Assignment 2

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1. Information Gathering:

A vital component of creating software that achieves its objectives is data collection. Without considering their suggestions and opinions, we won't be able to satisfy the demands of the software's users. I've chosen three key information gathering techniques for my system: **stories**, **interviews**, and **questionnaires**.

1.1. Stories

Story 1

I made the decision to talk to a student named Nafisa Ahmed about her means of getting to university. Nafisa claims that Dhaka, the city with the highest traffic in the world, has a very poor public transportation system that is unacceptable for most people, especially women. Buses are the most affordable mode of transportation, yet most of the time, bus conductors refuse to let women into the bus due to men occupying reserved seats for women. At other times, the bus is packed, and passengers must fight for space on moving buses. Nafisa frequently has trouble finding CNG and cannot afford to use Ubers every day. She must take multiple rickshaw rides as a result of all of them in order to go home from university. Nafisa stated that, like many other women, she had to deal with sexual harassment from staff members or other passengers when using public transit. She wishes women had access to a better transit system.

Findings from the story.

- There is demand for a better alternative transportation system in Dhaka

- Passengers want a fast, reliable, cost-effective way to travel from point A to point B.

- Female passengers want a safe and comfortable form of transportation makes travelling convenient, accessible and easy.

Story 2

I had a conversation with a neighbor. Latif is a single man who resides in Dhaka. He had several challenges last Eid while attempting to reach his village. He was unable to purchase bus or train tickets. In order to get to his village, he had to take a life-threatening risk and ride on the bus's roof. He wishes there was an automated internet system that facilitated interstate travel.

Findings from the story:

- There is a need for an affordable and convenient alternative to interstate transportation.

1.2. Interviewing

To better comprehend the situation, I decided to meet with the stakeholders. A crucial stage in gathering data and information to satisfy the criteria is conducting interviews. Interviews provide information on a wide range of crucial subjects. Goal justifications, important Human Computer Interactions, feelings and views, to name a few (HCI). I explained the operation of my smartphone app "Eki Path" to them at the start of our conversation. During the interview, both closed-ended and open-ended questions were posed. Open-ended questions allowed me to learn about their opinions and perspectives on the difficulty they had when searching for public transit, whereas closed questions helped me quickly conclude the session by obtaining the necessary and precise information (bus, cngs etc.). The Pyramid approach was utilized to organize the questions.

Selected Interviewee: Passenger

1. Are you satisfied with the current transportation system?
2. Do you think the proposed system will help to serve your need properly?
3. How long did it take previously to find a public transport?
4. How long did it take to reach your destination using that public transport?
5. What challenges did you face while travelling in a public transport?
6. How much did it cost you to travel in a public transport?
7. Have you considered other forms of transportation that are available

8. If the proposed system were available today, would you use it?
9. Do they think the new system will be successful and accepted?
10. If you were in charge of this system, what would you change?
11. How can we improve the new system?

Selected Interviewee: Drivers/vehicle owners:

1. Would you like to cut down your fuel costs and car maintenance cost?
2. Are you comfortable with travelling with other authorized co-travelers?
3. Do you want to make your routine commuting social?
4. Would you like to earn by travelling and receiving bookings?
5. Would you like to choose to share ride with only males or females?
6. Do you think the proposed system will help to serve your need properly?
7. Do you think the new system will be successful and accepted?
8. Are you going to recommend the system to others?
9. How can we improve the new system?
10. Share your opinion on the new system

Selected Interviewee: Admin /System Developer:

1. What are the security issues that will cause problem?

2. How often they need to check system?

3. How long will it take to update the system?

4. Can they work in case of emergency

1.3. Questionnaire

On Google Forms, we set up an online survey form that we used to ask participants and some stakeholders about their trip experiences. We will be able to quickly and easily assess what the people desire thanks to each person's comments. Thanks to the survey, we were also able to compile precise information on their problems.

Selected stakeholder: Passenger

(Personal Information)

Read the following questions and answer them appropriately:

1. Name

   _____

2. Select your gender:

- Male
- Female
- Other

3. Age

- Under 18
- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- Over 55
- Prefer not to answer

4. Do you use a public transportation to commute daily?

- Yes
- No

5. If yes, Are you satisfied with the current transportation system that you use?

- Yes
- No

6. How long does it take for you to find a public transport?
    - Less than 10 minutes
    - 11-20min
    - 21-30mins
    - More than 30 mins
7. What form(s) of public Transportation do you use to travel daily?
    - Rickshaw
    - Bus
    - Cng
    - Others (tempo, uber, electric bikes/cngs etc)
    - More than 1 form of public transport
8. If you use more than one form of public transport, then please mention those.

_____

9. How long did it take to reach your destination using that public transport?

- Less than 10 minutes
- 11-20 min

- 21-30 mins
- 31- 60mins
- 1hr-2hrs
- 2hrs-3hrs
- More than 3hrs

10. How much did it cost you to travel in a public transport?

- 10tk -20tk
- 21tk- 50tk
- 51tk -100tk
- 101tk-200tk
- 201tk – 300tk
- 301-500tk
- More than 500tk

11. How often do you travel in a week?

- 1 time
- 2 times
- 3 times
- 4 times
- 5times
- More than 5 times

Read question and circle the appropriate number:

12. Do passengers get a good experience while travel?

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

13. Do you feel the necessity of an automated system for commuting easily?

Never	Rarely	Sometimes	Often	Always
1	2	3	4	5

14. How much help this automated system will do you?

Not at all	little	a little much	helpful	very helpful
1	2	3	4	5

15. How much help do you think this automated application will do to the general people?

Not at all	little	a little much	helpful	very helpful
1	2	3	4	5

16. Will you feel comfortable running a mobile application?

Not at all	little	a little much	comfortable	very comfortable
1	2	3	4	5

Selected stakeholder: Driver (Vehicle owners)

(Personal Information)

Read the following questions and answer them the appropriately:

1. Name

   _____

2. Select your gender:

- Male
- Female
- Other

3. Age

- Under 18
- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- Over 55

- Prefer not to answer

4. Do you own at least one vehicle?

- Yes
- No

5. What kinds of a vehicle do you own?

- Motorcycle
- SUV Car
- Sedan car
- Small Microbus(8 seater)
- Large Microbus (12 seater+)
- Small Bus (20 seater)
- Big Bus (50 seater)

6. Would you like to cut down your fuel costs and car maintenance cost?

- Yes
- No

7. Are you comfortable with travelling with other authorized co-travelers?
    - Yes
    - No
8. Do you want to make your routine commuting social??
    - Yes
    - No

9. Would you like to earn by travelling and receiving bookings.
    - Yes
    - No
10. Would you like to choose to share ride with only males or females, or both?
        - Male Only
        - Female Only
        - Both

11. Do you think the proposed system will help to serve your need properly?

- Yes
- No

12. How much does cost you to travel in a private transport per week?

- 10tk -20tk
- 21tk- 50tk
- 51tk -100tk
- 101tk-200tk
- 201tk – 300tk
- 301-500tk
- More than 500tk

13. How often do you travel in a week with your vehicle?

- 1 time
- 2 times
- 3 times
- 4 times
- 5times
- More than 5 times

Read question and circle the appropriate number:

14. Do you feel the necessity for reducing the traffic congestion in the city?

Never	Rarely	Sometimes	Often	Always
2	2	3	4	5

15. Do you feel the necessity of an automated system for commuting easily?

Never	Rarely	Sometimes	Often	Always
2	2	3	4	5

16. How much help this automated system will do you?

Not at all	little	a little much	helpful	very helpful
1	2	3	4	5

17. How much help do you think this automated application will do to the general people?

Not at all	little	a little much	helpful	very helpful
2	2	3	4	5

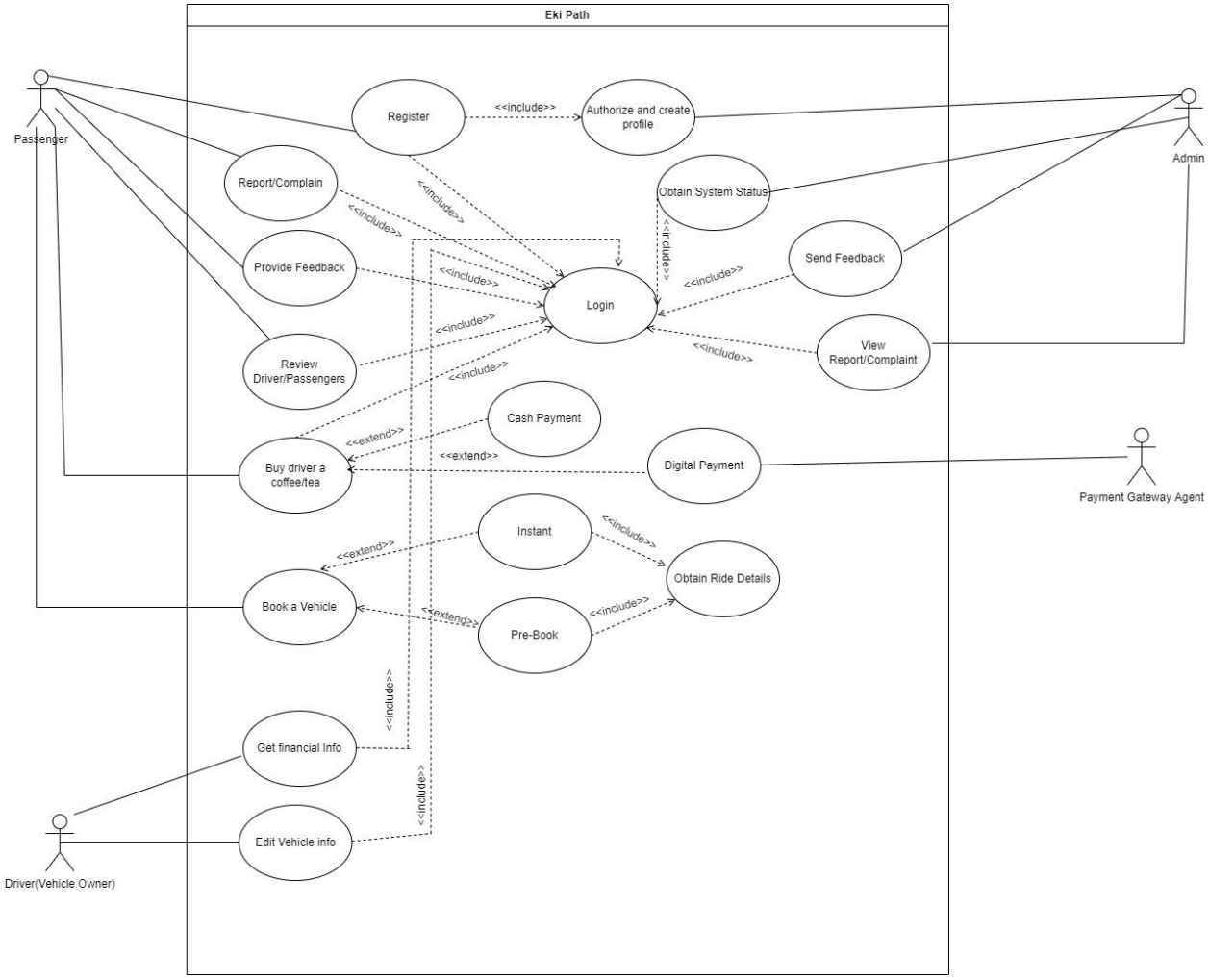
18. Will you feel comfortable running a mobile application?

Not at all	little	a little much	comfortable	very comfortable
2	2	3	4	5

I did the aforementioned survey, and the responses I got were both favorable and unfavorable:

The positive replies demonstrate their eagerness to adopt the new system, while the negative responses reveal their dissatisfaction with the time- and resource-intensiveness of the current system. Even if they are confirmed and allowed, a small percentage of people still feel uneasy traveling with strangers and people of the opposite gender. However, the general public (users/passengers) as well as the drivers reacted favorably. The majority of people (customers/users) anticipate a hassle-free experience while renting a car to go to their specific locations.

2. Use case diagram of the system



3. Normal Scenario for 2 use cases

Scenario 1:

Use Case Name: Register For Eki Path	Unique ID: SA-00001
Actor(s): Passenger, Driver.	
Stakeholders: Passenger, Driver.	
Description: User registers in the mobile app as Passenger or Driver.	
Triggering Event: User registers in the app and inputs information.	
Trigger type: External	
Steps Performed:	Information Required for Steps:
1. The registration interface loads.	
2. Selects user type.	user wants to register as Passenger or Driver.
3. User enters the following information: Email, User type, username, NID card number, mobile Number, address, password etc.	Personal information of user like User type, username, NID card number, Mobile Number, password, email, password.
4. Clicks the submit button.	All required information must be filled up.
5. If all information is correct then user will be registered to the system.	
6. A unique id will be given to the user and a confirmation message will be shown to the user interface.	Unique id and a confirmation message

Pre-condition: User needs to have idea about the features of the app.
Post-condition: User must carefully input all required information while registering.
Assumption: User wants to use the app.

Scenario 2:

Use Case Name: Book a ride	Unique ID: SA-00002
Actor(s): Passenger.	
Stakeholders: Customer, Driver, Admin	
Description: Book a ride using the mobile application	
Triggering Event: After booking a Ride the passenger will be able to go to his/her desired location.	
Trigger type: External	
Steps Performed:	Information Required for Steps:
1. User logs in to the system.	
2. Clicks the Book a ride button.	user must be registered in the app.
3. Fills up required information on the page like location, journey start time, destination location.	Present Location, Destination Location, prebook details.
4. Clicks on "Confirm Ride" button.	All required information fields must be filled up properly.
5. A list of available vehicles going to the same router appears.	Passenger's and rider's location and route details will have to be stored in the app database.
6. Choose a Driver from the list of available drivers.	Chosen Driver, name and model of car and passenger.
7. Name of the Driver and rating will be shown for confirming.	Name of the sweet shop and rating
8. After ordering, the customer may wish to tip the driver using the "Payment" option a) If pay with cash is selected just click "Confirm" option. b) If digital payment is selected, then choose agent like bkash/nogod/rocket. Suppose if Bkash payment is selected then:	agent number, payable amount, agent pin

• Give your Bkash number. • Enter the payable amount. • Enter bkash pin. • Select "Confirm" option	
9. If payment is done sucessfully a confirmation message will be shown. Else will show an error message	Confirmation message, error message
Pre-condition: User needs to be Registered to the app.	
Post-Condition: User has booked a driver who is going in the same route.	
Assumptions: User wants to find rides though this mobile application.	

4. Alternate Scenario for 2 use cases

Scenario 1:

Use Case Name: Register	**Unique ID: SA-00001**
Actor(s): Passenger, Driver.	
Stakeholders: Passenger, Driver.	
Description: User registers in the app as Passenger or Driver.	
Triggering Event: User registers in the app and inputs information.	
Trigger type: External	
Steps Performed:	**Information Required for Steps:**
1. The registration interface loads.	
2. Selects user type.	user wants to register as Passenger or Driver.
3. User enters the following information: Email, User type, NID no, username, mobile Number, address, password etc.	Personal information of user like User type, NID no, username, Mobile Number, password, email.

4. Clicks the submit button.	All required information must be filled up.
5. If any information is not correct then an error message will be shown that information is not valid and which information is invalid is also shown. Then prompted to enter valid information.	Error message, invalid information
6. The user will enter correct information and continue with the registration.	Correct information
7. A unique id will be given to the user and a confirmation message will be shown to the user interface.	Unique id and a confirmation message
Pre-condition: User needs to have an idea of how the mobile application works.	
Post-condition: User must carefully input all required information while registering.	
Assumption: User wants to use the app.	

Scenario 2:

Use Case Name: Book a ride.	Unique ID: SA-00002
Actor(s): Passenger.	
Stakeholders: Passenger, Driver, Admin	
Description: Book a ride which is going in the same route.	
Triggering Event: After ordering the customer will get the desired sweet from the sweet shop.	
Trigger type: External	
Steps Performed:	Information Required for Steps:
1. User logs in to the system.	
2. Clicks the Order sweets button.	user must be registered in the app.
3. Fills up required information on the page like destination location or prebook rides. If ride is prebooked starting journey time, and destination location also must be entered	Location, prebook, destination location, starting journey time

4. Clicks “Confirm ride” button.	All required information fields must be filled up properly.
5. A list of vehicles travelling in the same router will appear.	User and drivers data will have to be stored in the database.
6. Choose a driver from the list of vehicles going in the same route.	Chosen driver, name of passenger, details of car
7. The estimated time for the vehicle to arrive in the passenger’s location will be shown. If the passenger needs the ride urgently then the user need to pay the driver.	Name of sweet shop, rating
8. “Urgent Need” option will be there too, user must click it for travelling urgently. In case of an urgent booking user must pay Tk. 100 advance through digital payment If “Urgent Need” is selected, then: • Give your agent number. • Enter the payable amount with extra 100tk. • Enter agent pin. • Select "Confirm" option	agent number, payable amount, agent pin
9. If payment is done a confirmation message will be shown. Else will show an error message	Confirmation message, error message
Pre-condition: User needs to be Registered to the app.	
Post-Condition: User has successfully travelled to the destination location.	
Assumptions: User wants to find available vehicles going in the same route.	

5. Functional Requirements

It's critical to under what the functional requirements of a system are for both the development team and the stakeholders. The functional requirements of the system are as follows:

1. Users will be able to use the app on a variety of mobile devices include Windows, Android, IOS and Linux.

2. Users will have the option of registering as a passenger or a driver.

3. The user interfaces for Passenger and Driver will be distinct.

4. The user will be able to specify their preferences to achieve a better result.

5. The user will be able to both input and select the data that is required.

6. The app database will hold all the data.

7. All saved data will be safe and secure and will not be tampered with.

8. For each registered user, a user profile will be created.

9. User will be allowed to edit profile anytime.

10. The information that the user has altered will be automatically updated and saved.

11. Data on the available vehicles will be updated frequently.

12. Both instant and prebooking a ride options will be available.

14. All user data will be encrypted for data security.

15. During registration, users' identities will be verified by email, phone number and NID verification.

16. The user will receive a verification code by email or phone call.

17. The user will be able to reset their password by submitting a request.

18. Users will be able to rate Driver, Passengers, submit feedback, and file complaints.

19. Users will have the ability to rate and comment on the application.

20. Any user criticism will be forwarded to the admin authority

6. Non-functional Requirements

The non-functional requirements of the system are as follows:

Reliability:

- The system must be always available and should not experience any downtime.
- All tasks must be completed without any software-related errors or with minimal errors.

Performance:

- It should return a search result with 3 seconds.
- The user interface must be visible in less than eight seconds.

Maintainability:

- All this system's data must be maintained safe no matter what happens to it; hence the system will require data backup planning.
- If an error happens during any of the system's processes, the system will be able to trace each fault and correct it as quickly as possible before continuing the operation.

Efficiency:

The system must be able to accommodate at least 900,000 individuals at the same time while also consuming minimal resources such as memory, CPU, and disk space.

Security:

- To utilize this system, users must first register, after which only registered users can access the system's features by logging in with their ID and password.
- Ascertain that the system, or any of its data, is never subjected to malware attacks or illegal access.
- Unless it is required, a user's personal information or other data should not be available to other users.

Scalability:

This system must be scalable because it will be used by anyone living in Bangladesh to book a ride that going to the same route as the passenger all throughout the country. That is, regardless of how much memory, servers, or disk space is required, the system should be able to accommodate an increase in the number of users and processes without affecting perform