ZEBRA CROSSING WITH AUTOMATIC SPEED BREAKER

AIM:

Design and Development of Zebra Crossing with Automatic Speed breaker.

PURPOSE:

 Speed breakers plays important role on roads to minimize vehicles speed to avoid accidents at zebra crossing places. Because of normal speed breakers all vehicles slow down even no people on zebra crossing. So that unnecessarily so much traffic stuck on roads because of normal speed breakers. To solve this issue, we need automatic speed breakers that will come up when needed. System has to identify people on zebra crossing and speed breaker should come up. This kind of speed breaker mechanism will save time of travel passengers by avoiding unnecessary speed breaker stops or slowdowns. The entire project controlled by Nodemcu microcontroller. Proposed project title is zebra crossing with automatic speed breaker using Nodemcu.

DESCRIPTION:

Nodemcu interfaced with Bluetooth UART port. Two IR sensors, traffic LEDs and servo motor interfaced with Nodemcu digital pins.

WORKING:

 Two IR Sensors placed both sides of zebra crossing. When IR sensor activated that means people wants to cross zebra crossing then speed breaker will be active and come up. Red LED will be ON for vehicles and Green LED will be ON for zebra crossing people or pedestrians. This information will update to android application using Bluetooth module.

TECHNICAL SPECIFICATIONS:

HARDWARE:

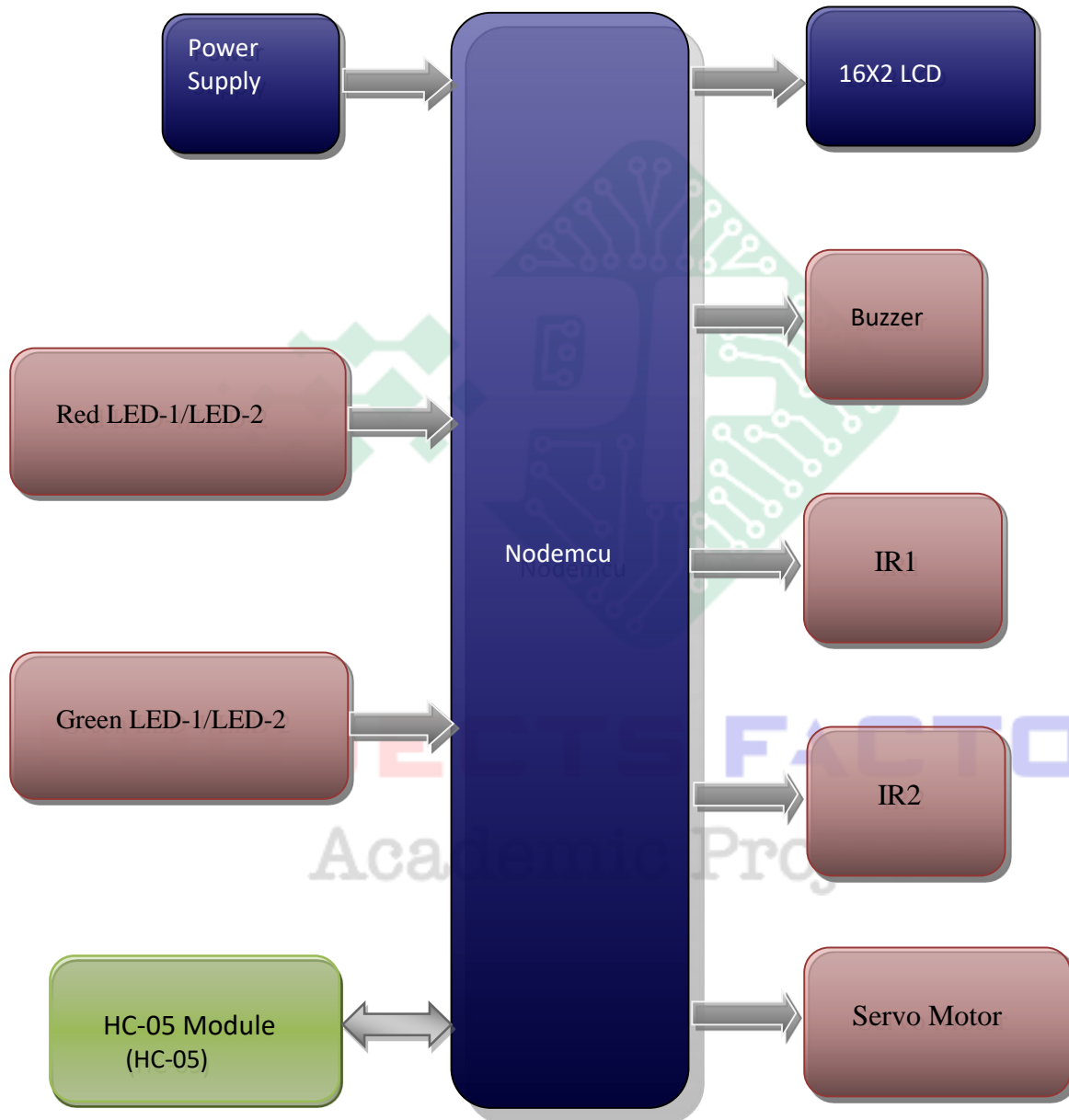|		
Microcontroller	:	Nodemcu-ESP32
Crystal	:	16 MHz
LCD	:	16X2 LCD
Servo Motors	:	SG/MG series
Traffic LEDS	:	Red and Green LEDs
Detecting Sensor	:	IR Sensors
Bluetooth	:	HC-05
Buzzer	:	5V DC
Power Source	:	12V 2 amp Adaptor

SOFTWARE:

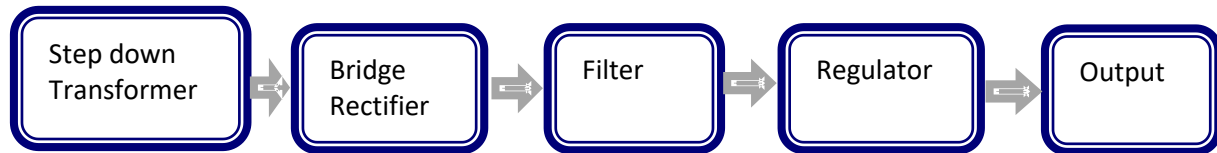Arduino IDE

Proteus based circuit diagram

APPLICATIONS:

- ➤ Zebra crossing applications
- ➤ Smart roads applications
- ➤ Smart cities applications
- ➤ Smart speed breakers
- ➤ Smart Zebra crossing with speed breaker

BLOCK DIAGRAM:

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Power Supply ──────► ┌─────────┐ ──────► 16X2 LCD
                     │         │
                     │         │ ──────► Buzzer
Red LED-1/LED-2 ───► │         │
                     │ Nodemcu │ ──────► IR1
                     │         │
Green LED-1/LED-2 ─► │         │ ──────► IR2
                     │         │
HC-05 Module ◄─────► │         │ ──────► Servo Motor
(HC-05)              └─────────┘
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POWER SUPPLY BLOCKDIAGRAM:

Step down Transformer → Bridge Rectifier → Filter → Regulator → Output

INTERFACES COVERD:

- We have covered Nodemcu and Bluetooth (HC-05) module interface
- IR sensors, Servo Motor and LED traffic light interface