American International University-Bangladesh (AIUB)

Faculty of Science and Technology (FST)
Department of Computer Science (CS)

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Project Title: Cultivar Life
Section: C

Submitted by

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1.0 Introduction

This document serves as a guide for various stakeholders involved in the Cultivar Life project, including development teams, investors, landowners, farmers, and decision-makers. The intention of this document is to clearly articulate the project's goals, scope, and key components. By outlining the objectives and deliverables, we aim to foster a shared understanding and commitment among all parties involved. As you progress through this document, you will gain valuable insights into the Cultivar Life project, ensuring a unified approach towards the common goal of enhancing agricultural sustainability and economic prosperity in Bangladesh.

Cultivar Life is an innovative software solution aimed at revitalizing the agricultural landscape of Bangladesh. It serves as a comprehensive platform that bridges the gap between potential investors, landowners, and farmers, fostering collaboration for agricultural growth. By providing detailed information about available lands, climate suitability, and potential crop profits, it empowers investors to make informed decisions. Simultaneously, it motivates landowners to utilize their land for productive farming. The system ensures fair compensation for farmers, increases their numbers, and provides much-needed investment. This collaborative ecosystem benefits a wide range of stakeholders, from investors and landowners to the farming community and the nation. Ultimately, Cultivar Life aims to boost agricultural productivity, economic stability, and self-sufficiency in food production, contributing to the overall well-being of Bangladesh.

2.0 Project Title: Cultivar Life

3.0 Objectives

The Cultivar Life project is driven by three core objectives. These core objectives are:

1. **Inspiring Investor Confidence:** Develop a user-friendly platform providing comprehensive information on agricultural lands, including location, climate conditions, suitable crops, and anticipated profits to attract potential investors. Implement features that enable easy navigation and access to relevant data, fostering investor confidence in making informed decisions.

2. **Motivating Landowner Contribution:** Design and implement a streamlined process within the software to encourage landowners to contribute their lands for productive farming activities. Introduce incentives and tools that simplify the process of offering

land for cultivation, thereby expanding the available land and increasing overall agricultural output.

3. **Ensuring Fair Compensation for Farmers:** Establish a mechanism within the software to connect farmers with investors, ensuring fair compensation for their hard work. Implement features that allocate specific lands for crop cultivation and facilitate financial support for farmers. Additionally, incorporate tools to increase the number of farmers participating in agricultural activities.

In summary, the overall objective of the proposed software system is to support and optimize the Cultivar Life project's efforts in inspiring investor confidence, motivating landowner contribution, and ensuring fair compensation for farmers, ultimately contributing to enhanced the agricultural sustainability and economic growth in Bangladesh.

4.0 Justification

Cultivar Life is a crucial solution to tackle the agricultural and economic challenges in Bangladesh, benefiting both society and individuals. This software empowers potential investors by providing them with valuable information for wise land investments, ensuring profitable returns. It motivates landowners to make their lands available for farming, increasing the land used for agriculture, and boosting food production and security. Farmers, in particular, benefit from fair compensation and financial support, improving their livelihoods and strengthening the agricultural sector. Overall, Cultivar Life contributes to economic growth, food self-sufficiency, and a better quality of life, ensuring that both clients and end-users reap substantial rewards.

5.0 Systems Overview

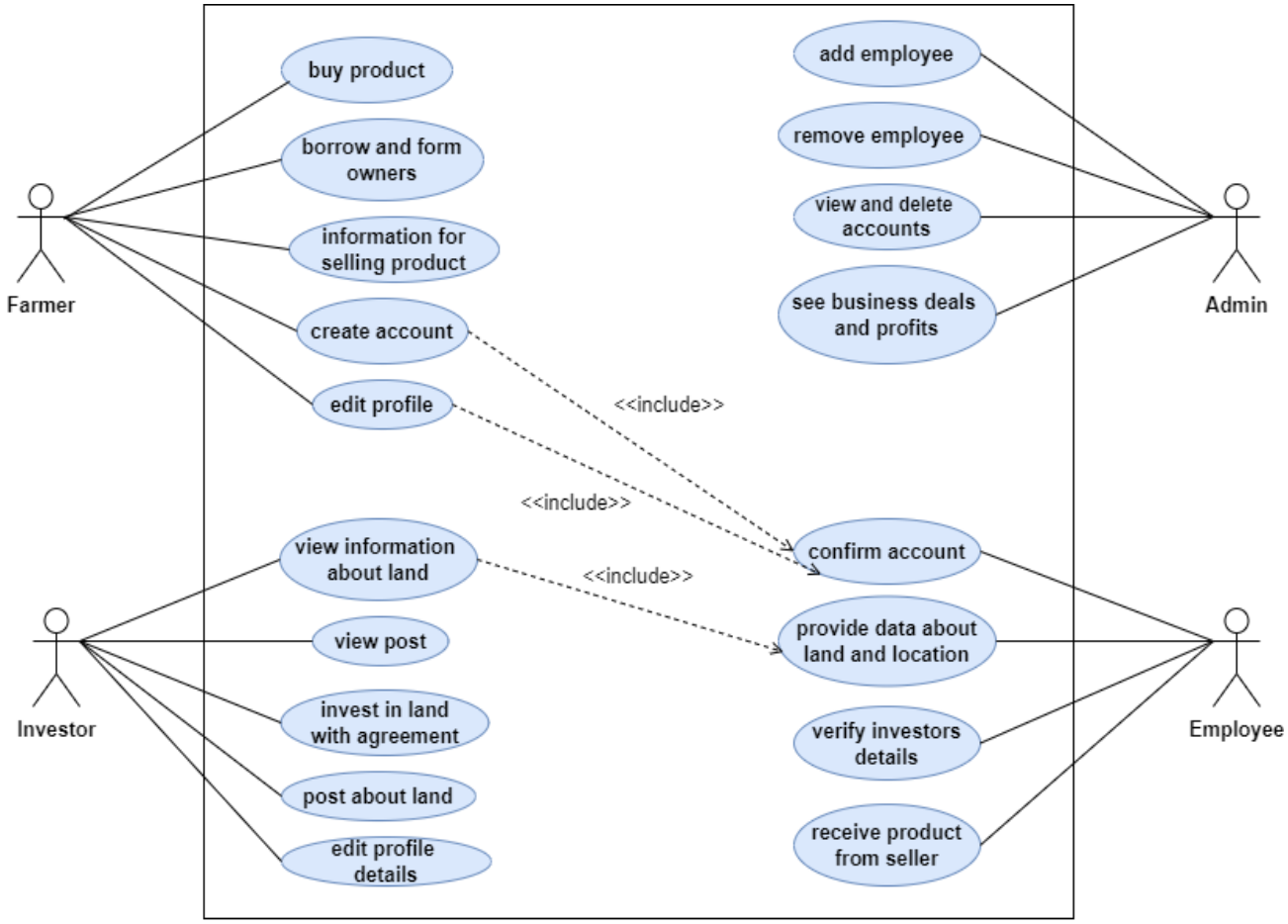

Figure 1: Use case Diagram

6.0 Stakeholders analysis:

1. Primary Stakeholders:

- **Internal to the Project Team:**

Investors: The financial analysts, strategists, and decision-makers directly involved in investment decisions within the Cultivar Life project team.

Landowners: Land acquisition specialists, negotiators, and management personnel responsible for coordinating land-related activities within the project team.

Farmers: Agricultural experts, crop specialists, and operational teams directly engaged in coordinating farming activities as part of the Cultivar Life project.

2. Secondary Stakeholders:

- **External to the Project Team but in the Same Organization:**

Users: Individuals within the organization who actively engage with the Cultivar Life platform, including those responsible for system testing and feedback.

Admin: Administrative staff overseeing the internal workings of the Cultivar Life platform, managing user accounts, and ensuring system integrity.

Seller: Personnel responsible for facilitating transactions and agreements between investors, landowners, and farmers within the organization.

Customers: Individuals or teams focused on customer relations and feedback gathering within the organization.

- **External to Both the Project and the Organization:**

External Customers: End-users, buyers, or individuals outside the organization who utilize the Cultivar Life platform for agricultural transactions and engagements.

This comprehensive breakdown distinguishes the stakeholders based on their internal or external relationship to the project team and the organization, providing insights into the varied roles and interests involved in the Cultivar Life initiative.

7.0 Feasibility study:

In conducting a comprehensive feasibility study for the development of the Cultivar Life system, both technical and financial aspects have been thoroughly evaluated.

1. Technical Feasibility:

The required number of software developers is available to develop the software. The servers are also capable of providing the service without constant supervision of any onsite software engineer. It will notify the software engineers through cloud monitoring tools if any error occurs. Moreover, today there are excellent Internet service providers that offer over 99% service up-time that will consistently provide stable, quality service for the customers. We also have the required software tools and the hardware to develop the whole software system.

Hardware Requirement:

• Memory: 2 GB

• GPU: INTEL HD Graphics 520

• CPU: Intel Pentium Gold G6400

Software Requirement:

• OS: Windows 7/10/11

• Database software: XAMPP

• Language: PHP/HTML/CSS/JavaScript

It can be concluded that the project is feasible in terms of technical assessment.

2. Financial Feasibility:

The financial feasibility of the Cultivar Life project is substantiated through a meticulous cost analysis, outlining all costs and benefits associated with the project. The proposal demonstrates a sound understanding of potential funding sources, including private investors, ensuring sufficient financial backing for timely project completion. Cost-cutting measures have been identified, demonstrating a commitment to optimizing the project's overall budget. The financial feasibility study provides a detailed analysis of the costs, revenues, and overall financial viability of the project over a 15-month period.

Cost Estimation:

Developers total Salary (15 months): 360,000 taka

Requirements Analysis expense: 7,000 taka

Transportation Cost: 32,000 taka

Hardware Expense: 220,000 taka

Rental Expense (15 months): 225,000 taka

Total Utilities: 30,000 taka

Total maintenance cost: 15,000 taka

Other Human Resource Cost:

Project Manager: 600,000 taka

Accountant: 300,000 taka

Technical Staff: 225,000 taka

Total HR cost: 1,125,000 taka

Total Estimated Expense: 360,000 + 7,000 + 32,000 + 220,000 + 225,000 + 30,000 + 15,000 + 1,125,000 = 2,007,000 taka

Profit:

20% of Total Estimated Expense: 2,007,000 * 20% = 401,400 taka

Final Project Budget:

Total Estimated Expense + Profit: 2,007,000 + 401,400 = 2,408,400 taka

The financial feasibility study indicates that the project is financially feasible, with a final budget of 2,408,400 taka.

8.0 Systems component

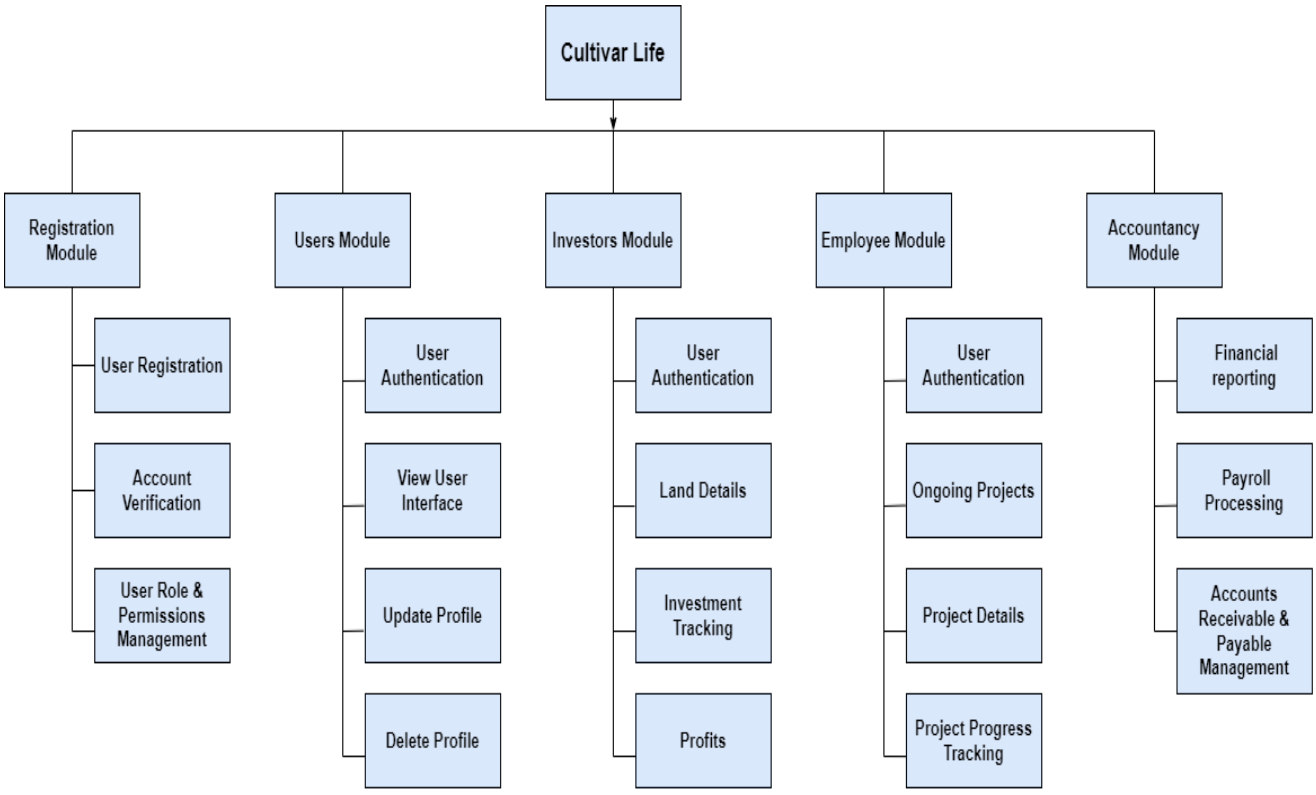

Figure 2: Breakdown of the System Component

9.0 Process Model to be followed

For the development of Cultivar Life, the Waterfall model has been selected. The Waterfall model is a linear and sequential approach where each phase must be completed before moving on to the next. This model is well-suited for our project due to its simplicity and clarity. The requirements for Cultivar Life are well-defined and stable, allowing for a structured and systematic development process. The linear progression aligns with the relatively straightforward nature of our project, and the fixed requirements complement the agricultural domain, where changes are typically planned and controlled. The Waterfall model ensures a disciplined and methodical development cycle, making it an appropriate choice for the Cultivar Life project.

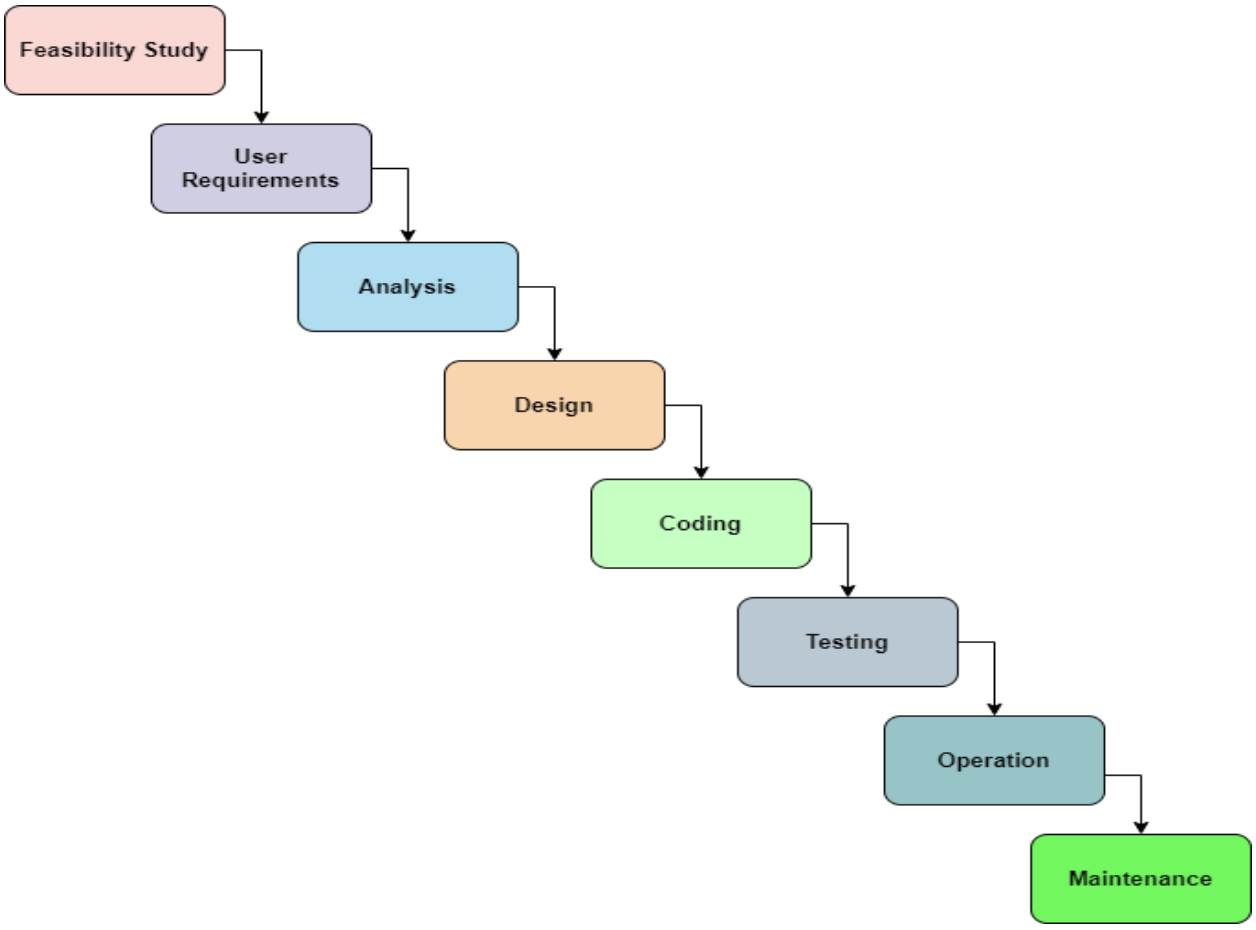

Figure 3: Steps of Waterfall Model

10.0 Efforts estimation

COCOMO (Constructive Cost Model) is used to estimate the effort for our project. COCOMO is a parametric productivity model based on SLOC (source lines of code) characteristic. Cost Estimation

If we consider that our project is organic. Then,

Coefficient Effort factor = 2.4

Let's consider SLOC (Source line of coding) = 40000

For organic project the value of P (Project complexity) = 1.05.

The value of T (SLOC-dependent coefficient) = 0.38

Effort = PM = Coefficient*(SLOC/1000) ^ P = 2.4 *(40000/1000) ^1.05 = 115.44

Development Time = DM = 2.50*(PM) ^ T

= 2.50* (115.44) 0.38

= 15.19

Required Number of people = PM/DM = 115.44/15.19=7.6~8

11. 0 Activity Diagram

Activity	Duration(Month)	Precedents
A. Project Planning	3	
B. Research & Analysis	2	A
C. Hardware Choice	1	
D. Designing	3	B
E. Coding	6	C,D
F. Testing	1	E
G. Write user Manual	3	
H. Installation	2	E,F

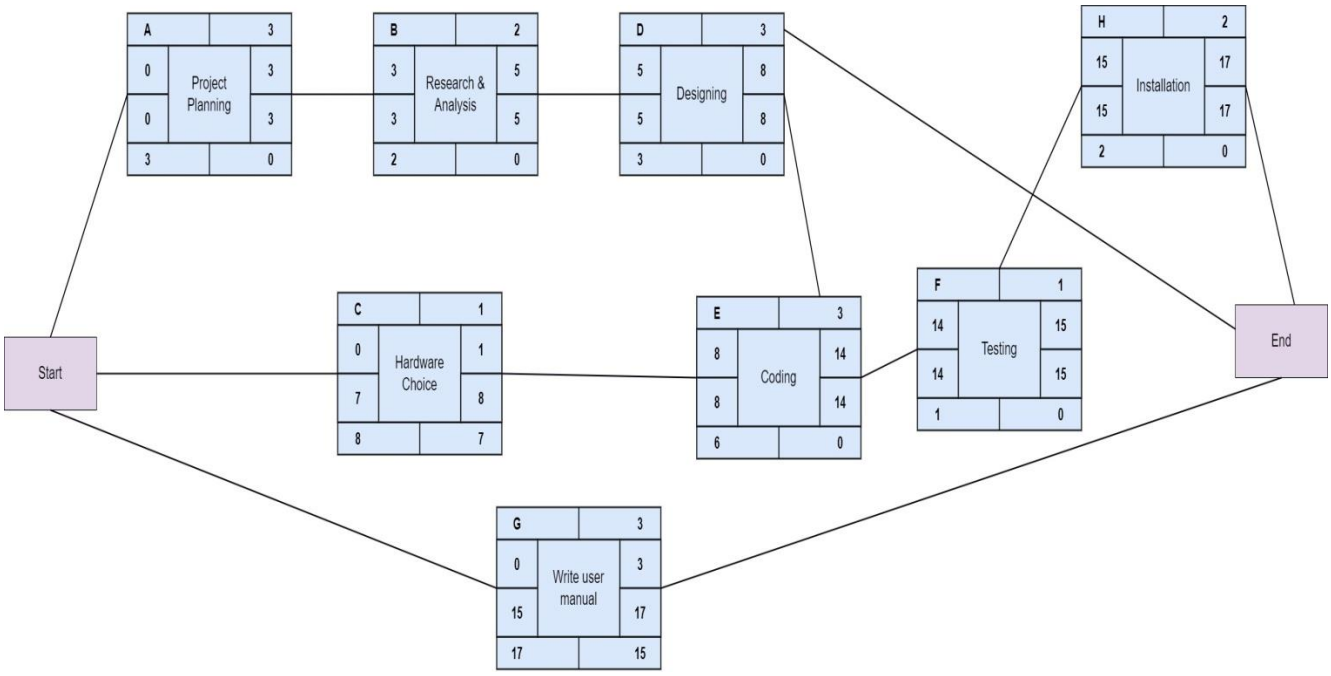

Figure 4: Activity Network Diagram

12.0 Risk Analysis

The possible risk for the proposed is given in the following risk table. The probability is between 0% - 100% where 100% is highest occurrence.

Impact values:

1 – Catastrophic

2 – Critical

3 – Marginal

4 – Negligible

Risk Description	Category	Probability	Impact	RMMM
Poor management of system	BU	70%	2	Receive consults form manager
Technical problems duringmanagement	TE	50%	2	Before start the project, listing all technical problem
Environmental damage's	DE	40%	2	Check the soil conditions before building
Funding loss: The company hasno efficient cost refund	CU	10%	1	Secure advanced payment Frequent communication
Schedule management plan	PR	60%	3	Analysis the project anddo WBS may resolve this
Irresponsibilityof worker's	ST	20%	3	Supervised work daily
Uncertain change of customer Requirement's	PS	80%	2	Use simulation to avoidthose Risk and show theclient before starting actual project
Staff turnover will be high	ST	40%	4	Secure efficient stuff
Misunderstanding	EM	30%	2	Make more meeting tounderstand all the topics.
Developing the wrong software function	DE	40%	3	Collect specific requirements.

13.0 Budget for the project

- Developers Salary in 15 months:

Hourly rate per developer: 100 taka

Hours per day: 8

Days per month: 30

Total salary: 100 * 8 * 30 * 15 = 360,000 taka

- Requirements Analysis:

Time needed: 70 working hours

Hourly wage for analysis person: 100 taka

Total expense: 1 * 70 * 100 = 7,000 taka

- Transportation Cost: 32,000 taka
- Hardware Expense: 220,000 taka
- Rental Expense:

Monthly rental: 15,000 taka

Total for 15 months: 15,000 * 15 = 225,000 taka

Total Utilities: 30,000 taka

- Maintenance Cost:

Expense per hour: 300 taka

Hours needed for maintenance: 50

Total maintenance cost: 50 * 300 = 15,000 taka

- Other Human Resource cost:

Project Manager: 1 * 40,000 * 15 = 600,000 taka

Accountant: 1 * 20,000 * 15 = 300,000 taka

Technical Staff: 1 * 15,000 * 15 = 225,000 taka

Total HR cost: 600,000 + 300,000 + 225,000 = 1,125,000 taka

- Total Estimated Expense:

Sum of all expenses: 360,000 + 32,000 + 220,000 + 225,000 + 30,000 + 15,000 + 1,125,000

= 2,007,000 taka

- Profit:

20% of Total Estimated Expense: 2,007,000*20% = 401,400 taka

- Final Project Budget:

Total Estimated Expense + Profit: 2,007,000+ 401,400 = 2,408,400 taka

The final budget for the project is 2,408,400 taka, including developer salaries, analysis, transportation, hardware, rental, utilities, maintenance, and other human resource costs, with a 20% profit margin.

14.0 Conclusion

Cultivar Life project represents a pivotal initiative towards revolutionizing the agricultural landscape in Bangladesh. By addressing the challenges faced by farmers, landowners, and investors, this software system aims to enhance the efficiency and profitability of agricultural practices. The decision to adopt the Waterfall model ensures a structured and systematic development approach, aligning with the well-defined and stable nature of the project requirements. Cultivar Life not only contributes to economic growth but also promotes social welfare by empowering farmers, providing fair compensation, and facilitating responsible land use. As we embark on this journey, we anticipate a positive impact on the agricultural sector, fostering sustainable development and resilience in the face of societal challenges. The collaborative efforts of stakeholders, coupled with the chosen development model, position Cultivar Life for success in bringing about positive change to the agricultural landscape in Bangladesh.