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ABSTRACT

With the growth in world population, the food consumption also grows rapidly. To meet the demand-supply ratio, change in the agriculture pattern is necessity. By this point of view, we have introduced project that is the “**Smart Farmer Service**”.

A **Smart Farmer Service** is a web site that helps Farmers to they sell and buy crop products online, buy agriculture products and get news about latest technology and farming, etc. It also provides of other features like provide price of product in all nearby market yard, farmer can give/take agriculture machines on rent, proper guidelines about use of fertilizer, how to produce organic fertilizers, government schemes, loan and insurance. □

Our website provides all necessary facilities to farmer online with easily accessible way for the growth of farmers.

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CHAPTER-1 INTRODUCTION

1.1 Why Smart Farming is require?

- Farming has been an important part of civilization for thousands of years. Farming provides society with quality, locally-grown food and allows some people to become self-sufficient by growing their own products. Farming also boosts rural employment which in turn helps the economy thrive.
- Farming may not sound like an issue you need to care about, but the agriculture industry is in dire need of refinement because farmers are facing many problems. The farmers suffer from infrastructural and economic problems in their routine life. This is mainly due to the lack of proper guideline and technical resources. Farmers are not acquainted with advanced agricultural practices. This holds them back from utilizing the proper technical resources in farming and other practices.

1.2 Problem Statement:

We talk to many different types of farmers and visit website to know the problems faced by farmers. List of major problems faced by farmers:

- **Unavailability of good quality of seeds:**
 - Seeds are the basic input or raw material for the farmers to grow crops. But there is a lack of availability of the good quality of seeds in the market. And if the good quality seeds are available, they are so expensive that the poor and marginal farmers are not able to afford.
 - Due to this, farmers are bound to use the traditional seeds which less productive and yields fewer crops.
 - We can't fully solve this problem as seed are made by private companies but we can provide feature by which farmer who have good quality of seeds can sell them to other farmers and also provide guidelines to buy seeds.
- **Dealing with local traders and middleman:**
 - Due to the absence of mandi houses and proper market places, farmers are not able to sell their crops and get a reasonable price. In this situation, they have to look for a middleman and local traders for business.
 - These middlemen don't provide a reasonable price for their crops, and hence farmers are bound to either sell crops at a lower price or just throw at the roads.
 - We can provide functionality that farmers can post about their crops and anyone who want to buy that can contact farmer. We can also add that farmers can see the prices of their crops in all nearby market so that farmer can get good price for crops.

- **Lack of knowledge of fertilizer:**

- Lack of adequate knowledge among farmers about the nutritional requirement of crops, proper guidelines on the right use of plant nutrients, right time to use fertilizer.
- Because of that yields fewer crops in farms.
- We can provide manual for fertilizer which includes
 - which fertilizer used in which crops?
 - How to used fertilizer?
 - What is the best time to use? and other details about fertilizer.
- Nowadays, farmers are using organic pesticides and people also demanding for organic products. So, we can provide manual how to made organic pesticides and how to use them.

- **Lack of modern equipment:**

- The majority of Indian farmers use traditional tools for agriculture such as plough, sickle, etc. This leads to the wastage of energy and manpower and less yield per capita labour force.
- Only little use of the machine is seen in irrigation, harvesting and transportation. There are two reason why farmers are not using modern equipment. First, they are not aware, and second, they can't afford such equipment.
- We can provide full guidelines of modern equipment and also about loan and subsidies by which farmers can buy them. We can also provide facility by which farmer who have modern equipment can give it to other farmers on rent.

- **Lack of knowledge of government scheme:**

- Government provide many facilities to farmers. All Farmers can't take advantage of it. There are two reason for it. One is, Some of farmers don't know about the government scheme and Second is, Some farmer know about government schemes but do not know about how to apply for that scheme.
- We can give functionality that farmer can see all government scheme regarding to farming and also provide manual which help them to know how to apply for scheme, eligible criteria and more about scheme.

- **Crop Destruction Due to unstable Weather:**

- Every year farmers face many problems due to heavy rain and sometimes due to no rain. Other reason for crop failure is crop being consumed by pests such as armyworms and attack by locusts and other worms.
- We can provide guidelines about how to get rid from insects and full detail about crop insurance policies.

1.3 Current System Analysis

1.3.1 Study of current System

- As we know that nowadays farmers are facing so many problems like unavailability of good quality of seeds, not getting good price of crop due to dealing with middleman, not getting advantage of government schemes due to lack of knowledge of government scheme and many more.
- Current system give facility to farmer that they sell and buy crop products online, buy agriculture products, chat with experts, get news about latest technology about farming, etc. Current system does not provide farmer to know prices of product in all nearby market yard, no platform where farmer can give/take agriculture machines on rent, no proper guidelines about government schemes, loan and insurance.

1.3.2 Problems and Weakness of Current System

- Current system does not provide farmer to know prices of product in all nearby market yard.
- No platform where farmer can give/take agriculture machines on rent.
- No proper guidelines about loan and insurance.
- Current system does not provide information about latest government scheme and about its further procedure to apply it.
- The current system does not provide website to farmer in their local language.

1.4 Project Definition

A Smart Farmer Service is a web site that helps Farmers to they sell and buy crop products online, buy agriculture products and get news about latest technology and farming, etc. It also provides of other features like provide price of product in all nearby market yard, farmer can give/take agriculture machines on rent, proper guidelines about use of fertilizer, how to produce organic fertilizers, government schemes, loan and insurance.□

Our website helps farmers to access the information for betterment of farming in easy and faster way.

1.5 Feature of System

Smart Farmer Service has below features.

- ✓ Farmers are able to Sell and Buy Agriculture Product.
- ✓ Farmers can give/take agriculture machines on rent.
- ✓ Farmers can know price of product in all nearby market yard.
- ✓ Farmers get guidelines about fertilizers, pesticide, loan, insurance and government schemes.
- ✓ Farmers get notification of latest agriculture news and weather updates.
- ✓ Customers and Owner of Market yard can buy product from farmer directly.
- ✓ Agriculture product seller can sell product online.
- ✓ Farmers can connect to each other and get help via messages and audio/video calls.

CHAPTER-2 SYSTEM ANALYSIS AND REQUIREMENT

2.1 SYSTEM ANALYSIS:

2.1.1 Requirementsof System

Main Requirement Of new System is that, farmers /customers/agriculture product seller are able to use all features of this system. Farmers are able to sell products, buy products and access to available guidelines. Customers are able to buy products. Agriculture product seller are able to sell their products.

User Requirements

User requirements include not many things, but the most important thing is user must be aware that system works properly with full availability, reliability, security and safety. The user responsibilities are as follow:

- Should know how to use it.
- Should able to access Help manual.

System Requirements

Users are able to know how system works.

Actors: (User)

Admin, users (farmers, customer, owner of market yard, agriculture product seller)

Functional Requirements:

- Verification OTP is send to user when he/she registers for the first time.
- Authentication of user when he/she tries to login in to the system.
- Notification send to farmer when new government scheme, loan scheme, insurance scheme, latest technology release, agriculture product seller post about new product and someone react to the post of their product selling.
- Message send to farmer when someone send messages or call her/him on website.
- Notification send to customer and market yard owner when someone post about product selling.
- System shutdown in the case of a cyber attack.

Nonfunctional Requirements:

- OTP Should be sent with a latency of no greater than 12 hours.
- Each request should be processed within 10 seconds.
- Notifications should be sent within 2-3 hours.
- All data should be stored in proper way.
- The site should load in less seconds.
- All payment should be perform safely data should be stored for further

request.

2.1.2 Feasibility Study

Technical Feasibility:

Technical feasibility is considered in terms of technical requirement and their availability in the market it determines whether the current level of technology supports the proposed system or not. The technical possibility of proposal system is as follow:

- At least one person is required which works as administrator.
- Manual describing Task file are available as soft copy.
- The unit does process the hardware as well as related Software for the project.
- The proposed system does not require much technical detail.
- The current manual working system is not so much sufficient.
- It just requires windows operating system.
- The organization has cared purchased all the enough devices for latest technology.

Economic Feasibility:

The Economic feasibility is considered in terms of money of or price value. The organization measures the cost effectiveness of the Project.

- Software purchase cost incurred (which is zero in our case).
- Data Gathering costs which includes information gathering costs.
- Man Power which includes developer and guides.
- The organizations are ready to invest in proposed system for latest technology and best result.
- The unit has not to spend much amount for the computer hardware and software.
- The organization is in position and also incapable to pay amount for the system. As a result the project processes the economic feasibility.

Operational Feasibility: -

At the ultimate feasibility consideration of the proposed system will fulfill the department's requirements. Operational feasibility as under:

- The proposed system will fulfill the organization's requirements.
- The responsible user of the system that is managers, accountants and partners are honesty enthusiastic for the new system.
- It will be easier and efficient to take various decisions and actions for the institute as it is based on the official Documents.
- People with a basic knowledge of computers would be able to use our system very effectively and easily, as the system would have and intuitive GUI. The officers have a working knowledge of computers so understanding the

working of the system and using it would be easy from the decision maker's point of view.

Consequently, we can say this system is also processes the operational feasibility hence with study of the above three major area of feasibility. It is quite natural that the organizations are ready to go ahead and work with proposed system.

Schedule Feasibility:-

- It is the most important part of the feasibility study because it deals with time limits of the system to be complete.
- The system schedule is first completing system design and after that all implementation will be performed. If system complete in 6 months so I can add more features.

2.2 SYSTEM REQUIREMENT STUDY

2.2.1 Technology Used

The Application Of online smart farming is the web-based systems so the following web-based Software is used to develop the proposed system.

Component	Reason
<u>Development Tool</u> Visual Studio Code Notepad++ Sublime Text	<ul style="list-style-type: none">• VCS Notable features are debugging, intelligent code completion ,syntax highlighting.• Powerful debugging toll.• It has a quick navigation ,adaptive matching od commands simultaneous editing.
<u>Web server</u> Apache	<ul style="list-style-type: none">• Easy to configure.
<u>Database</u> PostgreSQL	<ul style="list-style-type: none">• Compatible with Python Framework.
<u>ProgrammingLanguage</u> Python, JavaScript, Ajax, HTML	<ul style="list-style-type: none">• New and Involving Language.

	<ul style="list-style-type: none"> • Compatible with Programmer.
<u>Rich Media</u> Photoshop	<input type="checkbox"/> <ul style="list-style-type: none"> • Best tool available for graphics.
<u>Other</u> CSS	<ul style="list-style-type: none"> • Best tool for Design

Python Technologies

- **Python** is an interpreted, high-level and general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. Its language constructs and **object-oriented** approach aim to help programmers write clear, logical code for small and large-scale projects.
- Python is dynamically typed and **garbage-collected**. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented, and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.

Django Framework:

- Django is a Python-based free and open-source web framework that follows the model-template-views (MTV) architectural pattern.
- Django's primary goal is to ease the creation of complex, database-driven websites. The framework emphasizes reusability and "pluggability" of components, less code, low coupling, rapid development, and the principle of don't repeat yourself. Python is used throughout, even for settings files and data models. Django also provides an optional administrative create, read, update and delete interface that is generated dynamically through introspection and configured via admin models.

Despite having its own nomenclature, such as naming the callable objects generating the HTTP responses "views", the core Django framework can be seen as an MVC architecture. It consists of an object-relational mapper (ORM) that mediates between data models (defined as Python classes) and a relational database ("Model"), a system for processing HTTP requests with a web templating system ("View"), and a regular-expression-based URL dispatcher ("Controller").

Also included in the core framework are:

- a lightweight and standalone web server for development and testing
- a form serialization and validation system that can translate between HTML forms and values suitable for storage in the database
- a template system that utilizes the concept of inheritance borrowed from object-oriented programming

- a caching framework that can use any of several cache methods
- support for middleware classes that can intervene at various stages of request processing and carry out custom functions
- an internal dispatcher system that allows components of an application to communicate events to each other via pre-defined signals
- an internationalization system, including translations of Django's own components into a variety of languages
- a serialization system that can produce and read XML and/or JSON representations of Django model instances
- a system for extending the capabilities of the template engine
- an interface to Python's built-in unit test framework

Bundled applications

The main Django distribution also bundles a number of applications in its "contrib" package, including:

- an extensible authentication system
- the dynamic administrative interface
- tools for generating RSS and Atom syndication feeds
- a "Sites" framework that allows one Django installation to run multiple websites, each with their own content and applications
- tools for generating Google Sitemaps
- built-in mitigation for cross-site request forgery, cross-site scripting, SQL injection, password cracking and other typical web attacks, most of them turned on by default
- a framework for creating GIS applications

AJAX:

- **Ajax** (Shorthand for asynchronous JavaScript and XML) is a group of interrelated web development techniques used on client-side to create interactive web applications. With Ajax, web applications can retrieve data from the server asynchronously in the background without interfering with the display and behavior of the existing page. The use of Ajax techniques has led to an increase in interactive or dynamic interfaces on web pages. Data are usually retrieved using the *XMLHttpRequest* object. Despite the name, the use of XML is not actually required, nor do the requests need to be asynchronous.
- Like DHTML and LAMP, Ajax is not a technology in itself, but a group of technologies. Ajax uses a combination of HTML and CSS to mark up and style information. The DOM is accessed with JavaScript to dynamically display, and to allow the user to interact with, the information presented. JavaScript and the *XMLHttpRequest* object provide a method for exchanging data asynchronously between browser and server to avoid full page reloads.

PostgreSQL:

- PostgreSQL also known as Postgres, is a free and open-source relational database management system (RDBMS) emphasizing extensibility and SQL compliance. PostgreSQL features transactions with Atomicity, Consistency, Isolation, Durability (ACID) properties, automatically updatable views, materialized views, triggers, foreign keys, and stored procedures. It is designed to handle a range of workloads, from single machines to data warehouses or Web services with many concurrent users. It is the default database for macOS Server, and is also available for Linux, FreeBSD, OpenBSD, and Windows.
- PostgreSQL manages concurrency through multi-version concurrency control (MVCC), which gives each transaction a "snapshot" of the database, allowing changes to be made without affecting other transactions. This largely eliminates the need for read locks, and ensures the database maintains ACID principles. PostgreSQL offers three levels of transaction isolation: Read Committed, Repeatable Read and Serializable. Because PostgreSQL is immune to dirty reads, requesting a Read Uncommitted transaction isolation level provides read committed instead. PostgreSQL supports full serializability via the serializable snapshot isolation (SSI) method.

pgAdmin:

- It is an Open source front-ends and tools for administering PostgreSQL.
- The pgAdmin package is a free and open-source graphical user interface (GUI) administration tool for PostgreSQL, which is supported on many computer platforms. The program is available in more than a dozen languages.
- The first prototype, named pgManager, was written for PostgreSQL 6.3.2 and rewritten and released as pgAdmin under the GNU General Public License (GPL) in later months. The second incarnation (named pgAdmin II) was a complete rewrite. The third version, pgAdmin III, was originally released under the Artistic License and then released under the same license as PostgreSQL. Unlike prior versions that were written in Visual Basic, pgAdmin III is written in C++, using the wxWidgets framework allowing it to run on most common operating systems. The query tool includes a scripting language called pgScript for supporting admin and development tasks. pgAdmin 4 backend was written in Python, using Flask and Qt framework.

CSS & HTML - As designing tool:

- Cascading Style Sheets (CSS) is a style sheet language used to describe the presentation (that is, the look and formatting) of a document written in a markup language. Its most common application is to style web pages written in HTML and XHTML, but the language can be applied to any kind of XML document.
- CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the colors, fonts, and layout. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple pages to share formatting, and reduce complexity and repetition in the structural content.

CSS can also allow the same markup page to be presented in different styles for different rendering methods.

HTML

- HTML(Hyper Text Mark-up Language) is markup language for designing a web page. It provides a means to describe the structure of text-based information in a document by denoting certain text as links, headings, paragraphs, lists, etc. and to supplement that text with interactive forms, embedded images, and other objects. HTML is written in the form of tags that are surrounded by angle brackets.

JavaScript - As scripting language

- JavaScript is a scripting language used to enable programmatic access to objects within other applications. It is primarily used in the form of client-side JavaScript for the development of dynamic websites.
- JavaScript was designed to add interactivity to HTML pages. We can say it is light weighted programming language. It is useful to react to event, to read and write HTML elements, to validate input data.

2.2.2 Hardware-Software Used

Application will be accessed through a Browser Interface. The interface would be viewed best using 1024 x 768 and 800 x 600pixel resolution setting. The software would be fully compatible with Microsoft Internet Explorer for version 8 and above.

- **H/W requirement for Server**
 - Processor Minimum: Pentium 4 CPU, 2.40 GHz
 - Memory RAM: 2 GB
 - Hard Disk: 150 GB
- **H/W requirement for Clients**
 - Internet
 - Browser interface supporting device
- **Software Requirements**
 - **FRONT - END**
JavaScript, CSS, HTML
 - **BACK – END**
PostgreSQL,
Python(Django)
 - **SERVER**
XAMPP Server
 - **DESIGNING TOOL**
Visual Studio Code
Notepad++
Sublime
Text Photoshop
 - **DOCUMENTATION TOOL**

- **MICROSOFT OPERATING SYSTEM**
Microsoft Windows

2.3 Main Module of System

Register and Login Module:

Register

In registration module user need to register to system.

Login

Login module is used to check whether the user is an authorized person to use the system or not. For this the user should give the correct user name and password.

The different types of users are

1. Admin:
Administrator use this site for providing guidelines about government schemes, seeds, fertilizers, loan, insurance and about latest technology used in farming. Admin also maintain user data and site.
2. Farmer:
Farmer use this site for selling crop product, buying agriculture product, give machine on rent and access guidelines. They also use feature which provide price of product in all nearby market yard.
3. Agriculture Product Seller:
Agriculture product seller use this site to sell their agriculture products.
4. Market yard owner:
Market yard owner use this site to provide price of product for buying it from farmers.
5. Customer:
Customer use this site to buy product from farmer directly.

Admin Module

In this module admin can add various guideline. Admin can authorize user like give rights to access guidelines for farmer and only registered user can add products and buy products. Admin have all rights on what user can see. For Example, Guidelines available only for farmers, registered market yard owner can only update price of product, etc.

Add Product Module:

In this module Farmers, Agriculture product seller and Owner of Market Yard add product and other details for their product.

User wise module:

1. Farmer:
Farmer add Product details like product name, Product Quantity available and Product price for selling. Module for machine one rent in which farmer have to add machine name, machine description and price per hour.
2. Agriculture Product Seller:
Agriculture product seller add Product details like product name, Product price, Product Description, Product use manual.
3. Market yard owner:
Market yard owner add product name and price.

Buy Product Module:

In this module Farmers, Owner of Market Yard and Customers buy product and contact to each other for any queries. They can see all product available for sell. They can also search for product.

Guidelines Module:

In this module Farmers can access guidelines. Guidelines about:

- Government scheme which include name of guideline, description about who can apply, how to apply and what they get, etc.
- Seeds Guideline which include which seeds are good.
- Fertilizer guideline include which fertilizer is best for particular crop, best time to use and about pesticides. It also include how to make organic fertilizers and how to use them.
- Loan and Insurance guideline include for which loan and insurance they can apply and how to apply.

CHAPTER-3 PROJECT MANAGEMENT

3.1 Project Planning

3.1.1 Project Development Approach

There are many software development models. Model followed in this project is Incremental.

Incremental model is an evolution of waterfall model. Incremental Model is a process of software development where requirements are broken down into multiple standalone modules of software development cycle. Incremental development is done in steps from analysis design, implementation, testing/verification, maintenance.

Incremental software development model may be applicable to projects where:

- Requirements of the system are clearly understood.
- When demand for an early release of a product arises.
- When high-risk features and goals are involved.

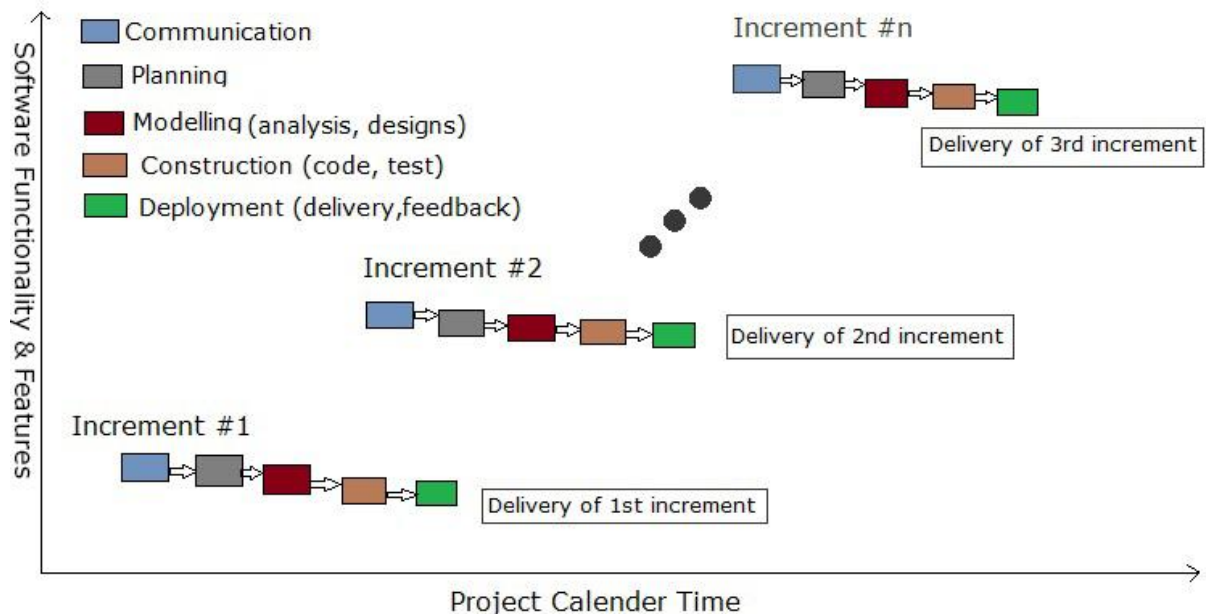
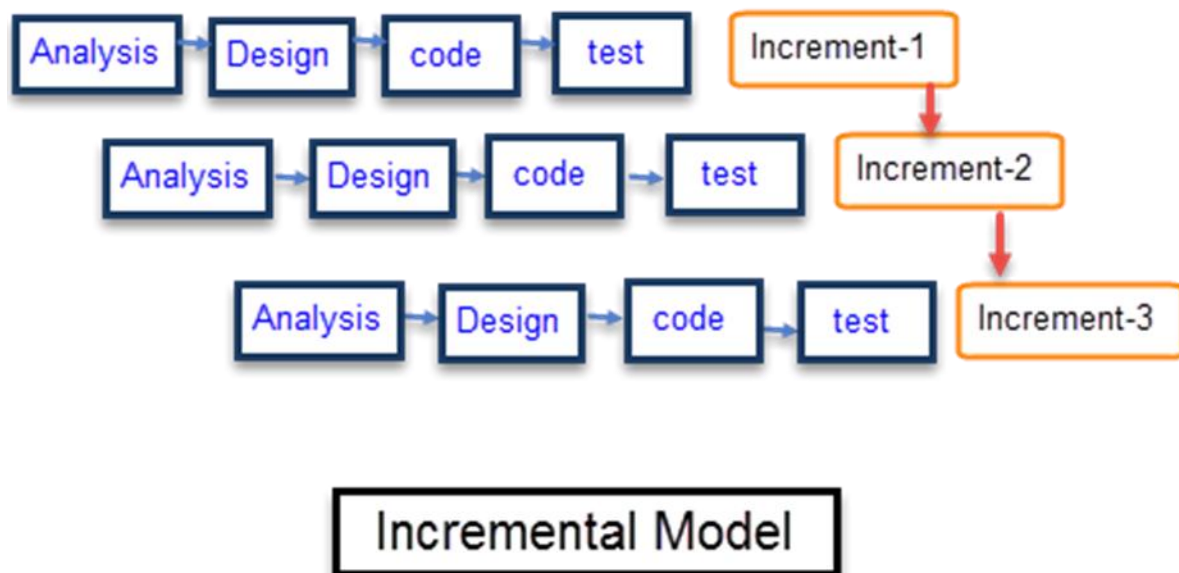


Figure: 3.1 Incremental Model chart

The series of releases is referred to as “increments”, with each increment providing more functionality to the customers. After the first increment, a core product is delivered, which can already be used by the customer. Based on customer feedback, a plan is developed for the next increments, and modifications are made accordingly. This process continues, with increments being delivered until the complete product is delivered.

The incremental model contains following phase:



3.2 Incremental model

1. System Analysis:

In the first phase of the incremental model, the product analysis expertise identifies the requirements. And the system functional requirements are understood by the requirement analysis team. To develop the software under the incremental model, this phase performs a crucial role.

2. System Design:

In this phase of the Incremental model of SDLC, the design of the system functionality and the development method are finished with success. When software develops new practicality, the incremental model uses style and development phase.

3. System Coding:

Design of system is implemented in this phase. The system design translate into computerunderstable language into this step. This step is also knows asprogramming step.

4. System Testing:

Implementation phase enables the coding phase of the development system. It involves the final coding that design in the designing and development phase and tests the functionality in the testing phase. After completion of this phase, the number of the product working is enhanced and upgraded up to the final system product.

5. Maintenance:

After completing system administrator maintain it as per user requirement. Software will change or update after it is supplied to customer at that time when error is detected for change will occur are solved in this step.

3.1.2 Project Plan

Project Plan considered as below:

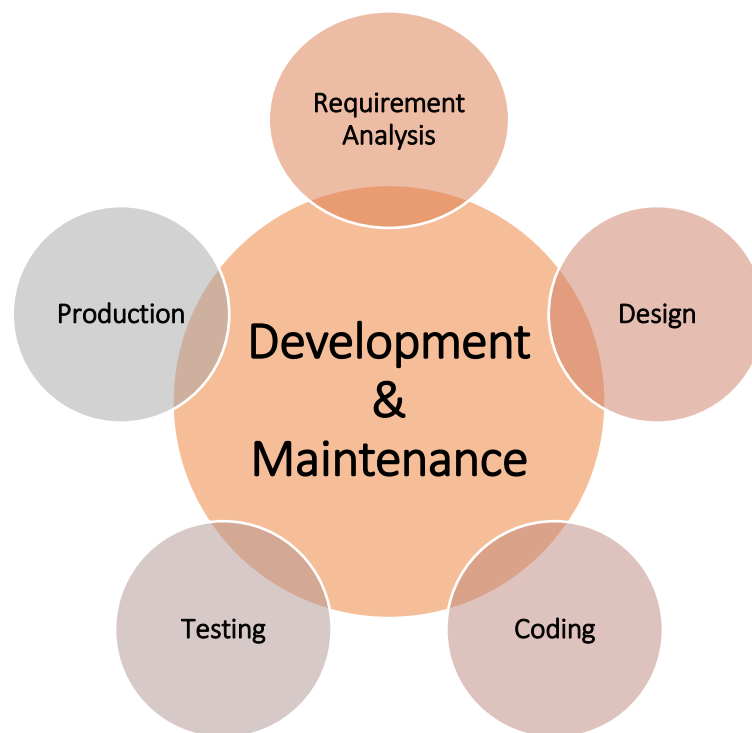


Figure: 3.3 Project plan

Once a Project Is Found to Be Feasible, Software Project Managers Undertake Project Planning. Project Planning Is Undertaken and Completed Even Before Any Development Activity Starts. Effective Management of a Software Project Depends On Thoroughly Planning the Progress Of The Project.

The Objective Of Project Planning Is To Provide A Framework That Enables The Manager To Make Reasonable Estimates Of Resources, Cost And Schedule. These Estimates Are Made Within A Limited Time Frame At The Beginning Of The Software Project And Should Not Be Updated Regularly As The Project Progresses.

Project Planning Process Starts with An Assessment Of The Constraints Affecting The Project.

- ✓ Identify Problems
- ✓ Determine Information Requirements
- ✓ Analyze System Needs
- ✓ Designing
- ✓ Documentation
- ✓ Development

3.3 Roles and Responsibilities

Role	Responsibility
Project Manager	Breaking down initiatives into Tasks
	Allocating project resources
	Project planning, tracking and monitoring
	Analysis
	Communicate with project teams
Project Leader	Designing and Documentation
	Manages project issues and risks
	Provide status update to PM
	Lead core team meetings
	Execution of project as per defined schedule
Team Member	Contribute to project schedule development

	Perform assigned activities
	Actively participates in team meetings

Table:3.1 Roles and Responsibilities

3.4 Project Schedule:



Figure:3.4 Project Schedule

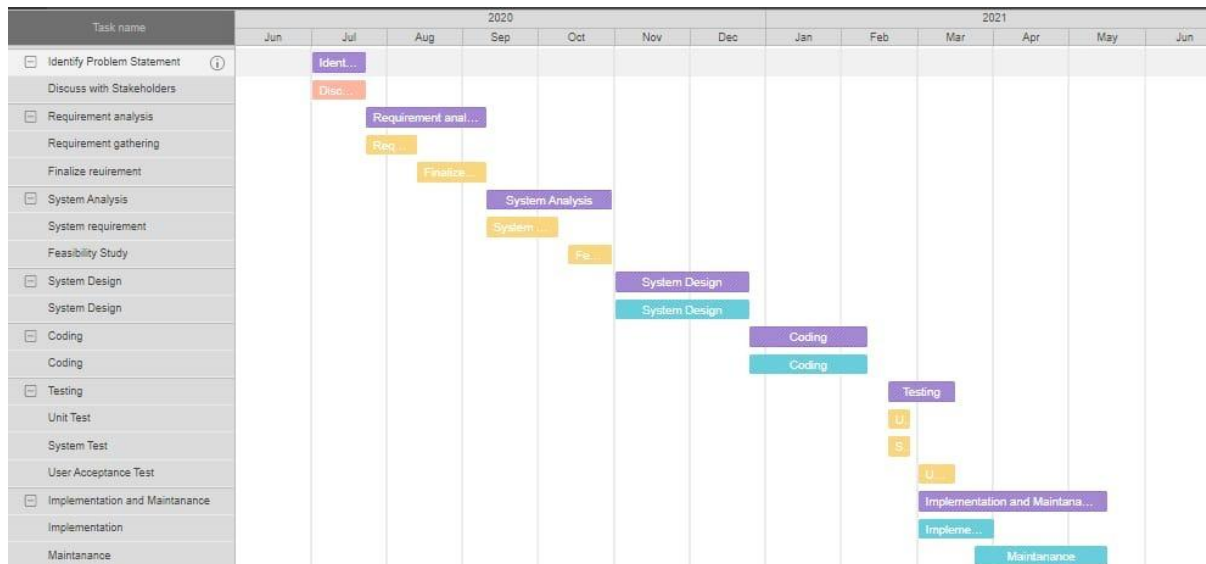


Figure: 3.5 Schedule Representations

Project Scheduling in project management is the listing of activities, deliverables, and milestones within a project. A schedule also usually includes the planned start and finish date, duration, and resources assigned to each activity. Effective project scheduling is a critical component of successful time management.

The project schedule provides a road map for a software project manager. If it has been properly developed, the project schedule defines the task and milestones that must be tracked and controlled as the project proceeds.

Things may not always happen as planned and that can cause projects to derail. This is where project tracking and monitoring proves invaluable in overall project management. Time tracking in Project Management provides the project team and stakeholders an understanding about the project health and highlights the areas of concern on the project. Tracking can be accomplished in a number of different ways.



3.6 Process Flow Of Better Project Tracking

Prioritize

It is very important to plan and prioritize the work effectively in order to make the most of your time and effort. According to Pareto Principle, 80% of the effect of your work will come from 20% of the work you do.

Set measurable targets

Performance measurement starts with setting targets or goals and assigning KPIs (Key Performance Indicators) which are measurable. While setting KPIs for each target, it is also essential to anticipate how the achievement of the target will be tracked.

Reporting to stakeholder:

The project stakeholders need to know what is working and what is taking the project off-track. The PM should ensure to conduct team meetings on a regular basis and give reports to stakeholder. Regular tracking and monitoring enables to identify potential problems as early as possible so that timely adjustments to project plans can be made before moving forward.

Use dashboards:

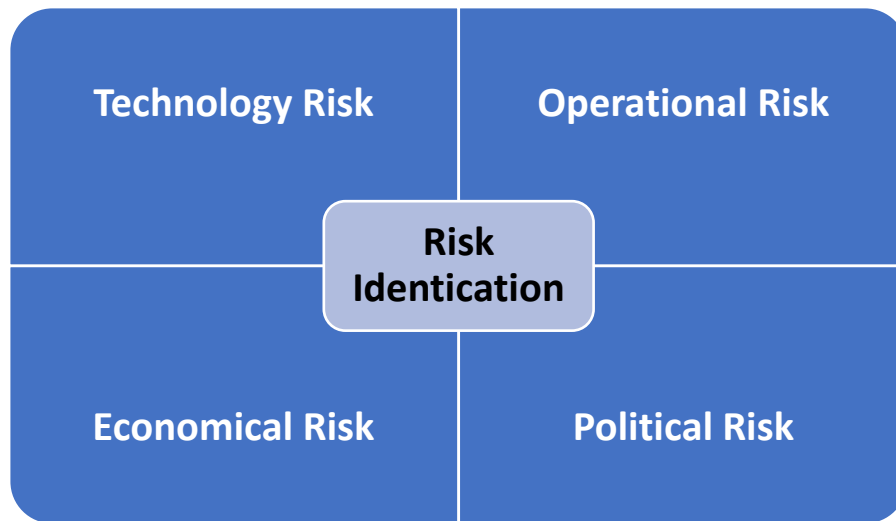
A dashboard always comes handy when it comes to expressing a project's status in a crisp yet effective manner. A Project Management Dashboard often provides at-a-glance view of project performance KPIs in a format that conveys project's overall progress and highlight particular problems that require further attention.

Recommend actions for improvement and follow-up:

This is most important activity in project tracking. Determine the recommend actions that will offer the greatest dividend in terms of keeping the project running smoothly, efficiently, and on-time, after taking feedback from the management. Recommendations could be corrective actions, preventive actions, or changes in the plan or the project execution.

3.5 Risk Management**3.7 Risk Management****3.5.1 Risk Identification:**

During the analysis of our whole application, we discovered some of the risks that could affect this website while developing and also while using. These are those risks:



3.8 Risk Identification

3.5.2 Risk Analysis:

Here is the description of how the above mentioned risks were to affect this application:

- **Technology Risk:** The most common technology risk are system can not process as many transaction per second as expected, low processor configuration, low buffer memory, low speed etc...
- **Operational Risk:** There are many operational risks such as software component which should be reused contain defects, Inability to achieve desired mission, lack of management, Inability to sustain operations, etc.
- **Political Risk:** There are many political risks such as wrong information about any place in city, images that are not permitted to show, also permit of all private organization which information includes in our intranet application.
- **Economical Risk:** This project is intranet application. There is no extra economic changes are there. This project is totally cheapest.

During the risk analysis process, each identified risk is considered in turn and a judgment made about the probability and the seriousness of the risk. It relies on the judgment and experience of the project manager.

The database used in system can not process as many transaction per second as expected.	High	Serious

The time required to develop the s/w is underestimated.	High	Serious
Changes to requirements which require major design	Moderate	Serious
Required training for staff is not available	Moderate	Serious
The rate of defect repair is underestimated	Moderate	Tolerable
S/W component which should be reused contain defects.	High	Serious
Financial Problem	Low	Catastrophic
The size of software is underestimated.	Low	Catastrophic

Table: 3.2 Risk& Probability

3.5.3 Risk Planning:

Here is how we deal with all the above said risks:

- **Technology Risk:** To avoid this risk, We planned to use better database and server.
- **Technological Risk:** To avoid this risk, we planned to make good planning and track project.
- **Political Risk:** Permitting of the organization to display or advertisement information is solve this problem.
- **Economical Risk:** There is no need to solve economical risk. Because there is no problem about economical problem.

The risk which might be uncounted after setting up the server is shown in the table below. All the applications have different internal and external risks. Internal risks basically comprise with hardware failure, server down, power interruption for which the solution is specified. External risks are associated with the application like virus, hacking and the corruption of files. The solution is mentioned in the table below, which is again not much difficult to handle if proper risk planning is done.

1	H/W failure	Internal	Low	Serious	Back up
2	Server down	Internal	High	Serious	Mirror site
3	Power Interruption	Internal	Low	Low	UPS
4	Virus	External	High	Serious	Antivirus
5	Hacking	External	Low	Moderate	Firewall
6	File corruption	External	Moderate	Serious	Back up

Table: 3.3 Risk & Solution

3.5.4 Risk Transfer

Means causing another party to accept the risk, typically by contract or by hedging. Insurance is one type of risk transfer that uses contracts. Other times it may involve contract language that transfers a risk to another party without the payment of an insurance premium. Liability among construction or other contractors is very often transferred this way. On the other hand, taking offsetting positions in derivatives is typically how firms use hedging to financially manage risk.

Some ways of managing risk fall into multiple categories. Risk retention pools are technically retaining the risk for the group, but spreading it over the whole group involves transfer among individual members of the group. This is different from traditional insurance, in that no premium is exchanged between members of the group up front, but instead losses are assessed to all members of the group.

The planning by which the risks cannot occur is:

- Interact with all branches.
- Authorize carefully and creating new safe security system for that.
- Make new security for natural threats.

CHAPTER-4 SYSTEM DESIGN

4.1 Design Engineering Canvas

4.1.1 AEIOU Summary


AEIOU Summary:		Group ID: 100050	Date: 21/10/20	Version: 1.0
Domain Name: Smart Farmer Service				
Environment: <ul style="list-style-type: none">- General impressions / observations (Style, material & atmosphere)- Floor plan- Elements, features and special notes- Scenes<ul style="list-style-type: none">• Market yard• Farm	Interactions: <ul style="list-style-type: none">- General impressions / observations (Who is interacting with whom, what?)- Scene of interaction (How it is being done)- Elements, features and special notes<ul style="list-style-type: none">• User to admin• Farmer to owner of market yard and owner of agriculture product seller• Customer to Farmer• Farmer to Farmer	Objects: <ul style="list-style-type: none">- General impressions / observations (What components are involved? How?)- Inventory of key objects- Elements, features and special notes<ul style="list-style-type: none">• Computer• Database• HTML/CSS/JS• Python		
Activities: <ul style="list-style-type: none">- General impressions / observations- Sketch/photo Summary of activity- Elements, features and special notes<ul style="list-style-type: none">• User registration• Buy and sell product(agriculture product , crops)• Search for required product• Contact via chats/video calls• Farmer can take/give Machines on rent• Farmer can use government schemes and use loan and insurance and other guidelines• Farmer can search nearest market yards.		Users: <ul style="list-style-type: none">- General impressions / observations (Who is present? Role and responsibilities)- Scene of user in context- Elements, features and special notes <div>Farmer Admin Customer</div> <div>Owner of market yard Owner of agriculture product store</div>		

4.1.2 Empathy Canvas


Design For Smart Farmer Service	Design By
Date 21/10/2020	Version 1.0
<div style="display: flex; justify-content: space-between; font-size: small;"><div>Priti Kachiya(24) Mitali Patel(45) Dhara Sorathiya(61)</div><div>Dharmik kakadiya(26) Sweta Rathod(52)</div></div>	
USER <div style="display: flex; justify-content: space-around; margin-top: 10px;"><div style="border: 1px solid black; padding: 2px 5px;">Farmer</div><div style="border: 1px solid black; padding: 2px 5px;">Customer</div><div style="border: 1px solid black; padding: 2px 5px;">Agriculture product seller</div><div style="border: 1px solid black; padding: 2px 5px;">Owner of market yard</div></div>	STAKEHOLDERS <div style="display: flex; justify-content: space-around; margin-top: 10px;"><div style="border: 1px solid black; padding: 2px 5px;">Farmer</div><div style="border: 1px solid black; padding: 2px 5px;">Agricultural suppliers</div><div style="border: 1px solid black; padding: 2px 5px;">Wholesalers and retailers</div></div> <div style="border: 1px solid black; padding: 2px 5px; margin-top: 10px; text-align: center;">Agriculture product manufacturing company</div>
ACTIVITIES <div style="border: 1px solid black; padding: 10px; margin-top: 10px;"><ul style="list-style-type: none">User registrationBuy and sell product (agriculture product, crops)Search for required productContact via chats/video callsFarmer can take/give Machines on rentFarmer can use government schemes and loan and insurance and other guidelinesFarmer can search nearest market yards.</div>	
STORY BOARDING	
HAPPY <div style="border: 1px solid black; padding: 10px; margin-top: 10px;">A Farmer Mr.Patil has so many products for sell and want to earn sufficient money for that. He use smart farmer service Application and he get price of product in all nearby market. So, he go to the market where he get good price for product and sell them.</div>	
HAPPY <div style="border: 1px solid black; padding: 10px; margin-top: 10px;">A Farmer has good crop in farm and due to sudden rain all his crop defected and his financial condition is not good so he can't buy machines for easy farming. He use smart farmer service and get details of insurance and regularly apply for that. He also take loan for buying some agriculture product. He also take machine on rent from other farmers.</div>	
SAD <div style="border: 1px solid black; padding: 10px; margin-top: 10px;">A Farmer has so many products but he don't know the market price of product and he knows some persons who buy his products. He wants to sell products early before products get damage. So, farmer sell his product to some known person who buy this product at lower price and then sell them at higher price. So, he get benefits but farmer get very low price for product.</div>	
SAD <div style="border: 1px solid black; padding: 10px; margin-top: 10px;">A Farmer want to buy product but his financial condition is not good and also he don't know about government schemes. So, due to lack of knowledge about loan and government scheme he can't get advantage of it. He apply traditional farming technique and not get good quantity and quality of crop and because of that not get good price for product.</div>	

4.1.3 Ideation Canvas


The Ideanaut: *Ideation Canvas* Project: Smart Farmer Service Team : 100050

 People


Farmer Admin Customer Owner of market Yard Owner of Agriculture store

 Activities

- User registration
- Buy and sell product(agriculture product , crops)
- Search for required product
- Farmers can take/give machines on rent.
- Contact via chats/video calls
- Farmer can use government schemes and use loan and insurance and other guidelines.
- Farmer can search nearest market yards.

 Situation/Context/Location

- Require knowledge about application
- Make application user friendly

 Props/Tools/Objects/Equipment

- Easy to use
- Time saving
- Sufficient result

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4.1.4 Product Development Canvas:

Product Development Canvas		Team/Date/Version:	100050	21/10/20	1.0
Purpose What is the purpose of this concept you're developing? Does it solve a problem, or it enhances a certain experience? Is it solving a need or it is trying to create a new need or tap an unmet need? <div>Easy product selling and purchasing</div> <div>Easy to searching particular product</div> <div>Save time of users</div> <div>Provide proper guideline for farmer</div>	Product Experience Define what your customer should feel like when he uses your product/service? What emotions, feelings would define his experience? Feeling of comfort, convenience, or feeling of buying more with less cost (conscious) or feeling of greater security/safety etc. <div>Less Time consumption</div> <div>User Friendly concepts</div>		Customer Revalidation Once you're finished with your feature set, test with the customer. Just the feelings, functions are useful, speak to the customer/user.		
	Product Functions Functions are a products answer to user problems/need. They do something that user wants. They are often visible in nature. Every function is powered by many features. Multitasking is a function. Browser tabs is a feature that powers the multitasking function. A function can have one or more features powering it. Functions are very generic in nature. Features are often more specific. Functions can be divided to product experience. Below, standard function provides a basis of... <div>Admin: Add guideline and Handle application</div> <div>Customers: Easily buy products</div> <div>Farmer: Easily sell their product and buy agriculture products. Take loan and insurance for their needs and access guidelines. Search nearest market yard. Take/Give machine on rent</div> <div>Owner of market yard: Update market price for product and contact to farmer</div> <div>Agriculture product seller: Post their products for sell & farmer can buy it.</div>				
	Product Features Product features are specific. One or more features will power a function. Apple's iPhones, Androids, Aulbags are features that power the safety function. Browser tabs, Apple's Home button to multitask between apps are features powering the multitasking function. Each feature will have many components/sub components powering it. Sometimes a very popular component becomes a feature itself. A blue car starts is a major component and a feature at the same time powering the in car entertainment function (powering entertainment) as a product experience. <div>Time saving</div> <div>Less expensive</div> <div>More accuracy</div> <div>Sufficient result</div>				
People Who is the key customer segment who will use this product/service or the end product of the concept you're pursuing? Write here about them, describe them a little. <div>Farmer</div> <div>Customer</div> <div>Admin</div> <div>Owner of market yard</div> <div>Owner of Agriculture store</div>	Components Components build-up the features. For a setting it will comprise a lot of component like logs, triggers etc. that go into making it. For a feedback browser it will comprise of various chunks of code that will make the tabs work. In cases where the feature is a major component, you could list here the auxiliary components that are required to make the major component work. You can also list new adjustments and innovations you're planning here, at the component level. <div>User device</div> <div>Internet connection</div>		Reject, Redesign, Retain Post customer validation, mark those functions or features that the customers didn't find useful. Redesign those that were partially useful and retain those that the farmer found with this (all) all functions/features as successful.		

4.2 Context Level Diagram:

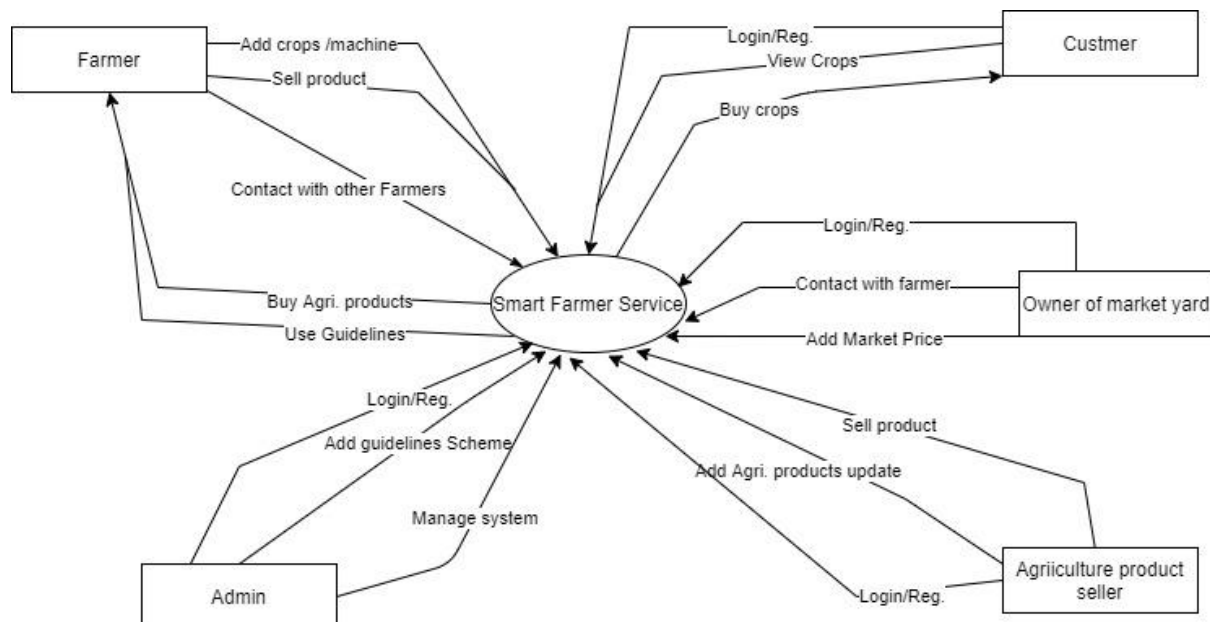


Figure:4.1 Context Diagram

4.3.1 Class Diagram



4.3.2 Activity Diagram

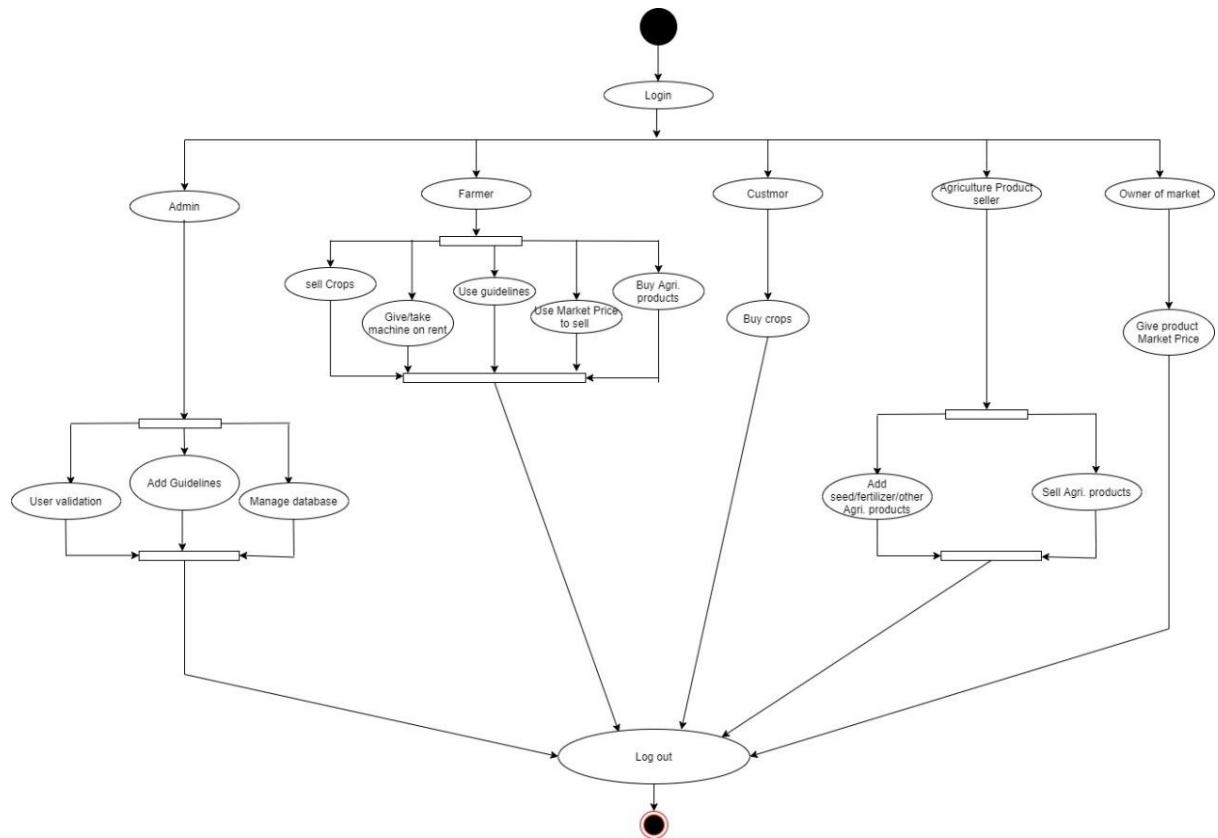


Figure: 4.3 Activity Diagram

4.3.3 Sequence Diagram

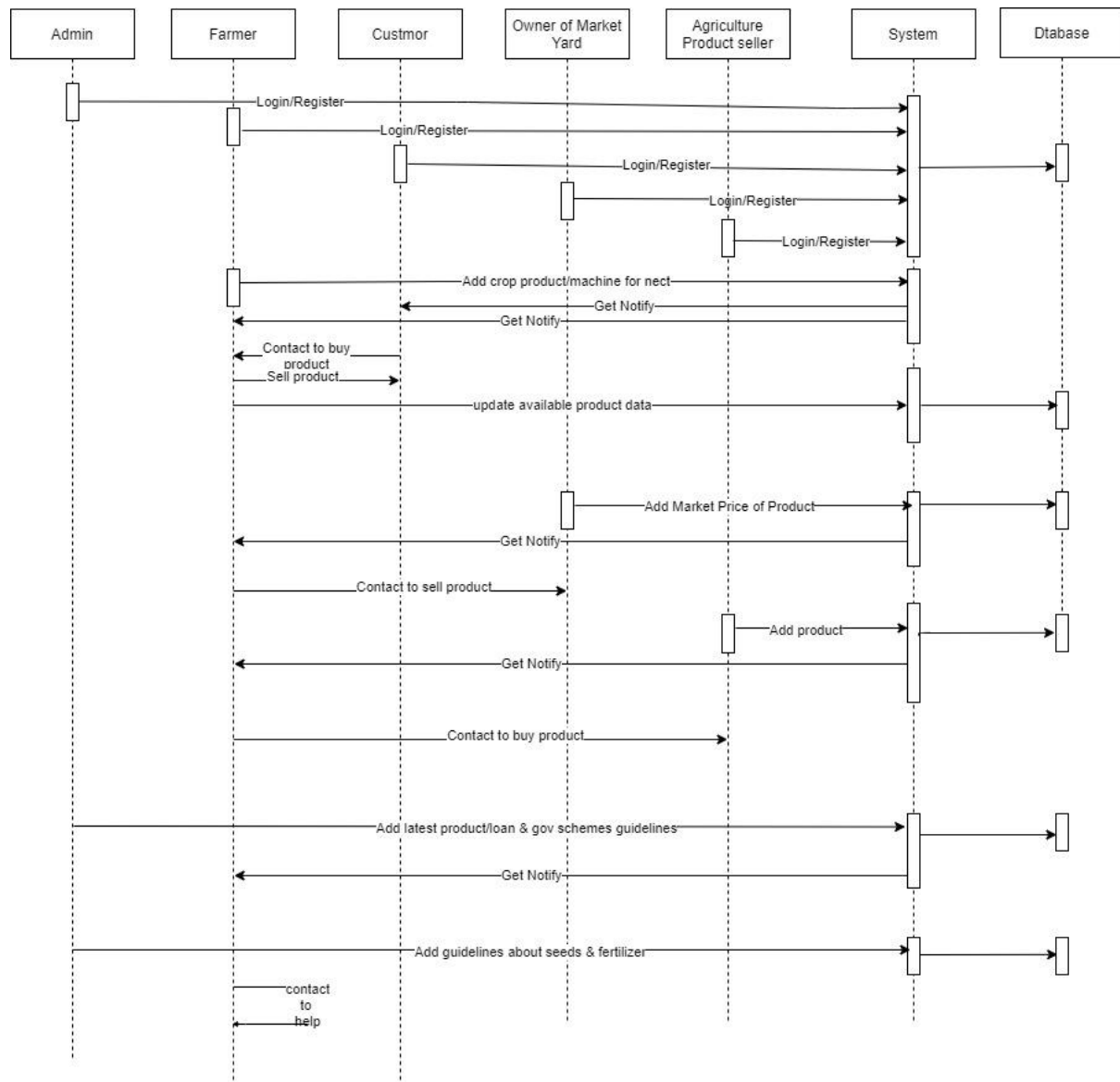


Figure: 4.4 Sequence Diagram

4.5 E-R Diagram

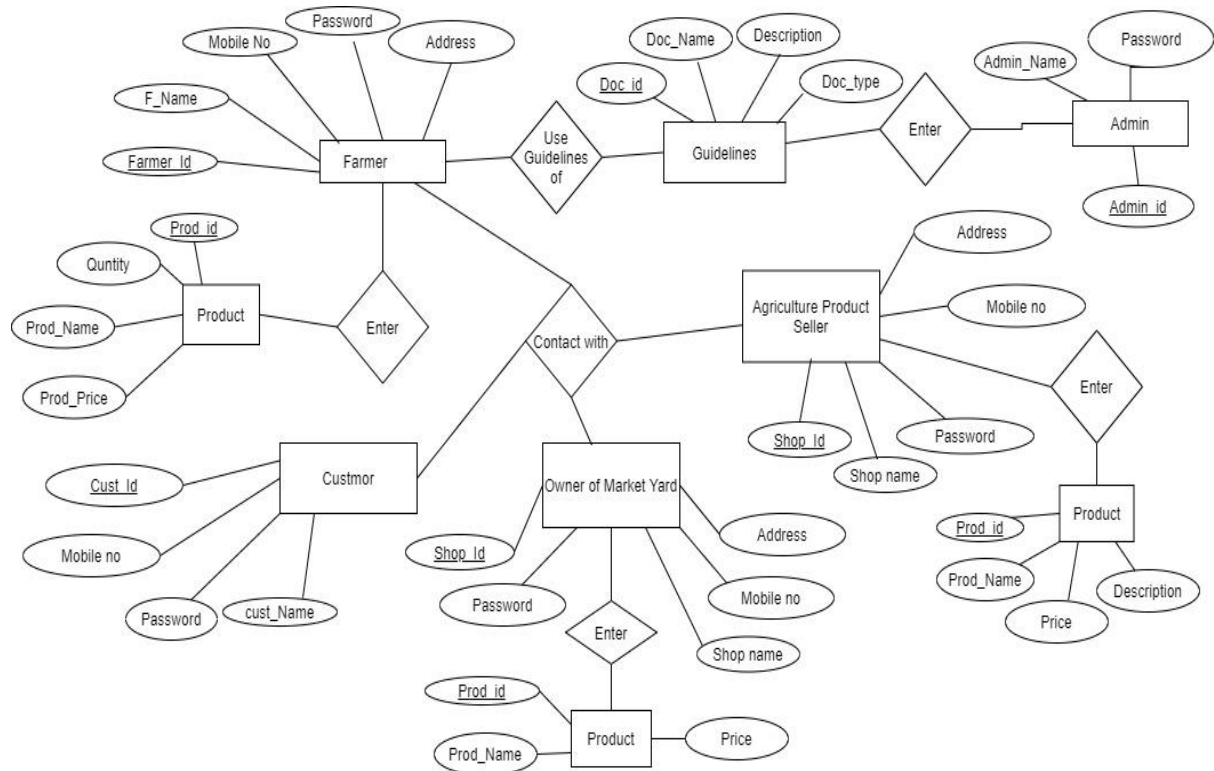
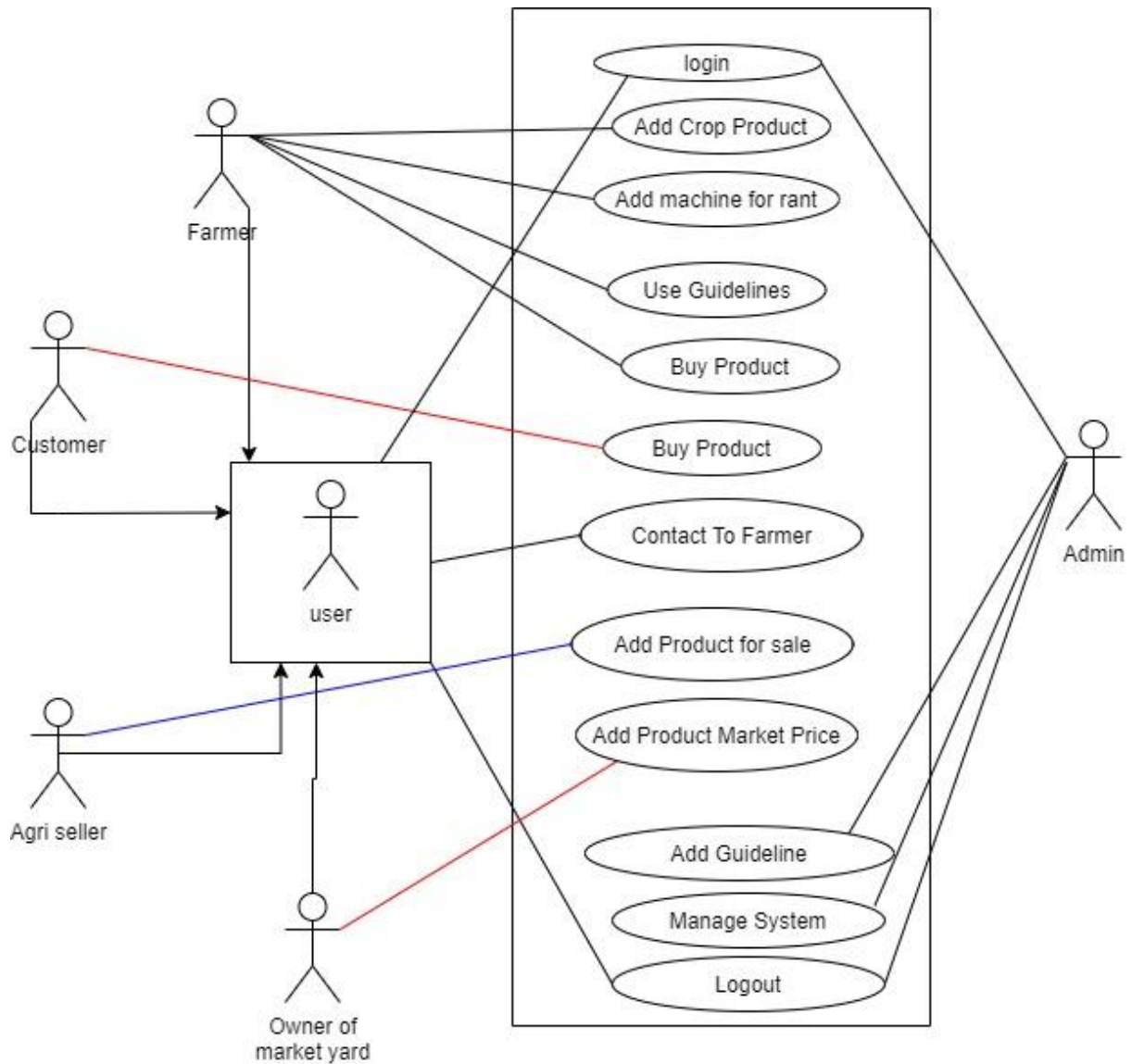


Figure: 4.5 E-R Diagram

4.6 Use Case Diagram



4.6 Use Case Diagram