Smart Refrigerator : IoT based system for food supply management

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Abstract:

Internet of Things is a renewable technology that allows objects, to interact and connect one with another through the internet, it gives many opportunities and can be used in many fields like in smart buildings, smart city, in health care, and more...
In this project, we will use it in smart refrigerators, where the use of IoT in the refrigerator leads to automat it and allow us to remote controlling the items and monitoring them in order to protect our food and thus protect our health and way of life.

Introduction:

The refrigerator is an important appliance in our life. The traditional refrigerators have been performing great task in preserving food items for a period of time, but there is need for more efficient ways of preserving and managing food items, save unnecessary cost, save food wastage, plan an organized menu, etc.
The main objective is to achieve the realization of an Intelligent Fridge prototype by simple components, in addition to develop cloud application for the management of the prototype.

Materials and methods:

To achieve the project we will develop and implement three sections:
First, An **IOT application** using an **IOT platform** and **Node-red.**
Second, the user interfaces which will be two **Android applications:**
1. The first application will represent the interface of the refrigerator.
2. The second application will be for monitoring and remote controlling the refrigerator.

To develop these two applications we will use **Android Studio.**
Third, the electronic side, which will be the prototype of the refrigerator and consists of a set of electronic components :
Arduino, Raspberry pi 3, Sensors and Actuator.
Other tools:
barcode technology, Tess two library.
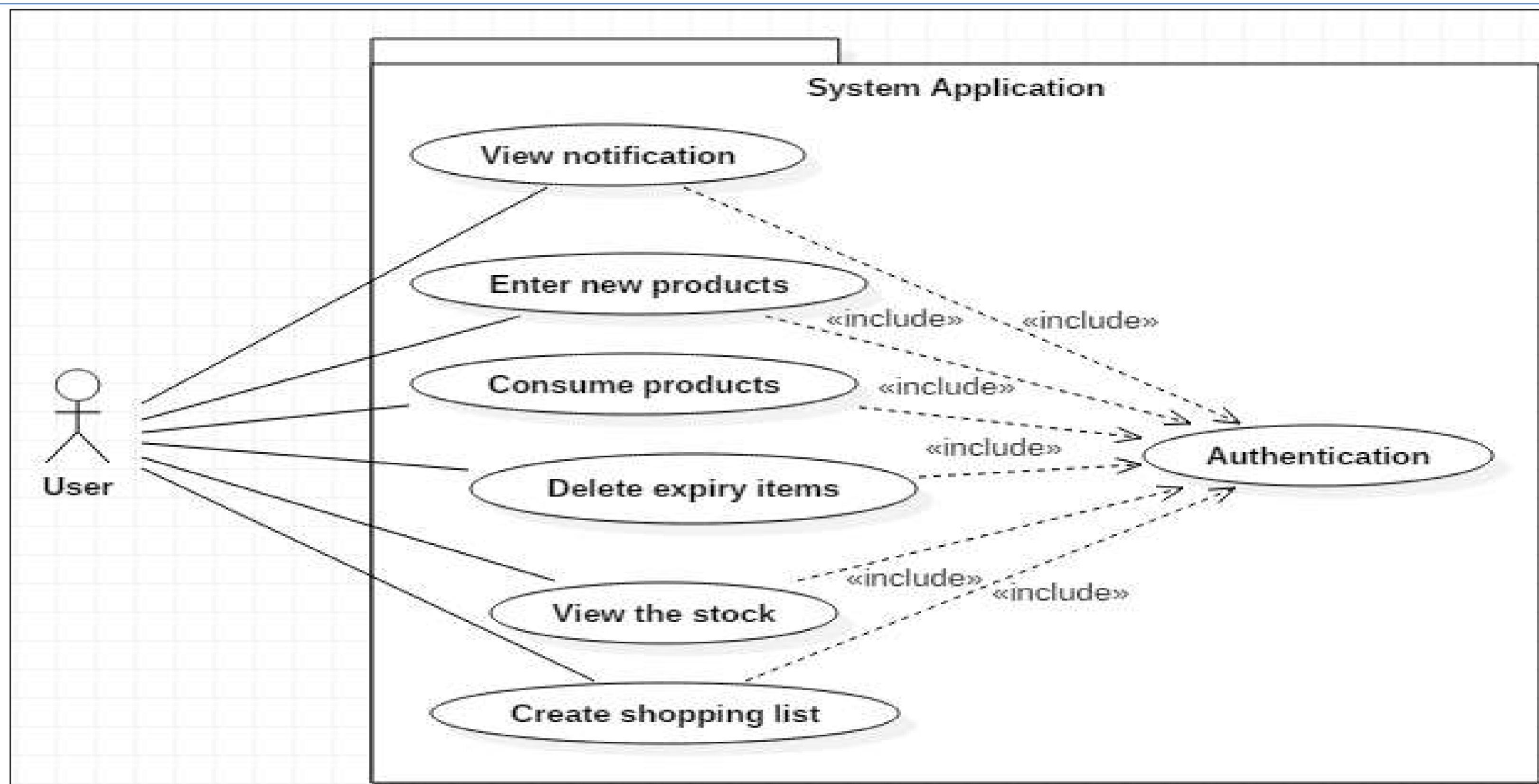

Result:

Nowadays, people are very busy with their work and do not have time to remember if they lack something in the fridge. If any ingredients such as vegetables, milk, eggs or others do not exist, our system will provide an alert to the user continuously. And it helps him to create a purchasing list. It also sends an alert to the user about the expired food, so the user should not check it by himself.
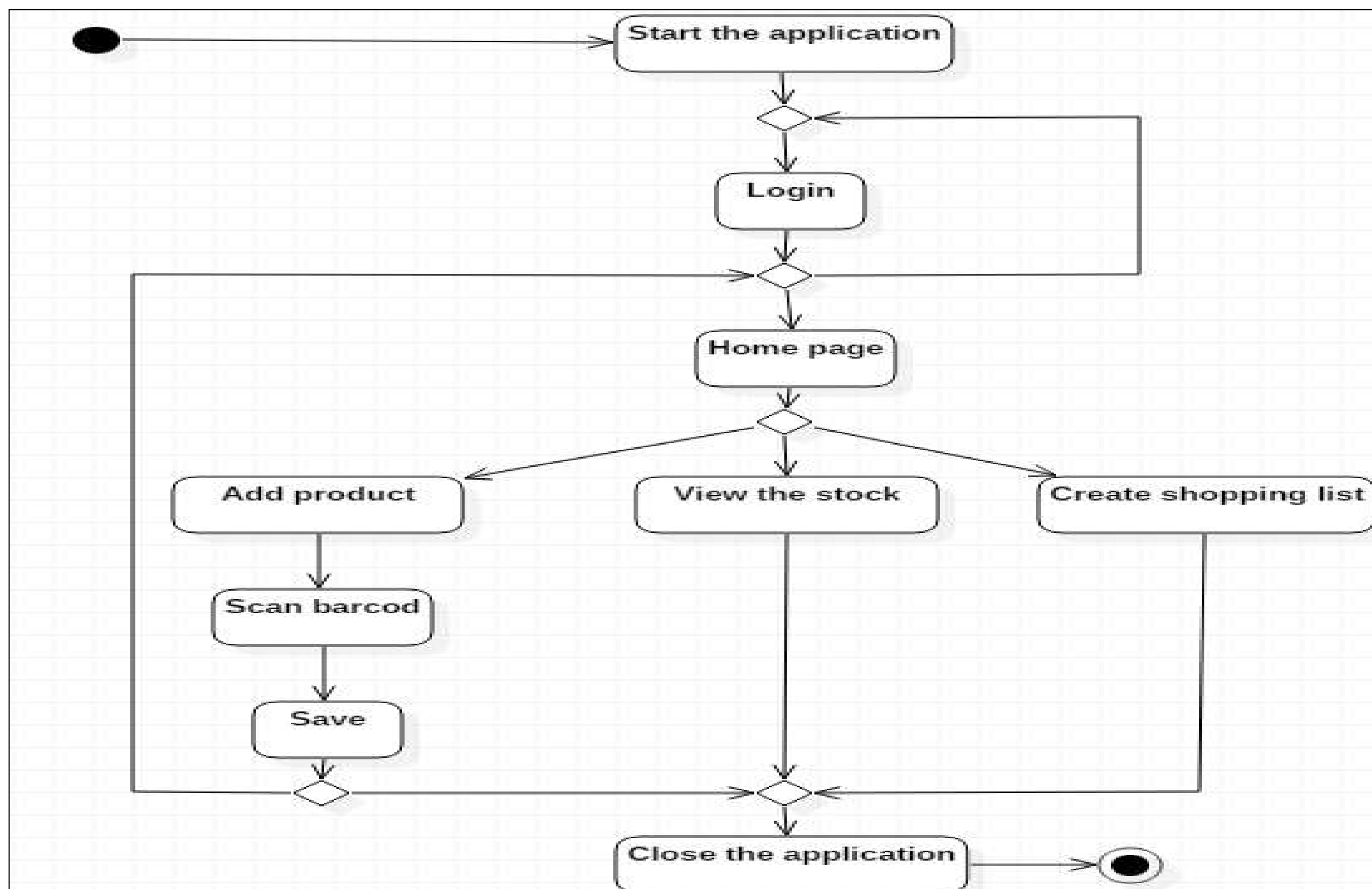
Discussion:

By observing and caring for our food, we are save our lives, when we keep track the vegetables, fruit and other items through The embedded system in the refrigerator, we avoid damaging the items, and if the food is damaged, the system sends an alert to the user to get rid of it.
With the help of the system to create a shopping list, it avoids the user returning home to inspect the refrigerator.
The system also checks the doors of the refrigerator if they are open for a long time and sends an alert to close them.

Architecture:
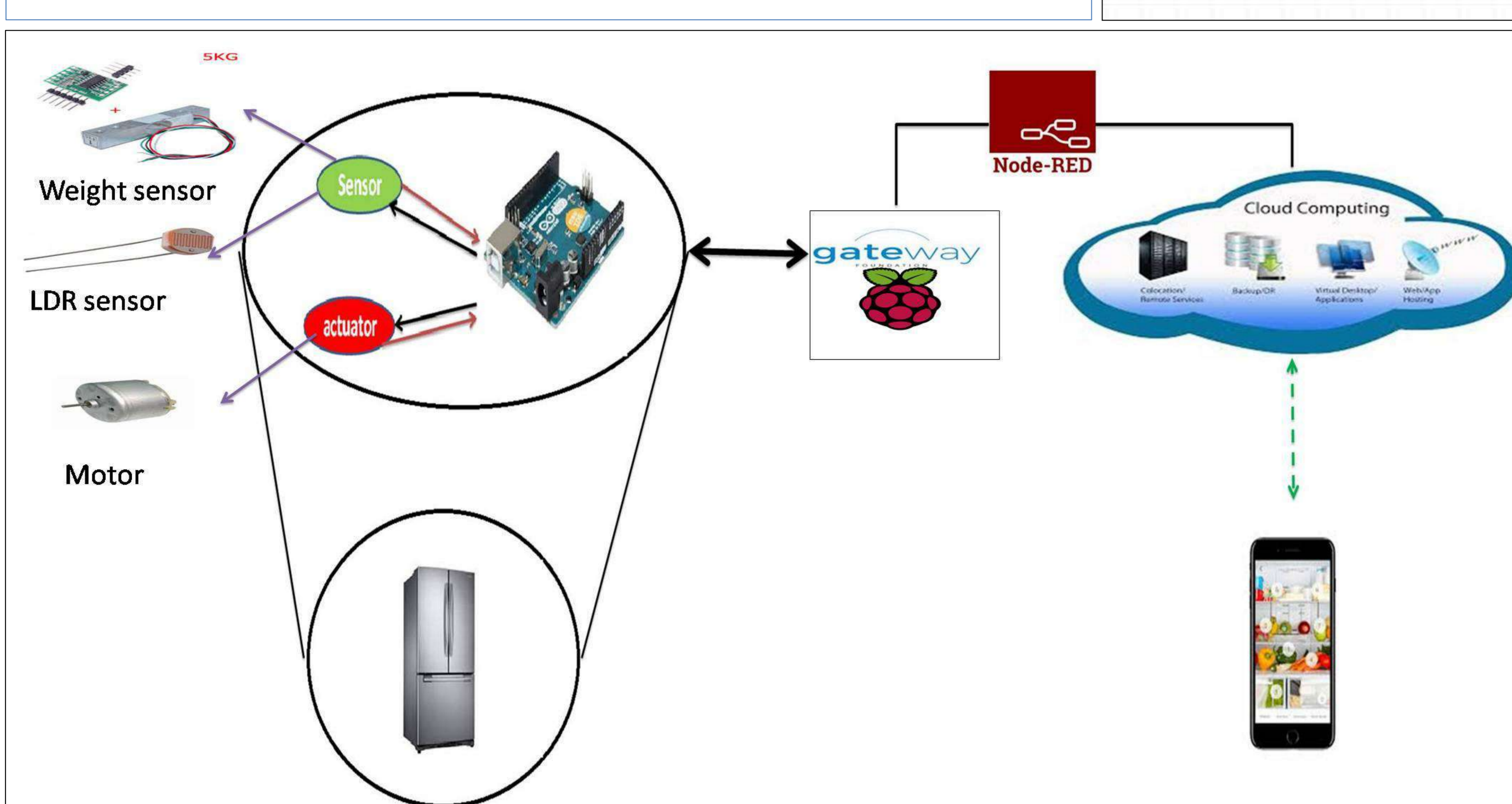
Conclusion:

In this paper we presented the smart fridge. It is designed to manage items stored in it. More importantly, it can perform other functions such as diet control, saving money with the least effort, economical and easy to use. We are confident that this smart refrigerator will be an important element in future smart homes.

References:

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