Project

Title: Online Bus/Launch Ticket Reservation System

Course Name: Software Engineering

Semester: Fall 2022-23, Section: C

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Background Description:

There are several ticketing agencies for public transport such as buses or launches all over Bangladesh, to meet the constantly growing demand for tourism and long-distance commute. However, the traditional way of ticket reservation comes with many drawbacks, for instance, having to wait in long queues at ticket counters for a long time, later going through a lot of manual paperwork before paying for the ticket afterwards, which is a very lengthy process. To counter this problem, a proposed online ticket booking system would provide an efficient way of booking travel tickets from the comfort of one's own homes after entering journey details. For the ticket agents, tickets can be generated automatically instead of manual labor thus saving time and operation cost for ticket operators. This ticketing system will offer more efficiency both for customers and agents.

Root cause of Problem:

- Inconvenient for customers for having to wait in long lines at counters for a long time to book their tickets.
- There are also fixed time frames for how long the counters would be open for reservations.
- Customers may find it difficult to modify or cancel their tickets at a ticket counter.
- Ticket processing is done manually which is severely time consuming and operation cost would be needed for manual labor.
- The data may be lost, stolen or destroyed because it is stored on paper.
- Difficult to retrieve and maintain details due to increasing number of passengers.

Proposed Solutions to the problems:

- An online web-based application would provide an easier access for booking tickets, as it would direct to a certain page for confirmation after entering journey details.
- Server would be open 24/7, hence flexible timing for booking, instead of limited time frames.
- Customers will be able to modify/cancel their tickets at any time before or after confirmation.
- User friendly interface where each webpage instantly links and directed to another. E.g., after user enters journey details, the web page may be directed to another relevant page.
- Ticket details can be viewed, updated or deleted.

Objective:

- To provide easier access for booking travel tickets.
- Support all modes of travel (in this case, bus or launch).
- Users can choose from a variety of buses or launches and will also be able to choose their own seats.
- Keep track of all available buses/launches
- Instant transaction for tickets.

Target Audience:

- People who enjoy travelling or travel frequently
- Familiar with online portals and can use it
- Individual or a certain group of people such as couples, friends, or families.
- Large groups such as school/university students or company employees

Basic Functionality

The following are the basic functionalities of the webpage for the users that allow them to:

- Login with existing account or create account with password.
- Enter Journey details (Journey date, departure date etc.)
- Choose mode of transport (bus/launch).
- Search for available buses/launches and choose their own seats.
- Modify journey details or cancel ticket.
- Choose form of payment (online or selecting a preferred bank).

Requirement Analysis

Functional Requirements:

1. Software Login

1.1 The software will allow users to login with their given username and password.
1.2 The login credentials (username and password) will be verified with database records.
1.3 If the login successful the home page of the user account will be displayed.
1.4 If the username and/or password has been inserted wrong, the random verification code will be generated and sent to the user's email address by the system to retry login.
1.5 If the number of login attempt exceed its limit (3 times), the system will block the user account login for one hour [optional function]

Priority Level: High

2. Journey Reservation Form

1.1 Users must enter the required fields such as: source, destination, boarding date and return date.

1.2 Users must choose the mode of transport for travel (either bus or launch).

1.3 Once the list of available buses/launches appear according to the journey details entered, the user may choose the desired bus/launch operators and seats.

1.4 The user must specify the number of seats needed if there is more than one person involved.

Priority level: High

3. Availability Check

1.5 The server will search the list of available buses/launches from the database according to the user's journey details, mainly the destination, boarding and return dates.

1.6 The server will check the number of vacant seats for each bus/launch.

1.7 If the number of vacant seats in each bus/launch are more, then it will be displayed to the user.

1.8 The bus operator, number of seats vacant, arrival and departure times, pick-up and drop-off points and fares will be displayed accordingly.

Priority level: High

4. Modify Journey details or cancel ticket

4.1 The software will allow users to make changes to their journey details. For example, they can change journey date or timing.

4.2 The software will allow users to cancel the ticket they bought already and can get the refund.

Priority Level: High

5. Payment

5.1 The software will allow users to choose their preferred payment method. For example, Bank payment, online payment through visa or mastercard, MFS (Bkash, Nagad, Rocket)

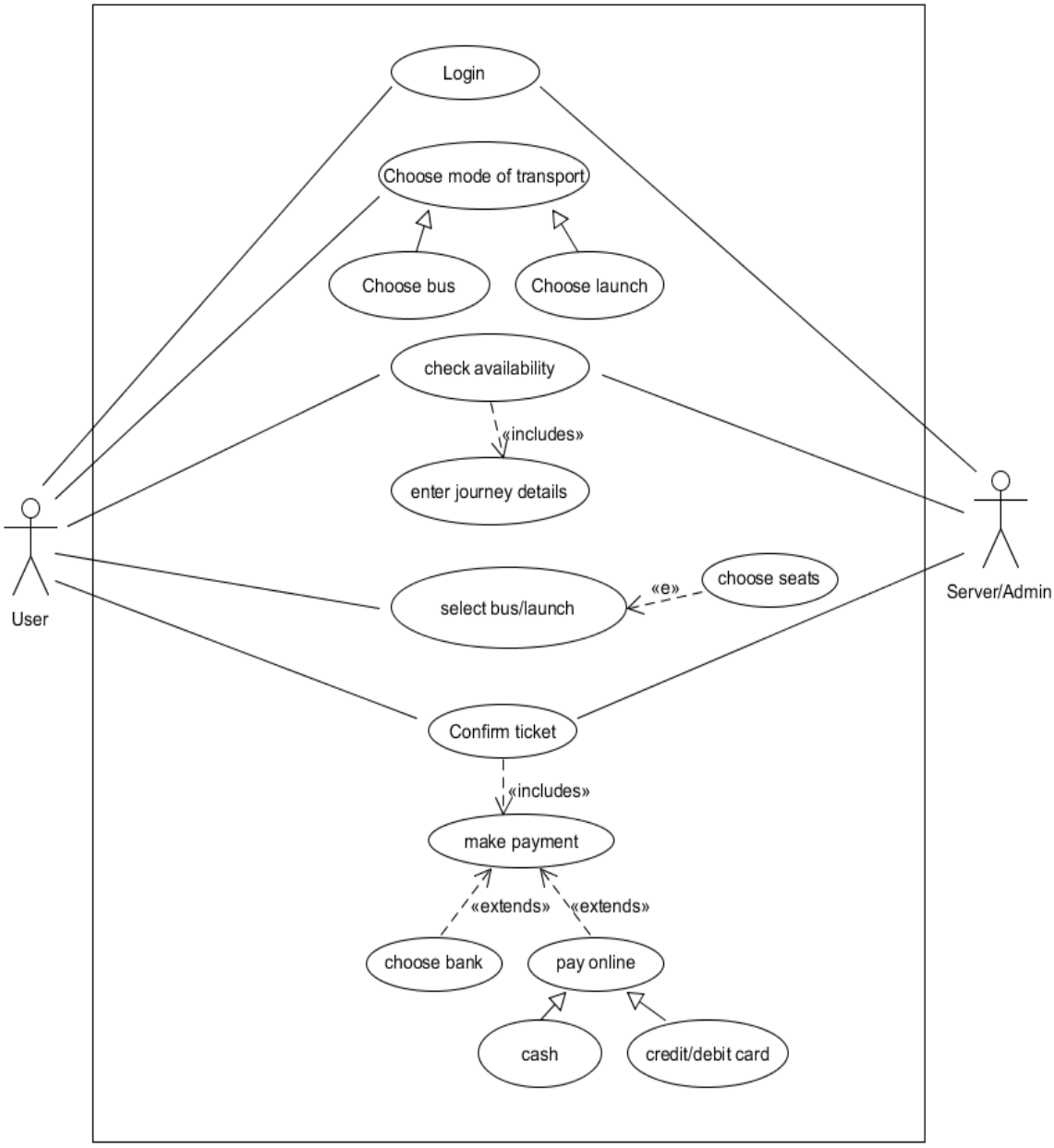
5.2 The payment credentials (Account holder name, account number etc) will be verified with relevant selected payment method partners database records.

5.3 If the payment is successful the system will generate your requested ticket.

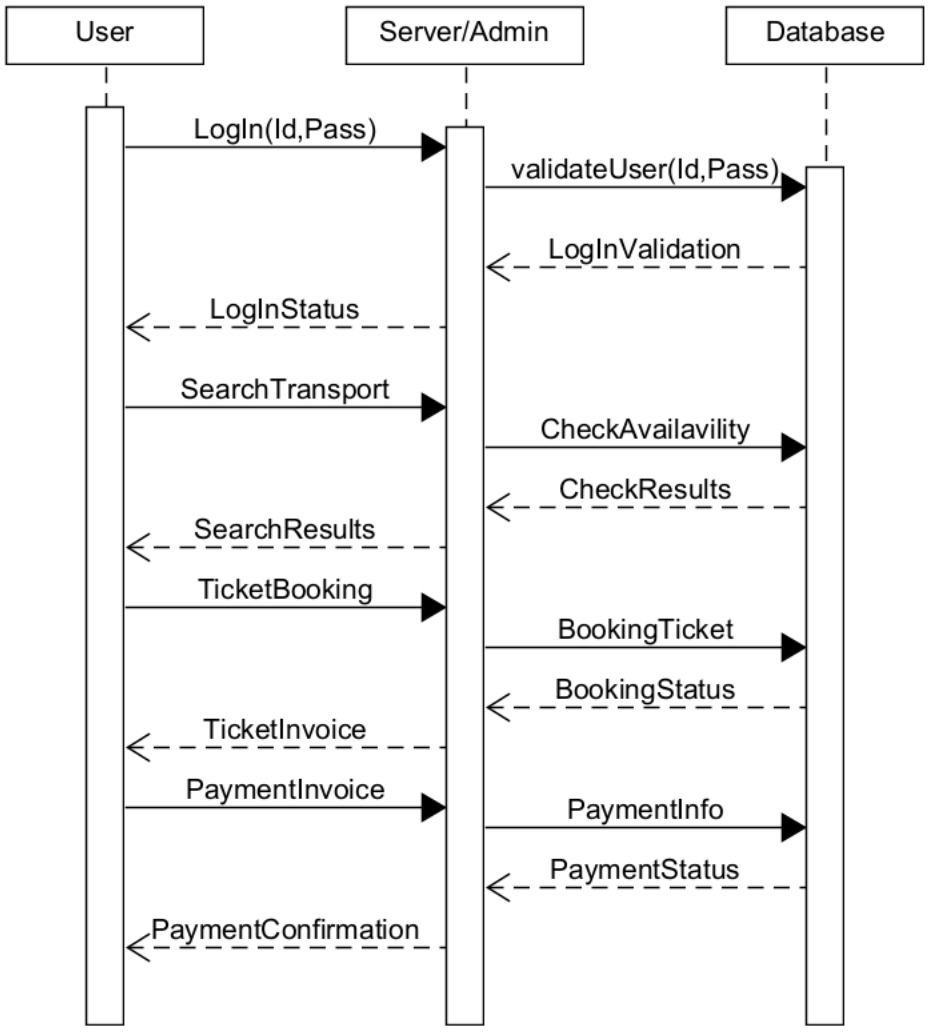
5.4 If the payment is failed due to any sort of issues the user will get maximum 24 hours to complete your payment to confirm the ticket otherwise request for the ticket will be invalid or canceled.

Priority Level: High

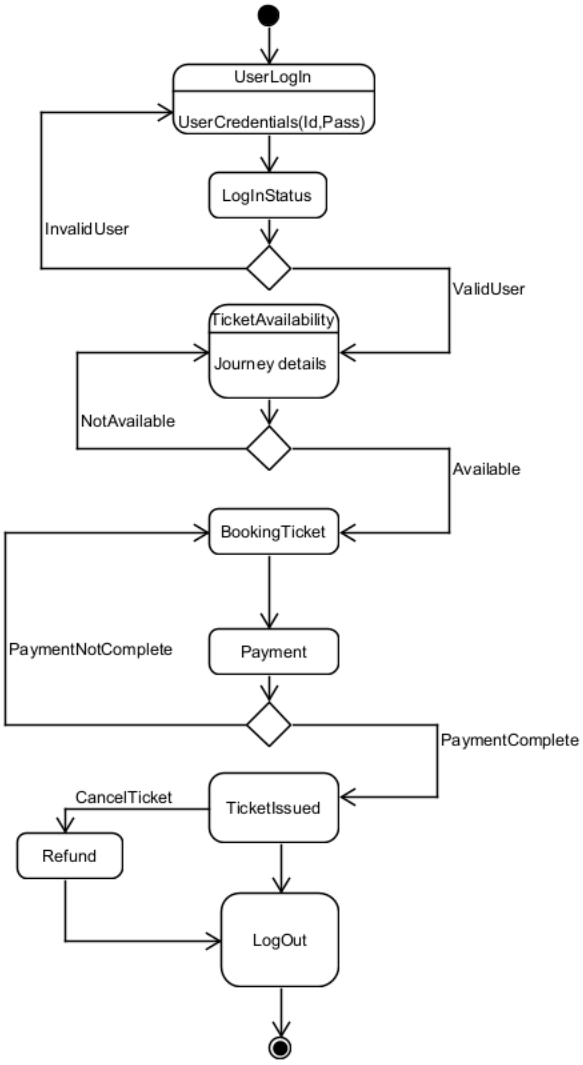
Use Case Diagram



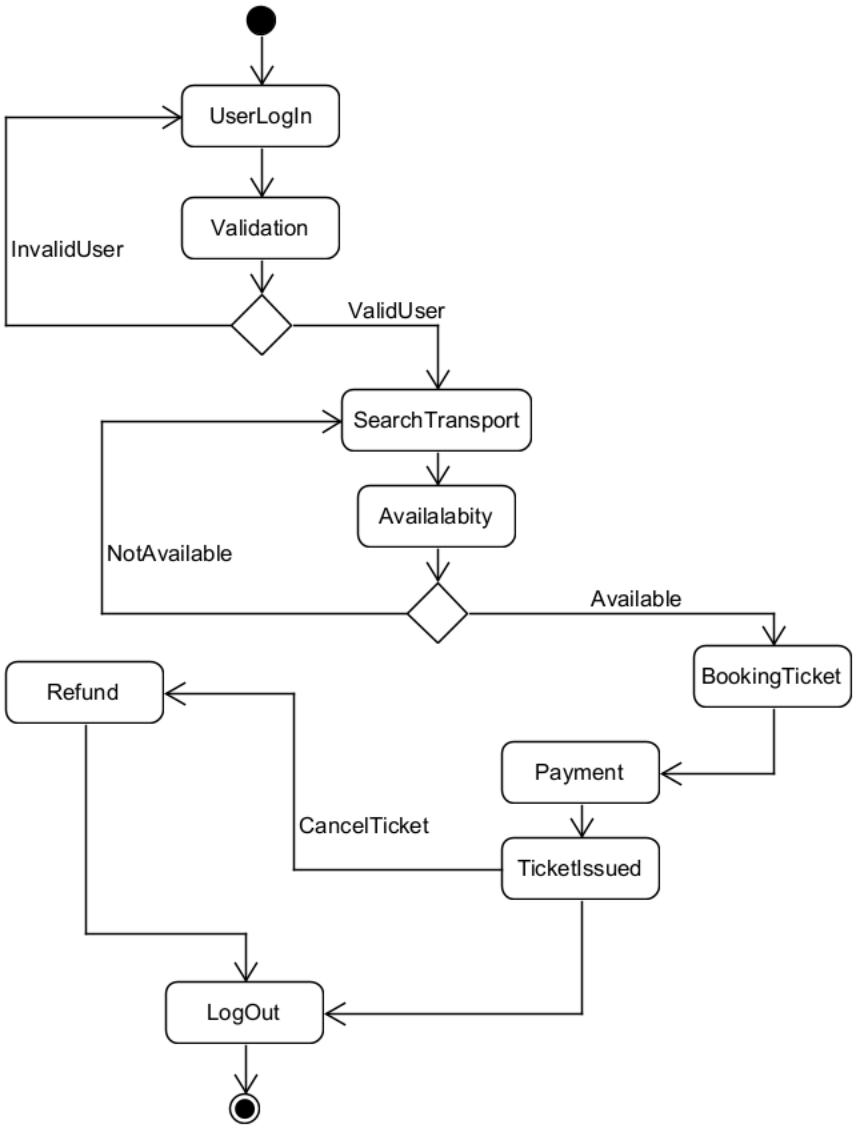
Sequence Diagram



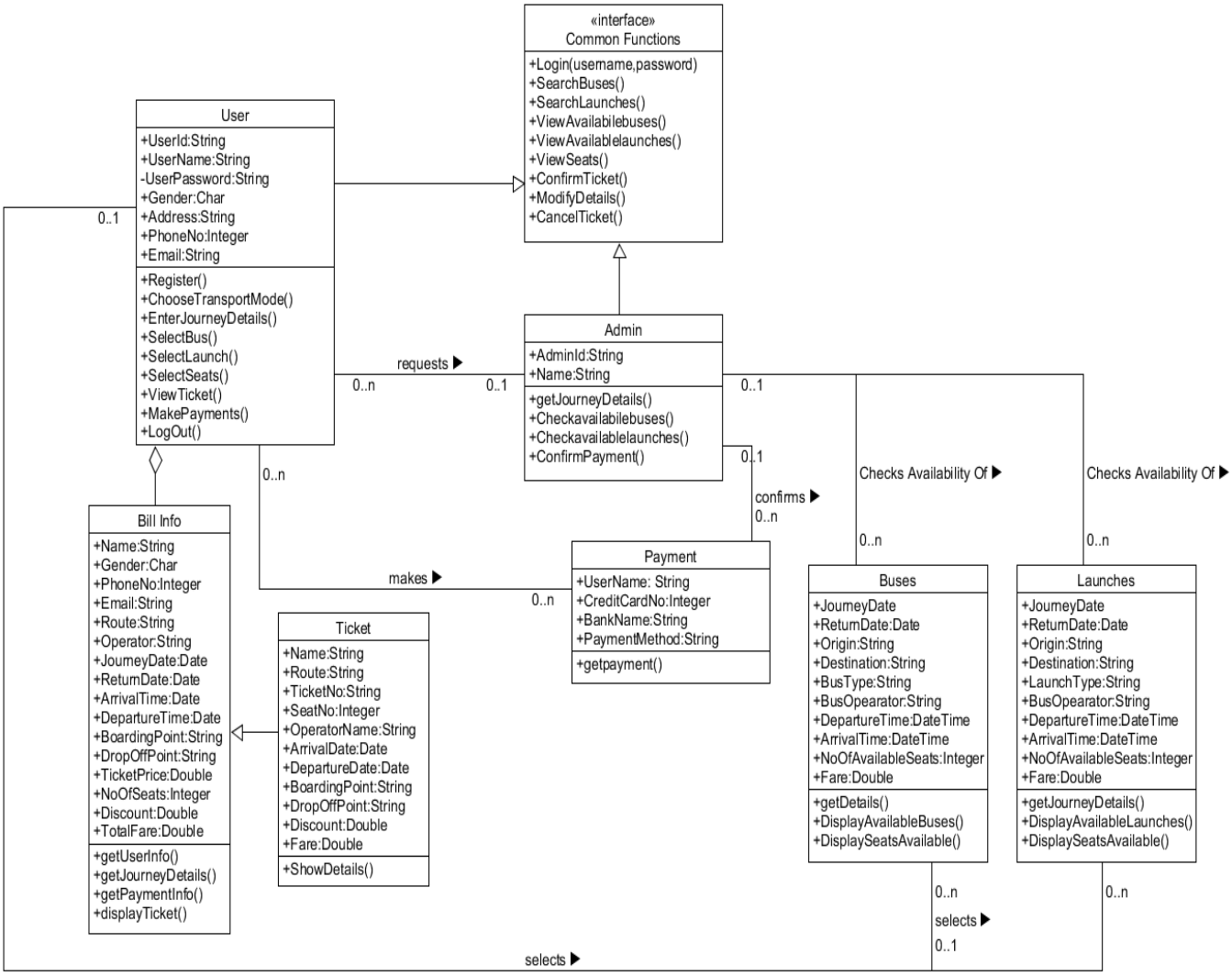
State Diagram



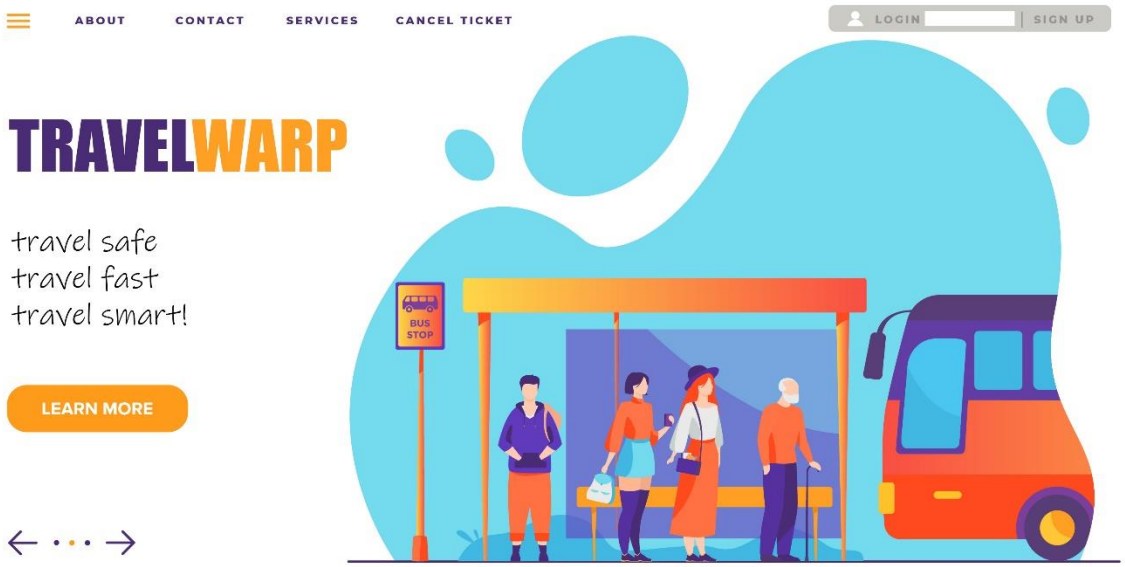
Activity Diagram



Class Diagram



UI Design


ABOUT
CONTACT
SERVICES
CANCEL TICKET
LOGIN
SIGN UP
TRAVELWARP
travel safe
travel fast
travel smart!
LEARN MORE
BUS STOP

TRAVELWARP

@username

xxxxxxxxxx

LOGIN

OR

@username

xxxxxxxxxx xxxxxxxxxx

SIGN UP

OR

SIGN UP with

ABOUT CONTACT SERVICES CANCEL TICKET @USERNAME | LOGOUT

TRAVELWARP

BUS LAUNCH

Journey Details

Date of Journey | Date of Return | Launch Type

Origin City | Destination City | No. of People

Search Launches

ABOUT CONTACT SERVICES CANCEL TICKET @USERNAME | LOGOUT

TRAVELWARP

BUS LAUNCH

Journey Details

Date of Journey | Date of Return | Bus Type

Origin City | Destination City | No. of People

Search Buses

ABOUT CONTACT SERVICES CANCEL TICKET @USERNAME | LOGOUT

TRAVELWARP

BUS LAUNCH

Journey Details

Date of Journey	Date of Return	Bus Type
23/02/2022	25/02/2022	Non-AC

Origin City	Destination City	No. of People
Dhaka	Chittagong	4

Modify Search

Bus Operator	Dep. Time	Arr. Time	Seats Available	Fare
Hanif Enterprise Hina, AK1J, Super plus NON-AC Route: Dhaka-Chittagong	11:00 PM	6:20 AM	36	৳ 580

Boarding Point [ ] View Seats

Bus Operator	Dep. Time	Arr. Time	Seats Available	Fare
Ena Transport Ltd Hina, AK1J, Super plus NON-AC Route: Dhaka-Mirpur-Feni-Chittagong	06:30 AM	2:00 PM	24	৳ 560

Boarding Point [ ] View Seats

Bus Operator	Dep. Time	Arr. Time	Seats Available	Fare
Green Line Paribahan Hina, AK1J, Super plus NON-AC Route: Dhaka-Chittagong	7:00 AM	3:00 PM	20	৳ 1400

Boarding Point [ ] View Seats

Bus Operator	Dep. Time	Arr. Time	Seats Available	Fare
Shohagh Paribahan Hina, AK1J, Super plus NON-AC Route: Dhaka-Chittagong	7:10 AM	1:15 PM	3	৳ 1400

Boarding Point [ ] View Seats

ABOUT CONTACT SERVICES CANCEL TICKET @USERNAME | LOGOUT

TRAVELWARP

BILLING INFO

Passenger Details

Name
xxxxxxx

Gender
xxxxxxx

Contact Info

Mobile
xxxxxxx

E-Mail
xxxxxxx

Journey Details

Route Name
xxxxxxx

Bus Operator
xxxxxxx

Seat No(s).
xxxxxxx

Journey Date
xxxxxxx

Departure Time
xxxxxxx

Return Date
xxxxxxx

Arrival Time
xxxxxxx

Boarding Point
xxxxxxx

Drop-off Point
xxxxxxx

Fair Details

Ticket Price
xxxxxxx

No. of Seats
xxxxxxx

Discount
xxxxxxx

Total
xxxxxxx

Payment Details

Select Bank
xxxxxxx

Pay Online by CARD

Pay by Cash

SDLC: XP Model

Why we choose XP model: Extreme programming (XP) is one of the most important software development frameworks of Agile models. It is used to improve software quality and responsiveness to customer requirements. The extreme programming model recommends taking the best practices that have worked well in the past in program development projects to extreme levels. Good practices need to be practiced in extreme programming: Some of the good practices that have been recognized in the extreme programming model and suggested to maximize their use are given below:

Code Review: Code review detects and corrects errors efficiently. It suggests pair programming as coding and reviewing of written code carried out by a pair of programmers who switch their works between them every hour.

Testing: Testing code helps to remove errors and improves its reliability. XP suggests test-driven development (TDD) to continually write and execute test cases. In the TDD approach test cases are written even before any code is written.

Incremental development: Incremental development is very good because customer feedback is gained and based on this development team comes up with new increments every few days after each iteration.

Simplicity: Simplicity makes it easier to develop good quality code as well as to test and debug it.

Design: Good quality design is important to develop good quality software. So, everybody should design daily.

Integration testing: It helps to identify bugs at the interfaces of different functionalities. Extreme programming suggests that the developers should achieve continuous integration by building and performing integration testing several times a day.

Basic principles of Extreme programming: XP is based on the frequent iteration through which the developers implement User Stories. User stories are simple and informal statements of the customer about the functionalities needed. A User Story is a conventional description by the user of a feature of the required system. It does not mention finer details such as the different scenarios that can occur. Based on User stories, the project team proposes Metaphors. Metaphors are a common vision of how the system would work. The development team may decide to build a Spike for some features. A Spike is a very simple program that is constructed to explore the suitability of a solution being proposed. It can be considered similar to a prototype. Some of the basic activities that are followed during software development by using the XP model are given below:

Coding: The concept of coding which is used in the XP model is slightly different from traditional coding. Here, the coding activity includes drawing diagrams (modeling) that will be

transformed into code, scripting a web-based system, and choosing among several alternative solutions.

Testing: XP model gives high importance to testing and considers it to be the primary factor to develop fault-free software.

Listening: The developers need to carefully listen to the customers if they have to develop good quality software. Sometimes programmers may not have the depth knowledge of the system to be developed. So, the programmers should understand properly the functionality of the system and they have to listen to the customers.

Designing: Without a proper design, a system implementation becomes too complex and very difficult to understand the solution, thus making maintenance expensive. A good design results elimination of complex dependencies within a system. So, effective use of suitable design is emphasized.

Feedback: One of the most important aspects of the XP model is to gain feedback to understand the exact customer needs. Frequent contact with the customer makes the development effective.

Simplicity: The main principle of the XP model is to develop a simple system that will work efficiently in the present time, rather than trying to build something that would take time and may never be used. It focuses on some specific features that are immediately needed, rather than engaging time and effort on speculations of future requirements.

Applications of Extreme Programming (XP): Some of the projects that are suitable to develop using the XP model are given below:

Small projects: XP model is very useful in small projects consisting of small teams as the face-to-face meeting is easier to achieve.

Projects involving new technology or Research projects: This type of project face changing requirements rapidly and technical problems. So, XP model is used to complete this type of project.