**An Analysis of Li-Fi based Prevalent Automated**

**Billing Systems in Shopping Malls**

**Alternative title:**

**Efficient automatic billing process in shopping trolley**

**Aim:**

Aim of the project is IoT based automated billing machine for shopping malls. This over all process is controlled by cloud (IoT). Aim of this IoT section is reducing main computer process and logic convertor.

**Introduction:**

This paper is proposed IoT based billing details stored system with automatic bill generator system. This system is get over all product details and cost send to cloud it is reduce time, main computer storage and hardware cost. Shopping trolley is containing thermal printer, RFID reader and wifi device. Thermal printer is used to generate bill amount. RFID reader is used to read product details. Wifi device is used to send product detail to cloud. Add switch is used for Products add to bill. Remove switch is used for product remove from the bill. Billing switch is used for close porches.

**Existing system:**

The most common controller used is PIC16F877 as it is programmer friendly and it is cheaper in comparison to other microcontrollers used. Smart trolley can change the experience of shopping and reduce or eliminate the waiting time of queues. Radio frequency identification is a technology which uses radio waves which automatically recognize the objects having RFID tag. It works on electronic product code.

**Proposed system:**

In this proposed system is IoT based billing process without logic convertor and main computer. All the billing data details are sending to cloud. The **RFID** avoids the limitations of barcode scanning, which requires line-of-sight access to each barcode and can only be used to scan one item at a time. **RFID** not only streamlines and automates asset scanning but also eliminates the possibility of human error. The internet of things, or **IoT**, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction.

**Block diagram:**

Arduino mega

RFID reader

Switch 1

Switch 2

Switch 3

Thermal printer

ESP8266

5v supply unit

Cloud

Data base

LCD 16x2

**Block diagram description:**

Above the block diagram is containing Arduino mega, switches, ESP8266 and RFID reader. RFID reader is connecting to UART port1 of Arduino mega. RFID send product detail to controller via UART communication. Thermal printer and ESP8266 also connecting to UART port of Arduino mega. Thermal printer is print billing amount and product details. Switch 1, 2 and 3 are connected to Arduino mega GPIO pins. Switch 1 is used for adding process. Switch 2 is used for removing process. Switch 3 is used for billing process. All the billing detail is send to cloud and these details are stored in cloud data base.

**Hardware requirement:**

* ESP8266
* Arduino mega
* Switches -3
* RFID reader
* Thermal printer

**Software requirement:**

* C language
* Arduino IDE

**Conclusion:**

RFID reader is used to read product details. Wifi device is used to send product detail to cloud. Add switch is used for Products add to bill. Remove switch is used for product remove from the bill. Billing switch is used for close porches.RFID not only streamlines and automates asset scanning but also eliminates the possibility of human error.