



Smart Shopping Trolley Using **Raspberry Pi Kit - Automatic Billing System** **Via IOT**

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ABSTRACT:

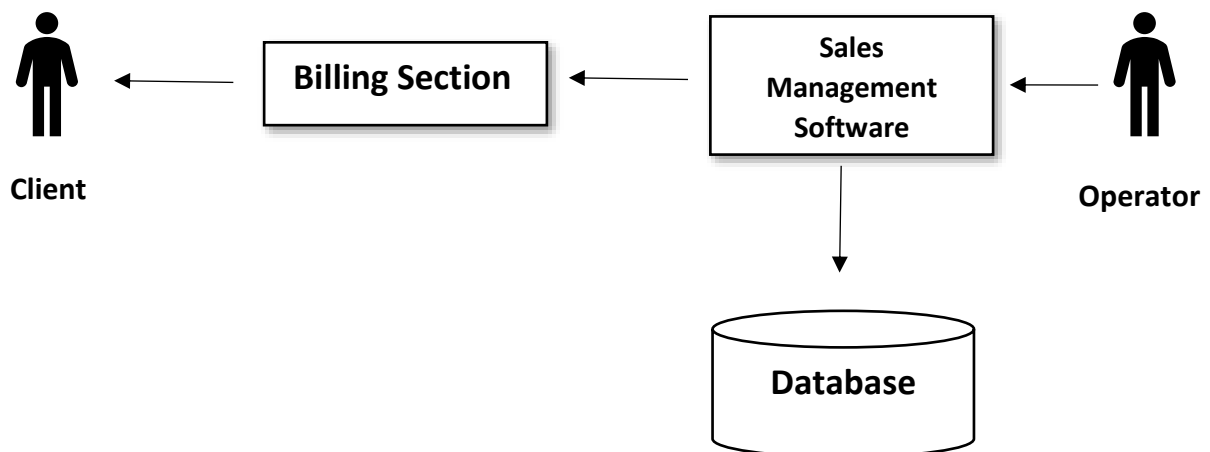
Now a days, Shopping have become daily activity in cities. People buys product from shopping mall/Supermarket for their regular use. To get their products scanned using barcode scanner and to get it billed, the customers have to stay in long queues. In this project developing the trolley where the customer has to scan the product barcode which they wish to purchase. The scanned product is dropped into the shopping cart of customer and then the customer can make payment online or at the Billing Counter. This Project proposed a technique which means to decrease and perhaps wipe out the aggregate holding up time of client, bring down the aggregate labour prerequisite from charging counter and increment effectiveness by and large.

OBJECTIVE:

- ✓ To provide the Customer with shopped items without standing on a long queue for billing/payment.
- ✓ Aim is to save the time for the Customer that it will be useful for another hold works.
- ✓ It is not fully automated but it is very easy to make a bill for the shopped items independently.
- ✓ Goal is to reach the project that will be efficiently and easily buyable for the shop owners

EXISTING SYSTEM:

The supermarket billing system is built to help supermarkets calculate and display bills and serve the customer in a faster and efficient manner. The software consists of an effective and easy GUI (Graphic User Interface) to help the employee in easy bill calculation and providing an efficient customer service. **Gofrugal's Supermarket software** is designed to manage all the supermarket activities like supermarket billing, accounting, inventory from a single POS (Point of Sale) system. It is based on the full type software application used in the Supermarket System server.



PROPOSED SYSTEM:

This Project is based on the Smart trolley is a **shopping assistant who supports customers for displaying more product information, accommodating with personal wheelie trollies/trays.** Smart Trolleys and Smart Checkout Systems have been redefining customer experience in **retail stores** in recent years by automating the checkout process. It is based on the using **Raspberry Pi 3** and **Barcode scanner** using **POS (Point of Sale) Billing System.** And it has a TFT-LCD/Alphanumeric LCD screen to display a QR code / List of Purchased items for the Online UPI Payment to avoid the Cash Problems.

BLOCK DIAGRAM:

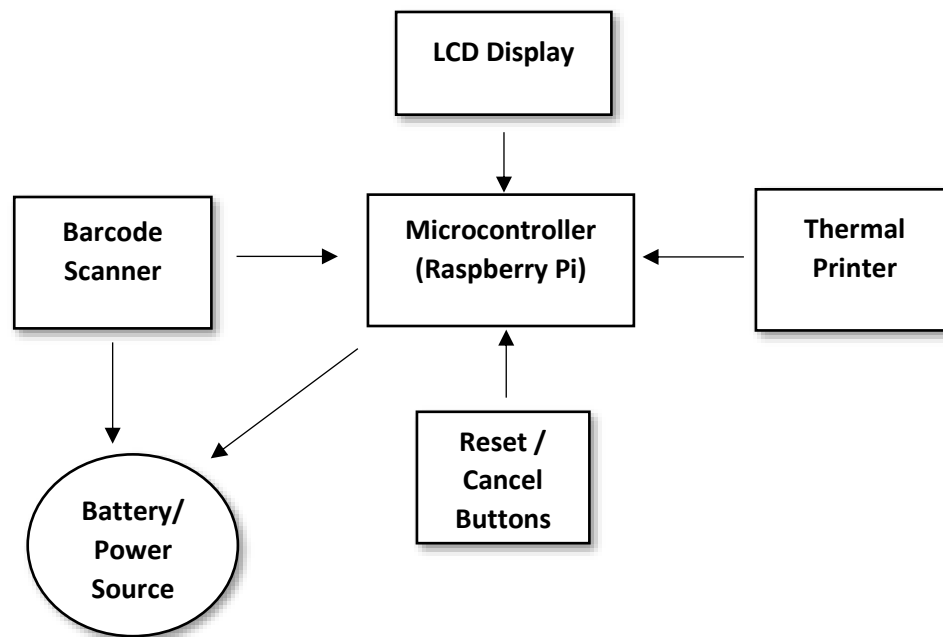


Fig-1 Block Diagram of Project

COMPONENTS OF BLOCK DIAGRAM:

Raspberry Pi 3	1
Barcode Scanner	1
20x4 alphanumeric LCD	2
Thermal Printer	1
Power Supplies (Either Batteries or Adopter)	As required
Jumper Wires	As required

RASPBERRY PI 3 KIT:

Raspberry Pi is a low-cost, basic computer that was originally intended to help spur interest in computing. The Raspberry Pi computer is essentially a wireless Internet capable system-on-a-chip (SoC) with 1 GB RAM, connection ports, a Micro SD card slot, camera and display interfaces and an audio/video jack. The Raspberry Pi is a credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python.

BATTERY/POWER SOURCE:

- Input voltage: 4.5 to 5.5v
- Power: 5v
- Input Ports: 2
- Output Ports: 2
- Charging method: Linear charge / Battery

BARCODE SCANNER:

The purpose of **Barcode scanners** is to read, translate, and transmit information contained in barcodes. Its purpose is relatively straightforward. However, while it seems simple, barcode scanners are very beneficial for your business. With barcode scanners, internal operations have never been easier.

ALPHANUMERIC LCD DISPLAY:

A **20x4 LCD** means it can display 20 characters per line and there are 4 such lines. In this LCD each character is displayed in **5x7** pixel matrix. This LCD has two registers, namely, Command and Data. This is standard HD44780 controller LCD.

THERMAL PRINTER:

Thermal printers are most commonly used to print items such as receipts and shipping labels. Thermal transfer printers use a thermal print head to transfer a solid ink from a ribbon onto a label supply. It is usually made from vinyl, polyester, nylon, or other thicker materials to produce a permanent print.

WIFI:

Wi-Fi a family of wireless network protocols based on the **IEEE 802.11** family of standards, which are commonly used for local area networking of devices and Internet access, allowing nearby digital devices to exchange data by radio waves. These are the most widely used computer networks in the world, used globally in home and small office networks to link desktop and laptop computers, tablet computers, smartphones, smart TVs, printers, and smart speakers together and to a wireless router to connect them to the Internet, and in wireless access points in public places like coffee shops, hotels, libraries, and airports to provide visitors with Internet connectivity for their mobile devices.

COMPARISON OF BOTH THE SYSTEM:

S. No	Existing system	Proposed system
Cost effectiveness	Costly and high manpower	Provide Cheaper Price and no manpower
Technology	GUI (Supermarket Software)	IOT
Feasibility	Easily Accessible only by Employees worked in Shops	A simple setup and can be easily accessed by all
Advantages	Only a handheld with limited functionalities	Easily accessed by all. Eco-Friendly. Price attracted towards shop owner to reduce the Employee rate.

APPLICATIONS:

- Low Cost & Affordable Price.
- Easy to access.
- Low Maintenance.
- Less Electronic Requirements for setup.
- Eco-Friendly.
- Semi-Automated Device.
- Produces at larger needs.

LITERATURE SURVEY:

SI.NO.	AUTHOR NAME AND PAPER	PROBLEM STATEMENT	MERITS	DISADVANTAGES
1	Ravindra Jogekar, Ruchita Ghodeswar, Payal Kadu proposed the paper of “Automated Shopping Trolley System Using Raspberry Pi Device”	The problem statement was the reduce the time in billing section in queue. Used the RFID and Zigbee.	Got solved the problem statement and it was very useful to the peoples	It is quite expensive. RFID identification is expensive and hard to understand.
2	M. Kabil Dev, R. Kannan and M. Agarshan proposed the paper of “ <i>Automated Billing Smart Trolley and Stock Monitoring</i> ” 2021 (ICCMC 2021)	The problem statement was the reduce the employee rate in billing section in shopping	It was less expensive because of using Arduino	It is also more complex hard to understand. It had more no of hardware failure
3	Shailesh, Pragathi Deb and Rajan Chauhan proposed the paper of “ <i>Smart Trolley</i> ”, (ICACITE) Greater Noida, India	The problem statement was able to reduce the unwanted time wastage in billing section	It was less expensive It is easy to operate	But it was quite more success due to complexity

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