Food Quality Monitoring System

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Abstract -- In a way we are always giving and receiving feedback. Our non-verbal communication can send out messages that we are not even aware of. Giving feedback, either good or bad, can be challenging. There are lot of food survey questions for a restaurant to evaluate food quality and food satisfaction feedback from customers. Those questions offers food quality evaluation, the value of food, hygiene levels and overall customer satisfaction. For this we're using an open-source micro-controller board and posting the feedback into the cloud.

Indexed Terms: Arduino, Cloud, ESP8266, Wi-Fi Network, ThingSpeak.

I. INTRODUCTION

Customer feedback is the specific instance or process of providing information to businesses about products, services and customer service. Many marketing, sales and management departments can all use this feedback system to improve profitability and streamline processes. This feedback enables restaurants or companies to assess the quality of food items. There exist different types of feedback. Restaurants can either implement internal feedback measures or by an external feedback measures to gather and analyse the quality of food. Our beloved customers can provide us feedback on food. Sometimes direct reports can also provide feedback on the food that how hygiene it is. The management of restaurant will use the feedback to improve the quality of food to be served. They will use the feedback from our beloved customers in order to improve the quality and to have more customers which will bring result of high profit of the business. Sometimes feedback is positive and sometimes it's negative. Remember that both are equally important. The goal of negative feedback should be to improve. The next steps are to maintain positive outcomes, improve average customers.

The users for the proposed system will be customers who are going to the restaurants and allowed to order the food, other users of the proposed system will be management of the restaurant who will be allowed to edit the new menu in the system and also can delete the previous ordering report from customers. The management of the restaurant will provide the menu, update and modify the menu by viewing the customer feedback and handle the quality food menu. Here, customer satisfaction is more important. Our System aims to make the quality food rather to quantity. To make customers get satisfied and comfortable with the food. Customer satisfaction in using efficient and effective food.

II. PROPOSED APPROACH

The procedure for the proposed approach is given by the following flow chart. Customer need to select the item to which he/she is going to give feedback. Then our beloved customer will enter the feedback for the selected item. At the end of the day feedback given by all customers will be taken as average and then uploaded to cloud.
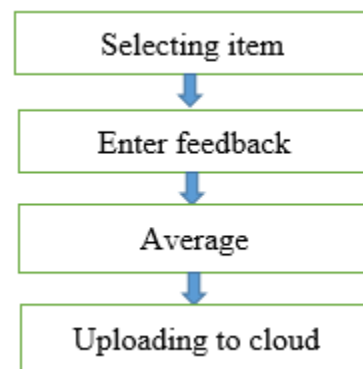

Fig.1 flow chart of the proposed system

For implementing this Feedback system, we make use of ESP8266 type of Nodemcu and Arduino software for writing the code to Nodemcu. Firstly, we make the system aware of all the available items so that the user

can access the menu to which the user desires to give feedback to. The user selects the items for which he wants to give feedback to. Then the LCD on the module acts as an interface to the user and software to give feedback on a scale of 1 to 10. The feedback is then processed and written to Cloud as the module is connected directly to internet. At the end of day the feedback is taken an average and accessible to all the members of the restaurant. The feedback helps to improve the quality and other factors that affects the sales of restaurant. The procedure mainly involves two phases to set the module.
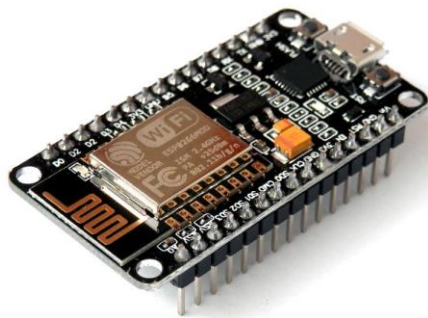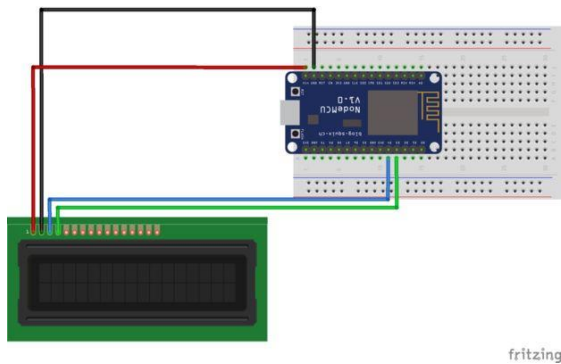

Fig.2 ESP8266 Wi-Fi module

Fig.3 LCD to Wi-Fi module

During the First Phase, the Code is written Arduino interface where it is made aware of all the items present in menu. So that the user can select the items from menu to give feedback to. The code is then written to the module where the credentials to connect

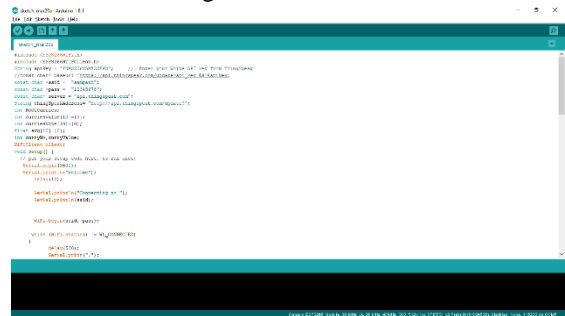to Cloud and network are mentioned in the code.

Fig.4 Arduino UNO

Fig. 5 code snippet

In the second Phase, the code is then dumped to the module using the Arduino Interface to the Nodemcu. The Nodemcu uses the configuration in the code and connects to the network and Cloud if the configuration is correct. In case of incorrect configuration, the module cannot connect to the network or the Cloud. The module can itself act alone to take and handle the feedback to upload it to the cloud. The uploaded feedback can be accessible by the restaurant members.
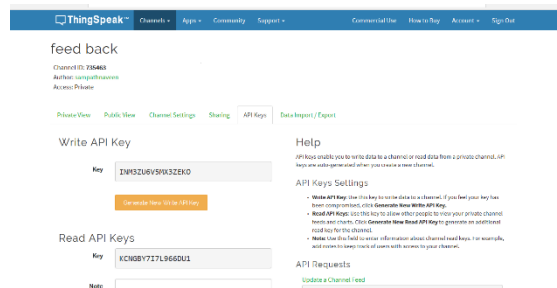

Fig.6 ThingSpeak Interface

After proper configuration of the module it can act independently, to take the feedback from the user for the desired items. The user rates the food on the scale of 1 to 10. Then the module takes the feedback and

writes it to the cloud. At the end of the day, the feedback is taken average for the individual items and will be posted into the cloud. The management of the restaurant will be able to access the average feedback of each item which was already uploaded into the cloud. Then in accordance with the feedback management of the restaurant decided that whether to improve or to maintain consistent quality. Sometimes there may be a chance of changing the menu. Then it will be easy to get feedback about the food quality for a restaurant.
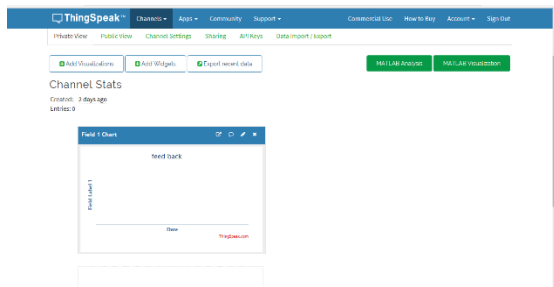

Fig.7 Fields in ThingSpeak

API keys enable you to write data to a channel or to read data from a private channel. API keys are auto-generated when you create a new channel. Write API key is used to write data to a channel and read API keys are used to allow other people to view your private channel feeds and charts. This feedback can be used to improve the quality and other factors that directly impact the business.

III. RESULTS AND OBSERVATIONS

As we have both write and read API keys to write and read data, we need read API key to allow management of the restaurant or customers to view the feedback written in the fields. Here we have many number of fields to write data. Based on our requirement that is depends on number of food items to be rated, fields are used. We can even get the result in the serial monitor itself. Serial monitor is part of the Arduino IDE software. It is a separate pop-up window that acts as a separate terminal that communicates by receiving and sending serial data. Here the serial data will be the feedback which has to be given by the customer.
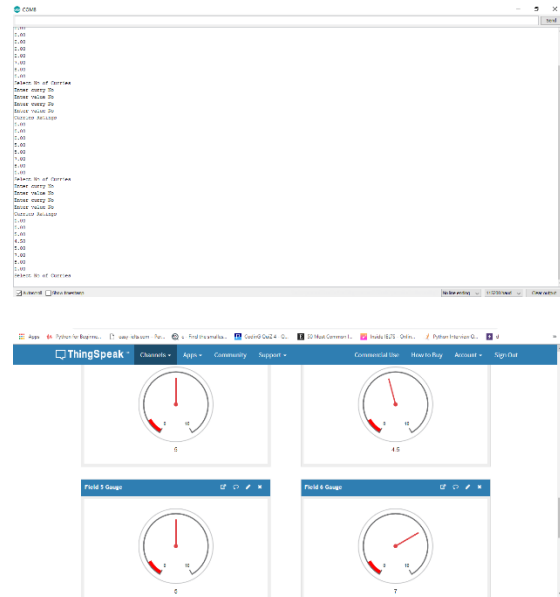

Fig.8 and I Results

The management of the restaurant is supposed to monitor the feedback posted in the fields in the ThingSpeak interface. Then they will get to know about the food quality in their respective restaurant.

IV. CONCLUSION

This implementation of feedback system can directly impact the business to improve the sales and the same system can be used at any business where customer interaction is necessary. It is an economical way to implementing the Feedback system that requires less or no infrastructure which can improve the business to improve at weak points.

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