Smart House

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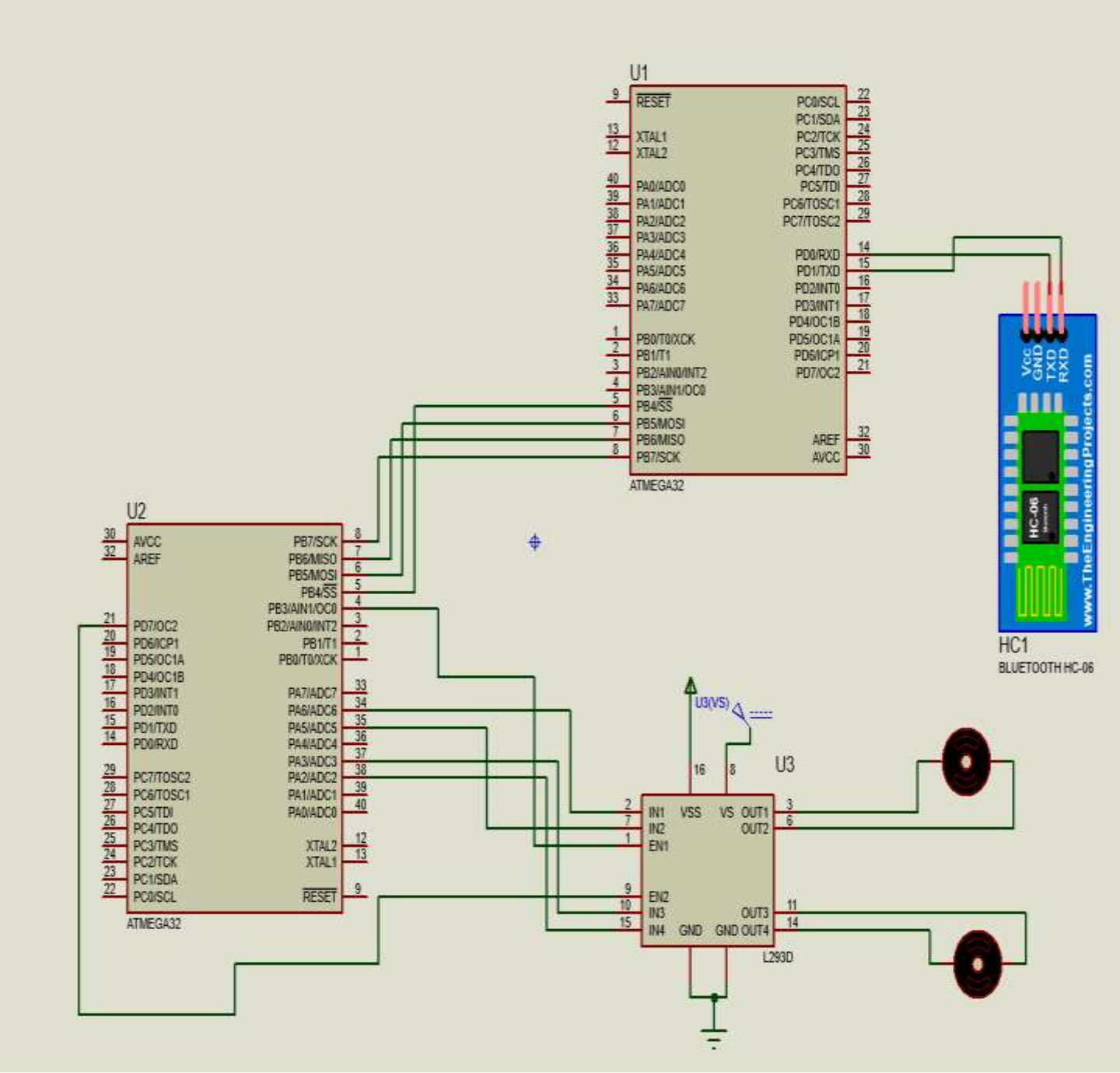
Date

30/9/2021

Course title

Embedded Systems

AMIT Final Project



Objective:

The purpose of this project to act as a final training for me to ensure that every concept that was mentioned during the course is fully understood for me , and obviously to earn my certificate for completion of the course.

Introduction:

This design is used to act as an aid for a smart house owner, as it provides for him control over his house through his mobile phone, without assistance of manually turning on switches.

Components Used and its references:

Components	Reference Number	Number
ATMEGA32	Un (U1, U2)	2
Brushful DC Motor	Mn (M1, M2)	2
L293d	U3	1
Bluetooth Module	HC1	1

Connections

For pins 10 and 11 (VCC and GND), they should be connected to 5V ,and ground respectively in both two ATMEGA32s.
For Bluetooth module HC1 Rx and Tx are connected to Tx and Rx of the Master Controller (U1) respectively. The VCC and the GND are connected to suitable voltage of 5V and ground respectively.
For U1 Master Controller all pins are disconnected except the Tx and Rx (pin 14,15) to the Bluetooth module as stated in previous point. The PB4, PB5, PB6 , and PB7 of the master controller (U1) are connected to the same named pi ns the Slave controller (U2).
As for the Slave controller, all pins are disconnected except stated pins in previous statement, and the following pins PB3/OCO and PDO/OC2 are connected to L293d module (U3) . PB3 and PDO are connected respectively to ENABLE1 and ENABLE2 for both channels of the DC motors. PA5 , and PA6 are connected to L293d INP1 , and INP2, while PA3 ,PA2, are connected to L293d INP3, INP4.
The L293d (U1) module Vss volt is to be determined by the user, and Vs is set to be 12V , and the rest of the pins are ground ,exempting all the stated pins in this statement and previous one.
Both DC motors are set to work on 12V with 10 ohm resistance.

Functionality:

The user uses his mobile phone to send 4 different types of signals to control his garage door and front doors of his villa. When the 4 signals that are shown in the upcoming table:

Signal	Function
A	Open Garage door (door 1)
B	Close Garage door (door 1)
C	Open Front door (door 2)
D	Close Front door (door 2)

For Signal A it commands the garage door to be opened. If it already opened the user is notified, and the garage will not open.

For Signal B it commands the garage door to be closed. If it already closed the user is notified, and the garage will not close.

For Signal C it commands the front door to be opened. If it already opened the user is notified, and the front will not open.

For Signal D it commands the front door to be closed. If it already closed the user is notified, and the front will not close.