American International University-Bangladesh (AIUB)
Department of Computer Science
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CEMETERY MANAGEMENT SYSTEM

Software Requirement Engineering

Section: A

Project submitted By

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Table Of Context

Revision History :

Revision	Date	Updated by	Update Comments
0.1	06/12/22	Tusher Banik	First draft
0.2	07/12/22	Nasim Reza	Second draft
0.3	08/12/22	Dipta Sarkar Apon	Third draft
0.4	09/12/22	Tapu Saha	Four draft
0.5	10/12/22	Tusher Banik	Five draft
0.6	11/12/22	Nasim Reza	Six draft
0.7	12/12/22	Tapu Saha	Final draft

1. PROBLEM DOMAIN

1.1 Background to the Problem

- Cemetery Management System a web-based solution that will work online to manage Funeral Arrangements. This Project is about managing the cemetery with the use of technology. People who live in the city and their relatives do not stay close to them, they face problems with where to bury their loved ones who died recently and how they perform the funeral activities. For this reason, we want to build a system that will help them with a better solution. People can easily use our system and buy our solution that where to bury their loved ones and select the staff who will complete the funeral activity.

- The leading cause of this problem is the unavailability of data or information. This system is a powerful data manager that allows users to track all information about graves, occupants, buyers, maps, and sales of the cemetery. The purpose of this system is to lessen manpower and time consumption. Besides this system make sure the security of a dead body and also the place.

- There are four types of users. The first one is the admin who controls every user functionality and manages the software. The second one is Staff who works funeral activity for livelihood. The third one is a volunteer who works willingly. The last one is members or End-user who get service from our system.

1.2 Solution to the Problem

- To deal with the problem we want to build a system that will connect the bereaved person and the professionals like Imam, caretakers or groundskeepers, and Gravediggers. In the system, we will add the feature of search and filter options. By using these search and filter option user (bereaved person) can find out the near cemetery location. This solution is particularly appropriate to solve the problem because it fulfills both of their requirements. Yes, the solution is feasible to meet the business objective.

- The software is specified for the ones who are facing problems finding a graveyard and for the ones who want to complete tasks task for money. There are many benefits of using the Cemetery management System. If a person is new to the city/town and doesn't know anyone to the place. The person can find a nearby graveyard by using this software. This software is user-friendly so anyone can use it easily. The objectives and goals of the software are to connect a lonely person to a reliable person. No one feels alone to go to a new place and getting a friendly environment from the graveyard staff members.

- The existing software solutions that are available to solve the problem are Graveyard management system (https://gms.dhakasouthcity.gov.bd), CIMS (https://www.cimscemeterysoftware.com/), Plotbox (https://www.plotbox.io), Cemetery Find (https://cemeteryfind.com), etc. are the existing has software which has not a real-time map, advanced security, and Online database. On the other hand, these features are included in this project.

2. SOLUTION DESCRIPTION

1.3. System Features

This software will have the following specifications/features:

1. Sign Up: Through the Sign-Up feature, any new user can create an account.

2. Login: An already-created account can give credential information via a login.

3. User profile: This feature shows users their profile pictures.

4. Profile info: Users can see all the information in this user profile tab.

5. Check Location: This option allows the user to search for a specific location.

6. Announcement: It is an option where the user can give a notice or an announcement.

7. About Us: Here is all the information about the management team.

8. User Block: The user can block anyone by using this option.

9. Payment option: all payment gateway options are listed.

10. Real-time grave plot information: The user can view live information about the grave plot.

11. Search: This is a search option where the user can identify a list of specific keywords.

12. Salary Info: A specific user can see their salary information in this tab.

13. Volunteer Rank: Different kinds of ranks are shown in this tab so that volunteers can get inspiration.

14. Rating: The user can give ratings in this tab.

15. Plot buy option: The user can purchase different plots for funeral activities.

There will be 4 types of users in our software:

1. Admin: This user has all kinds of access to this software. Anyone can be replaced, blocked, or deleted by this user. This user can perform top-level management-type tasks.

2. Staff: This user is a professional. They make a living by working with this software.

3. Member: This is the end-user who actually buys our plot and pays money for funeral activities.

4. Volunteer: This user is for general people who can help this graveyard willingly and can take the volunteer rank as a reward.

2.2 UML Diagrams:

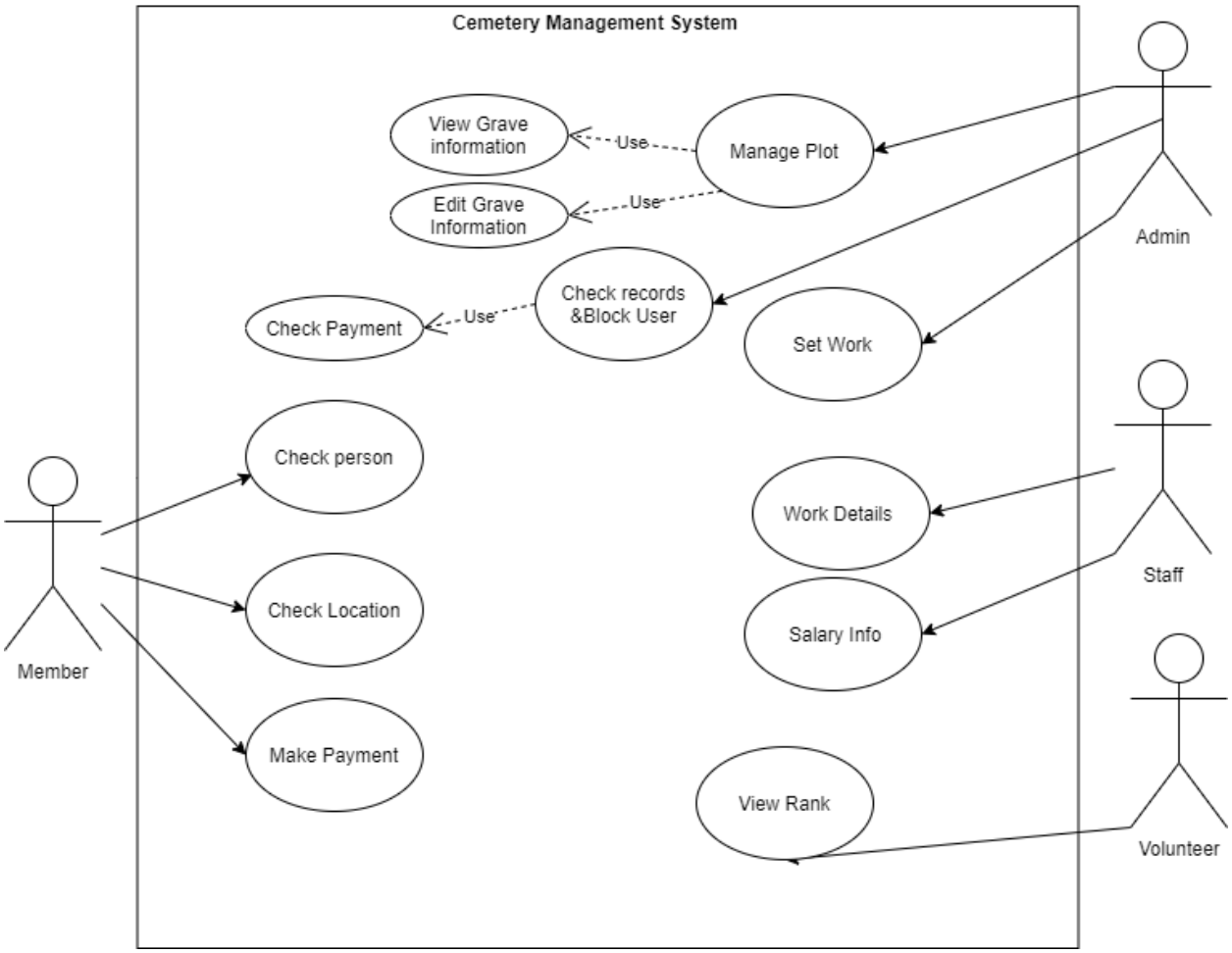

Figure 2.2.1: Use Case Diagram

In the above use case diagram, there are four actors named Member, Admin, Staff and Volunteer. There are a total of nine to ten use cases that represent the specific functionality of a cemetery management system. Each actor interacts with a particular use case. A member actor can a check person, location as well as can make payment on the application or a system. This actor can perform only these interactions with the system even though other use cases are remaining in the system.

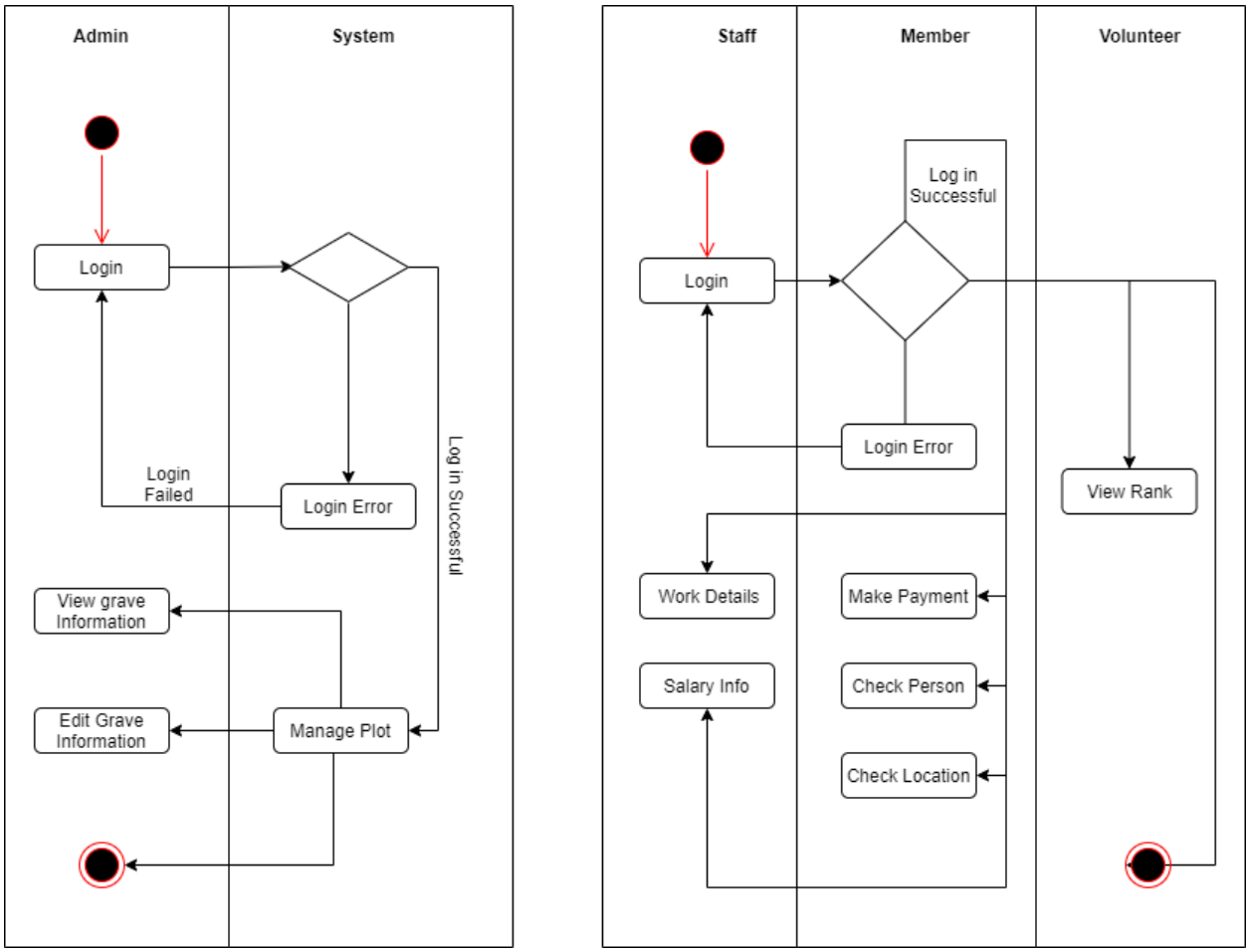

Figure 2.2.2 Activity Diagram

The diagram is about the activity diagram. In this activity diagram, we can see the activity of the Cemetery Management System where members have to log in to this website and then check login details and permission. After that members can go to check the permission of the managing person, manage the location, and manage to make payment. Then admin manages the plot, checks records & books, and set work.

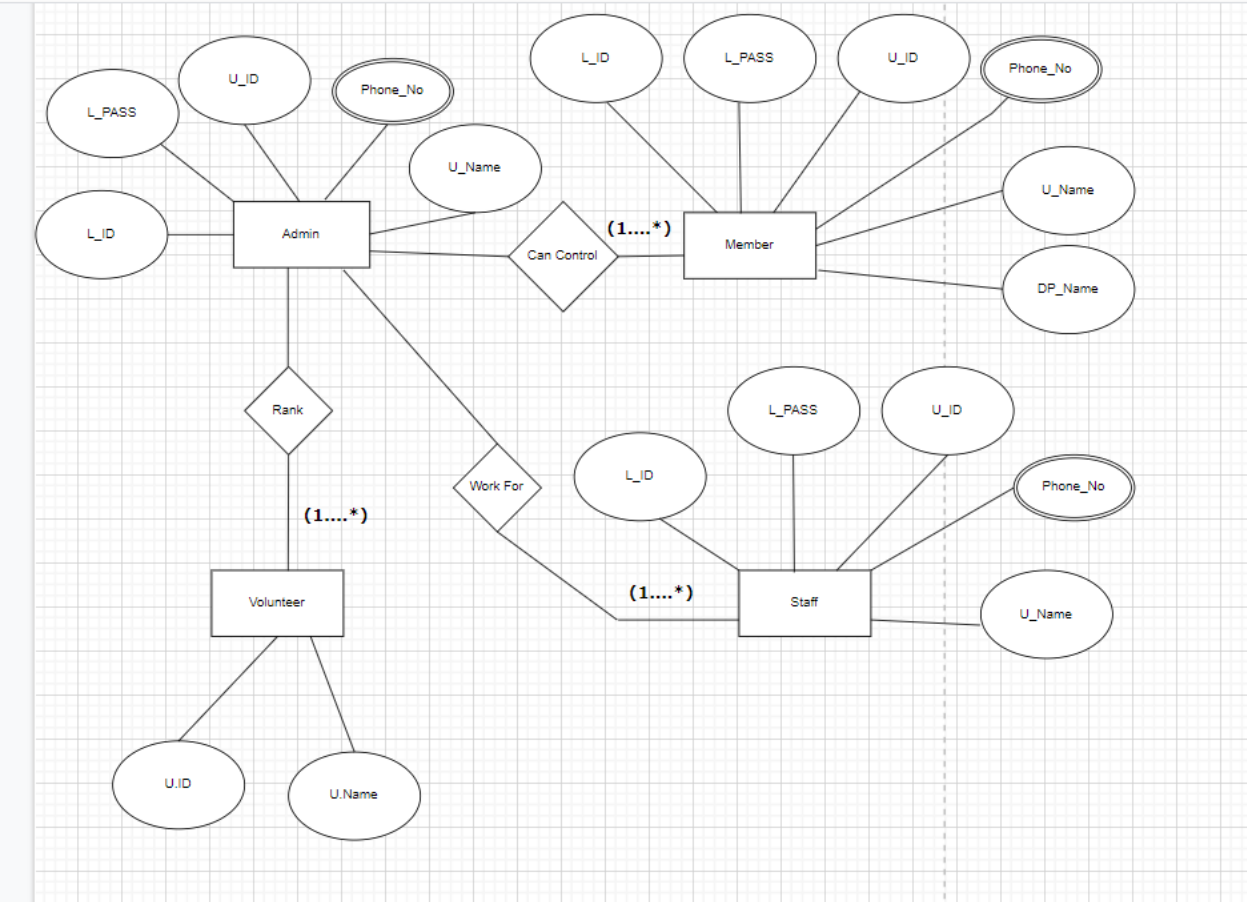

Figure 2.2.3 ER Diagram

Entity relationship diagram provides a visual starting point for database design that can also be used to help determine information system requirements throughout an organization. Here we have four entities named Member, Admin, Staff and Volunteer. Admin has some attributes. One of the attributes is multi valued here that is phone no. It means one admin can have multiple phone number. Also, others are remaining same in the system. One admin can conduct work for one or multiple members. So, It is one to many relationship. Also, many staff can work under one admin. So all kind of relationship is here one to many relationship.

3. Social Impact

Death is the unavoidable and extreme conclusion of human creatures on the soil. When this happens, there's a got secure area for the remains of the unhealthy in arrange to maintain a strategic distance from well-beginning risks. Apart from other functions, cemeteries serve primarily as burial places for corpses. Cemeteries also have a negative impact on the socioeconomic well-being of their residents, especially if they are not

properly managed. As a result, while cemeteries have positive effects (facilitate social interaction, provide closure for bereaved families, friends, and acquaintances, and increase the flow of funds from funeral costs), they also improve the socio-economic impact of residents. Negative effects on social well-being were shown to be: important. Impacts identified included threats to safe living environments. Decreased nightlife activity; especially intense fear of encountering paranormal entities/spirits. To increase security in this area, it is necessary to use the services of security agencies to extend security services to the cemetery environment. Harassment must be prevented and threats to a safe living environment must be addressed, especially at night. Improving the visual aesthetics of cemeteries in the Port Harcourt metropolitan area with the help of zoning is another way to reduce the horror and ugly scenes that characterize cemeteries in the study area. We also need to make more people aware of the fact that it is an important place economically, aesthetically, spiritually and recreationally.

4. Development Plan

Projects have timelines, budgets, and requirements to adhere to. We use agile project planning to construct the project plan. Agile project management is designed to be flexible enough to handle projects with potentially moving, changing, and evolving requirements. Agile planning gives an agile team a clear picture of the goals of their project. We developed this Cemetery management software using Scrum agile development technique, which is focused on iterative and incremental procedures. Scrum is an agile framework that is designed to provide value to the user throughout the project's development. It is so much adaptable, user-friendly, rapid, flexible, and effective.
Scrum's primary goal is to meet the users' needs by creating an environment of open communication, shared responsibility, and continuous improvement. The development process begins with a fundamental understanding of what needs to be constructed, followed by developing a list of characteristics sorted by priority (product backlog) that the product's owner desires.

It’s typically divided into six to eight steps:

Planning, Requirements and feasibility analysis, Design, Development, Testing, Deploy, Maintenance.

4.1.Planning: In the Planning phase,

- We will discuss about the plan or the steps to achieve our next goal.
- our developers will evaluate the terms of the project.

4.2. Requirements and feasibility analysis: Requirements and feasibility analysis makes detailed estimation and planning to complete. We will collect requirements from people in this section because they will be the system's users.

- By gathering certain requirements through the use of questionnaires, we can obtain a sense of how our system will work. We'll need at least one week to get those prerequisites.
- Also, we must decide whether a demand is necessary or not, which feature will be developed, and conduct brainstorming to come up with the best solution.

It looks at whether the application we want to build is viable for our requirements or calls for changes before design and development are in full swing. This can help us to get a more viable and cost-efficient product in the long run. we'll need at least one week to meet and brainstorm, or maybe two weeks.

4.3. Design: The Design phase models the way a software application will work. Some aspects of the design include:

Architecture – Specifies programming language, industry practices, overall design, and use of any templates or boilerplate.

User Interface – Defines the ways customers interact with the software, and how the software responds to input.

Platforms – Defines the platforms on which the software will run, such as Apple, Android, Windows version, Linux, or even gaming consoles

Programming – Not just the programming language, but including methods of solving problems and performing tasks in the application

Communications – Defines the methods that the application can communicate with other assets, such as a central server or other instances of the application

4.4. Development: This is the actual writing of the program. A small project might be written by a single developer, while a large project might be broken up and worked by several teams. In this phase developers track changes to the code. They will also help ensure compatibility between different team projects and to make sure target goals are being met. As a result, we'll attempt to complete our coding portion in five weeks.

4.5. Testing: We'll run a series of tests to see if our system is up to par. The testing procedure will include both white box and black box testing. Testing for regression and acceptance is also a part of the procedure. We will properly test the system. This exemplifies how well our system works. After we've finished coding, we can start testing. We can begin testing after the coding portion of the project has been completed for two weeks. We are going to perform **Unit testing** and **Integration testing** alongside with the system testing. Unit testing will be performed by the developers. We must ensure that the system functions correctly during the testing phase. As a result, a significant quantity of testing is required. If we find an error, we must correct it.

4.6. Implementation and deployment: In the deployment phase, we will make our application available to users. It can also be called a pre-launch testing so that we can decide our application is ready to move into production. It will define how our application should go before live operation.

4.7. Operations and maintenance: In this phase, the development cycle is almost finished. Our application will be rolled out for live operation and will be used by our customer. They may discover bugs that weren't found during testing. That is why we will maintain the development cycle by assigning some resources or we can sign a software maintenance agreement with our development team or a third party.

5. Project Schedule

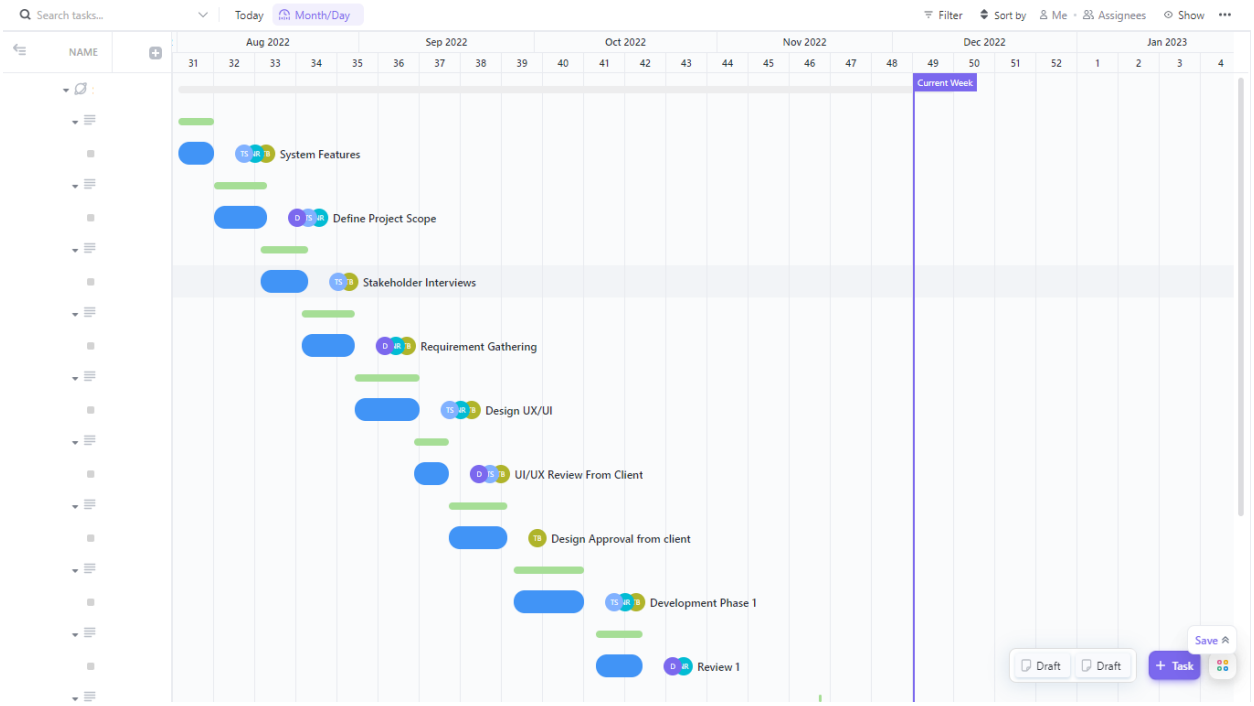

Figure: 5.1

We are used **ClickUp** Project Management Tools. This is the timing schedule in the working process. All our team members developers, QA, Business Analysts, Ui/Ux designers assign work.

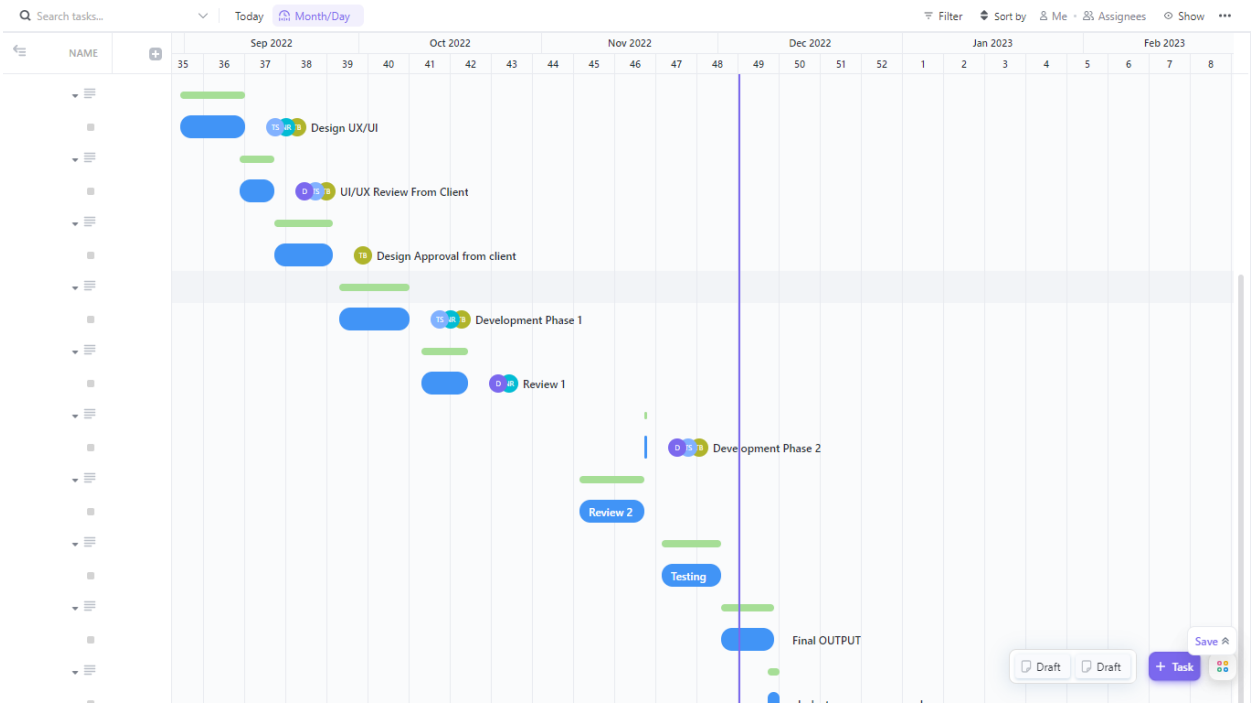

Figure: 5.2

Time assigned work due time over that time inform his employee. These tools (Project Management) use to update or change any work to inform his employee.

6. Change Management Plan

In software development projects, change management refers to identifying, planning, and implementing software changes. It's used through the software development process. New requirements and the need for change might emerge from nowhere and alter many times. A project may be doomed if we don't handle them properly. A methodical technique for coping with a shift is known as change management.

1. Employees who would be affected should be polled to determine the optimum timing to implement the change.

2. Simultaneously, allow individuals to express their concerns and ensure that they are addressed as quickly and openly as feasible. Throughout the process, keep in touch with team members.

3. Begin with the end in mind and developmental milestones to help you reach your objectives.

4. Make a training program with enough sessions to get users used to the new procedures. Give folks a phone number to call if they have any queries.

5. Determine some potential hurdles and how to get through them if they arise.

6. Keep track on the progress of the process and be prepared to make changes if necessary.

7.Marketing Plan

After building the software or system, We have to make a proper marketing plan to familiarize the software with the people. Marketing plans play a great role to boost in sales. There are many marketing approaches available that we can follow. Traditional and Digital Marketing is one of the popular branches of Marketing. Nowadays Digital Marketing is getting more popular than the traditional approaches of marketing. Marketing plans can be Short-term, long-term and Continuous plan. Describe these plans below

Short Term Marketing Plan:

The objectives of Short-term marketing planning is to reach a larger audience and about generating sales in the short term. It is a time period basically 1 year or less than that. In short-term marketing, it is difficult to reach out to a target audience and generates leads from them. So, the best way is to go the vast people in a short time, there is no alternative than Advertisement. Run Tv ads in the time of World cup, big tournaments and in the break time of popular tv shows is a good approach. So, In Short Term Marketing Plan massive advertisement will be the best approach for our services.

Long Term Marketing Plan:

Long-term marketing plan is a strategy where Long-term marketing activities help establish brand awareness and trustworthiness. In Long-term marketing focus on the big picture and work for future goals. In Long-term marketing, first we need to find out our target audience to whom we want to approach. Then we advertise our services among the target audience. We can use Google ads, Facebook ads, YouTube ads to promote our services. It also helps to generate leads. We can also launch campaigns or events to promote our services. Long-term marketing plans create our brand value among the people and brands/service value will grow eventually.

Continuous Marketing Plan:

Continuous marketing is a strategy in which the consumers of a good or service are continuously reminded of its need. It means Continuously marketing by showing ads and reminding the consumers about its need. Continuous marketing helps boost our business and gives Continuous grow. People who use our services, register our sites or visited our site/page, target that audience and show them our ads frequently. It has high probability that those people buy our services.

8. PROJECT ESTIMATION

An algorithmic software cost estimating methodology is the Constructive Cost Model (COCOMO). We will be using an organic software project type. It is a software project that must be worked on in a hardware-dependent environment.

Constructive Cost Model

We are assuming that the SLOC (Source Lines of Code) that we require here after analyzing all the components.

SLOC = 10,000

Now we need to figure out the effort, development time, and required number of people.

Suppose that, our software project type is organic, the values of the Coefficient<Effort Factor> =2.4

P = project complexity = 1.05

SLOC= 10,000

T= SLOC-dependent coefficient = 0.38

Now,

Effort = PM = Coefficient*(SLOC/1000) ^{P}

PM = 2.4*(10000/1000)$^{1.05}$

= 26.93

Development Time= DM= 2.5*(PM)^{T}

= 2.5*(26.93)$^{0.38}$

= 8.74

= 9 [In months]

Required Number of People = ST

= PM/DM

= 26.93/8.74

= 3.08

= 3

Total Development time: 9 months

Total working hours needed: (9*22) *8=1,584 hours; (1 month = 22 working day & per day working time 8 hours)

Requirement analysis & Documentation times needed: 22*8=176 hours

Times needed for Ui/Ux designing: (1.5*22) *8=264 hours

Times needed for developing system: (4*22) *8= 704 hours

Times needed for Testing & Debugging: (2*22) *8=352 hours

Revision time: (1*22) *8= 176 hours

For develop the software:

- Developer team of 6 engineers.
- Software Quality assurance team of 3 engineers.
- One Business Analyst
- One Ui/Ux Designer
- Total budget: **1,660,000 BDT**

9. Cost and Profit Analysis

	A	B	C	D	E	F
1		**Cost Analysis**				
2						
3		**Project Name: CEMETERY MANAGEMENT SYSTEM**				
4						
5		No. of Module : 4		Category: Medium		
6	**SL**	**Job post**	**Total hour**	**(Man Day)/Salary**	**Resource unit**	**Total Cost(BDT)**
7	1	Developer	704	250	6	1056000.00
8	2	SQA Engineer	352	200	3	211200.00
9	3	Ui/UX Designer	264	150	1	39600.00
10	4	BA's Analyst	176	300	1	52800.00
11			**Total Cost**			1359600.00

Now, All together

	A	B	C
1	**SL**	**Cost Item**	**Total Cost(BDT)**
2	1	Requirement Cost	20160.00
3	2	Design Cost	39600.00
4	3	Development Cost	1056000.00
5	4	Testing Cost	211200.00
6	5	BA's Salary	52800.00
7	6	Other Staff's Salary	40000.00
8	7	Maintenance cost	7360.00
9	8	Review Cost	1090.00
10	9	Market promotion cost	15000.00
11	10	Launching website Cost	5000.00
12			
13		Grand Total	1448210.00

Profit:

Those who will use their grave space in the cemetery have to buy a maintenance cost. We set our monthly maintenance rate at 150 BDT. We are assuming at least 1250 people will use our app.

So, 1250 X 150 = 187,500 BDT

So, In 9 months it will be 187500 X 9 = 1,687,500 BDT

Our Total Development cost = 1,448,210 BDT

So, earnings on this website = 1,687,500 BDT

So, we are getting (1687500-1448210) = 239290 BDT profit. After one-year subscription fee will be reduced.

10.Reference

- Graveyard Managementhttps://gms.dhakasouthcity.gov.bd),
- CIMS (https://www.cimscemeterysoftware.com/),
- Plotbox (https://www.plotbox.io/),
- Cemetery Find (https://cemeteryfind.com/)
- Draw.io(https://app.diagrams.net/)