IOT CAR PARKING SYSTEM USING ARDUINO

AIM:

Design and development of IOT based car parking system using Arduino.

PURPOSE:

Car parking is very difficult in modern cities. Everyone park their vehicle in front of shopping malls. It creates so much of traffic jams. There is no organized parking system not available. Here we have solution that IOT based car parking system using Arduino.

DESCRIPTION:

This project includes WIFI (Esp8266/IOT module) which is connected to Arduino through UART interface. IR sensors connected to Arduino IOs to detect parking lots and entry/exit. Two DC motor connected Arduino through H-bride IC (L293d). These two DC gear motors are for entry exit gate operations respectively.

WORKING:

Here three IR sensors placed at parking slots to identify vehicle parked or not. One more IR sensor placed at entry path and Other IR placed at exit path. When car enters from entry side Arduino checks for vehicle parking status. If anyone slot empty then entry gate will be open. If no slot empty then entry gate will not open. While Leaving from slot gate will be open by triggering exit IR sensor. Slots parking status will be displayed on LCD continuously. WIFI (ESP8266/IOT) module sends parking information to IOT server when any car come near to entry sensor. User can see data in IOT server from anywhere.

TECHNICAL SPECIFICATIONS:

HARDWARE:

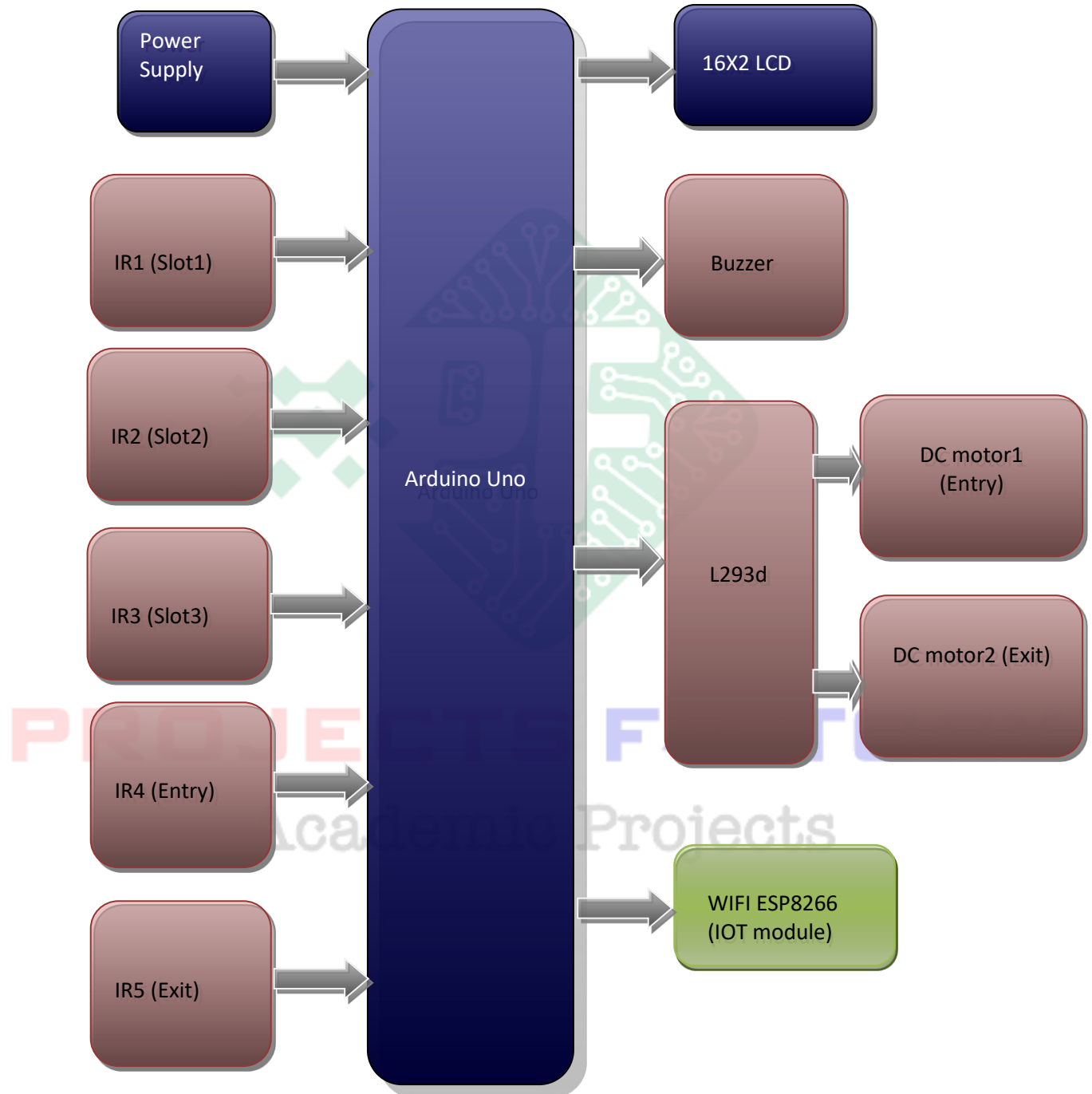|		
Microcontroller	:	Arduino Uno
Crystal	:	16 MHz
LCD	:	16X2 LCD
WIFI	:	Esp8266 (IOT module)
H-Bridge	:	L293d
DC gear motor	:	100 r.p.m
IR sensor	:	5v DC
Buzzer	:	5v DC
Power Source	:	12v 2 amp Adaptor

SOFTWARE:

Arduino IDE

Proteus based circuit diagram

APPLICATIONS:

➢ Parking management
➢ Shopping malls
➢ Movie theatres

BLOCK DIAGRAM:

```
Power                    ┌──────────┐                  ┌──────────┐
Supply  ────────────►    │          │  ──────────►     │ 16X2 LCD │
                         │          │                  └──────────┘
                         │          │
IR1 (Slot1) ─────────►   │          │  ──────────►     ┌──────────┐
                         │          │                  │  Buzzer  │
                         │          │                  └──────────┘
IR2 (Slot2) ─────────►   │          │
                         │ Arduino  │                  ┌──────────┐   ───►  ┌──────────────┐
                         │  Uno     │                  │          │         │  DC motor1   │
IR3 (Slot3) ─────────►   │          │  ──────────►     │  L293d   │         │  (Entry)     │
                         │          │                  │          │         └──────────────┘
                         │          │                  │          │   ───►  ┌──────────────┐
IR4 (Entry) ─────────►   │          │                  │          │         │ DC motor2    │
                         │          │                  └──────────┘         │  (Exit)      │
                         │          │                                       └──────────────┘
                         │          │  ──────────►     ┌──────────────┐
IR5 (Exit) ──────────►   │          │                  │ WIFI ESP8266 │
                         └──────────┘                  │ (IOT module) │
                                                       └──────────────┘
```

POWER SUPPLY BLOCKDIAGRAM:

Step down Transformer → Bridge Rectifier → Filter → Regulator → Output
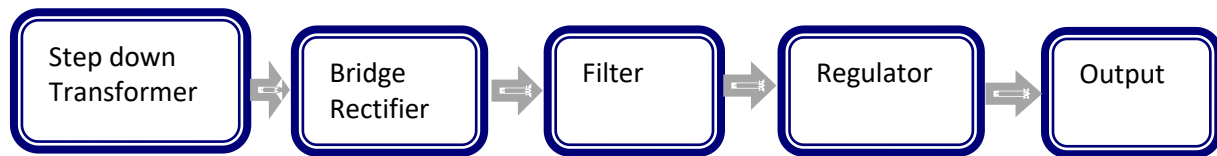
INTERFACES COVERD:

- We have covered WIFI (ESP8266/IOT) module interfacing
- L293d for motor controls
- Digital IR sensors