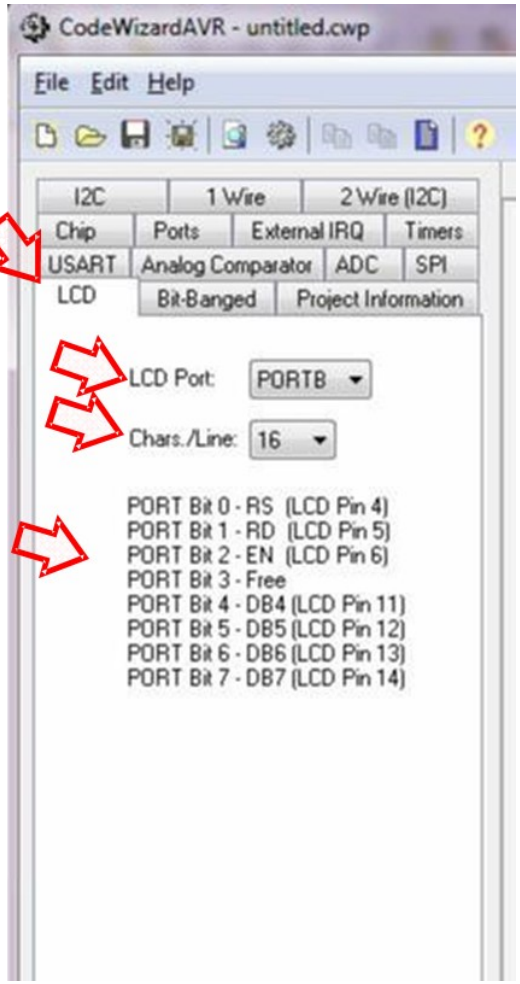
Project configurations

- Serial USART setting
  - Serial direction selection
  - Serial interrupt enabling (RXCIE / TXCIE)
  - Serial baud rate determination (UBRR)
  - Serial communication parameters determination (UCSRC)
  - Serial mode selection



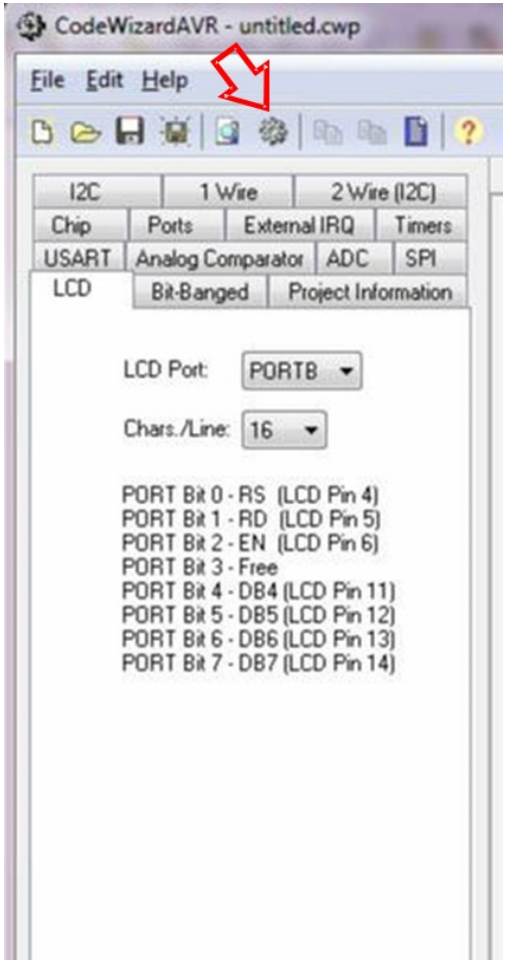
Project configurations

- LCD setting
  - LCD port selection
  - LCD selection
  - LCD pin out explanation

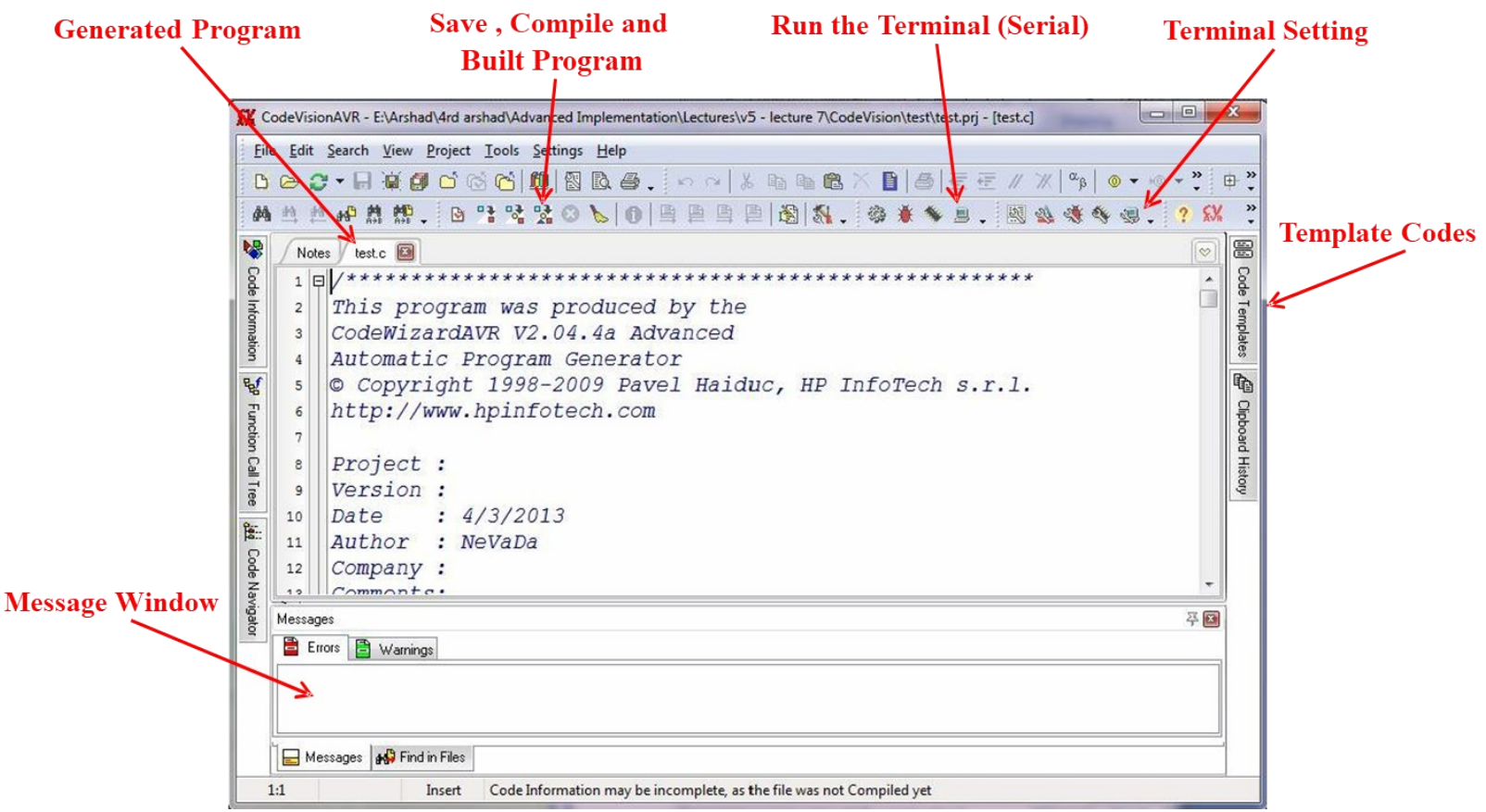


Project configurations

- Completing the project
  - Save source file
  - Save project file
  - Save Code Wizard AVR project file



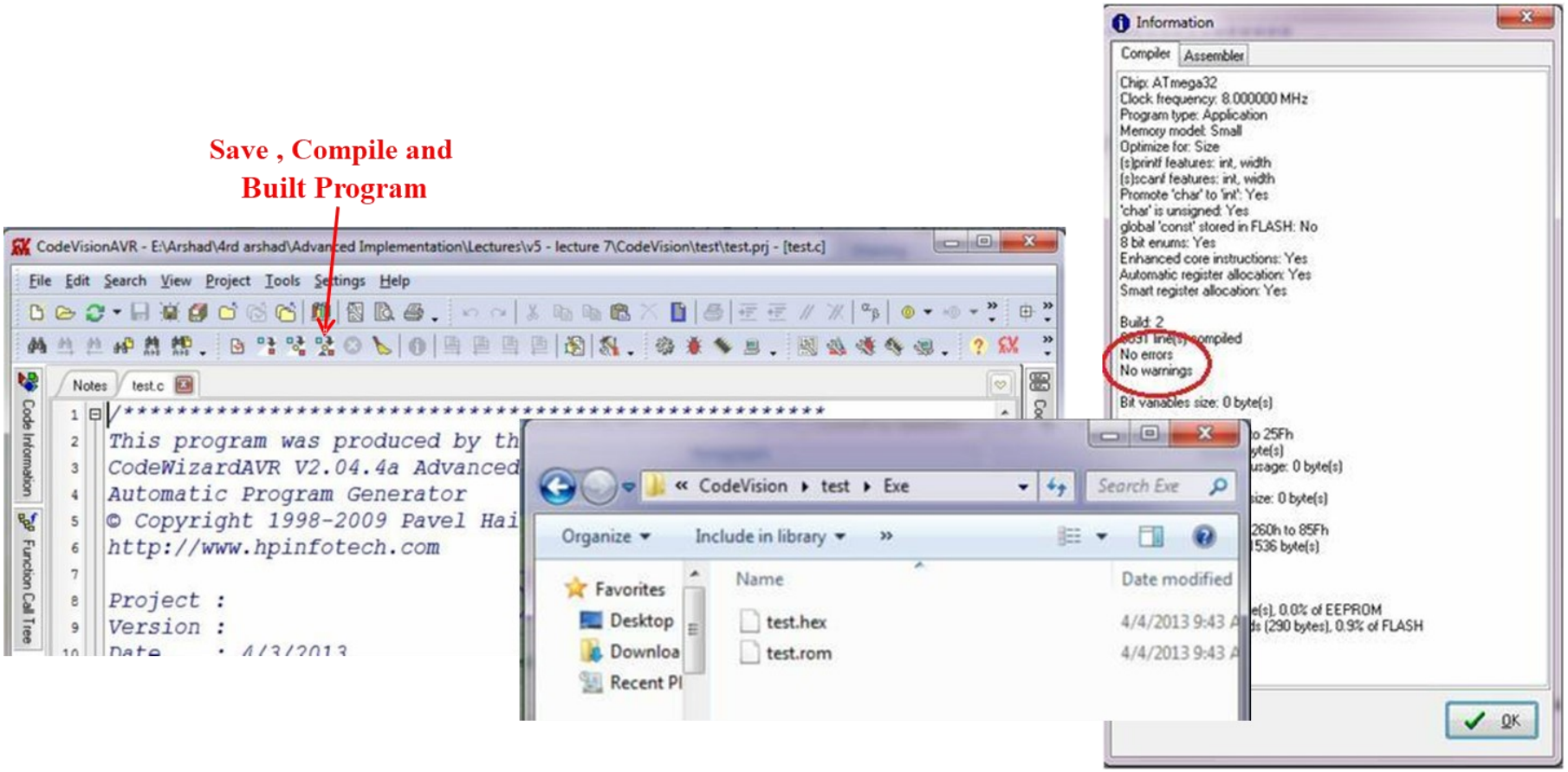
Writing your programs



Writing your programs

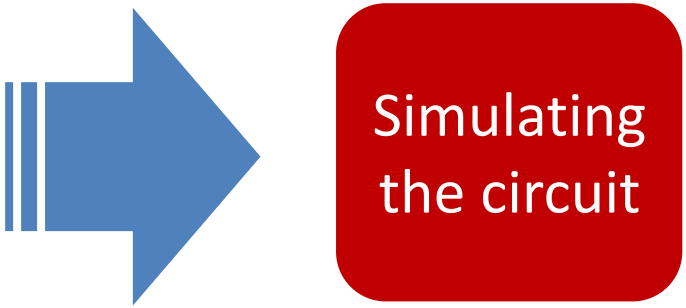
- Place your code in determined places
- Save, compile and build your project
- Information window shows the occurred warnings and errors
- Now the Hex file of your code is generated in
  - Project path/Exe/

Generating the executable file

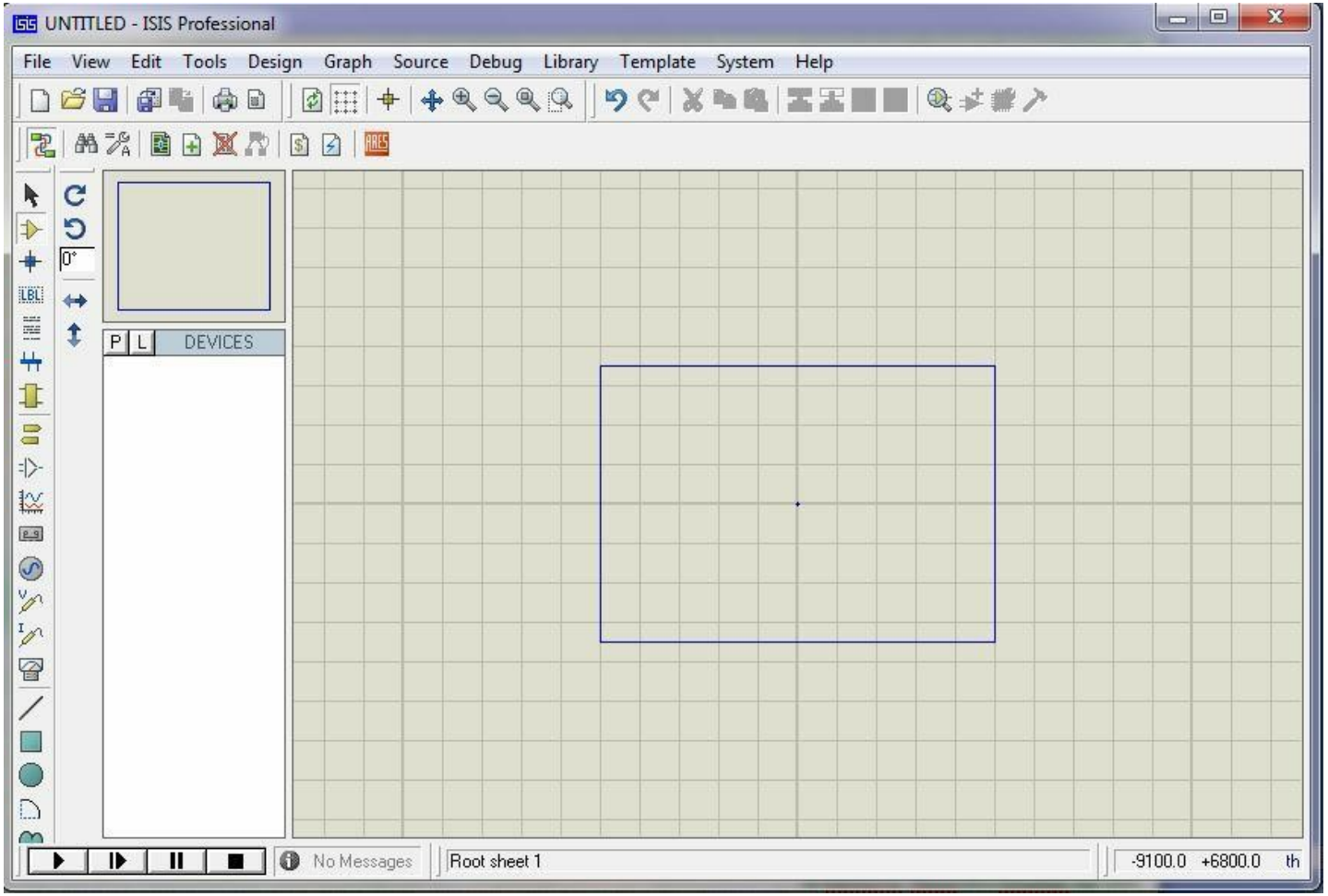


All at one glance!

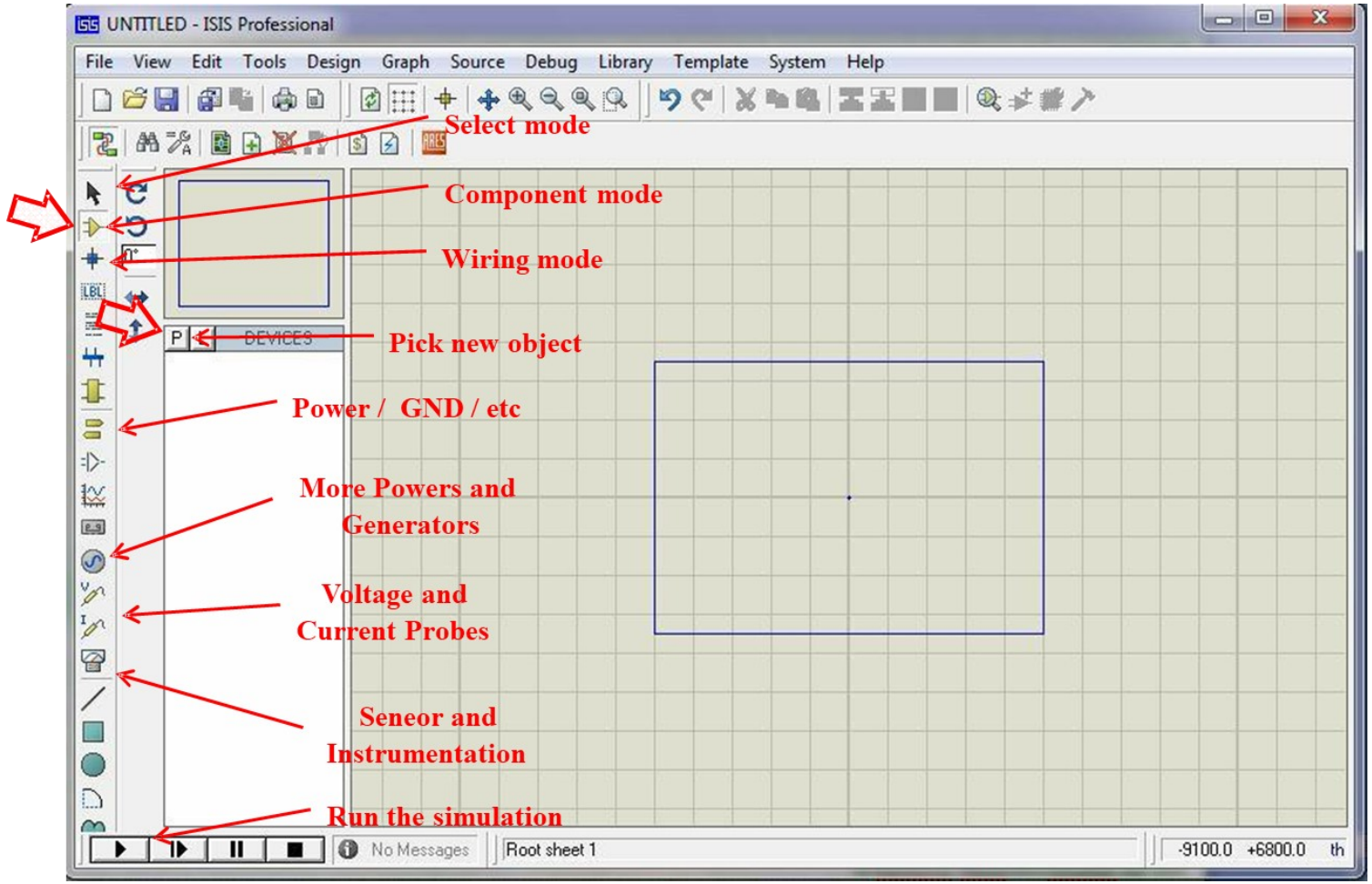
- Procedure for simulating an embedded system
  - Opening Proteus
  - Placing the devices of the circuit
  - Wiring the circuit
  - Programming the micro
    - ATmega32
  - Adding probes and sensors if needed



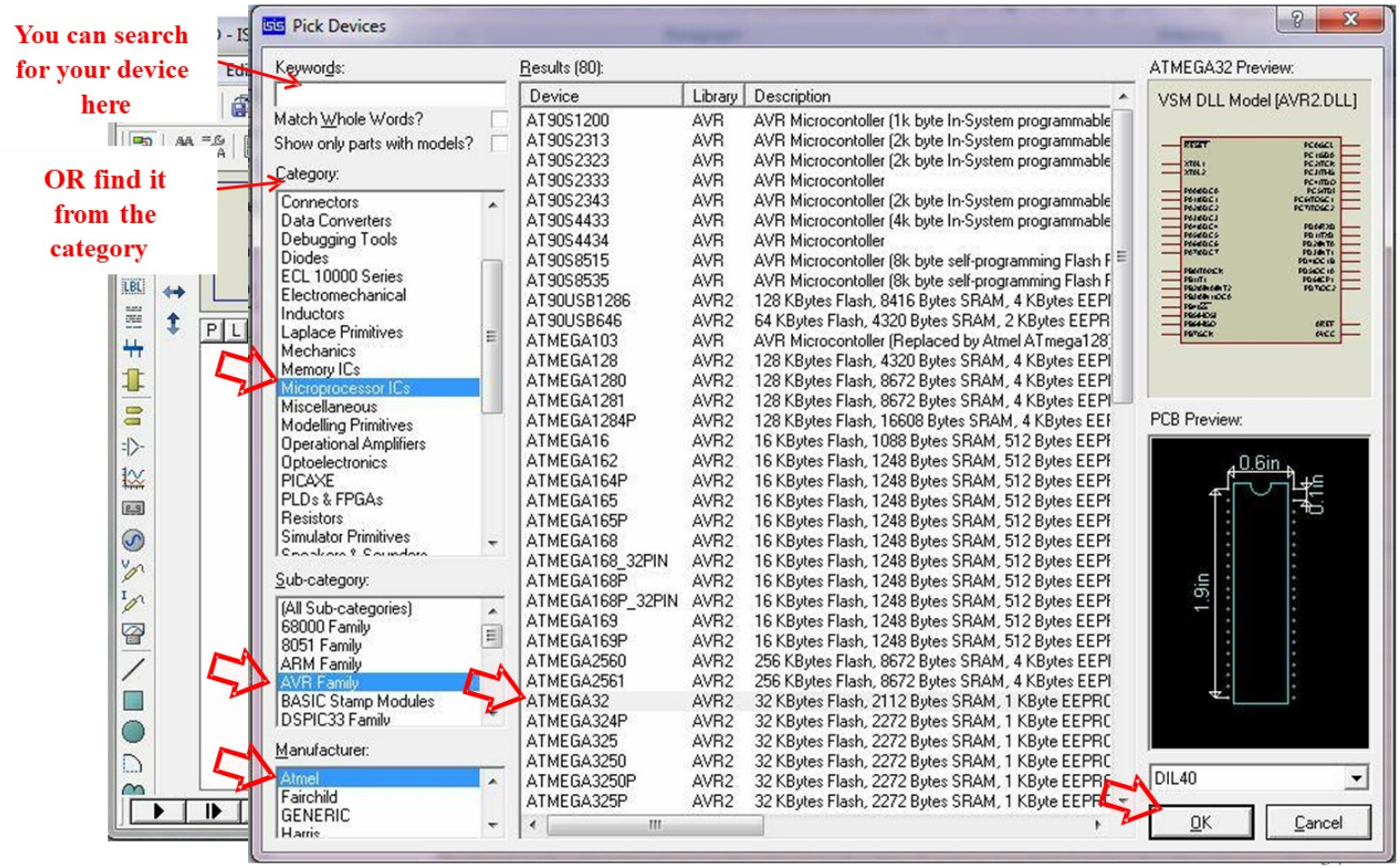
Design area


UNTITLED - ISIS Professional
File View Edit Tools Design Graph Source Debug Library Template System Help
DEVICES
No Messages
Root sheet 1
-9100.0 +6800.0

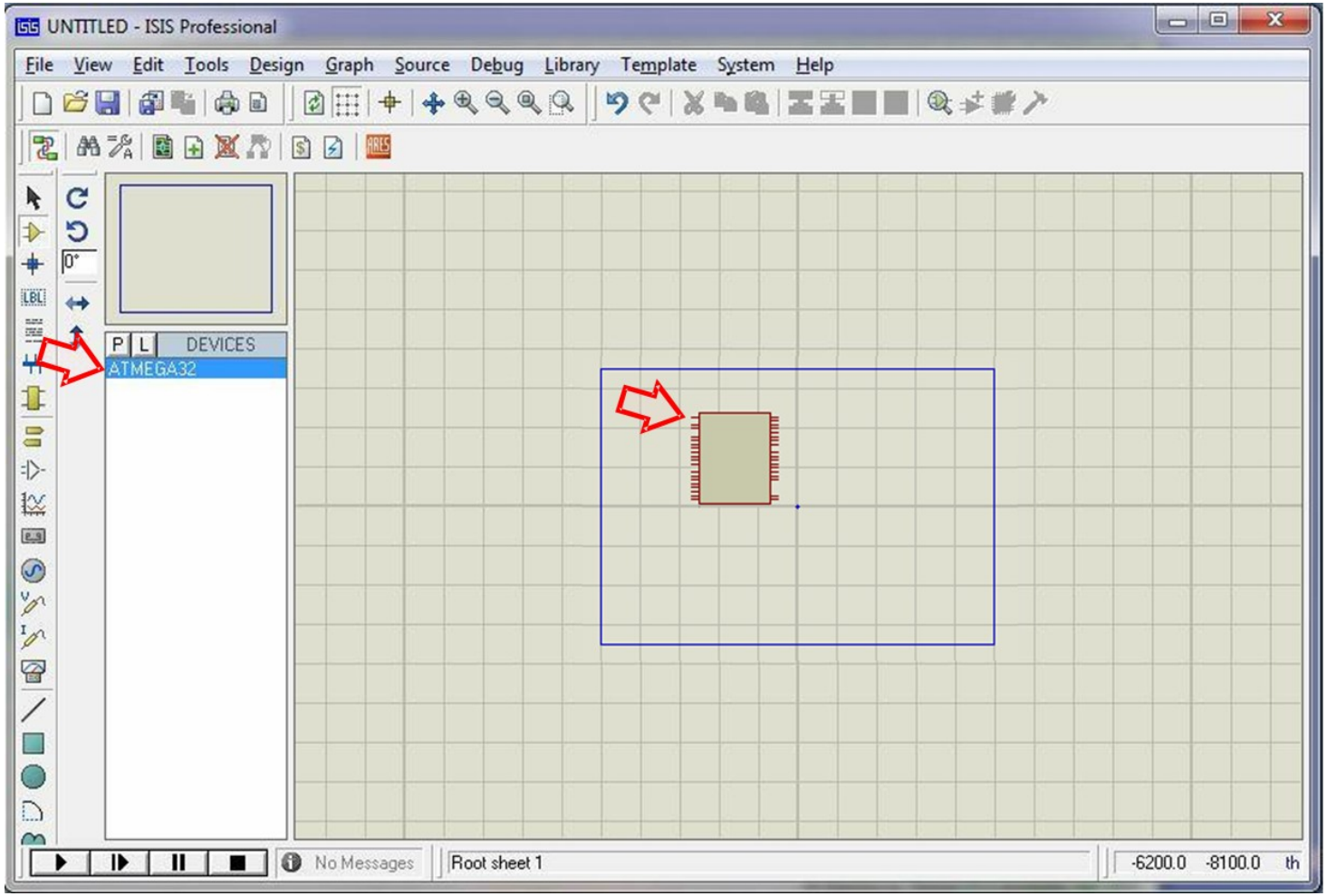
Design panel



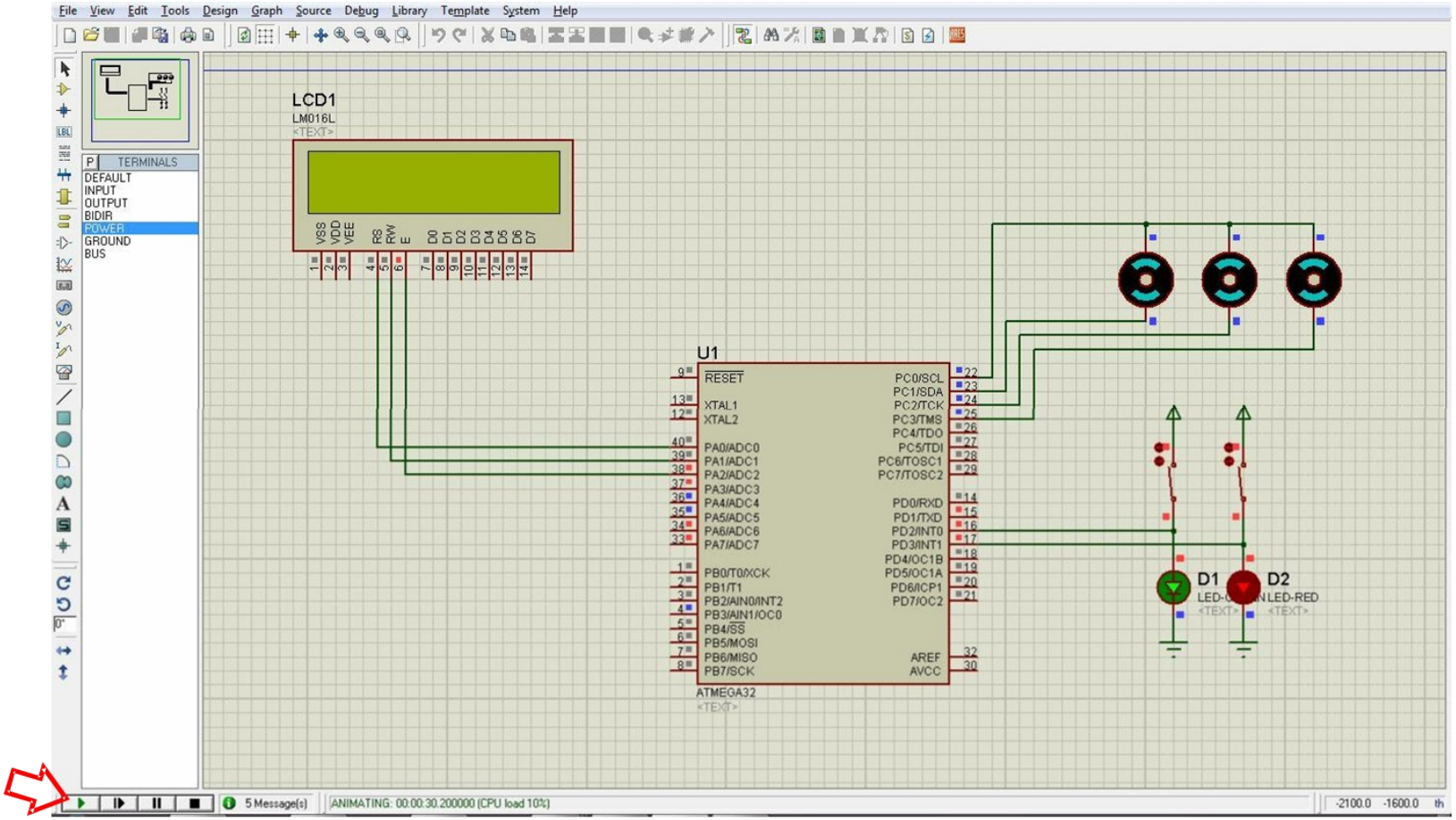
Component selection



Component placement



Running the simulation



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