

# American International University-Bangladesh (AIUB)

# Department of Computer Science Faculty of Science & Technology (FST) Fall 23-24

# A Web Based E-Commerce Application with Delivery System

Software Requirement Engineering

Sec: A

**Project submitted** 

By

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Submitted

To

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Associate Professor
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Page 2 of 24

# **Table of Contents**

1. Problem Domain	4
1.1 Background of the problem	4
1.2 Solution of the problem	4
2. Solution Description	5
2.1 System Features	5
2.2 UML Diagrams	12
3. Social Impact	15
4. Development Plan with Project Schedule	16
4.1 Planning	
4.2 Analysis	
4.3 Designing	17
4.4 Development	
4.5 Testing	17
4.6 Issue Fixing	18
4.7 User Acceptance Testing	18
4.8 Deployment	19
4.9 Maintenance	19
4.10 Overview	20
5. Marketing Plan	21
5.1 Short Term Plan	21
5.2 Long Term Plan	22
5.3 Continuous Plan	22
6. Cost and Profit Analysis	24
6.1 Development Costs	24
6.2 Infrastructure Costs	24
6.3 Operational Costs	24
6.4 Total Project Costs	25
7 Reference	25

#### 1. PROBLEM DOMAIN

#### 1.1 Background to the Problem

The use of electronic commerce, or e-commerce, to purchase and sell goods and services online has grown in popularity. Traditional brick-and-mortar stores are progressively moving to e-commerce platforms in our quickly changing world. Multivendor e-commerce is a unique kind of e-commerce where different vendors can list and sell their goods on one platform. But a typical problem comes up when buyers want to buy several things from various sellers. Imagine the following situation: a buyer wishes to purchase multiple items, each of which is offered by a separate vendor. Purchasing from several vendors presents two important problems. First of all, scheduling deliveries from multiple sources may leave you unsure of when each thing will actually arrive. The second issue is that of delivery fees. When a customer orders product from multiple vendors, each vendor typically charges a separate delivery fee. For instance, if the delivery charge is 60tk and a customer buys two items from three different vendors, they end up paying an additional 160tk just for delivery. From a financial perspective, this practice proves to be a significant loss for the consumer, not to mention the added inconvenience of managing multiple deliveries and schedules. In essence, this situation results in both a monetary and time-related setback for the customer.

#### 1.2 Solution to the Problem

To solve the aforementioned problem, we'll build a system that will act as a go-between for the seller and the customer. An order placed by a client on a multivendor e-commerce website is sent directly to the seller. The customer's order will be reviewed by our technology. It will confirm the number of goods the client has bought and the supplier's customer from whom the product was purchased. The system will automatically accept the order from the single vendor if the buyer puts an order with them and the seller has the products in stock.

But if a customer purchases goods from multiple sellers, our technology will identify which seller has all the merchandise and will let that seller know. The system will carry out the order with the appropriate seller after identifying which source can deliver the goods most quickly and affordably. A large variety of categories are available for purchases by customers. Subsequently, the system will determine the product's category. It will ascertain whether any

items in the same class have already been placed for purchase. Notifications would then be sent to the category's vendors. After receiving their response, it will make the purchase and set up a prompt delivery of the item to the e-commerce company's pick-up location. The products will subsequently be provided to clients from the pick-up site.

## 2. SOLUTION DESCRIPTION

#### 2.1 System Features

## **Functional Requirements**

Functional requirements for the Admin:

Requirement ID	Requirement Priority Description		Comments
FR000	An Admin shall log in with an username and valid password.	High	
FR001	The Admin shall have access to a centralized dashboard for managing users, sellers, and delivery personnel.		
FR002	Admin tools shall allow for the creation, modification, and deactivation of user accounts.	Medium	
FR003	Admin shall have access to analytics and reporting tools for website performance.	High	
FR004	System maintenance and security features shall be implemented by the Admin.	High	

The Admin shall have the authority to manage user accounts, including creating, modifying,	High	
creating, modifying, or deactivating them.		
	the authority to manage user accounts, including creating, modifying,	the authority to manage user accounts, including creating, modifying,

# Functional requirements for the General User:

Requirement ID	Requirement Description	Priority	Comments
FR006	The website's home page shall have a home page that has a login section where any user can log in.	High	
FR007	The website's home page shall have a registration page where the new users can create new accounts.	High	
FR008	A user shall log in with an email and also with the phone number.	High	
FR009	A user shall be greeted with a dashboard after the login or registration.	Medium	
FR010	Users shall be able to view a list of sellers included on this website.	High	
FR011	Users shall be able to view all the products included in this website.	High	

FR012	Users shall be able to purchase products and add to cart.	High	
FR013	Users shall be able to leave reviews of purchased products.	High	
FR014	The dashboard shall have a section where the user can access to their profiles	High	
FR015	A user shall be able to set image for their account	High	
FR016	A user shall be able to see the details of the order.	High	
FR017	A user shall be able to cancel orders within a limited time limit	High	
FR018	A user shall be notified when the orders arrived	High	
FR019	A user shall be able to log out from their account	High	
FR020	A user shall be able to pay with a credit card or a debit card.	High	
FR021	A user shall be able to pay with mobile banking.	High	
FR022	A user shall save the card information	High	
FR023	A user shall be offered with discounts	High	

Functional requirements for the Seller:

Requirement ID	Requirement Description	Priority	Comments
FR024	Sellers shall be able to create and manage a seller account with a dedicated profile.	High	
FR025	The website shall offer tools for adding, updating, and removing product listings.	High	
FR026	Sellers shall have access to an inventory management system to track stock levels.	High	
FR027	Sellers shall have the ability to run promotions and discounts within platform guidelines.	Medium	
FR028	A seller shall be able to set image for their account.	High	
FR029	Sellers shall receive notifications of new orders and be able to process and fulfill orders.	High	
FR030	A seller shall be able to log out from their account	High	

Functional requirements for the Delivary Man:

Requirement ID	Requirement Description	Priority	Comments
FR031	Delivery Men shall have the capability to create and manage a delivery account.	High	
FR032	A delivery man shall be able to set image for their account.	High	
FR033	A dashboard shall display assigned deliveries, delivery addresses, and order details for Delivery Men.	High	
FR034	Delivery Men shall update the status of deliveries in real-time, providing accurate tracking information.	High	
FR035	Delivery Men shall confirm successful deliveries and report any issues to the Admin for resolution.	High	
FR036	A delivery man shall be able to log out from their account.	High	

**Quality Attributes** 

Here is the list of the quality attributes required for the project,

1. Reliability

a. Priority: High

**b.** Indicators: Order processing, timely product delivery and many more.

c. Description: Reliability shall be paramount for an e-commerce site, ensuring

consistent order processing and timely product delivery. The platform should

commit to delivering promised services and accurate order fulfilment for a

trustworthy user experience.

2. Usability

a. Priority: High

b. Indicators: Clear navigation, user-friendly interface, efficient task completion time

and many more.

c. Description: Given that many users, including those from rural areas, may not have

advanced technological understanding, the platform must prioritize usability. This

involves providing clear navigation and an easy-to-use interface for Admin, Sellers,

Delivery Men, and Users.

3. Security

a. Priority: High

b. Indicators: SSL encryption, prevention of data breaches, secure payment

transactions and many more.

c. Description: Ensuring the security of sensitive information, such as user and

transaction data, is critical. The platform must implement robust security measures

to safeguard personal and financial details for Admin, Sellers, Delivery Men, and

Users.

4. Availability

a. Priority: High

Page 10 of 35

**b. Indicators:** Service availability, staff availability, round-the-clock customer

support and many more.

**c. Description:** As this is a product aimed at providing essential services, being

consistently available is a must. The system must be accessible to Admin, Sellers,

Delivery Men, and Users, ensuring timely service delivery and immediate support

when needed.

5. Privacy

a. Priority: High

**b.** Indicators: Compliance with privacy regulations, protection of user interactions,

confidentiality of records.

**c. Description:** Privacy shall be prioritized in the e-commerce site to ensure user data

confidentiality, adhering to regulations and instilling trust for a secure and positive

online shopping experience.

6. Flexibility

**a. Priority:** Medium

**b.** Indicators: User ability to select preferred consultants, modify orders, and adjust

preferences.

c. Description: Users shall enjoy the freedom to personalize their experience by

choosing preferred sellers, adjusting orders, and setting individual preferences. This

adaptability caters to diverse user needs, fostering a user-friendly environment for

Admin, Sellers, and Users alike.

7. Performance

a. Priority: High

**b.** Indicators: Minimal lag, low incidence of bugs, optimal system performance and

many more.

**c. Description:** Performance shall be a paramount requirement for this e-commerce

platform. Swift and seamless interactions, quick order processing, and efficient

inventory management shall characterize the user experience. This product shall

Page 11 of 35

ensure timely and accurate order deliveries and reflecting commitment to providing a responsive and reliable service for users.

#### 8. Testability

- a. Priority: High
- **b. Indicators:** Quality testing, UI/UX testing, continuous software-architecture testing and many more.
- **c. Description:** Quality assurance is an indispensable aspect of this product. It is imperative to conduct thorough and continuous testing to ensure the website's functionality is error-free, leaving no room for discrepancies.

#### 2.2 UML Diagrams

#### **Use Case Diagram**

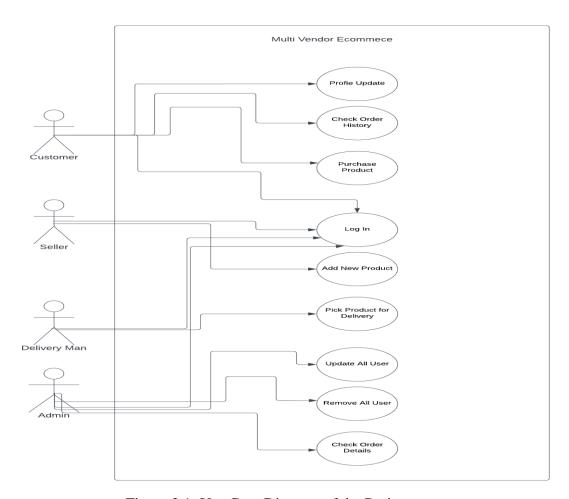


Figure 2.1: Use Case Diagram of the Project

In the e-commerce platform, customers can easily browse and purchase products, sellers manage their storefronts, processing orders efficiently. Delivery men ensure timely and secure product deliveries, while the admin oversees the entire system, ensuring reliability and security. The use case diagram illustrates seamless interactions among customers, sellers, delivery men, and admin, depicting a well-coordinated and user-centric e-commerce experience.

#### **Activity Diagram**

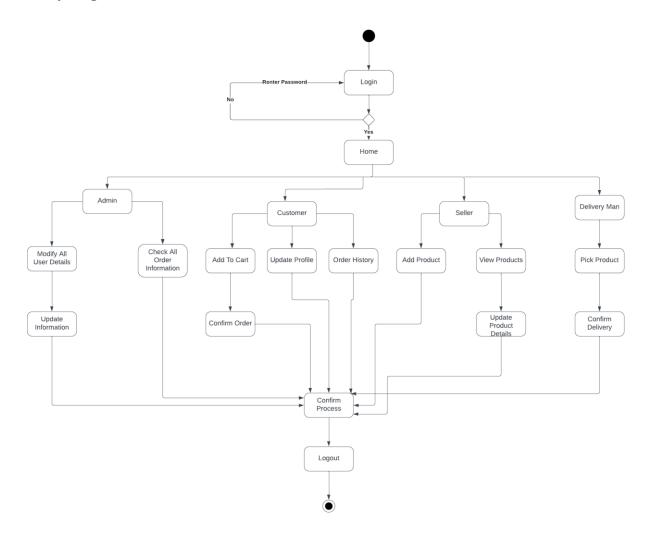


Figure 2.2: Activity Diagram of the Project

This figure is an activity diagram. It can be seen that the diagram is divided into four subsections. Which basically represents the four different users of the projects.

#### **Class Diagram**

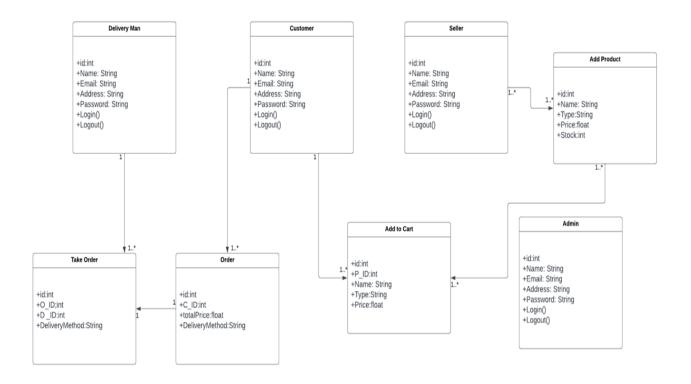


Figure 2.3: Class Diagram of the Project

In our e-commerce platform's class diagram, the Customer class represents individuals browsing and making purchases, with attributes capturing user information and preferences. Sellers are characterized by their ability to manage products, inventory, and transactions, forming a key class within the system. The Delivery Man class embodies the individuals responsible for efficient and secure order deliveries, with attributes reflecting their status and delivery history. The Admin class stands as a central figure, orchestrating the entire system, overseeing users, sellers, and delivery processes. The interplay of these classes illustrates the collaborative and well-defined structure of our e-commerce ecosystem.

#### 3. Social Impact

This e-commerce project isn't just an online marketplace; it's a powerful force driving positive change in our society. Its impact is profound, especially in empowering a diverse range of sellers and ensuring a safe marketplace through robust user authentication. Acting as a catalyst for entrepreneurship, the platform opens up a digital space for small and local businesses to expand their reach, fostering not only business growth but also contributing to job creation. What makes this project stand out is its commitment to fair competition, achieved through thorough user authentication. This emphasis builds a strong foundation of trust and credibility among users, assuring them that the sellers on the platform are not only legitimate but also reputable. The result is a marketplace that not only facilitates transactions but also nurtures a sense of reliability and integrity. Sellers can engage in cross-border trade, expanding their market reach internationally and fostering economic opportunities on a global scale. The platform offers educational resources and training for sellers, empowering them with the knowledge and skills needed to thrive in the digital marketplace.

But the impact goes beyond commerce. This initiative actively promotes digital inclusion by removing barriers for businesses of all sizes, ensuring that everyone can participate in the ever-expanding digital economy. Moreover, the platform's centralized approach not only streamlines logistics for a better shopping experience but also aligns with environmental consciousness, reducing the carbon footprint associated with traditional retail practices. The 24/7 accessibility of the platform allows users to shop at their convenience, breaking away from traditional retail constraints and accommodating varying schedules. By showcasing eco-friendly products and promoting sustainable business practices, the platform encourages both sellers and consumers to make environmentally conscious choices.

In a world that is more interconnected than ever, this e-commerce project becomes a global bridge, fostering innovation and enabling businesses to connect with consumers worldwide. It prioritizes data security and privacy, safeguarding user information and ensuring a safe online environment. The project enhances accessibility by providing a convenient online space for users to shop from the comfort of their homes, saving time and effort. Data analytics tools provide valuable insights into consumer behavior and market trends, enabling sellers to adapt and innovate based on real-time information.

As the digital landscape continues to evolve, this e-commerce initiative stands as a beacon of positive societal change, enhancing accessibility, convenience, and sustainability. It's not just a marketplace; it's a transformative force shaping the future of online commerce and making a lasting impact on the way we connect, do business, and care for our planet.

# 4. Development Plan with Project Schedule

The development plan with proper SDLC with project schedule is given below,

# 4.1 Planning



Figure 4.1: The project schedule for requirements gathering

This is the project schedule for requirement gathering. There is a total of 6 tasks and takes about 15 days to finish.

#### 4.2 Analysis



Figure 4.2: The project schedule for analyzing requirements

This is the project schedule for analyzing requirement. There is a total of 8 tasks and takes about 24 days to finish.

#### 4.3 Designing

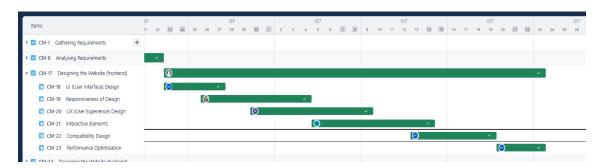


Figure 4.3: The Project Schedule for Designing the Website Front-end

This is the designing part of the SDLC. This is the front-end part which is expected to take 30 days which is about 1 month. It has 6 tasks.

#### **4.4 Development**

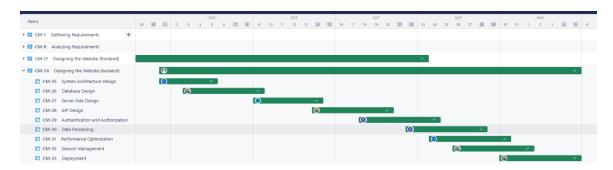


Figure 4.4: The Project Schedule for Developing the Website Backend

This task is developing the backend part of the project which is a part of the development phase in the SDLC. It takes about 35 days and it can take more.

#### 4.5 Testing

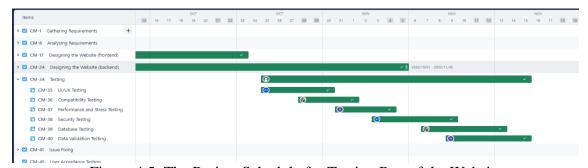


Figure 4.5: The Project Schedule for Testing Part of the Website

This is the testing part of the website which is the testing phase of the SDLC. It has a total of 6 tasks and takes about 21 days.

#### 4.6 Issue Fixing

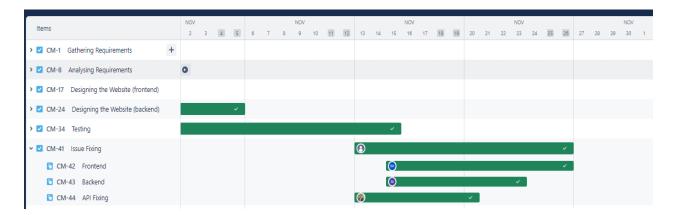


Figure 4.6: The Project Schedule for fixing issues of the Website

This is the fixing part of the website. It takes about 14 days. It is part of the deployment part of the SDLC.

#### **4.7 User Acceptance Testing**

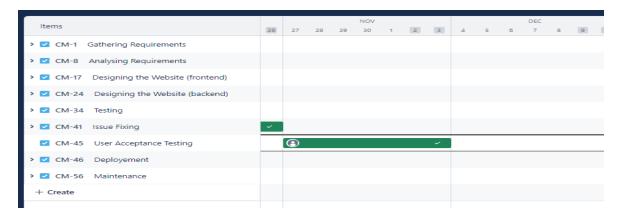


Figure 4.7: The Project Schedule for User Acceptance Testing of the Website

This is the user acceptance testing part of the website. It takes about 7 days

#### 4.8 Deployment



Figure 4.8: The Project Schedule for Deployment Part of the Website

This is the deployment part of the website. It takes about 15 days. It is part of the deployment part of the SDLC.

#### 4.9 Maintenance

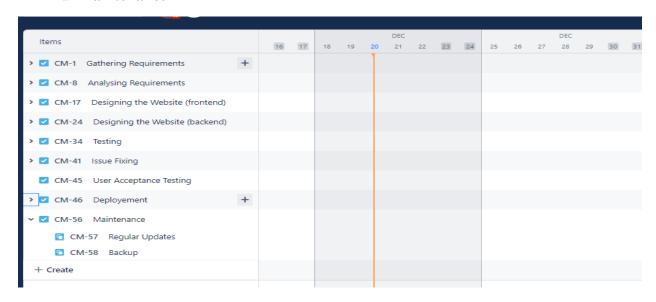


Figure 4.9: The Project Schedule for Maintenance Part of the Website

There is no scheduling for the maintenance phase because it is a continuous process.

#### 4.10 Overview



Figure 4.10: The Full Overview of The Project Scheduling

This figure represents the full overview of the SDLC and tasks designated to each development phase.

## 5. Marketing Plan

#### 5.1 Short Term Plan (0-6 months):

#### 1. Pre-Launch Buzz:

- Create teaser campaigns on social media platforms to generate excitement and anticipation for the launch.
- Collaborate with influencers to share sneak peeks of the platform's features and benefits.

#### 2. Launch Campaign:

- Launch with a user-friendly website showcasing key features, benefits, and an easy sign-up process.
- Offer a limited-time discount to early adopters who sign up within the first month.

#### 3. Social Media Blitz:

- Regularly post engaging content about online e-commerce, quick tips, and snippets from successful consultations.
- Run contests or giveaways to encourage user engagement and social media sharing.

#### 4. Email Campaigns:

- Build an email list through sign-ups and offer exclusive launch promotions to subscribers.
- Send personalized welcome emails to new users, introducing them to the service's features.

#### 5. Paid Advertising:

- Run targeted ads on search engines and social media platforms to capture users actively seeking online healthcare solutions.
- Utilize retargeting ads to remind users who visited the site but didn't sign up.

#### 5.2 Long Term Plan (6-12 Months):

#### 1. Content Authority:

- Establish a robust blog and resource center, publishing in-depth articles on product topics, product advancements, and products servicing.
- Share informative videos and infographics to enhance user education.

#### 2. Community Building:

- Launch online forums or communities where users can share experiences, ask questions, and connect with e-commerce professionals.
- Host Live Q&A sessions with doctors to address common product concerns.

#### 3. Partnerships Expansion:

- Forge partnerships with product service insurance providers, offering their members exclusive discounts on consultations.
- Collaborate with local supplier to offer free product delivery and product reminders.

#### 4. Personalized Experiences:

- Develop a recommendation engine that suggests articles, services, and specialists based on users' product user interests and needs.

#### **5.3 Continuous Plan (Beyond 12 months):**

#### 1. User Testimonials and Reviews:

- Continuously collect and showcase user success stories, transforming them into relatable content.
- Encourage users to provide feedback and reviews, highlighting positive experiences.

#### 2. Thought Leadership:

- Organize webinars and panel discussions featuring healthcare experts discussing relevant health topics.
- Share whitepapers or research findings related to online healthcare trends.

#### 3. E-commerce Awareness Campaigns:

- Launch product campaigns promoting product awareness months, offering specialized content and services related to those themes.

## 4. Data Driven Optimization:

- Continuously analyze product user behavior, engagement product margin (low and high), and conversion rates to refine marketing strategies.
- Adapt to changing trends and user preferences to stay relevant in the dynamic client user performance.

# 6. Cost and Profit Analysis

# **6.1 Development Costs**

Role	Count	Duration (MONTH)	Monthly Salary (BDT)	Total Salary (BDT)
Developers	3	3	35000	315,000
Designers	2	1	30,000	60,000
Testers	2	3	20,000	120,000
Project Manager	1	3	40,000	120,000
Total		•		615,000

This table summarizes the development costs associated with the various roles in our project.

#### **6.2 Infrastructure Costs**

Item	Monthly Cost (BDT)	Total Cost (BDT)
		(12 months)
Hosting	3000	36000
Cloud Services	5000	60000
Total Infrastructure		96,000

This table provides an overview of the estimated infrastructure costs for hosting and cloud services over a span of 12 months.

# **6.3 Operational Costs**

Item	Annual Cost (BDT)
Customer Support	60,000
Server Maintenance	50,000
Total Operational Costs	110,000

This table outlines the estimated annual operational costs for customer support and server maintenance.

## **6.4 Total Project Cost:**

Category	Amount (BDT)
Development Costs	615,000
Infrastructure Costs	96,000
Operational Costs	110,000
Total Project Cost	821,000

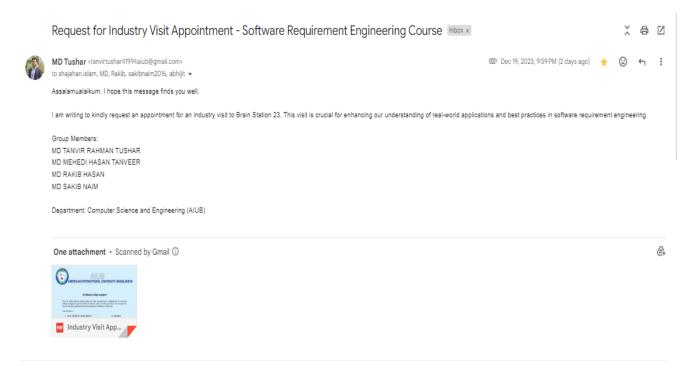
This table summarizes the different cost categories and their corresponding amounts that make up the total project cost.

#### 7. Reference

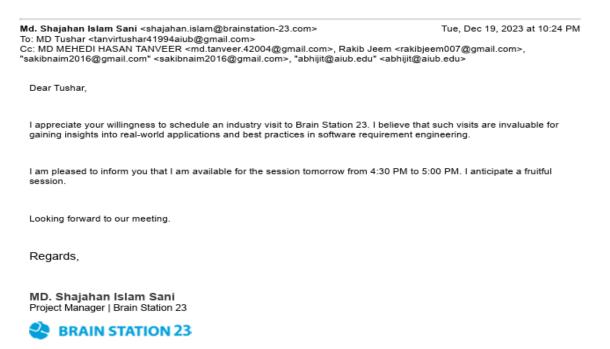
- 1. C. Wong, "A Successful Software Development," in IEEE Transactions on Software Engineering, vol. SE-10, no. 6, pp. 714-727, Nov. 1984
- 2. E-commerce Project: <a href="https://github.com/Jeem007/Simple-eCommerce-Web-Application.git">https://github.com/Jeem007/Simple-eCommerce-Web-Application.git</a>

**Industry Visit Attachments** 

#### **Appointment for Industry Visits**



#### **Approval of Industry Visits**



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# Requirement Collection:

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Md Tanvir Rahman Tushar Md Mehedi Hasan Tanveer Md Raxib Hasan Md Sakib (Vaim

# Previous Project Overview



# After meeting there are some changes in project time schedule



#### **Minutes of Meeting**



# MINUTES OF MEETING FOR SOFTWARE REQUIREMENT ENGINEERING PROJECT REVIEW

LOCATION: Brain Station 23, 8th Floor, 2 Bir Uttam AK

Khandakar Road, Dhaka 1212

DATE: 20/12/2023

ATTENDEES: TANVEER, RAKIB, TUSHAR, NAIM

TIME: 4:30 P.M

#### AGENDA ITEMS

I. Requirement Collection

II. Requirement Breakdown identify sub-features

III. BA will clarify requirements in more precise way

IV. Rough Order of Magnitude (Rom) Estimate

v. Backlog

VI. Sprint Plan: Refining breakdown

VII. Sprint Demo

VIII. Retrospective

IX. Scrum Master (Ensuring team adherence to Scrum methodology)

 Product Owner (Creating and managing product backlog, ensuring the team works on top priorities)

XI. Dev Instance, User Acceptance Testing (UAT), Pre-Production Level Testing (Beta Testing), Production Level Testing (Regression Testing)



#### **ACTION ITEMS**

- Priority items should be assigned as high, medium, low. Must and want cannot be used.
   Must and want will be used later based on clients demands.
- Before deployment, if any issues were found by the quality assurance team, then the developer team must fix all the issue before final deployment

## Prepared By

MD SAKIB NAIM (19-41531-3) MD TANVIR RAHAMN TUSHAR (20-41994-1) MD MEHEDI HASAN TANVEER (20-42004-1)

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