Business Utility Application

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Abstract - *This app is regarding the business utility to make management easy and convenient. Generating business bills and handling accounts of multiple branches. This application is helpful for cashiers, and managers. With the usage of this application, cashiers can easily generate tokens and bills and analyze which item is the best seller during the whole day, week, or month. The order is placed in the queue and updated in the database and then returned in real-time. With the help of that database shop's owner can also analyze which item is the best seller during the entire day, week, or month. The manager can also completely trust the cashier because the cashier's login and the manager's login both are different.*

Key Words: Management activity, Digital billing system, Conventional billing system, Data Analysis features, Tokens, Iterative and Incremental process.

1. INTRODUCTION

This app is regarding the business utility to make management easy and convenient. Generating business bills and handling accounts of multiple branches. For business owners who own a shop and have multiple branches. We discovered that it is hard to manage all branches and survey all the management activity. To replace the conventional billing system with the digital billing system with the help of an application that can work easily, and efficiently. With the usage of this application, cashiers can easily generate tokens and bills and analyze which item is the best seller during the whole day, week, or month. It will improve the management capability of the owner and can oversee other cashiers' work. It will give an easy analysis of the sales of business in three timestamps (daily, weekly, or yearly). To manage all branches with flexibility and to ensure all activities of cashier's work.

1.1 Technology used

For the application framework we used React native and for the database used MySQL. VS code is used for programming and for the API used PHP and python both also for server connection Ubuntu server is employed.

1.2 Project planning

There are many aspects which are considerable in project planning. For example: Task planning, scope of the project and Timeline.

2. SYSTEM ANALYSIS

One of the most limitations of current POS machines is that they are complex and less flexible. These machines do not provide data storage and data analysis features. The maintenance cost of these machines is very high. To overcome this problem we build this application with minimal system requirements.

Table -1: Requirements to use application

User System requirements
1. Android/ios smartphone
2. 2 GB ram
3. Bluetooth pos printer
4. Raspberry pi4 server
5. Internet/wi-fi

2.1 Proposed system

We gave different accounts different privileges and different roles. There are multiple branches of login/signup in the single app. There are two roles in this application.

1. Cashier Role

2. Manager Role

Privileges of Cashier: The cashier can sign in to only the cashier account. Cashier can generate bill tokens directly from the application. Cashier can refund the bill amount also.

Privileges of Manager: Branch owner can sign in to the manager account as well as the cashier account too. Manager can add/remove items and categories. Manager can update items and categories. Manager can view Daily, Weekly, Monthly, and Yearly transactions.

3. SYSTEM DESIGN

3.1 Flowchart of New System

Before building the application first we draw a flow chart and in that divide all the section according to their places. Because it is a graphical representation of steps.
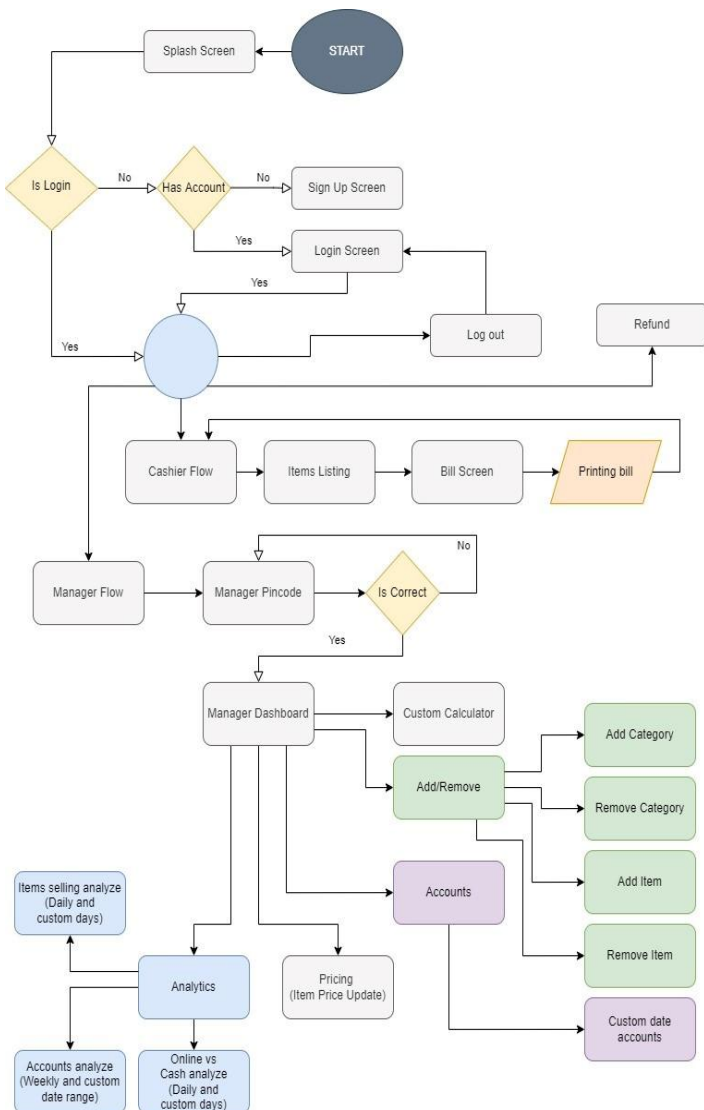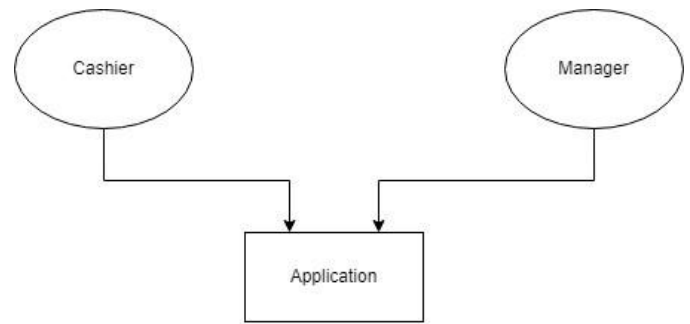
Chart -1: Flow chart

The development starts from a general idea of what needs to be built, elaborating on a list of characteristics ordered by priority (product backlog) that the owner of the product wants to obtain.
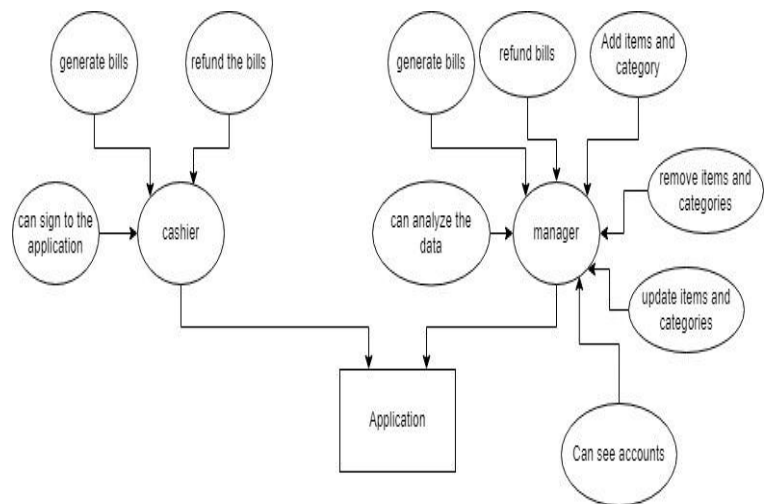
3.2 Data Flow Diagram (DFD)

Data flow diagram is define the flow of data. At DFD level-0

There are two login options: cashier and manager.

DFD level 0

In DFD level-1 cashier and manager do all activities which they can like cashier can generate bills and refund bills and manager can add or remove items and categories.

DFD level 1

Also manager can analyze the data means how many items sold on particular day and which item is hot favorite on that day or week.

3.3 Database diagram

Database diagram is useful to describe and design the table with the correlation of their entity. With the help of that diagram developer can easily understand the connection of each tables.
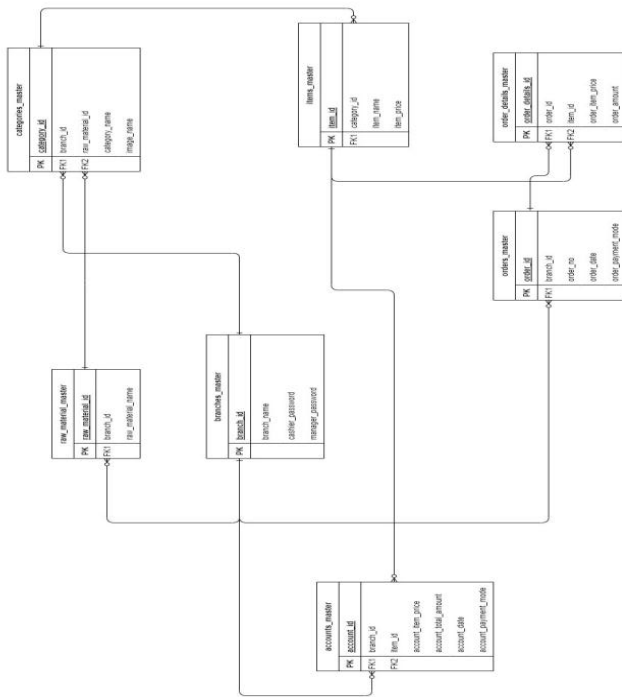
Chart -2: Database diagram

4. IMPLEMENTATION AND DEVELOPMENT

To implement out application we use scrum methodology.

Scrum is an agile development methodology, used in the development of software based on an iterative and incremental process. For development, our project is developed on the Flutter framework and the Dart as our programming language for the frontend, also we use PHP as API scripting language and MySQL as our backend. Flutter and Dart are the emerging technologies that can be used as cross-platform technologies for mobile devices, and they can help us a lot in making the application easy for any mobile device regardless of their operating system. PHP is used as a scripting language made for the APIs to connect the frontend with the database. Also, MySQL is used as a database engine used for storing and managing our data.

5. TESTING

Testing is the one of the important part while building the application. In testing part we tested GUI, cashier part, manager part and the analysis part of the database. All the test cases not completely working at initial stage but at deployment stage it performs very well.

We faced a problem during connecting the Bluetooth POS machine with React Native JavaScript code so we have done coding on the native side and applied to React Native bridging to native code. We have encountered another

problem which is a dynamic link by the server that has to be changed in react native live application because of that if the link changes connection breaks between server and application. Then we solved it by saving the data offline in the mobile storage as well as we have made a static server online where we can provide our application dynamic link with which we can update the application dynamically and also offline data get saved to the server.

1. Test ID: GV1 Test Condition:

Layout performance testing.

Expected output: Should perform smoothly in Android Device.

Actual output: It performs well in Devices above API level 25.

Remark: Need to make it more smooth in working.

2. Test ID: LIN1 Test Condition:

Login testing.

Expected output: Should navigate in their specific role's layout.

Actual output: It performs well.

Remark: Need to work on strengthening the login module.

3. Test ID: CRUD Test Condition:

CRUD testing on database.

Expected output: Should perform add, delete, edit, by faculty on database.

Actual output: It works fine and it performs over database.

Remark: Only need to work on the delete function

6. RESULTS

After the deployment we have observed that for owners who has plenty of branches can easily manage their branches. In past they buy all items raw material and at the end of the day items which not sold will be wasted while after using this app owner analyze data and according to that now they can reduce wastage. Because of this app now owner can completely trust on cashier because cashier and manager both have different portal for their work.

7. CONCLUSION

For business owners who own a shop and have multiple branches. We discovered that it is hard to manage all branches and survey all the management activity.

With the usage of this application, cashiers can easily generate tokens and bills and analyze which item is the best seller during the whole day, week, or month.

It will improve the management capability of the owner and can oversee other cashiers' work. It will give an easy analysis of the sales of business in three timestamps (daily, weekly, or yearly).

8. REFERENCES

1. For learn basics of coding: https://www.w3schools.com/

2. Video link how to use Ubuntu server: https://www.techrepublic.com/article/ubuntu-server-the-smart-personsguide/#:~:text=Ubuntu%20Server%20is%20a%20server,with%20an%20incredible%20cloud%20presence

3. For MYSQL learning: https://www.tutorialspoint.com/mysql/mysql-introduction.htm

4. For Reactnative:

https://www.oreilly.com/library/view/learning-reactnative/9781491929049/ch01.html

https://docs.python.org/3/c-api/intro.html

https://www.udemy.com/

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