**SYSTEM STUDY**

IoT based chemical detection in fruits and vegetables is a smart system based on IoT technology and incorporates sensors to detect whether the fruits and vegetables contains chemicals on it and to identify which type of chemicals are used etc.

**EXISTING SYSTEM**

Monitoring of chemicals in fruits and vegetable sample uses gas chromatography and liquid chromatography or its combination are the traditional analytical techniques for identification and quantity determination of chemical residues. Moreover, they don’t have the ability of information sharing.

**Drawbacks of the existing system**

* Time consuming
* More man power
* Lack of efficiency

**PROPOSED SYSTEM AND ITS FEATURES**

The main objective of the proposed system is to reduce the diseases that causes in our human health. However, we have solution to reduce the chemicals in fruits and vegetables which cause severe damage to our health. The farmers use the chemicals and pesticides to get more profit. So we develop an IoT based chemical detection system to monitor the percentage of the chemicals present in the fruits and vegetables.

**Advantages**

* High efficiency.
* Reduces the issues occurred while using chemical added food items.
* Measures the percentage of chemicals used accurately.
* Less man power.

**FEASIBILITY STUDY**

The feasibility study concerns with the considerations made to verify whether the system fit to be developed in all terms. Main objective of feasibility study is to test the technical, social and economic feasibility of developing a system. This is done before developing a system. This is done by investigating the existing system in the area under investigation and generating ideas about the new system.

**Technical Feasibility**

The system must be evaluated from the technical view point first. Sensors are used detect the chemicals in fruits and vegetables. Arduino is a microcontroller connected to computer, the program in the Arduino gives for the output display. Embedded C is used for programming.

**Operational Feasibility**

This test of feasibility asks if the system will work when it is developed and installed. The project is implemented in Embedded C.Embedded C is a set of language extensions for the [C programming language](https://en.wikipedia.org/wiki/C_(programming_language)) by the [C Standards Committee](https://en.wikipedia.org/wiki/ISO/IEC_JTC_1/SC_22) to address commonality issues that exist between C extensions for different [embedded systems](https://en.wikipedia.org/wiki/Embedded_system). In this project, we are sensing the ph value of the chemicals by using a ph sensor and displaying which chemicals are used in each of the fruits and vegetables.

**Economic Feasibility**

This system requires a microcontroller called Arduino 2560, sensors and a display. These materials costs above Rs.4000.

**SYSTEM REQUIREMENTS AND SPECIFICATIONS**

**HARDWARE REQUIREMENTS**

These are the hardware requirements used in this project,

* Operating Voltage : 5 Volt
* Processor : Intel
* RAM : 4 GB
* Input Voltage : 7 to 20 Volts
* Digital I/O Pins : 14 (of which 6 provide PWM output)
* Analog Input Pins : 6

**SOFTWARE REQUIREMENTS**

These are the software configurations used in this project,

* Operating System : Windows 7
* Front End : Embedded C

**SYSTEM DESIGN**

System design is a reduction of an entire system by studying the various operations performed and their relationships within the system and the requirements of its success. One aspect of design is defining the boundaries of the system and determining whether or not the candidate system should consider other related system. System can be defined, as an orderly grouping of interdependent components can be simple or complex. The idea of the systems has been most practical and necessary in computerizing the interrelationships and integration of operations, especially when using computers. Thus it’s a way of thinking organizations and their problems. An organization consists of several interrelated and interlocking components.

The first step in the system design is to determine how the output is to be produced and in what format. Samples of the output and the inputs are also presented. In the second step, input data and master files are to be designed to meet requirement of the proposed output. The processing phase’s system’s objectives and complete documentation. Finally, details related to justification of the system and an estimate of the impact of the candidate system on the user and organization are documented and evaluated by management as a step towards implementation. System design can be considered as the important point in the system development cycle.

**Requirements of specification**

Requirement specification simply means, “Figuring out what to make before you make it”. It determines what people need before you start developing a product for them. Requirement definition is the activity of translating the information gathered in to a document that defines a set of requirements. These should accurately reflect what consumer wants. It is an abstract description of the services that the system should provide and the constraints under the system must operate. This document must be written for that the end user and the stake holder can understand it.

The requirements of specification of the proposed system are as follows:

* Minimum time needed for various processing
* Better Service
* Faster response time
* User Friendly