

CHAPTER FOUR

SIMULATION AND SOFTWARE

4.1 Introduction

In chapter three we discussed circuit design and components; in this chapter we will discuss the simulation, software, and operation of the circuit.

4.2 Simulation

We use PROTEUS to simulate the circuit, PROTEUS is a software tool mainly used for electronic design automation. The software consists of a library tool option in which the designer can select the electronic components for the circuit and modify the values. Figure 4.1 shows the main window of PROTEUS.

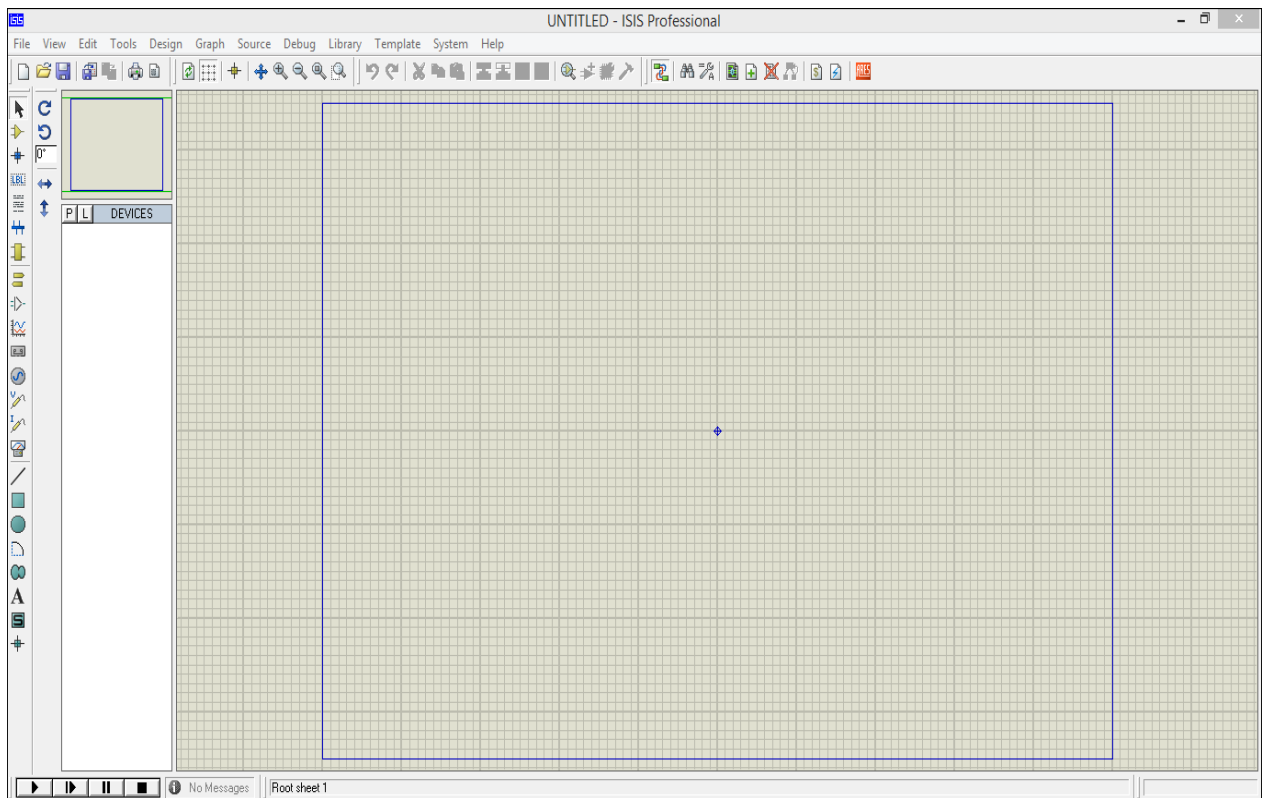


Figure 4.1 Main window of PROTUES

The circuit component is connected in PROTEUS program as shown in figure 4.2. The motors connected with drivers and driver connects with port D, the LCD connected with port B, and the keypad connects with port A.

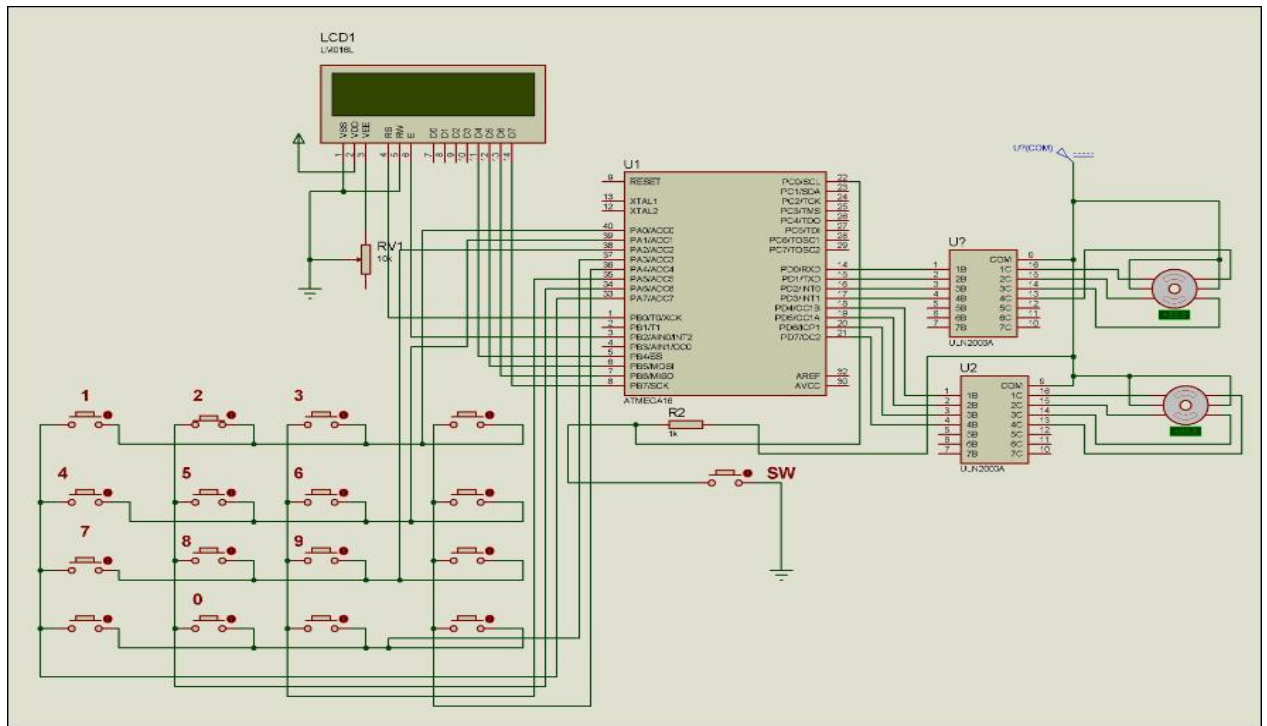


Figure 4.2 Circuit design by PROTEUS

4.3 Software Description:

The software is responsible for taking into consideration the input data and gives the required output signal to the linear control system. For this, we require an action perception loop. We have selected AT mega microcontroller and the code for it is written in Embedded Basic language. The programming of the microcontroller has been accomplished by using the “Bascom AVR Compiler”. The Embedded Basic language code has been successfully executed and programmed into the microcontroller .The BC is structured basic with labels. It supports structured programming with if-then-else-end if, do loop, while-when, select- case. Variables and labels in BC can be as long as 32 characters. Bit, Byte, Integer, Word, Long, Single and String variables. There are special commands for LCD-displays, I2C chips and 1WIRE chips. BC has integrated terminal emulator with download option .Integrated simulator for testing .It is

integrated flash programmer and also supports SPI, PG2051, PG302, SE512, SE514, TAFE and many more. It is context sensitive. For compatibility with BASCOM LT.

4.4 Operation Of The System

Press double clicks on the controller to edit the controller type, select the frequency value (8MHz) and load the program to the chip. Select Ok and then run the simulation from play button available at the bottom of the window. LCD display enters the password. In entry The driver enters the password by keyboard, the microcontroller receiving the password and checking if right or wrong, if it right send signal to motor one to open the gate and other motor chooses the parking location, After the driver parking his car and exit he press a pushbutton to send signal to motor to close the door. If the password is wrong LCD display reenter password. In exit driver enter another pas word , MC check it, and if it right MC send signal to open the gate and chooses the parking location, after the driver retrieved his car he press pushbutton to close the door.