

# ADVANCED BILLING SYSTEM USING RFID & LIFI TECHNOLOGY WITH CHILD SAFETY

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**Abstract-** Extensive general stores have an incredible assortment of merchandise and diverse markets may have distinctive appropriation of commodity. Nowadays in shopping center for buying variety of things it requires trolley. Every time client needs to pull the trolley from rack to rack for gathering things and in the meantime clients think that its hard to remain in long line for charging the acquired products. This venture gives an extraordinary answer for all these problems. In current period, for programmed charging framework are building up a microcontroller based trolley and here utilize LIFI as a correspondence medium. Most as of late LIFI is new blending innovation in the trend. Here utilize RFID. Client needs to hold the RFID labels of item before RFID peruser. Then relating information in regards to item will be shown on display. LIFI transmitter is use to get the information from microcontroller AT89S2 and after LIFI recipient get it. And those informations are send to pc through UART port by utilizing this trolley, customer can purchase vast number of item in less time with less exertion. At the charging counter, computer can be effortlessly interfaced for check and bill print out.

**Keywords:** Automatic billing, LiFi, RFID

## INTRODUCTION

Individuals tend to overshoot their spending when they are shopping at a major strip mall. Additionally they wind up in long lines toward the finish of their shopping sitting tight for the items to be examined and charged. The Smart Shopping Cart addresses the above issues easily.

It helps the client in guaranteeing that he doesn't overshoot his pre chosen spending plan and as it were purchases the basic items really required by him, moreover the framework helps in disposing of the long lines at the charging counter as the items are now filtered and the client simply needs to pay the bill and pack the things bought. The framework is gainful for the malls as it can help in decreasing the quantity of charging counters and thusly will help in decreasing representative expenses essentially.

The point is to plan a microcontroller-based shopping basket supporting the clients in their shopping and decreasing the line at the charging counter. The gadget must be easy to use and have an interface by means of which the

client can filter the items he/she expects to purchase, likewise the framework must have a LCD show so that the client can know the aggregate cost of the items acquired.

The framework should likewise have a component to erase a bought item on the off chance that the client changes his/her psyche. The framework ought to likewise contain a ringer framework which starts consequently at whatever point an item is checked. There is likewise a need of an incorporated database which contains the cost of the considerable number of items in the shopping market.

It is extremely basic that individuals tend to overshoot their use everywhere strip malls because of a straightforward reality that they are not ready to expect the cost of the items they have set in their shopping basket. Likewise on ends of the week and amid happy seasons the clients need to hold up in long lines just to get their items examined at the counter and get them charged. This paper helps in disposing of or lessening the previously mentioned issues significantly. The Smart Shopping Truck not just shows the aggregate cost of the wares in the truck it additionally has a component to expel any item if the client wishes to do as such. The Smart truck likewise dispenses with the repetitive procedure of checking the items at the counter as this procedure is now done by the client amid the shopping itself by utilizing RFID.

This might significantly lessen the long lines at the charging counters as now the clients just need to pay the bill of the items obtained and pack them. The item is too valuable for the strip malls as it encourages them in streamlining the aggregate workforc at their place bringing about benefits in the long run. Here Li-Fi is utilized as medium for correspondence. the information transmission speed is high when contrasted with ZigBee module.

## Methodology

This framework makes utilization of AT89S50 microcontrollers. Microcontroller is interfaced with an LCD, LiFi module and a RFID card reader. LiFi is utilized as a medium for correspondence.

### 1. Li-Fi

Li-Fi can be thought of as a light-based Wi-Fi. That is, it utilizes light rather than radio waves to transmit data.

What's more, rather than Wi-Fi modems, Li-Fi would utilize handset fitted LED lights that can light a room and additionally transmit and get data. Since straightforward lights are utilized, there can in fact be any number of access focuses.

This innovation utilizes a piece of the electromagnetic range that is as yet not incredibly used The Visible Spectrum. Light is in reality especially part of our lives for many years and does not have any real sick impact. In addition there is 10,000 times more space accessible in this range and simply relying on the globules being used, it additionally increases to 10,000 times greater accessibility as a framework, comprehensively. It is conceivable to encode information in the light by shifting the rate at which the LEDs glint on and off to give diverse series of 0s. The LED force is tweaked so quickly that human eyes can't see, so the yield seems steady.

## 2. Microcontroller

The AT89S52 is a low-control, superior CMOS 8-bit microcontroller with 8K bytes of in-framework programmable Flash memory. The gadget is fabricated utilizing Atmel's high-thickness nonvolatile memory innovation and is perfect with the business standard 80C51 guideline set and pinout.

The on-chip Flash enables the program memory to be reconstructed in-framework or by an ordinary nonvolatile memory software engineer. By consolidating an adaptable 8-bit CPU with in-framework programmable Flash on a solid chip, the Atmel AT89S52 is an intense microcontroller which gives an exceedingly adaptable and financially savvy answer for some installed control applications. The AT89S52 gives the accompanying standard highlights: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog clock, two information pointers, three 16-bit clock/counters, a six-vector two-level intrude on engineering, a full duplex serial port, on-chip oscillator, and clock hardware.

Likewise, the AT89S52 is composed with static rationale for activity down to zero recurrence and backings two programming selectable power sparing modes. The Idle Mode stops the CPU while permitting the RAM, clock/counters, serial port, and interfere with framework to keep working. The Power-down mode spares the RAM substance yet solidifies the oscillator, incapacitating all other chip capacities until the point that the following hinder or equipment reset



Fig1 AT89S52 Microcontroller

## 3. RFID reader and tag

Fig.2 shows RFID reader diagram. Radio frequency identification uses electromagnetic field to automatically identify and track tag attached to the object .the tag contain electronically stored information. passive tag collect energy from near by RFID reader interrogating radio waves.here we use passive RFID.because for passive RFID there is no need of external power source.the RFID reader is attached to the shopping cart which will detect any tag which comes in its surrounding area.the tag has unique number assigned to it .once the reader reads the number it is passed into the Atsss microcontroller which further communicate it for further processing .



Fig 2. RFID reader

### RF Transmitter

A RF transmitter module is a little size PCB prepared for trading a radio wave and managing radio wave to pass on information. RF transmitter modules are regularly associated nearby microcontroller. These Transmitter are by and large subjected to controlling requirements

### RF receiver

RF Receiver module takes the adjusted RF flag to demodulate. RF Receiver module comprises of two kinds super regenerative super heterodyne In super regenerative isRF utilized for low power plans and cost is low. In super heterodyne is utilized for superior over regenerative, they offer expanded steadiness and exactness.

#### 4. LCD

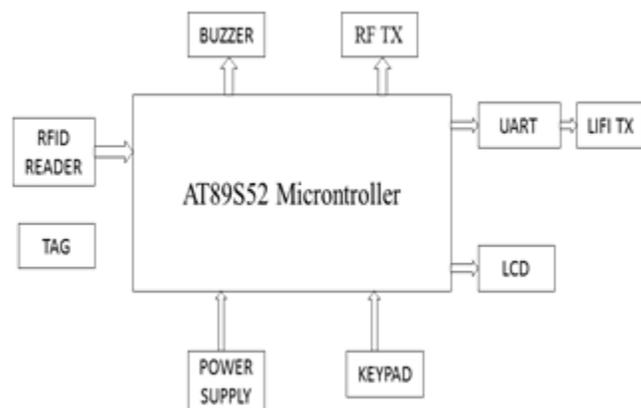
LCD remains for fluid gem show. They come in numerous sizes 8x1 , 8x2 , 10x2 , 16x1 , 16x2 , 16x4 , 20x2 , 20x4 ,24x2 , 30x2 , 32x2 , 40x2 and so forth . Numerous multinational organizations like Philips Hitachi Panasonic make their own particular unique sort of LCD'S to be utilized as a part of their items. All the LCD'S plays out similar capacities (show characters numbers unique characters ASCII characters etc).Their writing computer programs is additionally same and they all have same 14 pins (0-13) or 16 pins (0 to 15). Alphanumeric showcases are utilized as a part of an extensive variety of uses, including palmtop PCs, word processors, printers, purpose of offer terminals, restorative instruments, PDAs, and so on. This is a LCD Display intended for E-squares. It is a 16 character, 2-line alphanumeric LCD show associated with a solitary 9-way D-type connector.

This enables the gadget to be associated with most E-Block I/O ports. The LCD show requires information in a serial arrangement, which is point by point in the client manage underneath. The show likewise requires a 5V control supply. If it's not too much trouble take mind not to surpass 5V, as this will make harm the gadget. The 5V is best created from the E-pieces Multi developer or a 5V settled directed power supply.

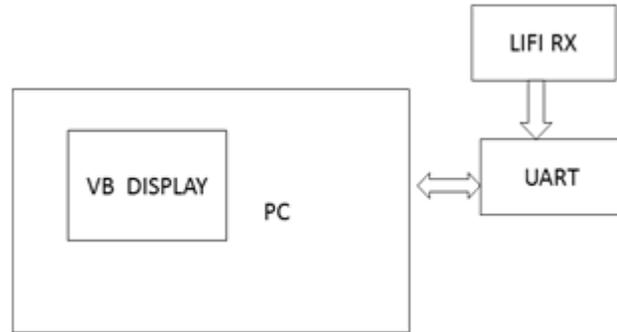
The 16 x 2 smart alphanumeric speck framework shows is fit for showing 224 unique characters and images. A full rundown of the characters and images is imprinted on pages 7/8 (take note of these images can fluctuate between brand of LCD utilized). This booklet gives all the specialized determinations to associating the unit, which requires a solitary power supply (+5V).

#### Block diagram

#### Shopping cart



#### Counter section:



#### Working process

This task used these RFID labels to accelerate the checkout procedure by building a framework that could at the same time read the RFID signs of the closeness to a radio wire stage and furthermore considerable number of articles that were put in transmit the item data to the counter with the goal that the bill is prepared when the client touches base at the counter. This takes out the requirement for standardized identification filtering of every individual thing, making checkout an essentially quicker affair. Likewise it decreases the time wastage of the consumer. The venture depends on the figuring of aggregate shopping done by the client utilizing the programmed shopping trolley with which at the same time it will send the data about the item to the money counter remotely to bill activity in view of remote innovation. The task comprise of RFID tag and peruser for computing the charging of the item acquired .RFID Reader will be connected with the microcontroller, ATmega16 which will read the ID of the item i.e the 12-bit character RFID label number and show the present item name, cost and the aggregate sum of shopping done.

Being a convenient gadget, this item can be illustrated live. Every one of the capacities depicted are exhibited as takes after.



Fig 3 RF transmitter and receiver

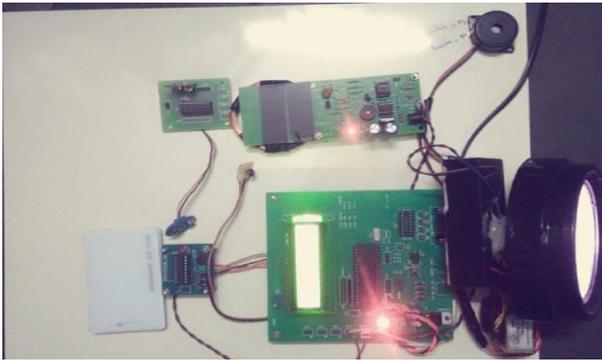


Fig 4 trolley section

a. The associations are appeared in the accompanying figure where both the truck module and the database are unmistakable. The figure unmistakably portrays the AT89S52 microcontrollers. The truck module is interfaced with the LCD, LiFi module and the RFID peruser while the Database microcontroller is interfaced.

b. At the point when the item is fueled on an appreciated message is shown on the LCD alongside the aggregate, which is zero at the beginning

c. When it is fueled on it is prepared for examining of items. The accompanying figures will demonstrate the examining process. Fig.5 demonstrates the introducing screen of the item

d. The truck additionally has a component of cancellation of item in case the client changes his/her psyche because of any reason or if an item gets erroneously filtered numerous circumstances. To empower erasure the catch on the left 50% of the breadboard needs to be squeezed while filtering the item to be erased. demonstrates the show of item cancellation

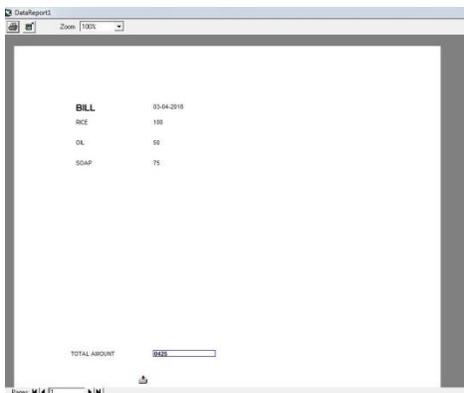


Fig5 counter section output

## CONCLUSION

The planned destinations were effectively accomplished in the model created. The created demonstrate has simple access, is conservative and grandstands a savvy and simple shopping background to lessen time, vitality of the customers. There are a couple of difficulties/downsides to be made plans to make the proposed framework more strong, however there is additionally most likely that with the RFID & and LiFi technology having a wide degree in production network administration, the proposed show can possibly enhance and facilitate the fundamental retail experience all things considered.

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