SHOPPING AUTOCART

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Abstract

It has been observed that supermarkets witness long queues during the peak of shopping period and it's a very time-consuming process for both customers and staffs. Studies have shown that immediate availability when shopping for products or services dramatically increases the number of purchases or appointments. The objective of this project is to develop an auto-cart with the sole objectives of minimizing shopping time in supermarkets and malls.

Introduction

Recently shopping has become a day-to-day activity and people are visiting the supermarket for purchasing products for their daily needs. Whenever a person is buying products, they need to search for the product in such a big store and collect all the required products and need to wait in queue for billing and payment. Since it is time consuming, they will be annoyed.

Our main aim in developing this product is to reduce the time consumption in searching products and waiting in queue while billing and payment thereby reducing the issues of social distancing which is the need for the hour. In this product RFID card reader is used in each product to identify it and a special RFID tag for payment and also for recharge, android app to search and locate products in store and also a payment option in application.

At present, many supermarket chains are attempting to further reduce labour costs by shifting to self-service check-out machines, where a single employee can oversee a group of four or five machines at once, assisting multiple customers at a time. This application creates an automated central bill system for supermarkets and mall.

Existing System

A supermarket is a place where customers come to purchase their daily using products and pay for that. So, there is a need to calculate how many products sold and generate the bill for the customer. When we go for shopping, we usually select the required products and add them into the shopping cart. But when it comes to the final bill payment there are no adequate counters in the mall that can handle all the customers.

Also scanning each and every product of all the customer becomes a huge task and leads to large queue formation. Also, after that, it is hectic to stand in line for billing all the goods Whenever a person is buying products they need to search for the product in such a big store and collect all the required products and need to wait in queue for billing and payment this is a time consuming process and the people need to wait for long time to pay their bill and likewise if people can search for product in a big store to get their required product it also take too much time.

Proposed System

Market is growing day by day; everyone wants to save their time and gain profit while shopping. The system will also give suggestion Ever since the debut of wireless technology, electronic commerce has developed to such an extent to provide convenience, comfort, and efficiency in day-to-day life.

The main purpose of this paper is to provide centralized and automated billing system using RFID and ZigBee communication. for products to buy based on user purchase history from a centralized system. In this system, every product in Mart will have RFID tag, and every cart will be having RFID Reader.

Methodology

AGILE methodology is a practice that promotes continuous iteration of development and testing throughout the software development lifecycle of the project. Both development and testing activities are concurrent unlike the waterfall model. The agile software development emphasizes on four core values

- o Individual interaction over processes and tools
- o Working software over comprehensive documentation
- o Customer collaboration over contact negotiation
- o Responding to change over following a plan

System Specification

Hardware and software requirements for the installation and smooth functioning of this product could be configured based on the requirements needed by the component of the operating environment that works as front-end system here we suggest minimum configuration for the both hardware and software components. Working off with this software is requirements concrete on system environments. It includes two phases: Hardware Requirements & Software Requirements.

Hardware Specification

- o Processor: i3 or above.
- o System Bus: 32Bit or 64Bit

- o RAM: 4 GB or Above
- o HDD: 500 GB or Above
- o Monitor: 14" LCD or Above
- o Key Board: 108 Keys
- o Mouse: Any Type of mouse

Software Specification

- o Operating System: Windows 10 Any 32 bit or 64-bit platform
- o Front End: Python
- o Back End: MySQL Sever
- o IDE: Eclipse, Python 3.6 or above, PyCharm

Software Required - Frontend

Python

Python is an interpreted, high-level, general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python has a design philosophy that emphasizes code readability, notably using significant whitespace. It provides constructs that enable clear programming on both small and large scales. Python is a general-purpose interpreted, interactive, object- oriented, and high-level programming language.

Guido van Rossum during 1985- 1990, created it. Like Perl, Python source code is also available under the GNU General Public License (GPL). Python is a popular programming language. Guido van Rossum created it in 1991.

It is used for:

- o web development (server-side),
- o software development,
- o mathematics,
- o System scripting.

Python is a high-level, interpreted, interactive and object-oriented scripting language. Python is designed to be highly readable. It uses English keywords frequently where as other languages use punctuation, and it has fewer syntactical constructions than other languages.

- o Python is Interpreted − Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.
- o Python is Interactive −You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.
- o Python is Object-Oriented − Python supports Object-Oriented style or technique of programming that encapsulates code within objects.
- o Python is a Beginner's Language − Python is a great language for the beginner-level programmers and supports the development of a wide range of application

Python's features include:

- o Easy-to-learn − Python has few keywords, simple structure, and a clearly defined syntax. This allows the student to pick up the language quickly.
- o Easy-to-read − Python code is more clearly defined and visible to the eyes.
- o Easy-to-maintain − Python's source code is fairly easy-to-maintain.
- o A broad standard library − Python's bulk of the library is very portable and cross-platform compatible on UNIX, Windows, and Macintosh.
- o Interactive ·Mode − Python has support for an interactive mode which allows interactive testing and debugging of snippets of code.
- o Portable − Python can run on a wide variety of hardware platforms and has the same interface on all platforms.
- o Extendable −You can add low-level modules to the Python interpreter. These modules enable programmers to add to or customize their tools to be more efficient.
- o Databases − Python provides interfaces to all major commercial databases.
- o GUI Programming − Python supports GUI applications that can be created and ported to many system calls, libraries and windows systems, such as Windows MFC, Macintosh, and the X Window system of Unix.
- o Scalable − Python provides a better structure and support for large programs than shell scripting.

PyCharm IDE

- PyCharm is an integrated development environment (IDE) used in computer programming, specifically for the Python language. It is developed by the Czech company JetBrains. It provides code analysis, a graphical debugger, an integrated unit tester, integration with version control systems (VCS), and supports web development with Django as well as data science with Anaconda.

- PyCharm is cross-platform, with Windows, macOS and Linux versions. The Community Edition

- is released under the Apache License, and there is also Professional Edition with extra *features – released under a proprietary license*

Bootstrap

Bootstrap is a free and open-source front-end framework for designing websites and web applications. It contains HTML- and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions. Unlike many earlier web frameworks, it concerns itself with end development only. Bootstrap, originally named Twitter Blueprint, was developed by Mark Otto and Jacob Thornton at Twitter as a framework to encourage consistency across internal tools.

Before Bootstrap, various libraries were used for interface development, which led to inconsistencies and a high maintenance burden. After a few months of development by a small group, many developers at Twitter began to contribute to the project as a part ofHack Week, a hackathon-style week for the Twitter development team. It was renamed from Twitter Blueprint to Bootstrap, and released as an open-source project on August 19, 2011.

Structure and Function

Bootstrap is modular and consists of a series of Less (Sass version 4 and onward) stylesheets that implement the various components of the toolkit. These stylesheets are generally compiled into a bundle and included in web pages, but individual components can be included or removed.

Bootstrap provides a number of configurations variables that control things such as colour and padding of various components. Since Bootstrap 2, the Bootstrap documentation has included a customization wizard which generates a customized version of Bootstrap based on the requested components and various settings. As of Bootstrap 4, Sass is used instead of Less for the stylesheets. Each Bootstrap component consists of an HTML structure, CSS declarations, and in some cases accompanying JavaScript code.

Grid system and responsive design comes standard with an 1170-pixel-wide grid layout. Alternatively, the developer can use a variable-width layout. For both cases, the toolkit has four variations to make use of different resolutions and types of devices: mobile phones, portrait and landscape, tablets and PCs with low and high resolution. Each variation adjusts the width of the columns.

Software Required - Backend

My SQL

MySQL is an open-source relational database and it includes advanced data types. MySQL operates using client/server architecture in which the server runs on the machine containing the database and client connect to the server over the network. MySQL run on all platforms supported by MySQL and provides the most direct means of interacting with the server, so it's the logical client to begin with.

- ○ You need to have the MySQL software installed.
- ○ You need a MySQL account so that you can connect to the server.
- ○ You need a database to work with.

The required software includes the MySQL clients and a MySQL client and a MySQL server. The client program must be located on the machine where you will work. The server can be located on our machine although that is not required. As long as you have permission to connect to it the server can be located anywhere. In addition to the MySQL software, you will need a MySQL account so that the server will allow you to connect and create us sample database and its table.

Microsoft SQL Server 2008 is a full-featured relational database management system (RDBMS) that offers a variety of administrative tools to ease the burdens of database development, maintenance and administration. In this article, we'll cover six of the more frequently used tool: Enterprise Manager, Query analyzer, SQL Profiler, Service Manager, Data Transformation Services and Books Online. Let's take a brief look at each.

Enterprise Manager is the main administrative console for SQL Server installations. It provides you with a graphical "birds-eye" view of all of the SQL Server installation on your network. You can perform high-level administrative functions that affect one or more servers, schedule common maintenance tasks or create and modify the structure of individual databases.

Query Analyzer offers a quick method for performing queries against any of your SQL Server databases. It's a great way to quickly pull information out of a database in response to a user request, test queries before implementing them in other applications, create/modify stored procedures and execute administrative tasks.

SQL Profiler provides a window into the inner workings of your database. You can monitor many different event types and observe database performance in real time. SQL Profiler allows you to capture and replay system "traces" that log various activities. It's a great tool for optimizing databases with performance issues or troubleshooting particular problems.

Service Manager is used to control the MS SQL Server (the main SQL Server process), MSDTC (Microsoft Distributed Transaction Coordinator) and SQL Server Agent processes. An icon for this service Manager to start, stop or pause any one of these services.

Data Transformation Services (DTS) provide an extremely flexible method for importing and exporting data between a Microsoft SQL Server installation and a large variety of other formats. The most commonly used DTS application is the "Import and Export Data" wizard found in the SQL Server program group.

System Design

System design is the process of developing specifications for a candidate system that meet the criteria established in the system analysis. Major step in system design is the preparation of the input forms and the output reports in a form applicable to the user.

The main objective of the system design is to use the package easily by any computer operator. System Design is the creative act of invention, developing new inputs, a database, offline files, method, procedures and output for processing business to meet an organization objective. System design builds information gathered during the system analysis.

The system design is the most creative and challenging phase. The first step is to determine how the output is produced and in what format. Samples of input and output are presented. Next the input data and the master data are to be designed to meet the requirements of the proposed output. The operational phases are handled through program construction testing, including a list of programs needed to meet the system objective and complete documentation.

Input Design

Input design is the process of converting the user originated inputs to a computer format. The input design involves determining what the inputs are, how the data should be performed, how to validate data, how to minimize data entry and how to provide a multiuser facility.

The design for handling input specifies how data are accepted for computer processing. Input design is a part of overall system design that needs careful attention and if includes specifying the means by which actions are taken. A system user interacting through a system must be able to tell the system whether to accept input produce a report or end processing. The collection of input data is considered to be the most expensive part of the system design. Since the inputs have to be planned in such a manner so as to get the relevant information extreme care is taken to obtain the information. If the data going into the system is incorrect then processing and outputs will magnify this error.

All input data are validated in the order and if any data violates any conditions, the user is warned by a message. If the data satisfies all the conditions, then it is transferred to the appropriate tables in the database.

We have to keep in mind the following things to design the system

- What data to input?
- What medium to use?
- The dialogue to guide users in providing input.
- Methods for performing input validation and steps to follow when errors occur Input requirement gathering was one of the major trivial processes in web or android application development. The project involves text inputs.
- The inputs can be entered through keyboard and mouse. The text input is gathered by forms with text boxes.

Output Design

Effective output design will improve the clarity and performance of output. Output design phase of the system is concerned with the convergence of information's to the end user friendly manner. The output design should be Effective output design will improve the clarity and performance of output. Output design phase of the system is concerned with the convergence of information's to the end user friendly manner. The output design should be efficient, intelligible so that system relationship with the end user is improved and thereby enhancing the process of decision making.

They are also used to provide a permanent copy of these results of processing to the users. They are also used to provide a permanent copy of these results for late consultation. There are various types of output required by most systems, the main ones are:

- External outputs, whose destination is outside the organization and which require special attention because they project the image of the organization.
- Internal outputs, whose destination is within the organization and which require careful design because they are the user's main interface with the computer.
- Operational outputs, whose use is purely within the computer department.

- Turn around outputs, to which the data will be added before they are returned to the computer for further processing.

System Implementation

The implementation includes all those activities that take place to convert from the old system to new. The old system consists of no filtering the contents searched by the user, which is operated in a push model manner from the proposed new system.

A proper implementation is essential to provide a reliable system to meet the requirements of the customers. An improper implementation may affect the success of the application. There are several methods for handling the implementation and the consequent conversion from the old applications to the new application developed in this project. The most secure methods for compare the old system and the new system is to run the old and new system in parallel. In this approach, a person may operate the old existing application and the new application.

This method offers high reliability and security. A working version of the system can is implemented in the website application. The website is managed by the admin, Doctor user and the user. The implementation plan includes host the website and the application put it into its operation. The implementation plan consists of the following steps:

- List all files required for implementation.
- Host the website and put it into its operation.

The implementation plan should anticipate possible problems and must be able to deal with them. The usual problems may be missing documents; mixed data formats between current files and errors in data translation, missing data etc.

Conclusion

Now a days, shopping has become a daily activity in today's world. We can see large queues in many shopping malls waiting for billing. The objective of our project is to overcome the problem of standing in queue and wasting time. To overcome the above

problem, we are proposing a smart trolley billing system that will audit the purchased products and the payment is made online automatically using the RFID tag.

It will automatically identify and scan the product, and the final billing is made from the cart itself. So that customers are free from waiting in a long queue at checkout. It also provides the centralized and automated billing system using RFID. The primary goal is to provide a technology oriented, time saving and commercial oriented system for enhanced shopping experience.

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