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Authenticated Automatic Ration Shop using RFID and GSM

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Abstract: ***The main aim of the project is to automize the ration materials distribution system for the public. The goal of this project is to provide the ration materials automatically using RFID technology. The existing system consists of manual ration distribution process. The proposed system discusses about automatic material distribution that includes user data entry section in which the user will enroll their user ID and password. The proposed system also contains automatic weighing section and GSM module. The automatic weighing section scales the authorized measure of the ration materials like sugar, rice, etc. and distributes to the customer in exact measure. The outcome of the project is to reduce the unnecessary ration materials distribution.***

Keywords: RFID, GSM Module, HMI, Programmable Logic Controller (PLC)

I. INTRODUCTION

As the ration material distribution in recent scenario consumes more time to distribute the material due to population.The user spent more time to waiting the queue. Automatic ration dispensing system is useful for automatic and more efficient way of ration distribution. This project is designed to minimize the manual intervention in thedistribution, so that more transparency & efficiency can be maintained. In that system various products like rice, sugar and kerosene are distributed using conventional ration shop.And also the chance of illegal usage of our product in the conventional system i.e. the materials are robbed by making wrong entries in the register without knowledge of the ration card holder. Due to human operations the working hours of the ration shops are restricted, so that the user cannot be able to get the materials at any time.To overcome these problems we go for the automation of the ration shop using PLC.In automatic ration shop we use PLC for controlling purpose.The controller outputs are used to drive motors and solenoid valves.

II. LITERATURE SURVEY

The paper [1] followed as Automatic rationing shop using embedded system technology. In this paper ration distributed system is automatic by using PLC. The main aim of this paper is to run by the system in the use of solar power.High cost and difficult implement. The paper [2] followed as fair price shop tracking system.The system overcome the corruptionin the fair price shop by using thumb detector .Secure for thebelow poverty line card hold for getting food and grains manual distribution.

The paper [3] followed a systematic application for public distribution ration shop. The aim of this system to haveofficerdealer and consumer will access for the supply of grains and rice .Efficient process for data registers. Time consuming and manual datawebsite entry may leads to corruption. The paper [4] followed as Smart ration distribution and controlling. This paper is not efficient way of ration distribution.In this system smart card is used instead of ration card.

III. BLOCK DIAGRAM

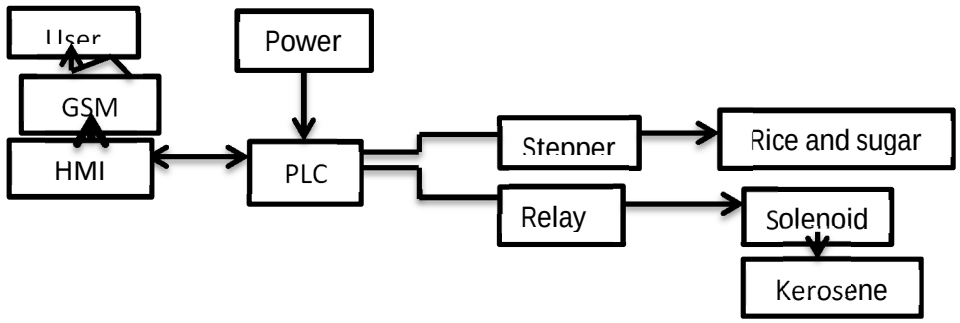

Fig. 1 – Block Diagram of Automatic Ration Material Distribution System

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IV. CONCEPT OF THE BLOCK DIAGRAM

The user will register their user name and password. After the successful verification the user will select the materials using Human Machine Interface. Weighing machine mainly used to calculate the weight of the materials.If the user's want rice means stepper motor will automatically rotate in clock wise and distribute the rice. After current quantity of materials distribution, the stepper motor will be automatically stopwith help of IR sensor for avoiding the wastage of materials. Suppose if user's select sugar means stepper motor will be rotate in anti -clockwise and distribute the sugar. If user's want kerosene means the solenoid valve will be automatically open and distribute the kerosene. Here liquid level sensor is used to identify the flow and the level of liquid in a particular container. The processor will be interface with GSM for communicate to the user's mobile.

V. MODULES OF THE PROJECT

A. Hardware

1) HMI
2) PLC
3) RFID
4) GSM module
5) Stepper motor
6) Relay
7) Weighing section
8) Solenoid valve

B. Software

C. GSM Modem

1) In GSM modem must have active service plan that allows for sending and receiving of text messages.
2) In many cases you can get a data only plan.
3) Once the modem has been prepared for the use connect to the serial port on your PC using that data cable included with the modem.
4) The flashing light on a GSM modem is indicates the modem is receiving the power and that is communicating with the mobile networks.
5) If the light is not flashing on a GSM modem is not receiving the power.

VI. RELAY

Relays are the primary protection as well as switching devices in most of the control processes or equipment regardless of whether they are electronic or electromechanical. All the relays respond to one or more electrical quantities like voltage or current such that they open or close the contacts or circuits. A relay is a switching device as it works to isolate or change the state of an electric circuit from one state to another. These are found in all sorts of devices. Relays allow one circuit to switch over to a second circuit that can be completely separated from the first. There is no electrical connection inside the relay between the two circuits – the link is magnetic and mechanical only.

Basically a relay consists of an electromagnet coil, an armature, a spring and a series of electrical contacts. The electromagnet coil gets power through a switch or a relay driver and causes the armature to get connected such that the load gets the power supply. The

armature movement is caused using a spring. Thus, the relay consists of two separate electrical circuits that are connected to each other only through a magnetic connection, and the relay is controlled by controlling the switching of the electromagnet.

VII. SOLENOID VALVES

The valves are used to stop the flow of a fluid orstart the flow of fluid in a piping configuration. The type of solenoid valve refers to whether that valve is a 2-way, 3-way or 4-way. A 2-way valve has two port connections an input port and an outlet port.Usually, a 2-way valve is referred to as a 2/2 valve, which mean the valve has two port and two position. The positions are: 1) on or energized and 2) off or de-energized.

Three way valves have three ports an input port, a cylinder port and an exhaust port. A 3-way valve's most common application is for process valve automation. The solenoid sends air to a spring return actuator or cylinder, which creates rotational movement to open or close a process derived.

VIII. ADVANTAGES

A. Reliability.
B. Make operation easy
C. Visualization.
D. Flexibility.
E. Transparency.

IX. CONCLUSION

Our project focuses design and implementation of Automatic of Ration Shop. In recent scenario, all the public and private sectors go for automation in their process. In that system various product like Rice, Sugar and Kerosene are distributed using conventional ration shop.

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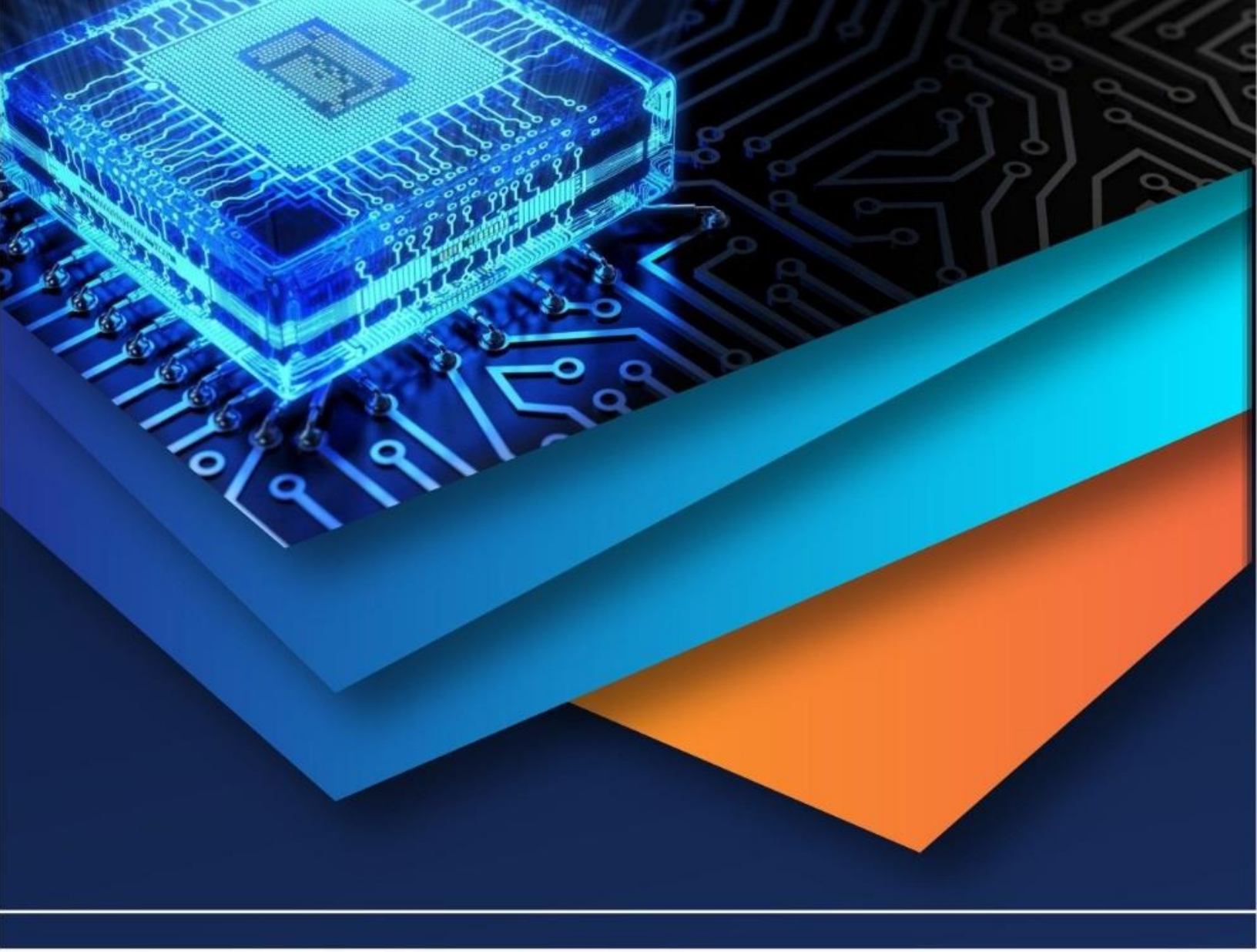

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