A TUTORIAL FOR PIC C COMPILER AND ISIS SIMULATION

Aim of this tutorial is to show how to use PIC C COMPILER and ISIS simulator. Tutorial covers an object that writing a code to light a LED on 0th bit of PORTB. In this way, PORTB in PIC16F877A should be an output port. After showing how to open a project and how to write a CCS C code in PIC C COMPILER at part one, an ISIS simulation will be done at part two.

1. Introduction to PIC C COMPILER

1) Open PIC C COMPILER. Icon of the editor can be seen in **Figure-1**.

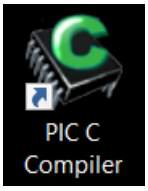

Figure-1

2) From the **"Project"** choose **"PIC Wizard"**. Click **"PIC Wizard"** in the **Figure-2** window.

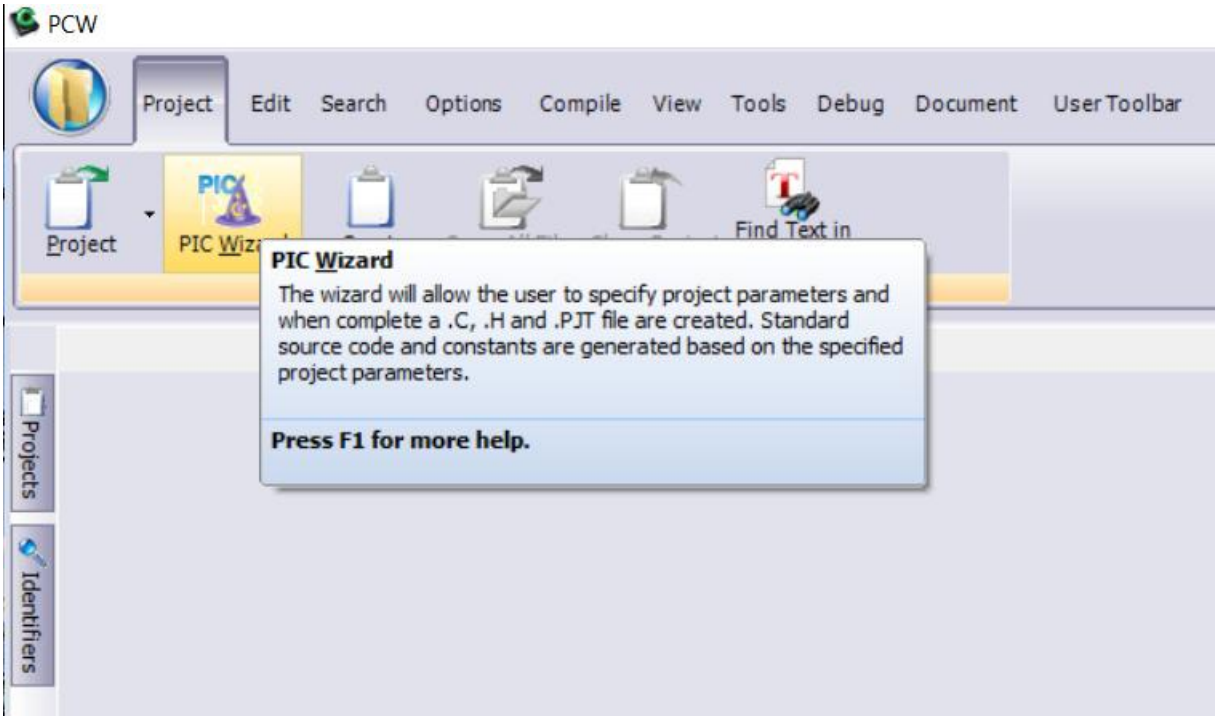

Figure-2

3) Open new file **“CCS C TUTORIAL”** and write file name **“hello_world”** in the **Figure-3** window and click **SAVE.**

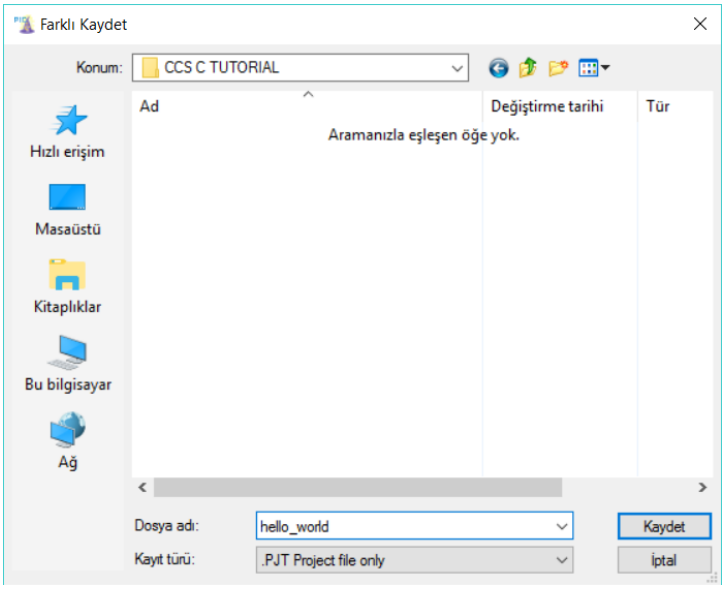

Figure-3

4) Select the device. In our case choose “**PIC16F877A**”. Select the fuses. In our case choose **“High speed Osc (>4mhz)”** and click “**OK**”.

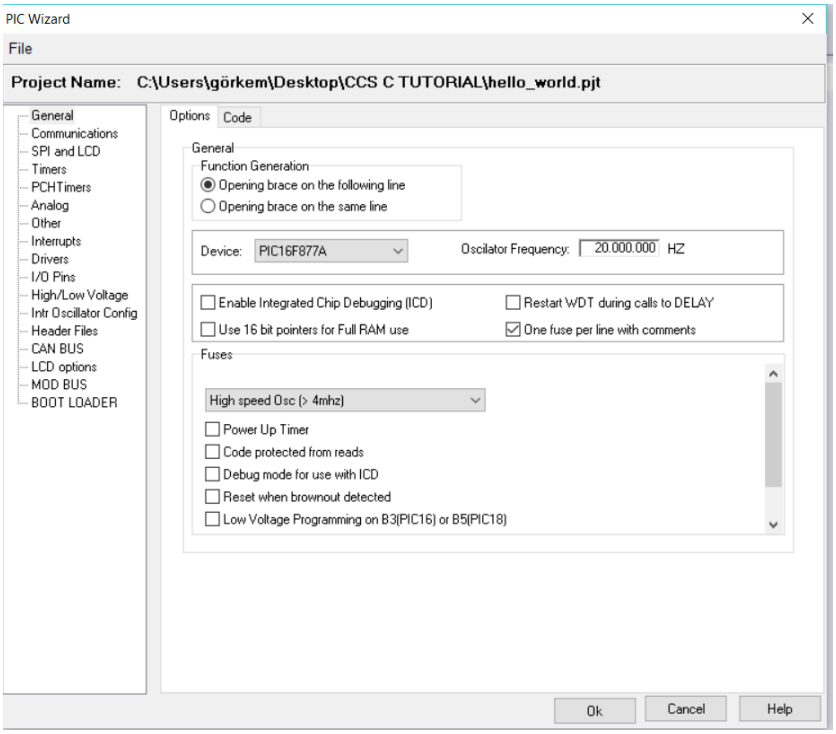

Figure-4

5) A default is opened as it seen in the **Figure-5**.

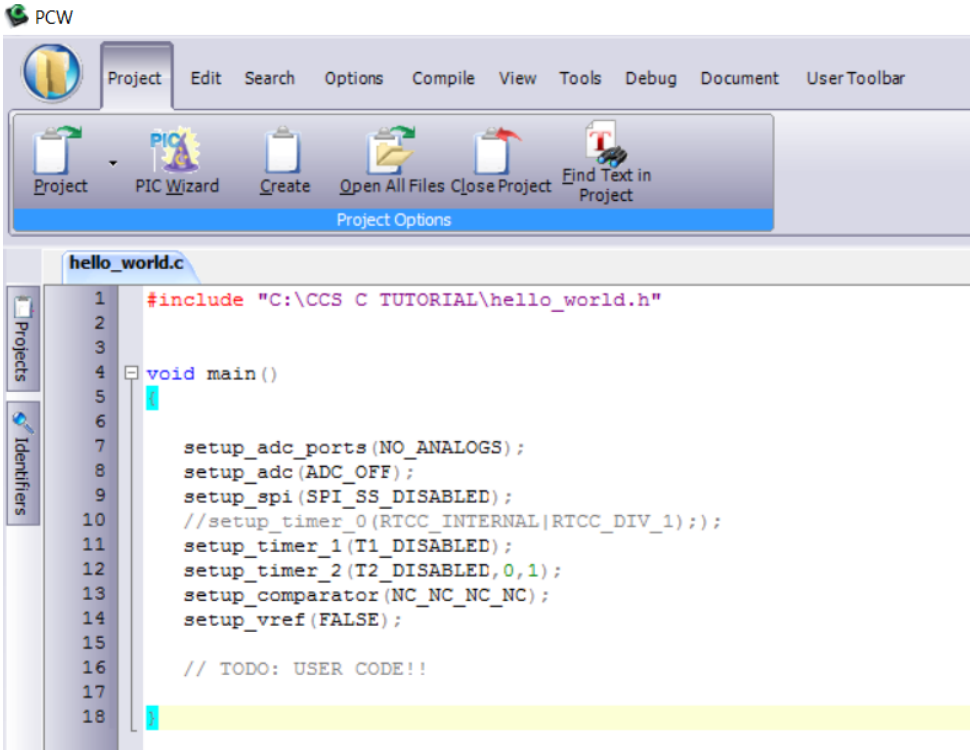

Figure-5

6) Aim of the project is to light the LED on the 0th bit of the PORTB. A sample code is written in **Figure-6**.

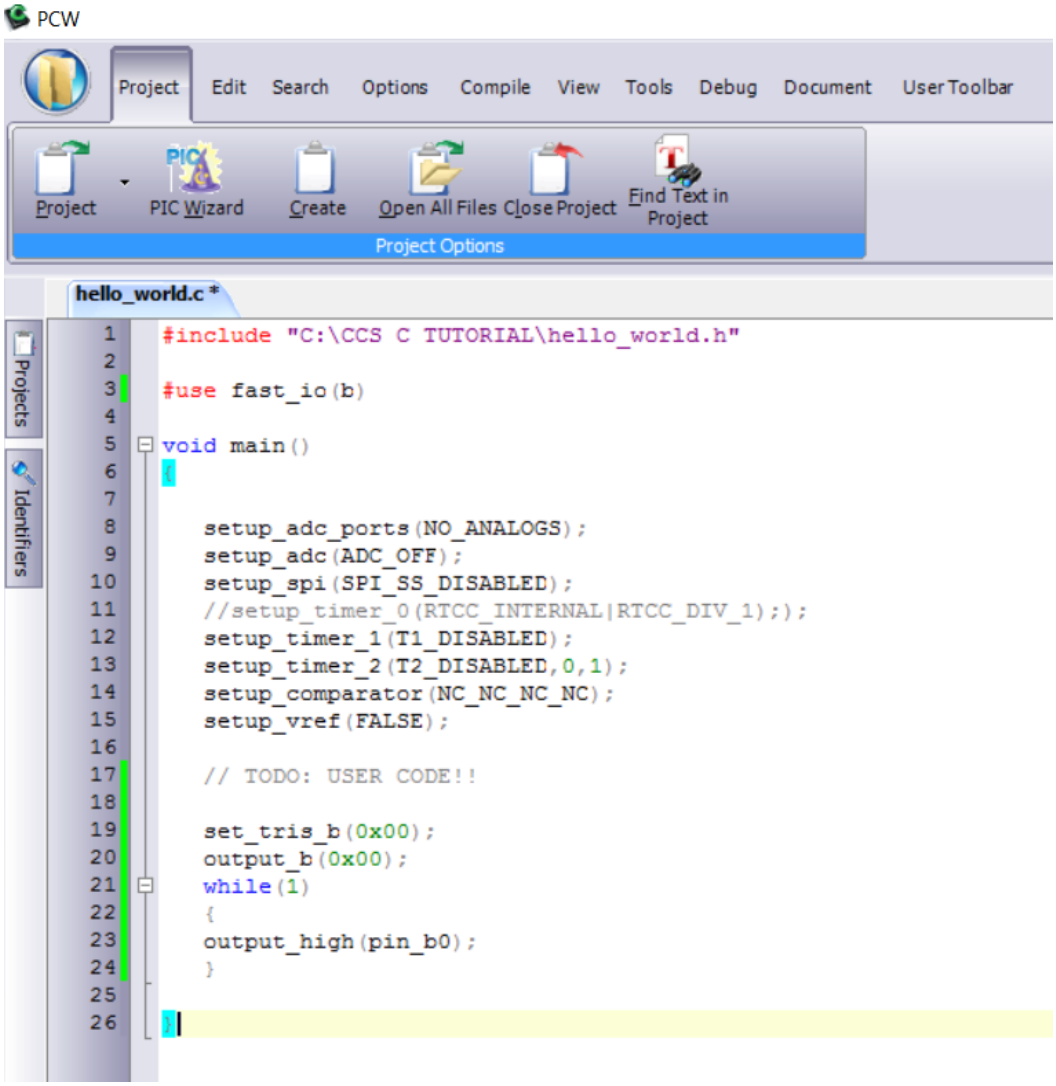

Figure-6

7) From the **"Compile"** choose the **"Build All".**

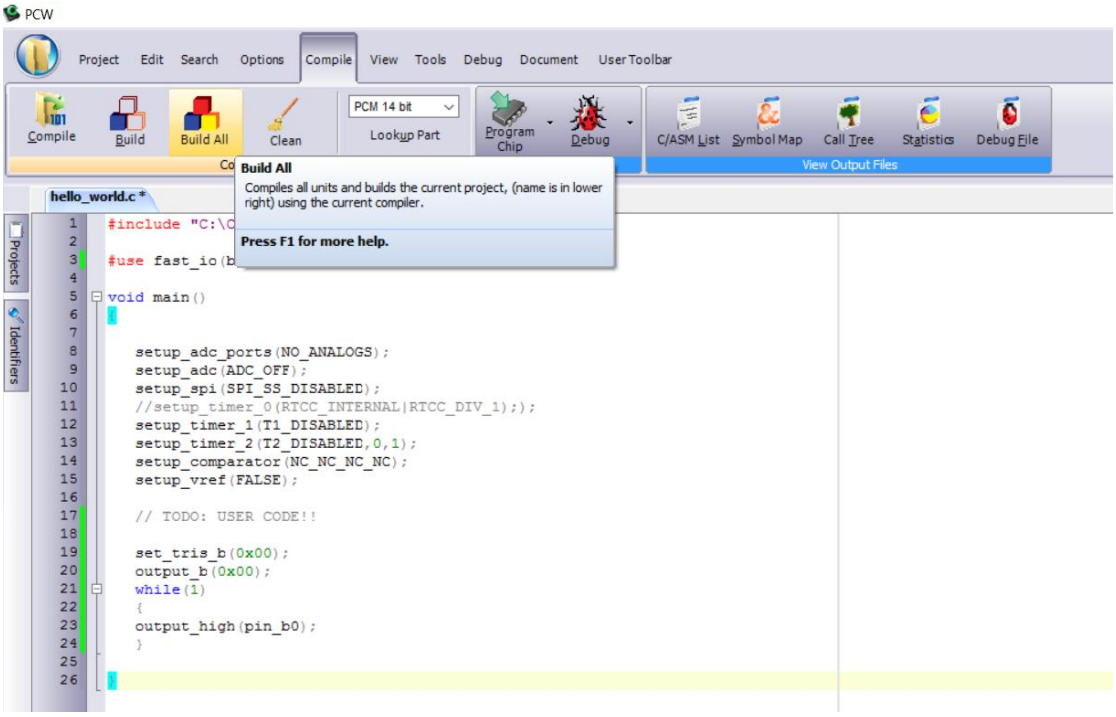

Figure-7

8) "Build" is completed and there is no error, **Figure-8.**

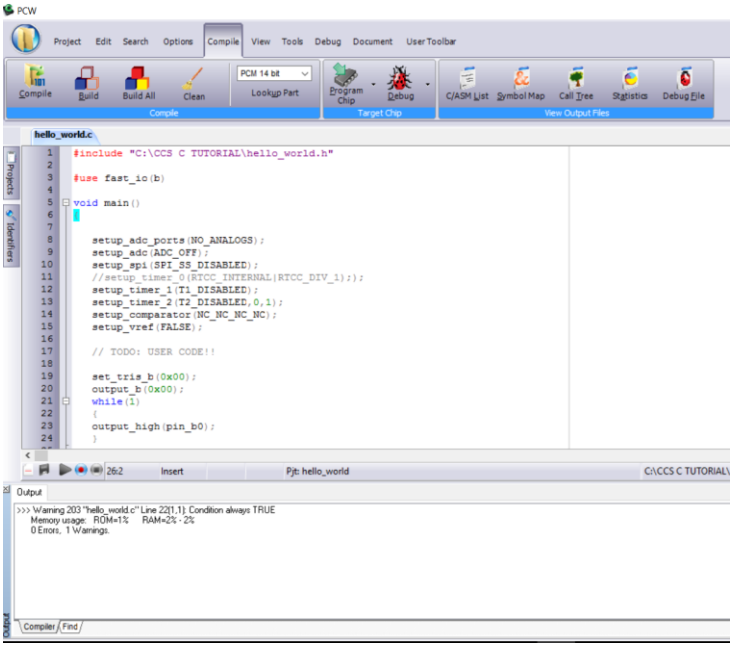

Figure-8

2. Simulate your assembly code in ISIS

1) Open ISIS, our simple project should be light the LED on 0th bit PORTB. In this scope, we need to add related components to the schematic project and construct the simulation circuit. In the **Figure-9**, a blank schematic page can be seen.

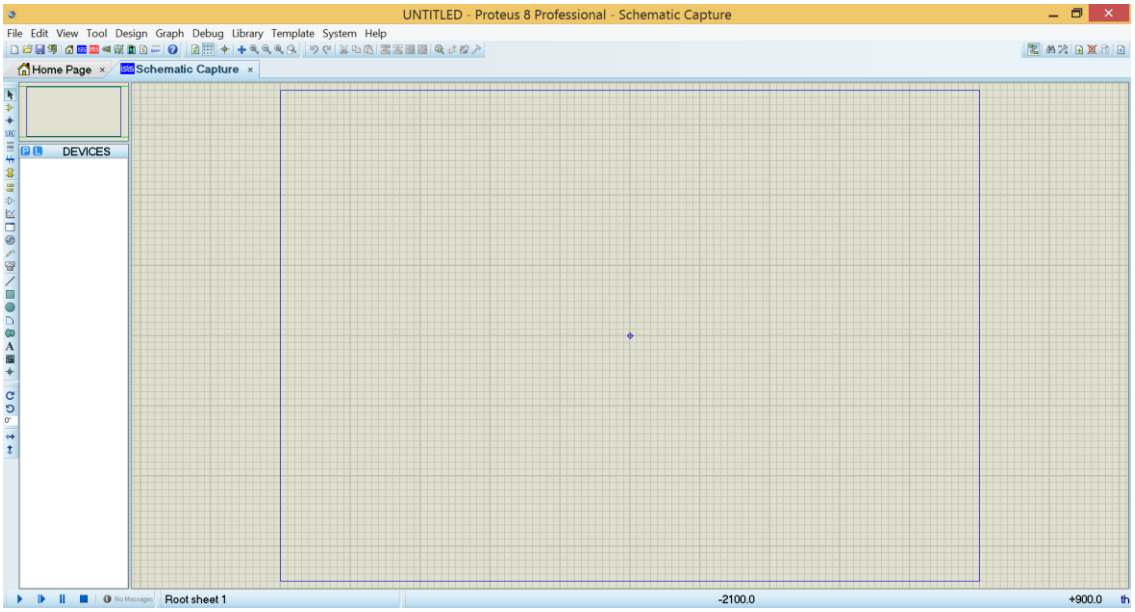

Figure-9

2) Circuit elements can be added from the ISIS libraries. At first click "Component Mode" icon, **Figure-10** step 1, then click "P" icon, **Figure-10** step 2, to open library window.

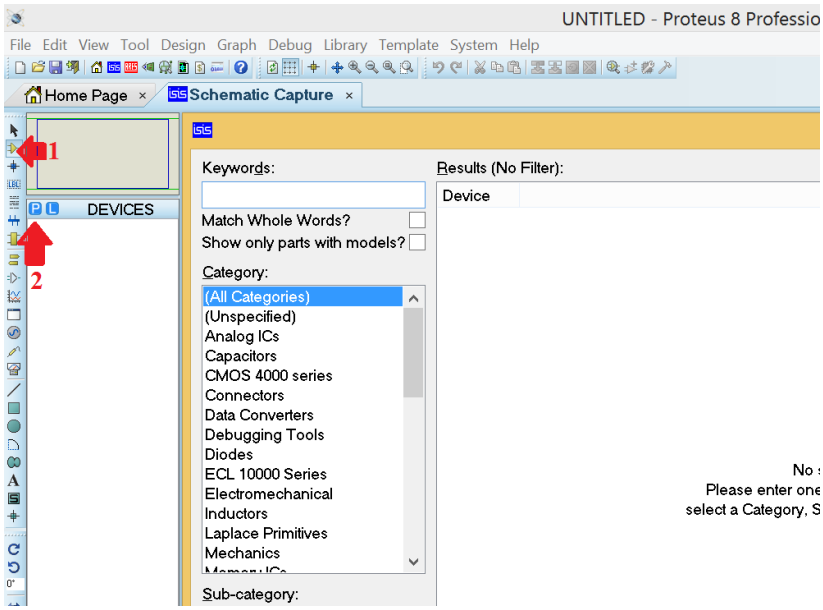

Figure-10

3) Type PIC16F877A, LED-RED, RES step by step then double click for each one. **Figure-11** shows the operation.

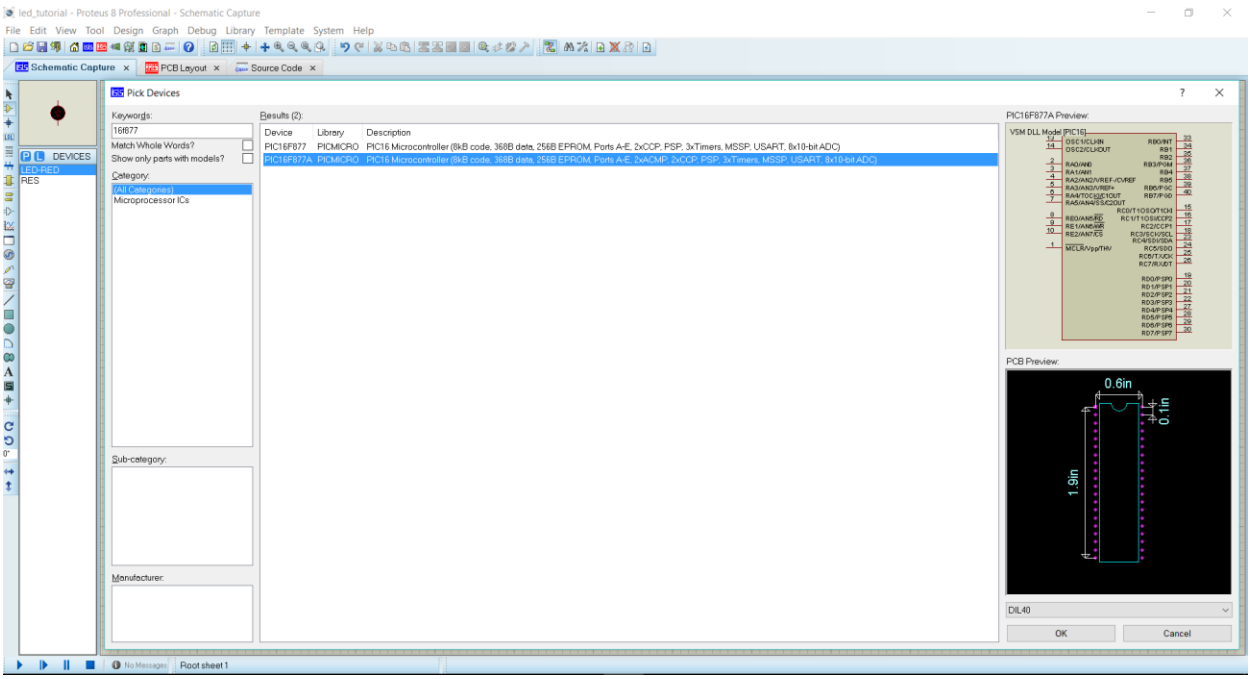

Figure-11

4) As seen in the **Figure-12**, circuit for the simulation of assembly code in the previous part is constructed. GND object has been taken from "Terminals Mode" part. It is important to mention that, OSC pins and MCLR pin are left floating. In the simulation, there is no need to add them however, they should be also used while constructing on breadboard or PCB.

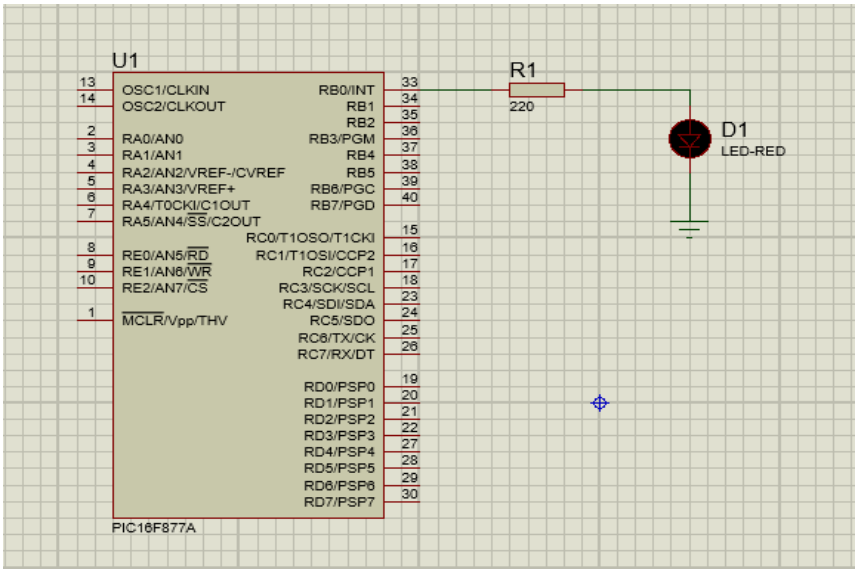

Figure-12

5)Circuit is constructed, now we need to load our ".hex" file to the PIC and run the simulation. By double clicking on the PIC16F84A IC on ISIS, a new window will be opened. From this window, choose your ".hex" file from the directory that you have created in part one. In Figure-13, ".hex" file is added and clock frequency of the IC is set to 20MHz.After setting these, press "OK" button.

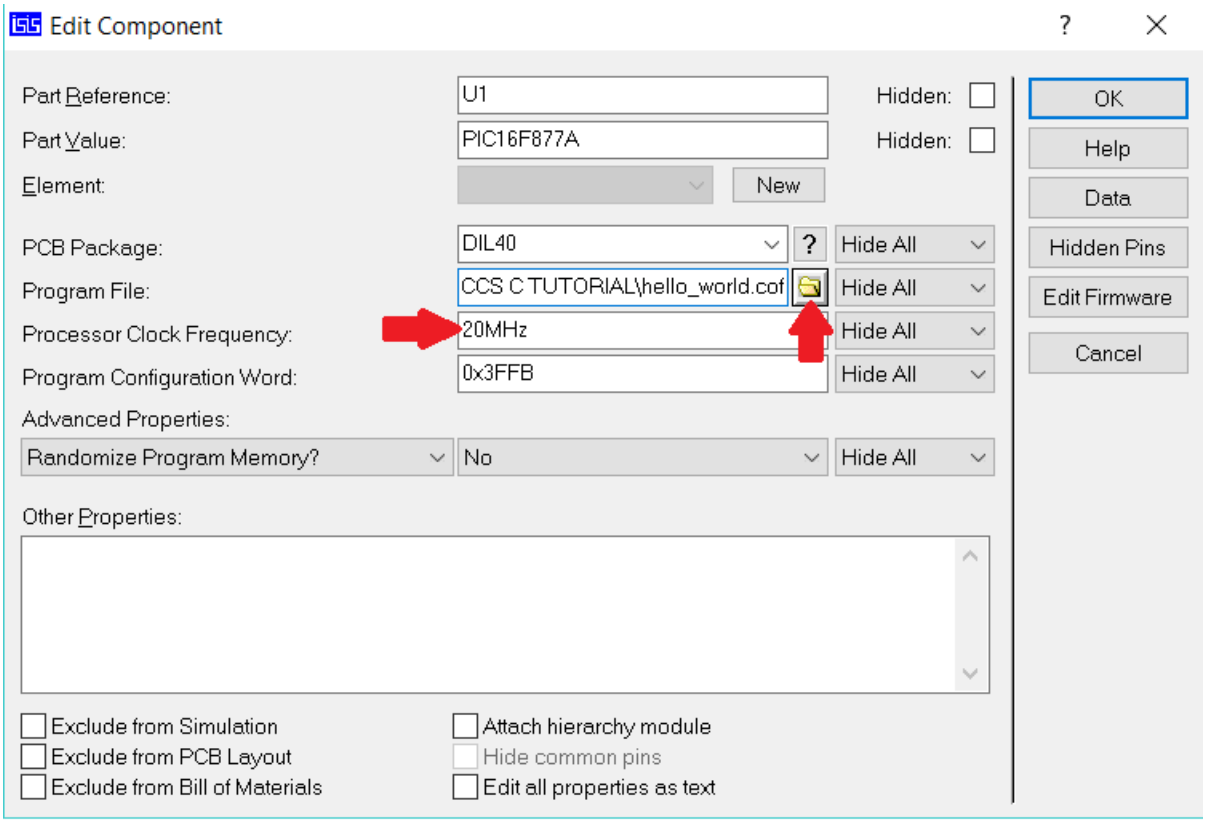

Figure-13

6) Program is set up on IC. Final step is to run the simulation. Click play button and see the result, **Figure-14**.

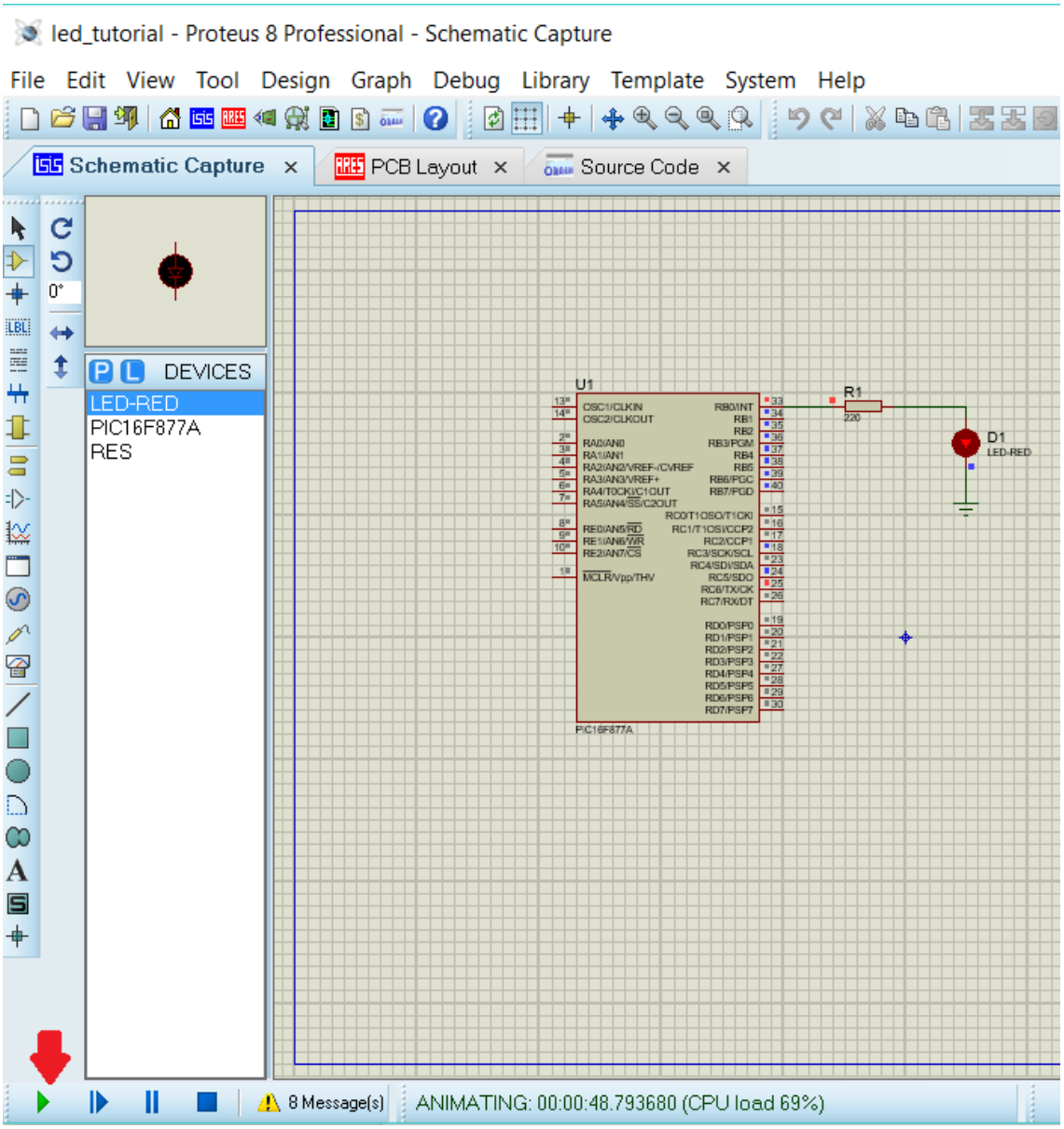

Figure-14

Prepared by A.ÇağrıArlı