**Abstract**

**Project Title** – **“**Smart Automatic Petrol Pump System Based on RFID and ESP8266**”**

# Introduction –

Internet of Things (IoT) is the network of joined devices, mechanical and digital machines, automobiles, home appliances and other things inserted with sensors, software, control keys and connectivity which allow these things to attach to a network and gather and exchange data .Smart petrol pump is a petrol pump based on internet of things, where the rise in the number of cars in current years has guided to the congestion and traffic jams in almost all cities The supply of the fuel to this enormous number of automobiles at the fuel stations has produced many difficulties in Iraq. The automobile driver has to pay for fuel with cash money and may have to pay above than the amount of distributed fuel because of the lack of small money change unused with station worker. The role of the software and hardware that base the Arduino program is to reduce problems when working on an electronic project .ATmega2560 is an electronic circuit board that support you make shared objects by evaluating information from the real world, treating these information, and then getting action in the world suitably .This paper focus on design RFID based automated petrol pump to reduce human roles and develop an auto- led technique and to do the work serially by using RFID technology. The radio frequency technology has improved the old-style methods of data collection.The UHF band RFID technology has been commonly accepted due to its large read range, and low-cost tags. The antenna plays an significant function in the entire system structure. Hence, the antenna designer must have to study totally features for example performance, integration environment and real requirements in terms of space and cost, to meet the customers’ conditions.

LCD 16×2

# Block diagram –

ThingsSpeak.com

Atmega 2560 microcontroller

Power supply

RFID reader

Ultrasonic sensor

Regulator

I805

keypad

MOTOR

PUMP

Relay

Esp 8266 MODULE

# Hardware:

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**ATmega328 Microcontroller:**

This microcontroller serves as the central processing unit for your project. It controls and manages the interaction between various sensors and devices, processes data, and makes decisions based on the inputs received.

**SR04 Ultrasonic Sensor:**

The SR04 ultrasonic sensor is used for distance measurement. It emits ultrasonic pulses and measures the time it takes for the pulses to bounce back from an object, allowing you to calculate the distance to that object.

**RFID Reader:**

The RFID reader is used to read RFID tags, allowing you to identify and authenticate users or objects. It communicates with the RFID tags and sends the data to the microcontroller for processing.

**Keypad:**

The keypad provides a user interface for inputting data or commands. It can be used to enter PINs, codes, or other information into the system. It usually consists of a set of buttons arranged in a grid.

**Relay:**

A relay is an electromechanical switch used to control high-power devices like a water pump. It can be used to turn the water pump on and off based on the control logic of your project.

**Water Pump:**

The water pump is responsible for pumping water or other liquids. In your project, it could be used for tasks like dispensing water, filling containers, or controlling a water-based system.

**ESP8266 Wi-Fi Module:**

The ESP8266 Wi-Fi module provides wireless connectivity to your project. It can be used for remote monitoring, control, or data transfer over Wi-Fi. The module allows your project to communicate with other devices or a central server.

**LCD 16x2 Display**:

The LCD 16x2 display is used to provide visual feedback to the user. It can display information, messages, status, and other relevant data. This type of display consists of two lines, each capable of displaying up to 16 characters.

Bottom of Form

# Software:

**Arduino IDE (Integrated Development Environment):**

Description: The Arduino IDE is an open-source software platform used for programming and developing applications for Arduino microcontroller boards. It provides an easy-to-use interface for writing, compiling, and uploading code to Arduino boards.

**Express PCB (ExpressSCH and ExpressPCB):**

Description: Express PCB is a PCB (Printed Circuit Board) design software suite that includes ExpressSCH for schematic capture and ExpressPCB for PCB layout design. It is intended for creating custom circuit boards for electronic projects.

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**Applications**

* The primary application is in traditional petrol and diesel fuel stations, where it can streamline the fueling process, enhance security, and improve user experience.
* The system can be adapted for EV charging stations, making it convenient for EV owners to access charging services and manage their accounts seamlessly.
* Companies with vehicle fleets can use this system to efficiently track and manage fuel consumption, automate refueling, and monitor driver behavior.
* Private individuals or businesses with their fueling stations can adopt this system for personalized and secure fueling.

# References:

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