**SOFTWARE ENGINEERING PROJECT**

**REPORT**

**ON**

**SMART AGROHELP**

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**1. Introduction**

**1.1 About Project:**

This is a web based project which is useful for farmers and agricultural students. This is an open discussion portal providing solutions to small farmers and agricultural students. It also provides soil analysis for all regions and suggestions on which fertilizers to use where and how much? And which crop, herb or vegetable to be grown where and in which season? It also helps to make decisions on market and best prices. Information about major crop markets and their current price for the crop will be published daily. NGO’s are trying to spread messages to make agriculture more eco-friendly through this site. This also includes training scheduled by agricultural officers. Training is requested by students, general public. Training provides information about crops, fertilizers, and market details that are requested. Online query handlings for all users. Queries can be posted by students, general public through mails. Queries can be directed to a particular officer. Information pages should be dynamic so that agricultural officers and administrator can change it.

**2. Project Analysis**

**2.1Purpose of the Project:**

It is an open discussion portal used for agricultural students and farmers. Any general public can use this system for knowing the information about various crops, and the usage of fertilizers to those crops and in which soil these crops give more yield and the climatic conditions for those crops.

Training is requested by the students, general public. These trainings are scheduled by agricultural officer. Information about major crop markets and their current price for the crop will be published daily.

Current prices of the markets are updated daily by the NGO. It gives information regarding all the states in India.

**2.2 Existing System:**

Complexity in managing the data related to the agriculture products, soils, fertilizers, mandi/market details.

**2.2.1 Problems in existing system:**

* Lack of security.
* This system does not provide category wise classifications of products.
* Inefficiency in querying details.
* Periodic Report generation takes lot of time.

**2.3 Proposed system:**

The development of this new system contains the following activities, which try to automate the entire process keeping in the view of database integration approach.

* Reduce complexity in managing the data related to the agriculture products, soils, fertilizers, mandi/market details.
* Current system provides different access levels for security.
* Rich user interface is provided in order to interact with application.
* Reports are generated dynamically on a periodic basis.
* Efficiency in querying details.
* User Queries and Answers are maintained.

**3. Requirement Analysis**

* 1. **Purpose and Scope:**
* **Purpose:**

It is an open discussion portal used for farmers and agricultural students for knowing the information about various crops, and in which soil they grow more, and the usage of fertilizers to the crops. If necessary training is given to the students and farmers.

* **Scope:**
  + - Providing accessibility to all users who have a valid userID and password.
    - Generating monthly and daily reports of the market
    - User can post query. They can see answers only after they have logged in.
    - Communication is provided for the user through mails.

**3.2 Users of the system:**

* Farmers and agricultural students
* General public
* Administrator
* Agricultural officers

**4. Specific Requirements**

**4.1 Functional and Non- Functional Requirements:**

**Functional Requirements:**

* Individual profile management for all kind of users.
* Basic soil analysis for all regions and suggestions on which fertilizers to use where & how much? Which crop, herb or vegetable can be grown where and in which season?
* Online query handlings for all users. Queries can be general or directed to a particular officer.
* Officers/NGOs can schedule trainings and publish it online. General public, farmers and agriculture students can request training online.
* Facilitate communication between user, experts and general public through mails.
* Information about major crop markets (mandi) and their current price for crop should be published daily.
* Information pages should be dynamic so that agriculture officers and administrator can change it from their interface easily.

**Non-functional Requirements:**

* Secure access of confidential data (user’s details).
* 24 X 7 availability
* Better component design to get better performance at peak time
* Flexible service based architecture will be highly desirable for future extension

**4.2 User Interface Requirements:**

* Professional look and feel
* Browser testing and support for IE, Chrome, and Firefox.
* Reports exportable in .doc or any other desirable format.

**4.3 System Architecture:**

Database

Web client

Http servlet request

Http servlet response

Web components

C#

components

1

2

3

4

5

6

Figure 1: System Architecture

**5. System Requirements**

**Technologies Used:**

* UML
* Java script
* ASP .NET
* C#
* Microsoft SQL Server

**UML:**

The Unified Modeling Language (UML) is an open method used to specify, visualize, construct and document the artifacts of an object-oriented software-intensive system under development. UML offers a standard way to write a system's blueprints, including conceptual components such as:

Actors, Business processes and System’s components and activities.

**Java script:**

JavaScript is a script-based programming language that was developed by Netscape Communication Corporation. JavaScript was originally called Live Script and renamed as JavaScript to indicate its relationship with Java

**ASP .NET:**

**ASP.NET** is an [open-source](https://en.wikipedia.org/wiki/Open_source) [server-side](https://en.wikipedia.org/wiki/Server-side_scripting) [web application framework](https://en.wikipedia.org/wiki/Web_application_framework) designed for [web development](https://en.wikipedia.org/wiki/Web_development) to produce [dynamic web pages](https://en.wikipedia.org/wiki/Dynamic_web_page). It was developed by [Microsoft](https://en.wikipedia.org/wiki/Microsoft) to allow [programmers](https://en.wikipedia.org/wiki/Programmer) to build dynamic [web sites](https://en.wikipedia.org/wiki/Web_site), [web applications](https://en.wikipedia.org/wiki/Web_application) and [web services](https://en.wikipedia.org/wiki/Web_service).

**C#:**

C# (pronounced as see sharp) is a multi-paradigm programming language encompassing strong typing, imperative, declarative, functional, generic, object-oriented (class-based), and component-oriented programming disciplines. It was developed by Microsoft within its .NET initiative and later approved as a standard by Ecma (ECMA-334) and ISO (ISO/IEC 23270:2006). C# is one of the programming languages designed for the Common Language Infrastructure.

**Microsoft SQL Server:**

**Microsoft SQL Server** is a [relational database management system](https://en.wikipedia.org/wiki/Relational_database_management_system) developed by [Microsoft](https://en.wikipedia.org/wiki/Microsoft). As a [database server](https://en.wikipedia.org/wiki/Database_server), it is a [software product](https://en.wikipedia.org/wiki/Software_product) with the primary function of storing and retrieving data as requested by other [software applications](https://en.wikipedia.org/wiki/Software_application) which may run either on the same computer or on another computer across a network (including the Internet).

**Tools used:**

* SQL Server Management Studio 2012
* Microsoft Visual Studio 2015 Community Edition
* IIS Express
* Google Translate API

**SQL Server 2012 Management Studio :**

**SQL Server Management Studio** (SSMS) is a software application first launched with the [Microsoft](https://en.wikipedia.org/wiki/Microsoft) [SQL Server 2005](https://en.wikipedia.org/wiki/Microsoft_SQL_Server) that is used for configuring, managing, and administering all components within Microsoft SQL Server. The tool includes both script editors and graphical tools which work with objects and features of the server.

SQL Server 2012 Management Studio is used to create database system for the project

In the form of .mdf and .ldf files .It is used to host this database on a local database server and it was linked to the localhost web server to retrieve and update data in the database.

This database can be updated by the Administrator and the Agricultural Officer. The database is used to store information about the Administrator, the Agricultural Officer and the User and other information.

**Microsoft Visual Studio 2015 Community Edition:**

**Microsoft Visual Studio** is an [integrated development environment](https://en.wikipedia.org/wiki/Integrated_development_environment) (IDE) from [Microsoft](https://en.wikipedia.org/wiki/Microsoft). It is used to develop [computer programs](https://en.wikipedia.org/wiki/Computer_program) for [Microsoft Windows](https://en.wikipedia.org/wiki/Microsoft_Windows), as well as [web sites](https://en.wikipedia.org/wiki/Web_site), [web applications](https://en.wikipedia.org/wiki/Web_application) and [web services](https://en.wikipedia.org/wiki/Web_service). Visual Studio uses Microsoft software development platforms such as [Windows API](https://en.wikipedia.org/wiki/Windows_API), [Windows Forms](https://en.wikipedia.org/wiki/Windows_Forms), [Windows Presentation Foundation](https://en.wikipedia.org/wiki/Windows_Presentation_Foundation), [Windows Store](https://en.wikipedia.org/wiki/Windows_Store) and [Microsoft Silverlight](https://en.wikipedia.org/wiki/Microsoft_Silverlight). It can produce both [native code](https://en.wikipedia.org/wiki/Native_code) and [managed code](https://en.wikipedia.org/wiki/Managed_code).

Microsoft Visual Studio 2015 Community Edition is the main application used to develop this website. Javascript is used to produce additional information pop-ups in the website. It is used to develop all the web pages (.aspx) . The back-end

Coding of these pages was done in C# programming language.

**IIS Express:**

**Internet Information Services** (**IIS**, formerly **Internet Information Server**) is an extensible [web server](https://en.wikipedia.org/wiki/Web_server) created by [Microsoft](https://en.wikipedia.org/wiki/Microsoft) for use with [Windows NT](https://en.wikipedia.org/wiki/Windows_NT) family.[[2]](https://en.wikipedia.org/wiki/Internet_Information_Services#cite_note-2) IIS supports [HTTP](https://en.wikipedia.org/wiki/HTTP), [HTTPS](https://en.wikipedia.org/wiki/HTTPS), [FTP](https://en.wikipedia.org/wiki/File_Transfer_Protocol), [FTPS](https://en.wikipedia.org/wiki/FTPS), [SMTP](https://en.wikipedia.org/wiki/Simple_Mail_Transfer_Protocol) and [NNTP](https://en.wikipedia.org/wiki/Network_News_Transfer_Protocol). It has been an integral part of the Windows NT family since [Windows NT 4.0](https://en.wikipedia.org/wiki/Windows_NT_4.0), though it may be absent from some editions (e.g. Windows XP Home edition), and is not active by default.

It is used to host this website on the local web server created by it.

**Google Translate API :**

With Google Translate, you can dynamically translate text between thousands of language pairs.The Google Translate API lets websites and programs integrate with Google Translate programmatically. It was used to translate this website from English to Regional language like Hindi and Kannada.

**6. System Design**

**6.1 System Specific Modules:**

It has been modularized into following modules:

1. User Module
2. Soils and Fertilizers
3. Crop Details
4. Market Details
5. Reports
6. Mails
7. **User Module:**

First, to enter this system the users has to login to this system. Basically there are 3 types of users in this system.

* + Admin users - Has full access to all the modules of this system.
  + Farmers and Agriculture Students – Has restricted access. i.e., Normal users have access to some of the modules only.
  + Agricultural officers: Has also restricted access.

1. **Soils and Fertilizers:**

This module is used to maintain the various Soils and Fertilizers Details. This module will be enabled only to the admin type of users.

This module contains:

* + A separate screen should be provided to maintain the Soils and Fertilizers Details. It should provide a way to add, modify and delete the both details.
  + If a new Soil Information is received it should be added to the System.
  + If a new Fertilizer information is received it should be added to the system with the corresponding details like soil name, crop type, crop name etc.

**3.Crop Details:**

This module is used to maintain the various details about crops. This module will be enabled only to the admin type of users.

This module contains:

* + A separate screen should be provided to maintain the Crops Information. It should provide a way to add, modify and delete the crop details.
  + If a new crop information is received, it should be added to the system with the corresponding details like Soil Name, Crop Type, Crop Name and Season.

**4.Market Details:**

In this module we can maintain the market details. This module will be enabled only to the admin type of users.

This module contains:

* A separate screen should be provided to maintain the market related information. It should provide a way to add, modify and delete the market related information.
* Administrator type of user can add the commodities in the market.
* He can add the information about new markets into the system.
* He can add the market report into the system regarding a particular market and commodities prices details in that market in a day.

**5.Reports**

This module is used to prepare various online reports.

* Area Wise Crops report – This contains various information about the crops in a particular district.
* Soil Based Fertilizers report – This contains various information about the fertilizers based on the state, district, crop type and season.
* Commodity Wise report – This gives the different details about a particular commodity in a particular state and district.
* Market Wise Daily report – This gives the daily information about the various Markets in a particular state and district.
* Market Wise Monthly report – This report gives the market information in state and district in a particular month.

**6.Mails:**

This module provides the mail system to every user in the system who are authenticated.

* He can view the inbox to know about the emails he got.
* He can view the sent mails to know the mails he sent.
* He can send the mail to another user.
  1. **6.2 System Evolution**

Our system should provide services to the users who are existing in this system. Users should have valid user id and password to enter the system. The administrator, agricultural students, general public, agricultural officer can use the benefits of the system who are having valid user id and password.

**System to be changed:**

In the existing system periodic generation of reports takes lot of time. It is time consuming and lot of complications will arise. So there is necessity to change the system and then the time taking will be very short.

**System understanding:**

Complete understanding of the system that is to be done i.e. brief study of the requirements and designing of the system is to be developed.

**System validation:**

Validation can be find in many ways, but a simple definition is that validation succeeds when software functions in a manner that can be reasonably expected by the user, i.e. fulfilling all the user specified requirements.

**Modified system:**

Modified system provides periodic generation of reports which is not available for the existing system such that reduce work being done manually and time consumption.

1. **Conclusion**

By this project, we provide various information required for farmers and agricultural students and also providing solutions to them about queries posted by them. It also provides information about crops, fertilizers, Bank loans, Government Schemes and Modern farming Techniques. This makes agriculture more eco-friendly, more productive and this portal is very useful to farmers and agricultural students to increase their agricultural outcome.

**8. Appendix A - Hardware and Software Configurations**

**HARDWARE REQUIREMENTS:**

Processor : Pentium IV

Hard Disk : 40GB

RAM : 512MB or more

**SOFTWARE REQUIREMENTS:**

Operating System : Windows XP/2003 or later /Linux

User Interface : ASP .NET

Client-side Scripting : JavaScript

Programming Language : C#

Database : Microsoft SQL Server

Server Deployment : IIS

**9. Appendix B- Limitations and Enhancements**

**Limitations:**

* It is open discussion forum so that everyone uploads unwanted and wrong information so that it misleads the students and farmers.
* Quite inefficiency in querying details.

**Enhancements:**

It is not possible to develop a system that makes all the requirements of the user. User requirements keep changing as the system is being used. Some of the future enhancements that can be done to this system are:

* As the technology emerges, it is possible to upgrade the system and can be adaptable to desired environment.
* Because it is based on object-oriented design, any further changes can be easily adaptable.
* Based on the future security issues, security can be improved using emerging technologies.
* Case Registration module can be added

**10.** **Appendix C-Bibliography:**

**References:**

(1) Wikipedia, URL: <http://www.wikipedia.org>.

(2) Answers.com, Online Dictionary, Encyclopaedia and much more, URL: <http://www.answers.com>

(3) Project Management URL: <http://www.startwright.com/project.htm>