AUTOMATIC SMART SPEED BREAKER BASED ON VEHICLE SPEED

AIM:

Design and Development of Automatic smart speed breaker based on vehicle speed.

PURPOSE:

The Automatic Smart Speed Breaker (ASSB) is a novel system designed to enhance road safety by dynamically adjusting speed breakers according to the speed of approaching vehicles. Speed breakers play a crucial role in controlling vehicular speed and reducing accidents. However, static speed breakers can cause discomfort to drivers and passengers, lead to vehicle damage, and contribute to environmental pollution. This abstract presents an innovative solution that leverages real-time vehicle speed data to automatically modify the height and profile of speed breakers, providing an adaptive approach to traffic calming. The proposed project title is Automatic smart speed breaker based on vehicle speed.

DESCRIPTION:

Servo motor (SG90) interfaced with ESP32 pwm pin. Two digital pins and traffic lights connected to ESP32 digital pins.

WORKING:

ESP32 has inbuilt WIFI module that can send data to IOT server. Two IR sensors placed side of the road to detect speed of vehicle. If vehicle speed is more than desired level then red traffic light will be ON, this will indicates to stop vehicles. Also, with the help of servo motor speed breaker will be enabled. This information will update to IOT server.

TECHNICAL SPECIFICATIONS:

HARDWARE:

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

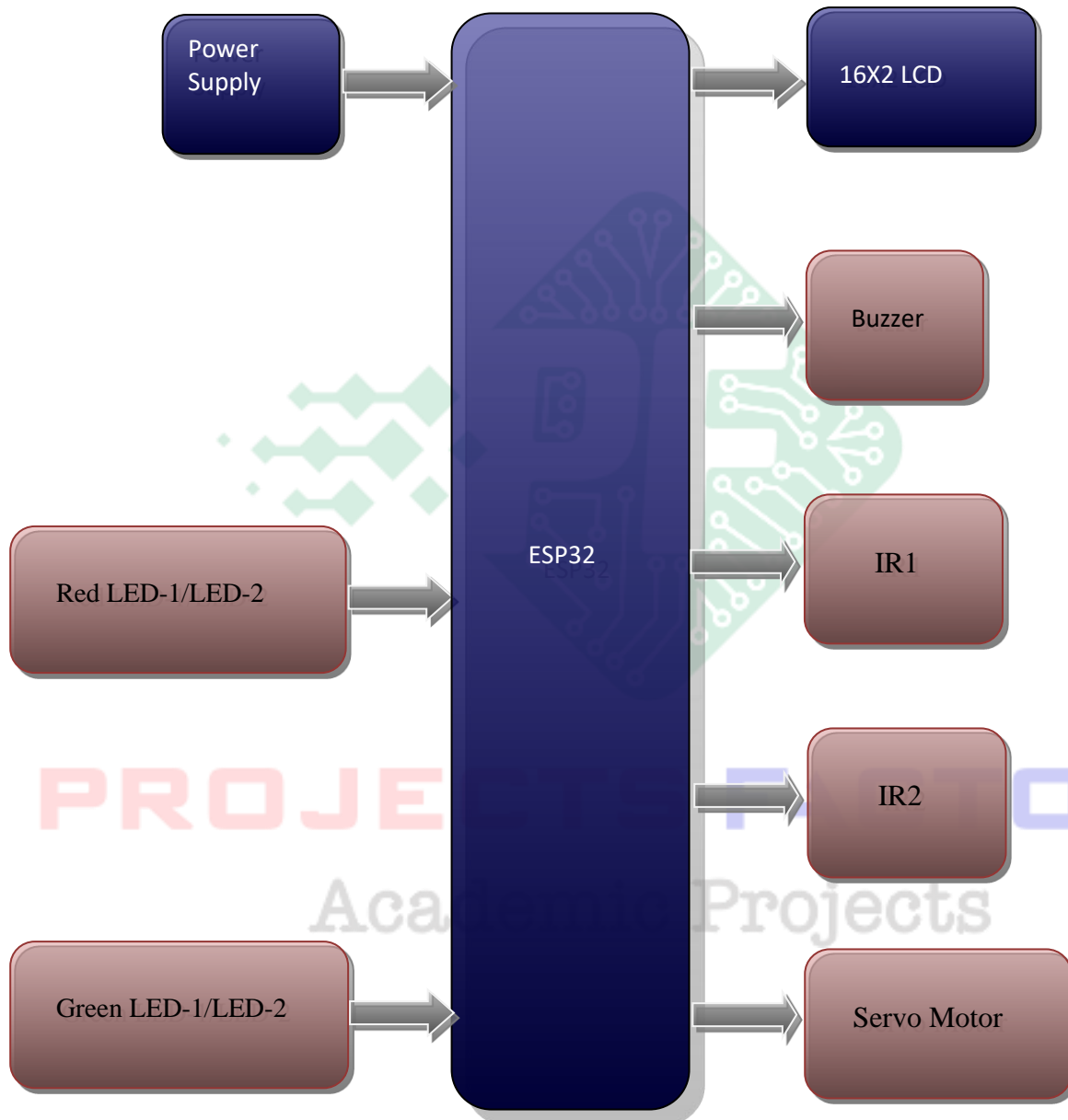### SOFTWARE:

Arduino IDE

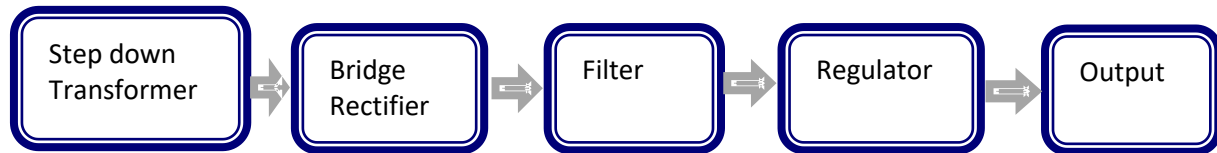Proteus based circuit diagram

APPLICATIONS:

➢ Smart Cities

➢ Automatic smart breaker

➢ Smart speed breaker technology

➢ Intelligent speed breaker

➢ Automatic speed breaker with IOT

BLOCK DIAGRAM:

```
  ┌──────────┐                                        ┌──────────┐
  │  Power   │ ──────▶                        ──────▶ │ 16X2 LCD │
  │  Supply  │                                        └──────────┘
  └──────────┘        ┌──────────────┐
                      │              │        ──────▶ ┌──────────┐
                      │              │                │  Buzzer  │
                      │              │                └──────────┘
  ┌──────────────┐    │              │
  │ Red LED-1/   │ ──▶│    ESP32     │        ──────▶ ┌──────────┐
  │ LED-2        │    │              │                │   IR1    │
  └──────────────┘    │              │                └──────────┘
                      │              │
                      │              │        ──────▶ ┌──────────┐
                      │              │                │   IR2    │
  ┌──────────────┐    │              │                └──────────┘
  │ Green LED-1/ │ ──▶│              │
  │ LED-2        │    │              │        ──────▶ ┌────────────┐
  └──────────────┘    └──────────────┘                │ Servo Motor│
                                                       └────────────┘
```

POWER SUPPLY BLOCKDIAGRAM:

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

INTERFACES COVERD:

- We have covered ESP32 and IOT interface
- IR sensors, Servo Motor and LED traffic light interface