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"JATRA"

Software Requirement Engineering

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Sec: D

Project submitted

By

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1. Problem Statement:

In Bangladesh local travelers is increasing day by day. Since the local travelers travelling tendency increasing rapidly so travel related service availability increase in various travel location. This is the high time for different online travel agencies to join market and provide an online platform for travel related services. According to our neighbor county India's travel and tourism industry was the seventh-highest GDP contributor with its share of the country's GDP[1]. That type of travel related platform make contribute in our country economy. The travel and tourism market in Bangladesh is projected to grow by 11.95%[2]. It is the low growth instead another country. In our country, there is not sufficient online travel platform who gave proper services. Though there are lots of travel agencies who provide with the details of the services, almost none of them provide with any information about what activities to perform or the guideline about where to find which services, like food, transportation or accommodation. Therefore, the tourists must either travel alone or coordinate with a local guide in advance, which can be challenging at times, especially in less well-known regions. These circumstances mostly result from a lack of reliable information and direction regarding travel services. Additionally, there are places where traveling that require a guide in order to move to specific areas. If a person doesn't speak with a guide before arriving at the destination, they might not be aware of the rules. Therefore, as they are unaware of what can or cannot be done, our country's visitors who simply move to a particular trip destination without precisely planning in detail prior tend to move aimlessly. So, best solution to mitigate this lack of information is to provide some important source information by online platform to travelers so that it can keep them update on the travel. Our "JATRA" online platform can be the hassle free most popular for travelers.

2. Current common problem of travelers/tourists in BD:

Day by day tourists are increasing in Bangladesh. People are trying to explore new places and also trying to go closer to nature. But the tourist doesn't have a clear idea about the place. So, they take help from local guides. Here most of the time the local guides are misguide them. For this reason, they have to pay extra money for hotels, vehicles, and food. Sometimes tourists have to face a lot of hardships due to the not easy way of travel. For example, if a person wants to travel from Sylhet to Khagrachari but there is no direct transport from Sylhet to Khagrachari he has to travel from Sylhet to Chittagong first then Chittagong to Khagrachari. For this, he has to spend extra time, money, and travail. Most of the tourists do not have a clear idea about the hotel cost and travel cost of tourist places. Locals take advantage of it and they take high costs on hotel rent and vehicles. Basically, the travelers are facing problem for lack of proper information.

3. Requirements:

3.1 Business Requirements:
- More income with less cost.
- Providing hassle free services.
- Since "JATRA" is online platform so more task is self-services.

3.2 User Requirements:
- Tourist will be able to browse suggested travel destination.
- Tourist will able to book hotels through the platform.
- As a tourist will able to book guided tour packages.
- As a tourist will be able to book a transport through the service like "Uber/ Pathao or JATRA".

3.3 Functional Requirements:
- Traveler shall be able to book hotel in the area of tour spot.
- Traveler can search restaurants and food items.
- Can look for transportation facility and hire rider.
- Traveler can choose their preferred place and get recommendations accordingly.

3.4 System Requirements:
- System will verify user by email and password.
- Generate recommendation of tour places.
- System will save transection related data.

4. Requirement development:

Login and signup:

- ❖ Validation of email and password is required in order to login, logout and sign in
- ❖ There should be an option of remember me. So that one can login and save his identity.

- ❖ There should be an option for forgot password. So that if one forgets his password, he can recover it by providing a new password.

Features:

- ❖ Visitors can look out the packages and then choose what is best for them and then they can offer their favorite one
- ❖ They can hire the vehicle which is preferable for them.
- ❖ They will be able to see the information which are important for them

Vehicle feature:

- ❖ Riders must have NID, license, validation of every document with them.
- ❖ The charge of money will have to be maintained in a systemic way.
- ❖ They should have proper setup things so that contact with the travelers.

Payment system:

- ❖ Payment should be done in a systemic way.
- ❖ There should be a system of calculating a payment both the traveler and the driver can't demand for more and less money. Exact money must have to be shared between themselves.
- ❖ There should be also a system of update payment system. Like it should match with the current situation of the country.

Updated information:

- ❖ All the systems must be updated according to the current situation.
- ❖ Non update features have to be strictly prohibited.

Sign out:

- ❖ User can sign up whenever they want.
- ❖ The system should be organized with a proper functionality.

5. Product vision and project Scope:

- **Building the product roadmap:** The software will be built according to the terms of resource, budget and time constraints.

- **Determining the exact plan:** To build a proper software, building important plan is necessary. Some plan will not be working properly. So, making a proper plan is very much important.

- **Building scope monitoring:** Referring to strategic plan is very much important. We need to be engaged regularly to review how the works of our software is going and then plan accordingly.

- **Discourage the developers from over delivering:** We need a perfect planning for building the software. So here the developers play a vital role. The developers should deliver according to the necessity of the software. If they do over deliveries then our plan may fail or may not work according to the plan. So, maintaining proper delivers by the developers are also very much necessary.

- **Making easy suggestions and great ideas:** Perfect plan comes from great ideas. We have to give concentration on making easy suggestion so that it will become very much easy for everyone to use it.

6. Use case diagram:

In this application there will be three types of users. They are Tourists, Guides and Riders. Besides them, the system will also act as a user. The system will be responsible for coordinating the communication between the tourists and the guides and riders. It will also ensure the recommendation and search functionalities act as intended.
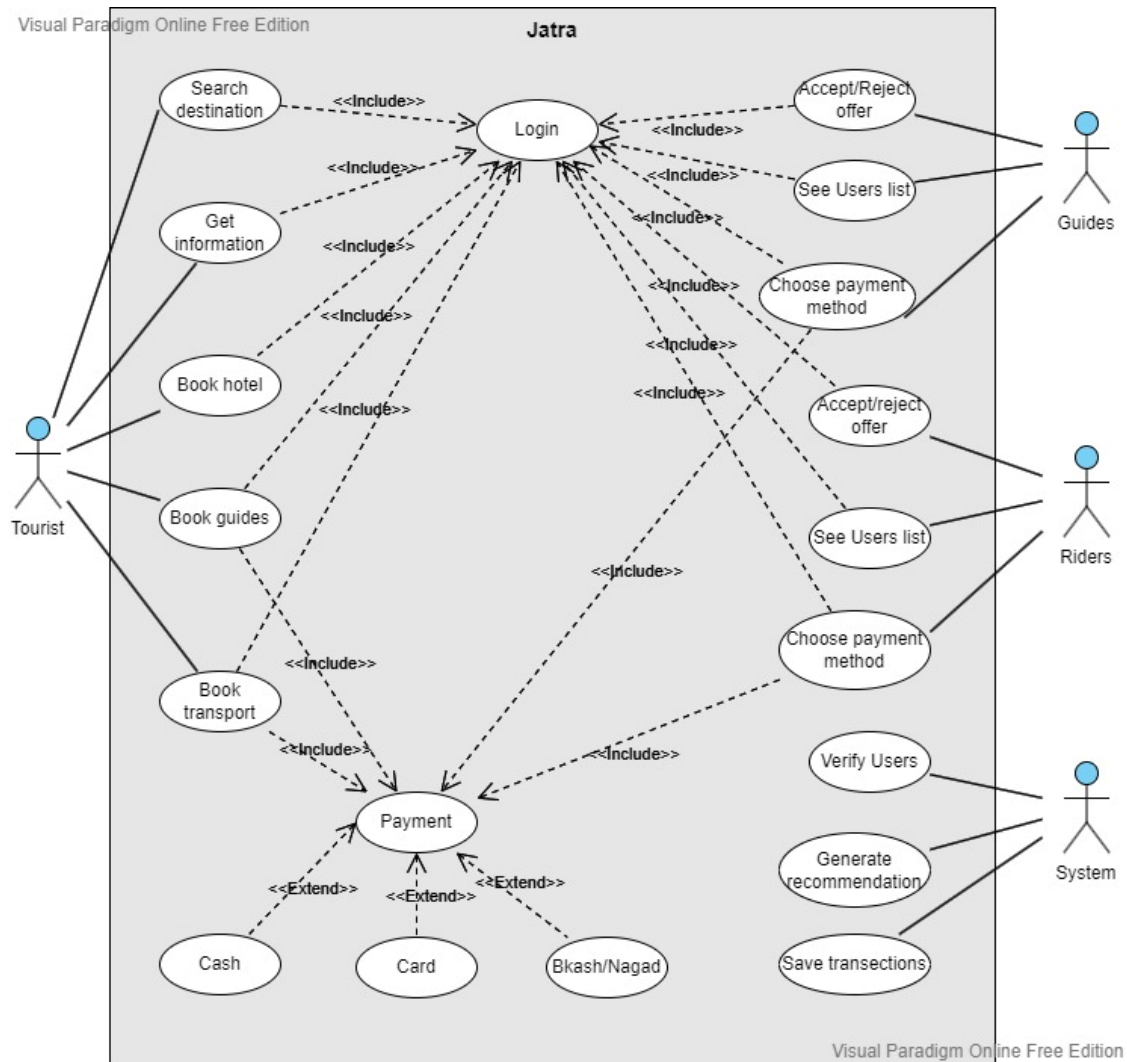
7. ER diagram:

This application has eight entities. These are Tourists, Guides, Riders, Information, Destination, Tours, Payments and Transports. These entities are related by their functionalities and has different attributes. These entities have different attributes which defines the characteristics of these attributes. They may have one to one, one to many, many to many or zero to many relationships.
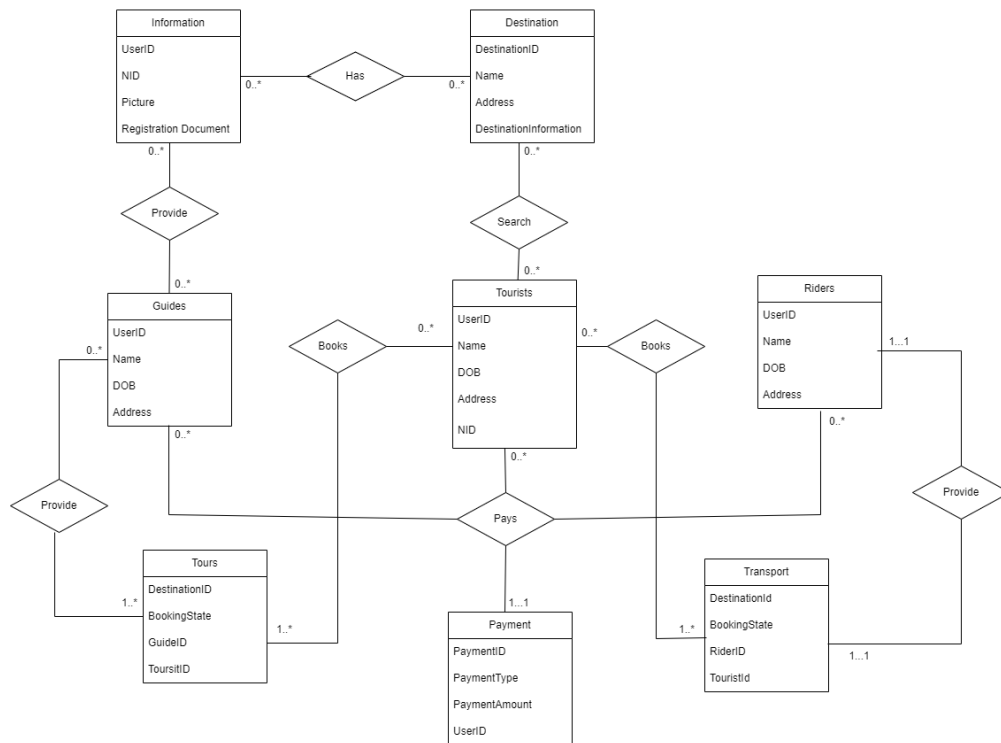
8. Class diagram:

This application will have a user class which will be inherited by the tourist, guide and rider class. There will also be a destination class and an information class. The information class and destination classes will have association among them. There will be a payment class which will handle the payment related functionality. The tourist class will search for destination which has the information and will be returned with the related information the user is looking for. There will be a tour class and a rider class. The rider class will have composition relation with the transport class and the guide class will have composition relation with the tour class. The user will have booking functionality for the transport and tours class.
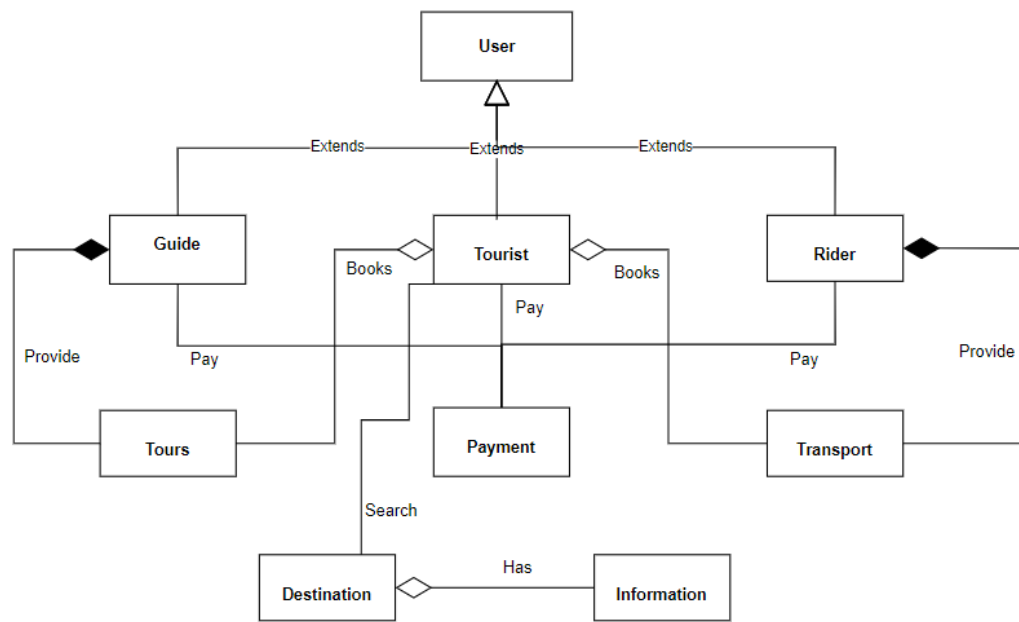
9. Requirement baseline:

a. **Customer Management:** In this part our main focus is to satisfy the customer's scope change decisions.

b. **User Representatives:** We will work together before the construction begin so that we can find a right and proper solution

c. **Development Management:** Here the main focus is to achieve the objectives. Here we will try to balance schedule, cost, functionality and quality.

d. **Business Analysis:** We will be able to manage the changes and keep the chaos in a minimum rate.

e. **Quality Assurance:** We will be able to develop the test scripts.

10. Resolving Requirement issues:

There are some benefits of using the tools. They are:

a. No issue ever gets lost.
b. The manager can easily see the current status of all issues.
c. There should be a single owner for each issue.
d. The development can be begun earlier because open issues will be known.

11. Requirement Elicitation:

a. Requirement specifications will be correct and complete.
b. We will be able to use the existing product for the requirement's reference.
c. It will also define non - functional requirements.

12. Software requirement specification:

12.1 Functional Requirements

➢ **App Login:**
The users will be able to login to the application using valid email and password. Then both password and email will be checked from database.
   o If logged in through email, then there will be an email confirmation system.
   o There will be a password recovery system through email.
   o There will be separate sign in systems for tourist, riders and guides.

   o **Priority:** High
   o **Precondition(s):** Use email and password must be valid
   o **Cross-reference:** None

➢ **Tourist Features:**
   o Tourists will be able to browse travel destinations.
   o Tourists will be able to get information about available restaurants in the area.
   o Tourists will be able to book a transport or gain information about the transportation system of the area.
   o Tourists will be able to book hotels in the area.
   o Tourists will be able to hire a guide available in the area.
   o Tourists can book guided tour packages.
   o Tourists can choose payment methods.

   Priority: High

Precondition(s): Must be logged in
Cross-reference: Billing and Payments

➢ **Guide Features:**
  o Guides will be able to accept or reject offers from tourists.
  o Guides will need to provide with NID and picture for verification purpose.
  o Guides can provide customized tour experience as requested by the customers.
  o Guides will be able to check tourist lists.
  o Guides can choose different payment methods.

  Priority: High
  Precondition(s): Must be logged in
  Cross-reference: Billing and Payments

➢ **Rider Features:**
  o Riders will be able to accept or reject offers from tourists/travelers.
  o Riders will need to Provide NID, Driving License and registration documents of the transport.
  o Riders can choose different payment methods.

  Priority: High
  Precondition(s): Must be logged in
  Cross-reference: Billing and Payments

➢ **Destination Information Search Functionality:**
  o Tourists will be recommended with the most popular destinations
  o Tourists can have basic information like restaurant locations, hotel locations, estimated fairs and costing and restrictions.
  o Tourists can search services based on a specific location.
  o Guides and riders can search for hotspots of tourists with the help of the system.

  Priority: High
  Precondition(s): None
  Cross-reference: Rider Features, Guide features, Tourist Features

➢ **Booking Functionality:**
  o Tourists can book a guide or a rider.
  o The booked guide or rider will be notified.
  o Tourists can able to cancel their booking if necessary.
  o Guides or riders should be able to reject the booking if necessary.
  o No advanced payment is required for booking.

Priority: High

Precondition(s): None

Cross-reference: Rider Features, Guide features, Tourist Features, Billing and Payment

- ➤ **Billing and Payment Functionality:**
  - o Tourists, Guides and Riders should be able to choose payment methods (Cash/Credit card/ Bkash/Nagad).
  - o The system should be able to update payment information in real time.
  - o Users will be notified by confirmation email with payment slip.

  Priority: High

  Precondition(s): User must be logged in

  Cross-reference: None

- ➤ **System Features:**
  - o System should have the capacity to verify the guides and tourists.
  - o System will keep record of the services availability and the transactions.
  - o System should ensure that the services of a location are relevant to the search of the tourists.
  - o System should ensure that data is consistent among both the tourists and the Guides/Riders.

  Priority: High

  Precondition(s): None

  Cross-reference: None

- ➤ **Sign out functionality:**
  - o Users should be able to sign out whenever they want.
  - o Users should be able to sign out of all devices currently logged in.

  Priority: High

  Precondition(s): User must be logged in

  Cross-reference: None

12.2 Non-Functional Requirements

- ➤ **Availability:**
  - o The application should be up and running 99% of the time.

  Priority level: High

  Precondition(s): None

  Cross-reference: None

➢ **Integrity:**
   o Free Users should not be able to have access to offers for subscribed users.
   o User email must be authenticated after registering a new account before using any account features.
   o Users should be authenticated before they can access secured routes which are accessible by specific users only.

   Priority level: High
   Precondition(s): None
   Cross-reference: None

➢ **Maintainability:**
   o All kinds of maintenance which can hamper user functionality should be completed in under 1 or 2 hours.
   o Deployment time of the web application should not exceed 2 minutes.

   Priority level: High
   Precondition(s): None
   Cross-reference: None

➢ **Robustness:**
   o The application should be able to recover the last booking state if the application closes unexpectedly.
   o The application should be able to recover the last state of search, page, destination, booking etc. if there was a break or sudden disconnection of the internet issue.
   Priority level: High
   Precondition(s): None
   Cross-reference: None

➢ **Usability:**
   o User interface should be easy to understand and use so that new users can feel right at home without going through boring documentations.
   o Interactions should be fast enough so that users do not have to wait more than 5 seconds for a functionality to be completed.
   o System should be able to understand and save user preferences.

   Priority level: High
   Precondition(s): None
   Cross-reference: None

➢ **Interoperability:**
   o For integrating card payment systems, a payment gateway should be used to communicate data between card and the system.
   o For bkash payment, bkash API should be integrated for payment systems.

Priority level: High
Precondition(s): None
Cross-reference: None

➢ **Scalability:**
- o NoSQL database should be horizontally scalable as the number of users increase.
- o MySQL database should implement master-slave architecture
- o CDN servers should be upgradeable
- o Server should be able to handle multiple requests at the same time

Priority level: High
Precondition(s): None
Cross-reference: None

13. Validation and Verification:

1. **Functionality Testing:** Checking the software is working properly or not. The main functionalities are
   a. Installing, running and updating the applications and packages.
   b. Testing the interruptions.

2. **Usability Testing:** Checking the interface, navigation is validated or not according the effectiveness of the software.
3. **Performance Testing:** For checking the validation of the software checking the performance of stress, volume and techniques are must important. These things are needed to be observed.
4. **Requirements verification:** It is very important to verify that the requirements are complete and correct.
5. **Design Verification:** It is a process of checking if the design specifications provide accurate evidence or not.
6. **Code Verification:** It is a process of checking the code whether the code's accuracy, correctness efficiency and consistency.

14. Social impact:

1. Tourists can have easier access to information about a specific travel destination. This will allow them to visit different places of interest more efficiently with lesser effort. This will enable them to have easier access to different services. So, tourists will be more interested to go to certain locations where the information are available.

2. The guides can have easier way to communicate with the tourists. This will allow for more inclusion of the guides into the travelling services. This will also allow them to have online presence and better exposure and a bigger scope to work.

3. Tourists can have customized travel experiences. This can allow the guides to inform the tourists about different places which are comparatively lesser known to the tourists. This will allow for those locations to have better exposure to tourists.

15. Project Scheduling:

PROJECT SCHEDULE

TASK	MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6
Initiate Project	████					
Develop project Charter		████				
Finalization			██			
Develop work plan			██			
Design				██		
Development				████		
Testing					██	
Implementation						███
Close project						██

16. Marketing Plan:

Marketing Goals:

The main goal of the marketing plan is to gradually grow the business and penetrate different levels of users with the objective of generating maximum revenue and having a positive impact on the whole tourism industry of Bangladesh.

- Maintain positive and steady growth over time for the platform as well as the community.
- Ensuring that new customers stay to become long-term customers.
- To reach the guides and riders of different travel locations and help them grow with the platform.
- Reducing the fixed overhead by ensuring stronger networks.

Target Market

The main target audience of this platform will be tourists. The platform will aim to help the less experienced and foreign tourists to have a better and easier time while traveling. We will also target the guides and riders of different locations and try to ensure their socio-economic conditions become improved working with "JATRA". So, the target market of our platform will have the following audiences:

- The tourists, both domestic and foreign, who are willing to have a better traveling experience.
- The guides who will provide the tourists with a guided experience and generate a certain amount of revenue for the platform.
- The riders and transport providers who will be providing transportation services to the tourists and will also be generating certain amount of revenue for the platform.
- The platform will also try extend its market to the people who are willing to travel, but are not doing so due to the lack of information or guidance.
- The platform will try to extend to the locals of lesser-known travel locations of Bangladesh to attract them to become guides for that specific area and provide information.

Conclusion:

In this project report, an effort was made to understand the program's "JATRA's" business feasibility, implementation details, and possible estimations. The report concentrated on specifics related to software design, such as project specifications, requirement specifications, design descriptions, time and cost estimates, etc. Although estimates were made based on assumptions about possible scenarios, the project's commercial viability depends entirely on how visitors, their companion guides, and riders will respond. During the project's implementation, there will be challenges to overcome and potential

difficulties. But this project can definitely create new business case opportunities and serve as a foundation for applications that can combine a lot more services.

References:

1.   https://www.mordorintelligence.com/industry-reports/online-travel-market-in-india.
2.   https://www.statista.com/outlook/mmo/travel-tourism/bangladesh#revenue.