HARDWARE BASED CUSTOMER FEEDBACK SYSTEM WITH MODELLING AND ANALYSIS OF DATA

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Abstract: Customer feedback is an essential part of most business operations. Knowing if the customer was happy or unhappy about the company's products or services is of utmost importance to the company and their growth.The system consists of a Raspberry Pi connected to buttons which the customer can press to let the company know about their feedback. This response is then stored in a separate database.The review stored is then sorted based on the total count of each response and the particular time at which the response was recorded. This detailed analysis will help the organisation understand the measure of how products and services supplied by a company surpass customer expectation.When the organisation requests the logistics, this analysed data is calculated and made visible to the organisation.

Index Terms **- Customer feedback system, Raspberry Pi, Opinion Analysis, Rating, Physical computing**

I.INTRODUCTION

Customer feedback holds a significant part in marketing and in the field of business. It helps understand the demand and guarantees that the product fulfils the necessities. By doing so, it improves customer relationships and encourages the company to deliver better products and services. There are a number of strategies deployed to understand customers and their experience. Traditional ways are paper-based customer surveys, phone calls and emails. Some of these approaches are found to have greater response as its personalised. But when looked from other aspects, these are quite expensive and requires a lot of overhead processing. For instance, paper based customer surveys are passed around where the customer is pressured to write down their views. This takes up valuable time of the customer. Not only that, processing these hard copies involves a lot of manual work. It requires experts to analyse and segregate the data for the companies that also takes up a lot manpower and time. Both are precious and not to be wasted from a business point of view.

The main aim of this paper is to reduce workload and automate the process of feedback system. A simple and catchy design where the customer needs to only click one button. Now that doesn't take the amount of time taken to fill forms, quizzes, and multiple choice questions in other feedback tools. The analysis of feedback information which is acquired from clicking one of the two buttons is automated and doesn't involve any expertise. In this paper, these challenges are looked upon and a system is put in place for fruitful customer engagement during the process and automated analysis of feedback information.

II.LITERATURE SURVEY

The discomfort in traditional feedback systems and digitised systems is one of the reasons that customers fail to provide feedbacks. There is a need to reduce the time involved and build an attractive system that catches the customer's eye hence making it unavoidable.

In References [1], "Customer Feedback System" proposed explains the disadvantages of the current deployed customer feedback systems involving a lot of unstructured data. Oleksiy Khriyenko describes a new approach for semantic enhancement of customer survey.

In References [2], Noor Azah Samsudin, Shamsul Kamal Ahmad Khalid, Mohd Fikry Akmal Mohd Kohar have deployed a system that generates automatic customer feedback form after delivery of food. It is a mobile application that allows customers to be anywhere and give feedback. The drawback being that customers can skip providing feedback.

In references [3], A system for patients in hospitals to call for help by pressing a button is proposed. The message signal reaches the nurse who can call for doctors that reduces the response delay. The idea of using buttons for customer service was inferred from this paper.

III.SYSTEM DESIGN

The block diagram of the proposed system is presented in Figure 1. The flow of the process starts by detecting signals of responses from either of the two pushdown buttons. These buttons are connected to the Raspberry Pi. The response with the customer ID and the time at which it was recorded is stored in a relational SQLite3 database. A precise form of the customer details are displayed when the client requests for the details.The data is analysed to find the maximum good reviews and the time at which maximum reviews were recorded, to help clients make better customer friendly services.

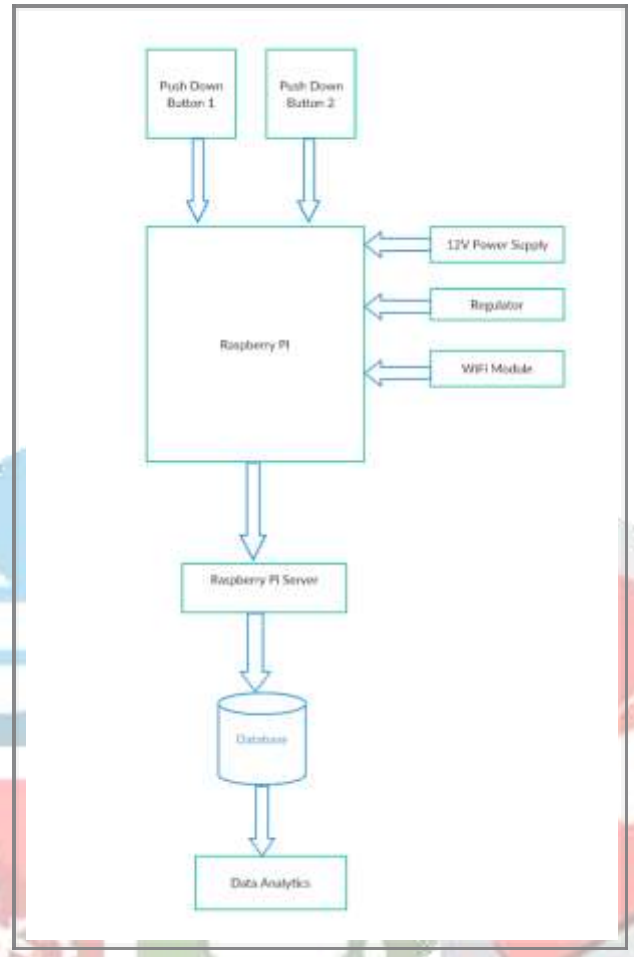


Figure 1: System Architecture of the proposed system

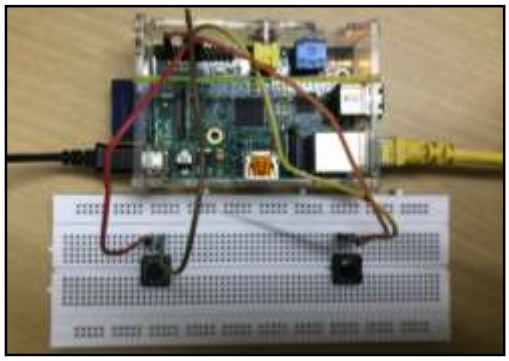
IV.MODULES

4. Hardware Design

Figure 2 depicts the hardware design of the proposed model. The components are:

- Two pushdown buttons
- Raspberry Pi
- Computer
- Jumper wires
- Power source
- Breadboard

The two pushdown buttons is fit into the breadboard. With the help of female male jumper wires, the switches are connected to 18 and 23 GPIO ports in the Raspberry Pi. The Raspberry Pi is connected to the computer via wifi. It is plugged to a power source to power



the circuit.

3.2 Software Development

Python programming language with SQLite 3 and Raspberry Pi packages are the minimum software requirements of the system. Linux based Rasbian operating system runs on Raspberry Pi. A python script is used to integrate the signals from the switch and converted into data that can be stored on a database. The relational database used to store customer details is SQLite3. Figure 3 shown below describes the internal flow.

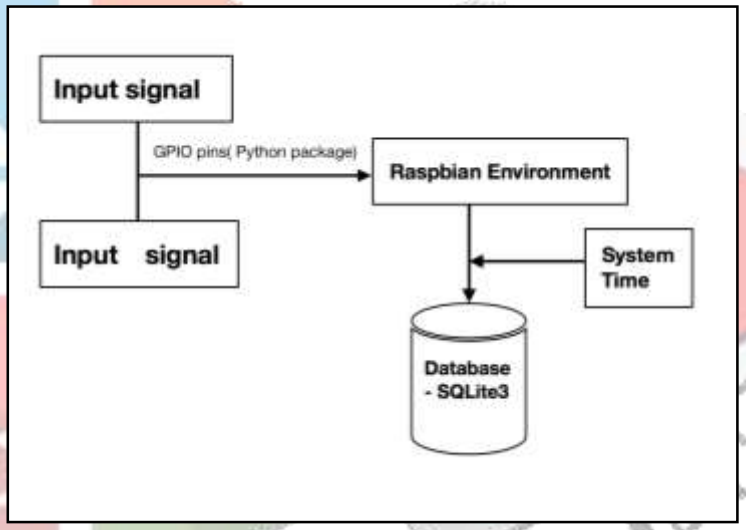


Figure 3: Internal Dataflow Diagram

3.3 Data Analysis

The data acquired from the customer is then further analysed to provide aggregated result that can possibly be of importance to the client. The table maintained in the database consist of three columns- customer ID, feedback, time. Customer ID is chosen as the primary key. Feedback is obtained from the switch signals. Time is computed to be the system time at which the switch was clicked. Three different observations are displayed to the client, one is all the recorded information, or total amount of good reviews and bad reviews or the time interval at which maximum good feedback was recorded. These results are evaluated using SQL query functions. Figure 4 shows the overall activity flow of the system.

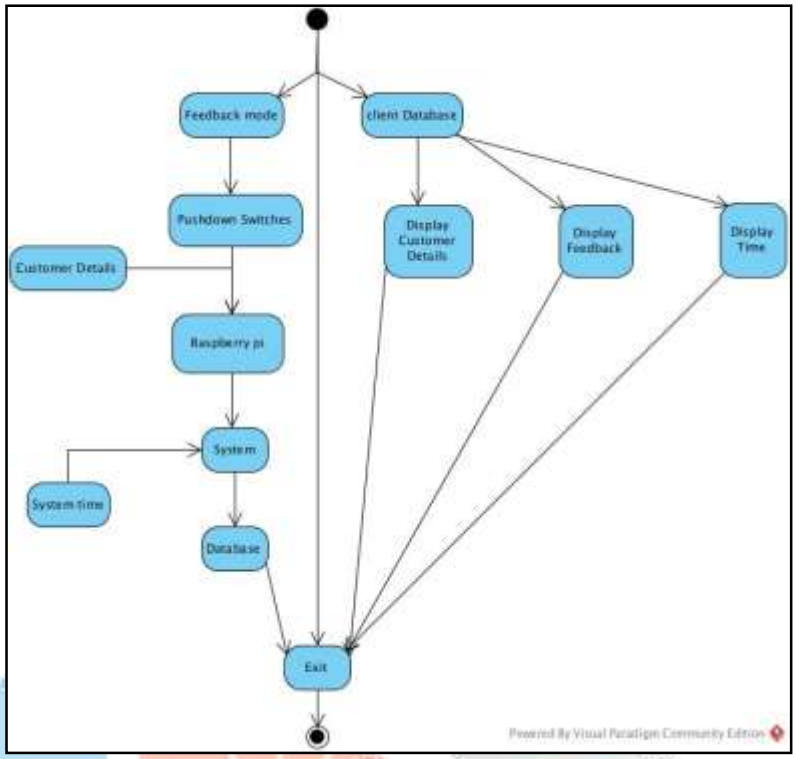


Figure 4: Activity Diagram of the system

IV. EXPERIMENT RESULTS AND DISCUSSION

In this experimental design, feedback from customers is obtained from switch signals from which data is analysed. As it involves hardware installations of switches and Raspberry Pi, there can be failures in hardware components. Apart from this, installing it on different platforms can also be burdensome. Otherwise, a simple straightforward design to obtain and display observations.

V. CONCLUSION

In this paper , the system is put in place to acquire customer feedback. The input by the customer is stored in a separate database and analysed. The analysed data is then passed to the organisation that requested for customer feedback services.A very caromed friendly user interface is put in place for the customer to provide feedback. Due to hardware installation procedures, this approach may not cost effective.However, the main aim of the paper is to reduce workload and ensure that customers provide feedback without fail, with which the organisations can improve their products and services.

VI.ACKNOWLEDGMENT

Nobody has been more important to us in the pursuit of this project than the members of our families. We would like to thank our parents, whose love and guidance are with us in whatever we pursue. Most importantly, we wish to thank our friends and professors who motivated us to complete this project in time.

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