



# **American International University-Bangladesh (AIUB)**

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

**SDPM Group Project, Summer 2022**

**Project Title: Household Management System  
Section: B**

**Submitted by**

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## **1.0 Introduction:**

Using technology to help manage the household can add up to a good amount of time and money saved. For that reason, we are building an application which can solve a house's all basic problems. From Electrician to House shifting labor, from plumber to painter, user can hire several types of helping hands as needed. This system will help all those busy people who are incapable of doing house maintenance because of busy schedules. People do not have to run anymore in case of any emergencies. We will provide experienced electricians, plumbers, laborers at our user's doorstep. We will also provide a van or truck if the user is shifting furniture from one place to another. User will select numbers of labors and create a furniture list to proceed. Or suppose a user needs to fix his refrigerator, then we will provide a fridge expert or a user needs to set up his new TV, then we will send someone who is good at it. This app will be a huge lifesaver for those people who spend their major time outside of the house and the service we are going to provide is quite common and essential for householders.

## **2.0 Project Title:**

Household Management System.

## **3.0 Objectives:**

Using technology to help manage the household can add up to a good amount of time and money saved. For that reason, we are building an application which can solve a house's all basic problems. From Electrician to House shifting labor, from plumber to painter, user can hire distinct types of helping hands as needed. This system will help all those busy people who are incapable of doing house maintenance because of their busy schedule. People do not have to run anymore in case of any emergencies. We will provide experienced electricians, plumbers, laborers at our user's doorstep. We will also provide a van or truck if the user is shifting furniture from one place to another. User will select numbers of labors and create a furniture list to proceed. Or suppose a user needs to fix his refrigerator, then we

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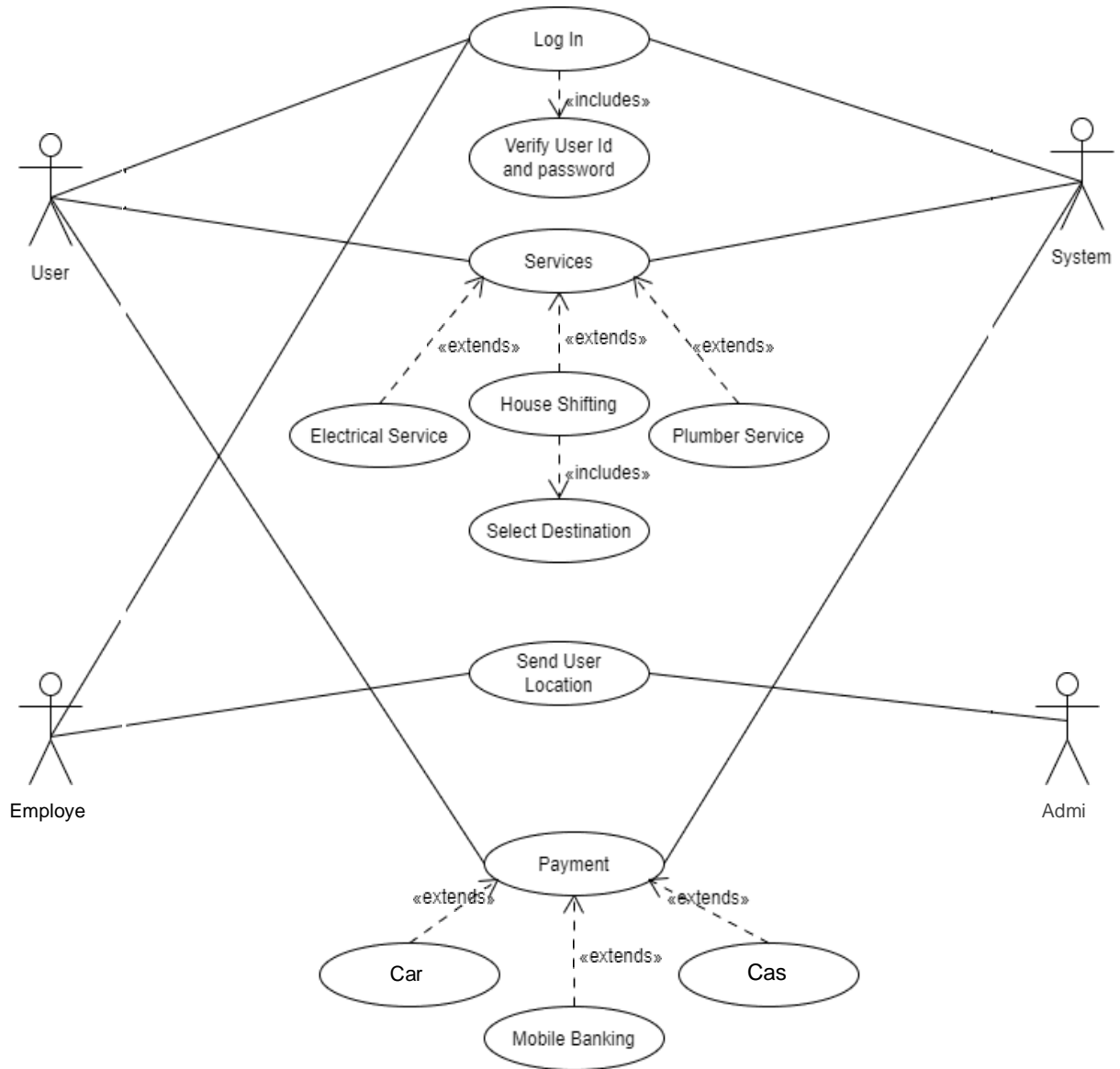
#### **4.0 Justification:**

This system will help all those busy people who are incapable of doing house maintenance because of busy schedules. People do not have to run anymore in case of any emergencies. We will provide experienced electricians, plumbers, laborers at our user's doorstep. We will also provide a van or truck if the user is shifting furniture from one place to another. User will select numbers of labors and create a furniture list to proceed.

#### **5.0 Systems Overview: (Includes Use case diagram)**

When a user uses our application for the very first time, he/she must create an account with a valid email address and provide us with his contact info for communication. Users need to give us location accessibility so that we will know where to send our employees to provide the services to the user. After creating an account and providing location, user will reach to our home page where our all services, user review and basic information will be there. User will select one of those services if he wants to get any of our services or all services together. Initially we are providing house shifting labors, Mini truck and truck drivers, electricians, and plumbers. Often the user needs all those services together if user is shifting his residence. But if any user needs only labor, or truck or electrician he can get it too.

# House hold Management System



## 6.0 Stakeholders analysis:

There are two sorts of stakeholders recognized for this project's development.

•**Primary Stakeholders or Positive Stakeholders:** A positive stakeholder or primary stakeholder perceives the good aspects of the project and benefits from its success. These stakeholders contribute to the project management team's success.

•**Secondary Stakeholders or Negative Stakeholders:** A negative stakeholder or secondary stakeholder experiences the project's unfavorable consequences and may be negatively influenced by the project. This sort of stakeholder is less helpful in completing the project.

Primary Stakeholders or Positive Stakeholders:

- Employees
- Owner
- Manager

Secondary Stakeholders or Negative Stakeholders:

- Electrician
- Plumber
- Customer
- House shifting labors

## 7.0 Feasibility study:

### 1. Technical Feasibility:

The use of digital storage and communication is on the rise as the cost of these technologies continues to fall and their availability continues to rise. Mobile WSNs make it easier and more reliable than ever to keep an eye on people's well-being on the go. To assist users, make better decisions, GPS-enabled smartphones track the duration. Real-time communication, on the other hand, has several drawbacks, especially when it comes to warnings about potentially harmful circumstances, such as degradation and energy conservation. Several researchers have utilized GPS-enabled smartphones for monitoring technician's location, according to published studies.

### 2. Financial Feasibility:

It is important to know the financial health of the application by looking at its financial statements. Assets, liabilities, and shareholders' equity are all represented on the balance sheet at a single point in time on the balance sheet. Maintaining legal compliance for tax and payroll reasons and being aware of your financial status if you seek a loan to expand your company necessitate an understanding of application financials.

### **3. Development Feasibility:**

We focus primarily on the application of our services. The improvement of the app should be our ultimate objective. Users will make sure that the services are satisfactory and technicians are well mannered. The app will be updated every month at least if users face any difficulties. In future technicians GPS will also show in some new or several ways to users. Apps can give some extra benefits to some users for using more time in a month or week. App will make sure to users if there are any difficulties. For the next years, more essential will be updated for users which they need. People do not have to run anymore in case of any emergencies. This app will be a huge lifesaver for those people who spend their major time outside of the house and the service we are going to provide is quite common and essential for householders. This application will solve a house's all basic problems.

### **8.0 Systems component:**

#### **Software Component:**

1. User Registration
2. User Log In
3. Dashboard
4. Accounts
5. Services
6. Select destinations
7. User location
8. Payment
9. Mobile banking

#### **Hardware Component:**

1. Hub
2. Server
3. Computer.

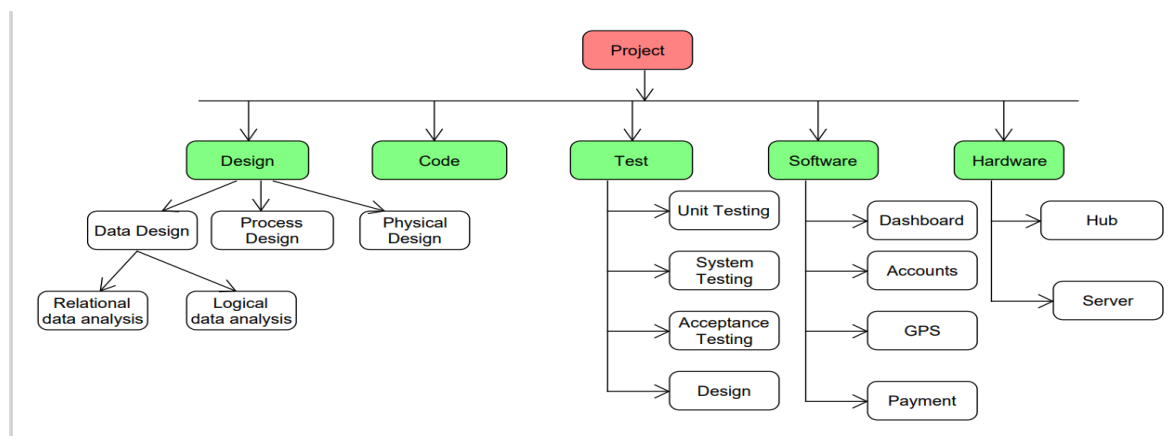
## 9.0 Process Model to be followed:

Agile today stands as one of the most popular approaches to project management because of its flexibility and evolutionary nature. Over time, agile project management evolved and became a popular choice for many project managers, irrespective of the industry. Agile, briefly, is an iterative and incremental approach to project management that helps teams keep up with the demands of the modern workplace. It consists of different methodologies and all of them are based on the concepts of flexibility, transparency, quality, and continuous improvement.

### Why Agile?

1. Agile Methodologies have overcome the traditional methods of waterfall model by becoming flexible, fast, lean, responsive, and consistent.
2. Agile method focuses on people and is more communication-oriented
3. Agile methods are tested in a dynamic environment and prove to be very flexible by adapting to the change happening in the business.
4. Agile methods include regular inspection in a disciplined manner, which consequently improves the leadership qualities to boost the teamwork.
5. The agile method follows best practices that help in getting high-quality software very quickly.

## 10.0 Efforts estimation:



In our project, we can assume that SLOC is 7000. Our project is a semi-detached project.

Effort= PM= Coefficient <Effort Factor> \* (SLOC/1000) ^P

$$= 3.0 * (7000/1000) ^{1.12}$$

= **26.52 persons-months**

Development Time = DM =  $2.50 * (PM)^{0.35}$

$$= 2.50 * (26.52)^{0.35}$$

= **7.87 months**

Required Number of people = ST = Effort (PM)/Development Time (DM)

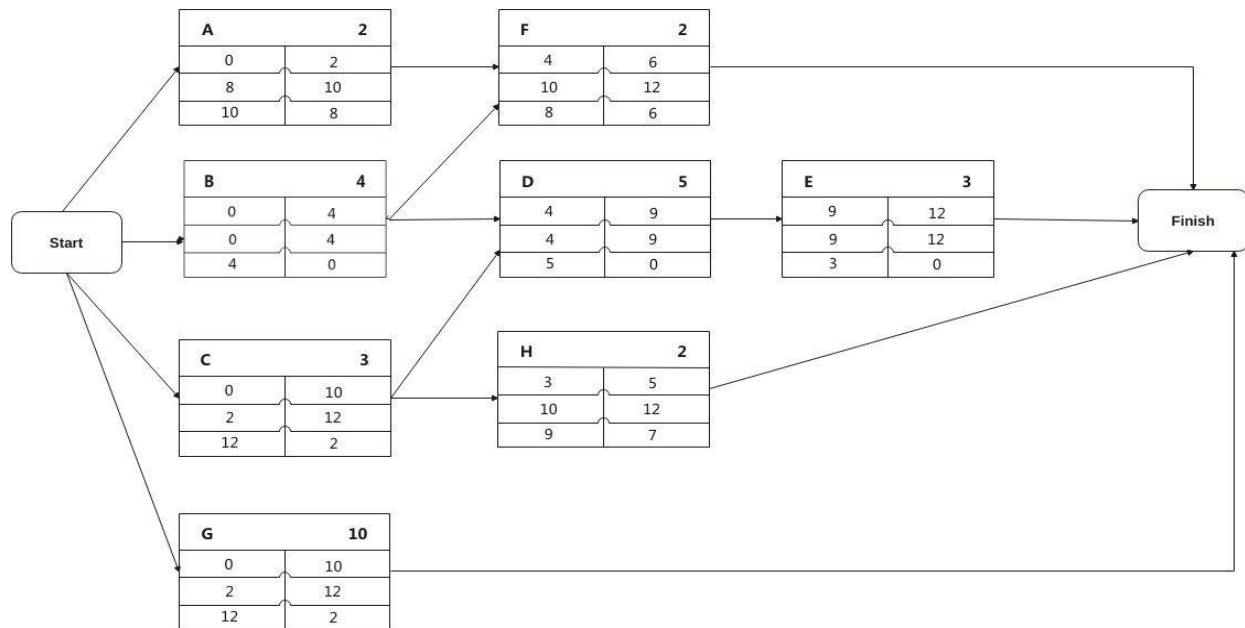
$$= 26.52/7.87$$

= 3.36 ~ **4 persons**

## 11. 0 Activity Diagram:

Activity	Duration	Precedence
A. Hardware Selection	2	
B. Software Selection	4	
C. Design	3	
D. Code	5	B, C
E. Test	3	D
F. File Take On	2	A, B
G. Write User Manual	10	
H. Install	2	C





### **Critical Activity Finding:**

Path 1: Start – A – F – Finish

Path2: Start – B – F – Finish

Path 3: Start – B – D – E – Finish

Path 4: Start – C – D – E – Finish

Path 5: Start – C – H – Finish

Path 6: Start – G – Finish

Here Path 3 is the critical activity duration.

## **12.0 Risk Analysis:**

## **Risk Analysis:**

A project's risk is the potential for an unexpected occurrence to occur. A risk analysis is critical after obtaining the requirements since it helps identify potential problems that may arise during and after development of the project. There are a certain number of specific hazards that come with any undertaking. Cattle farm management systems are the focus of our research. We need to know the categories of risk in which it is necessary to identify the probable unknown occurrences of the future and their causes and consequences to examine the risk factors. In terms of potential danger, the following are the most significant classes:

- **Actor:** Related to stockholders of the project.
- **Technology:** Availability and performance of the technology. For example: We must know about the availability percentages of IOT basics and automated systems as we are using them to complete the project.
- **Structure:** Management structures and systems which includes affecting planning and control.
- **Task:** The common danger here is underestimating the amount of work required to complete the activity.

Risk refers to the potential of an unknown occurrence happening in a certain situation. Under each category, there are some risk components. We must include the risk associated with our project in the risk component.

- **Risk of non-conformance:** The requirements may not be satisfied. Risk Example: While the program estimates the weight of food consumed by each animal, it is unable to detect specific illnesses by scanning or sensors.

- **Cost Risk:** Our project may go over budget. Risk Example: The project may be finished on time and under budget, but user representative training may go beyond budget.
- **Support Risk:** the risk associated with system updates. Risk Example: When upgrades are required, the development team may experience turnover. The new squad will have a tough time keeping up with the old team.
- **Schedule Risk:** The risk of not delivering the product on time. Risk Example: There may be delays in our project critical path for staff turnover, technology problems and so on which will affect the project completion time.

The risks associated with a project are not equal. Risk varies depending on its nature. The risk might be

1. Catastrophic,
2. Critical,
3. Marginal,
4. Negligible.

Additionally, there are some odds that a certain danger may occur or the risk is certain, but we must assess the risk's consequences.

Additionally, we will quantify the risk exposure, which is a quantitative way to determine the possible loss of a corporation. Risk monitoring, mitigation, and management are all terms that refer to the same procedure.

Possible Risk	Category	Likelihood	Impact	RE
Resource uncertainty	Development environment (DE)	5	7	35
Output uncertainty	Business Impact (BU)	4	10	40
Increasing number of unfathomable end users.	Project size (PS)	6	6	36
The System cannot automatically send notification to the technicians.	Technology to be built (TE)	8	4	32
Late changing on requirement.	Project size (PS)	5	9	45
Lack of training the sources	Development environment (DE)	6	3	18
Delivery date may exit	Business impact (BU)	5	8	40
Less users than planned	Project size (PS)	4	7	28
High rate of staff turns over	Staff size and experience (ST)	7	9	63
Low estimation of the size	Project size (PS)	6	6	36

The likelihood and impact have been graded on a scale of 1 to 10. The higher the rating, the more serious the hazards; the lower the rating, the less serious the risks. The term "risk exposure" refers to the unknown commercial consequence of our undertaking.

As we are done with identifying risk, we must plan our risk. There are some steps of planning where we will decide what to do with risks.

**Risk acceptance:** There is no other way to accept the risk rather than prevent the risk.

- **Example for Project:** In the system testing it may show that the software detecting the problem that the user finds difficulties to update his location sometimes but before publishing the problem system crashes sometimes but there is no time left to fix the problem. So, we need to accept the risk for the first release of our project and will try to develop it in another updated release.

**Risk avoidance:** Avoiding the activity which could bring risk.

- **Example for Project:** We are considering 12 developers are working in a team to build the project. One of the experienced team members could have some problem and failed to complete the critical path activity in time. But involving another member who is eligible to handle the same work we could involve him with the project from the starting period by maintaining the same or moderately high employee cost.

**Risk Reduction:** The actions to reduce a particular risk.

- **Example for Project:** We have discussed a risk about the system crash in the risk acceptance steps. We could have developed a way which would save the data of unshown results so that the system does not need to take the data from the very first even though it crashes the system.

**Risk transfer:** Transferring the risk prevention responsibilities to another team or organization.

- **Example for our Project:** We have identified the risk that our system will not automatically send notification to the technician when he is assigned for a job and our developers may fail to solve the problem. So, we can transfer the risk prevention responsibilities to other organizations based on contract.

**Risk Mitigation:** Trying to reduce the post impact of a risk.

- **Example for our Project:** We could have a high rating of staff turnover and, in this situation, we could hire some excellent fresh graduates with enough salaries until the project completion time.

Sometimes there is confusion among the whole team about risk prevention or acceptance. To solve this confusion there is a term called "Risk Reduction Leverage."

We are assuming that rural communities have suddenly become more interested in our system.

We can save 0.5 percent of this loss by paying 10,000 taka to teach some individuals for remote regions, but there are no end-user trainers, thus there is a 1.5% possibility of losses of 50,000 taka. We will appreciate the RRL's value if it costs more than one.

$$\begin{aligned}\text{RRL} &= \text{RE before} - \text{RE after} / \text{Risk reduction cost} \\ &= (1.5\% \text{ of } 50000) - (0.5\% \text{ of } 50000) / 10000 \\ &= 0.05\end{aligned}$$

As the  $\text{RRL} < 1$  so the step is not worth doing. These are the possible risks and prevention for our cattle farm management project.

### **13.0 Budget for the project:**

#### **Development Cost:**

Total working days = total days \* DM

$$= 25 * 8.73$$

$$= 218.75 \text{ day (about 7 months)}$$

$$= 219 \text{ days (about 7 months)}$$

Working hours per day = 6

$$\text{Total working hours} = 219 * 6$$

$$= 1314 \text{ hours (about 2 months)}$$

$$\text{Total development cost} = 1314 * 600 \text{ [per hour salary 600]}$$

$$= 788400$$

#### **Maintenance Cost:**

Monthly 12 Hours (6 months and per hour salary 1200)

$$\text{Cost} = 12 * 6 * 1200$$

$$= 86,400$$

#### **Requirement Cost:**

Days = 15 working hours = 7 salary = 750

Total Cost = 7 x 15 x 750

= 78,750

Development Cost	7,88,400
Requirement Cost	78,750
Travel Cost	8,000
Maintenance Cost	86,400
Training	32,000
Equipment	1,00,000
Utilities	1,13,000
Profit (20%)	2,87,150
Total	14,93,700

## 14.0 Conclusion:

In the conclusion part of this proposal, it could be said that there is an intention behind the development of a software or system. Household management system is a unique and well-timed application to launch in the market. This system is very much needed in a city like Dhaka. Because most of the people live in rented apartments and often move from one area to another. And it takes 2-3 days to move all the housing stuff from one area to another if they do it all by themselves. This system will be extremely helpful for them. Our other service, which is technician hiring, is also a very much needed solution in the current situation. So, we already have a vast number of users to take benefits from our system.

