American International University-Bangladesh (AIUB)

Department of Computer Science

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<Online Bus Ticket Booking System>

Software Requirement Engineering

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Project submitted

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1. PROBLEM_DOMAIN

1.1 Background to the Problem

In our country population are increasing day by day. So the transport vehicle are also increasing day by day and also the use of an online bus ticket booking system has recently grown in popularity. However, it has some flaws, which is why so many individuals are critical of the system and booking ticket for bus are not easy at all. The goal of this project is to create a web-based application called "Online Bus Ticket Booking System" that will allow passengers to search for and book tickets. This concept will improve profits while reducing additional costs and unneeded effort on the part of passengers and bus companies.

Passengers are frequently subjected to a great deal of stress as a result of bus delays. The majority of employees or students have suffered significant losses as a result of the bus delay. People are unable to achieve their objectives on time. The majority of passengers have to wait a lengthy period for their selected transport. People had to wait in line for a long period for tickets on any given occasion, and the corporation had a lot of trouble delivering them. Many customers were unable to obtain tickets in time and were forced to purchase tickets in black with additional funds. Many times, bus drivers are unaware of the amount of passengers on board, so they travel with only a few. They were losing at the time. All of these issues can be resolved by putting our project into action

1.2 Solution to the Problem

The proposed system will monitor the current status of the journey and in case of users, emergency need for cancellation or delay the system will allow the user to book more than one bus for the journey. If the user does not book additional bus services the user will get refunded in case of ticket cancellation request. On the other hand, if the service is delayed due to some unforeseen circumstances the user will get rewarded as a compensation. However, in case of an emergency the customer

needs to pay an additional fee to receive a backup bus service. The proposed new system only requires 5 to 7 skilled personnel to operate and it is anticipated that a total of 8 to 10 staff per office is sufficient to run the operation. This reduces the number of staff requirement per office and in return ensuring high economic gains for the business.

Overview

A bus ticketing app that lets customers search for the availability of different bus tickets. This project also has features like user registration and the ability for management staff or administrators to change the details of the application, such as adding, deleting, or changing customer information, bus information, and trip details.

Benefit

It will cut costs for the bus companies. And the profit margin will go up as a result. Also, it is easy to use and will take some of the stress off of travellers.

Objective

The goal of this project is to design and build software that will automate important steps in the ticket booking process, such as making it possible to buy online bus tickets or any other steps through an effective and easy-to-use user interface for a typical bus passenger.

Problem area & solutions:

There are several other software projects that are used for ticket booking systems, such as Pathao, Sohoz, Car loan, Obhai and many others, however not all of them give backup trip precedence for passengers who may want emergency assistance. The problem can be remedied if a backup trip option is made for the same time or just half an hour later.

Solution:

When a customer comes to reserve a ticket, he gives his entire name and address. Details are mentioned in the client form. The computer then double-checks the booking date. It verifies the trip's date. If the journey fails on that day, the system

looks for a different trip id. It also inspects the bus seats. After that ticket will be generated. The reservation has been made. If the requirement is not met, it will proceed to the next seat. And it was justified. If it is also booked, it will proceed to the next step. If there are no seats available, the system will accept an unconfirmed ticket. Then it displays a waiting list.

2. SOLUTION DESCRIPTION

2.1 System Features

Functional requirements

The user will get access to the following features and functionalities as part of this project

Find status of the bus: The technology will enable registered users to verify the status of the bus if their travel times are delayed due to traffic or other circumstances. Messages are sent automatically to authorized passengers who have purchased tickets.

Book a Ticket: The technology enables the passenger to search for available buses between the "Departure city" and "Arrival city" for a specified departure date. The system presents a list of available buses together with trip information, enabling consumers to pick a route that best meets their requirements. If seats are available on a particular bus, the system will enable the customer to choose a seat; otherwise, the user will be sent to another bus. They may also cancel existing bookings with ease.

Account Information (User): In order to access bus status and updates, users must register for an online account with the system. Or, a new user might register and become an authorized user.

Payment System: Passengers may pay for their tickets using an online payment system such as Nagad, Upay, bkash, or another online banking system. It will make payment easier for them. If a traveler cancels his reservation, he will get a full refund within two to four business days.

Quality Attributes:

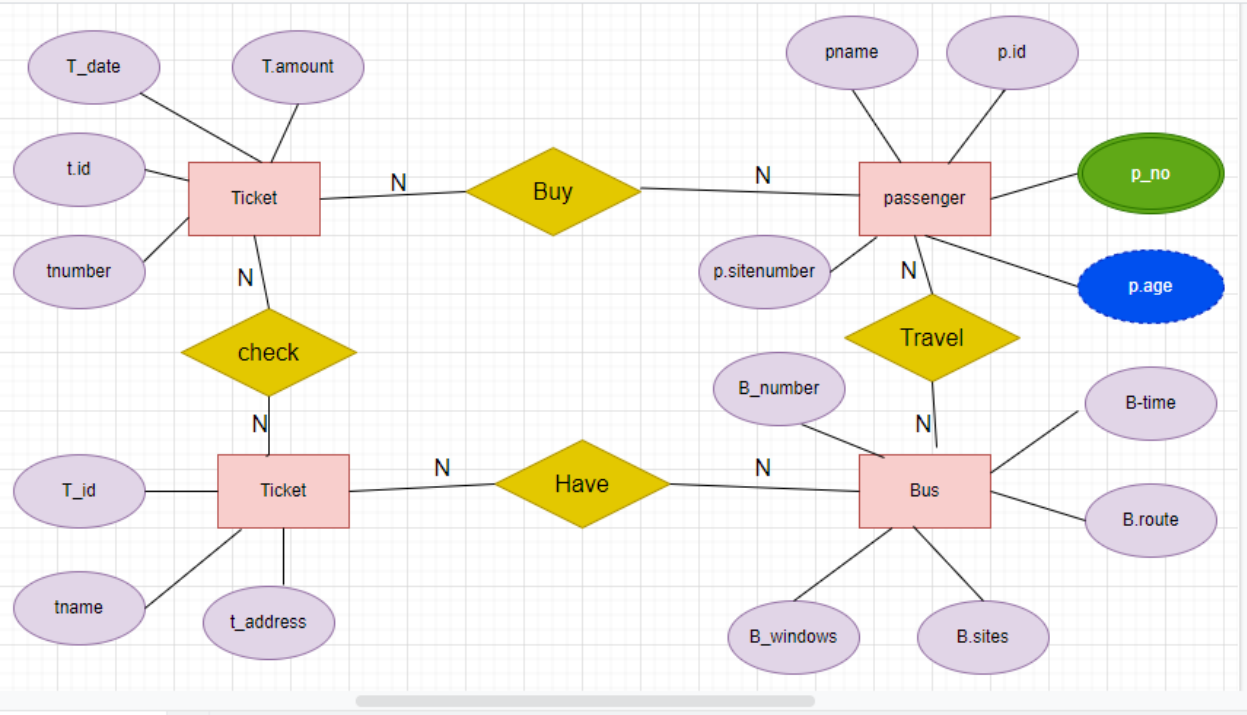
Usability: The system should be compatible with Windows, Android, Mac OS X, UNIX, Linux, and other operating systems.

A trustworthy, safe, and secure banking medium is essential for transactions.

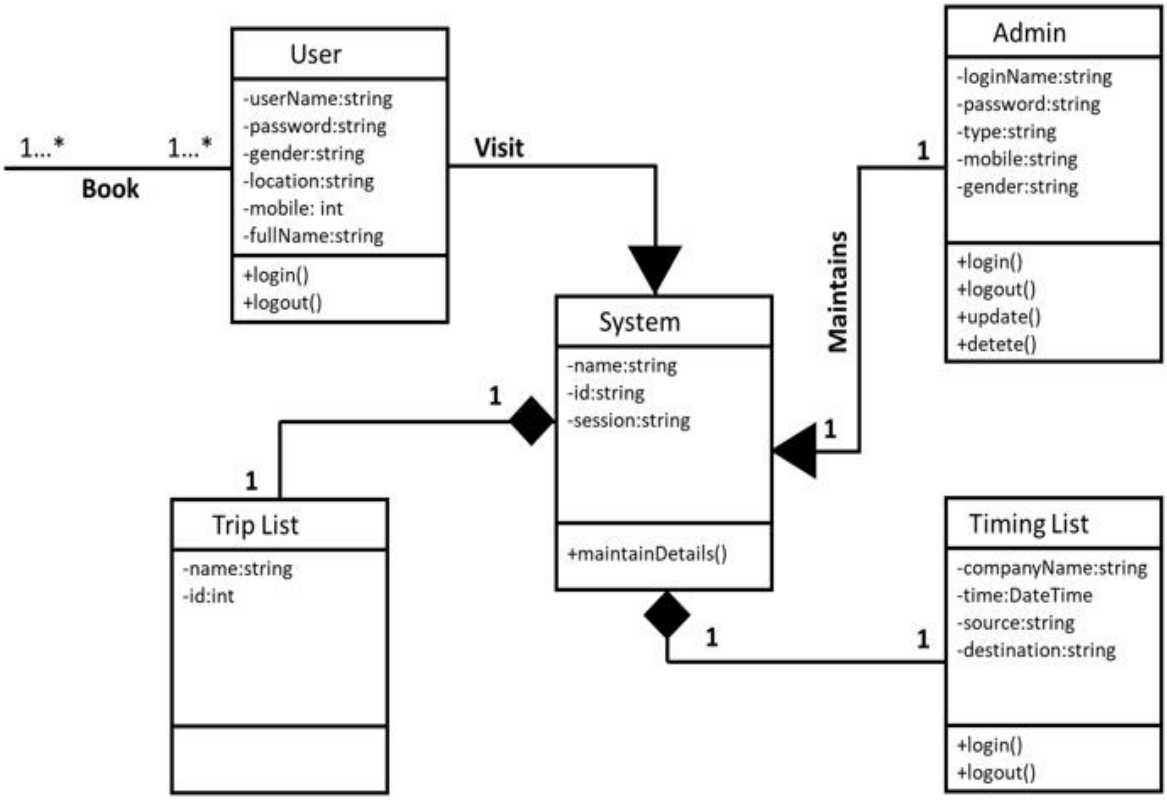
Consider recovery scenarios that enable you to restore a state that is no more than one business day old when creating a robust system.

2.2 UML Diagrams (Any 3 types)

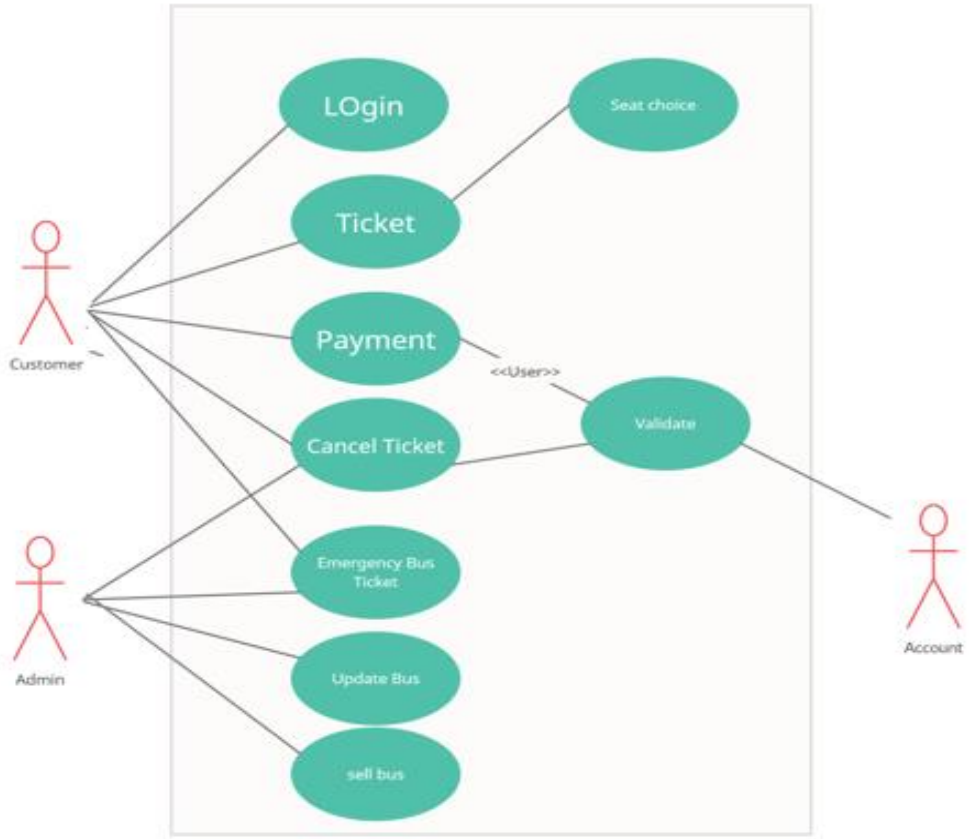
ER Diagram



Class Diagram



Use Case diagram



3. Social Impact

People in our community suffer considerably from bus delays and seat shortages. As a consequence of bus delays or inability to get seats, the majority of workers, students, and ordinary people face a variety of issues, such as being unable to reach their destination on time, missing meetings or classes, losing valuable time waiting

for the bus, being late to return home, etc. This project can resolve all of these problems. Moreover, the software infrastructure for this project will provide both new opportunities and a multitude of challenges for ticketing firms.

These difficulties are specific to each firm, but they must be evaluated in light of the market's global ecosystem and interdependencies with other companies. The aim of the initiative is to:

- Determine the growth and competitiveness influencing variables.
- Analyze the market effect and projected market transformation of developing data-driven technologies.
- Determine the possible present and future economic growth consequences of the firms and their services on the social economy.
- Make policy proposals to eliminate impediments and boost the expansion of the sector.

4. Development Plan with Project Schedule

Start the project with a task list:
Initiate Project

1. **Develop a charted project**
   - Define the scope of the project
   - Requirements
   - Determine High-Level Positions
   - Make a high-level budget plan

- Identify Control Strategies at the Highest Level

2. Finalize Charter

- Publishing project charter
- Holding a review meeting
- Revise
- Approval from the institutions

3. Project planning

- Developing work plan
- Project staffing development plan
- Project schedule
- Project budget

4. Project control panel

- Develop communication plan
- Develop quality management plan

5. Design

- Define Stages and activities
- Create content formats
- Review object design

6. Build

- Project Review with bus companies

7. Testing

- Usability Testing
- Unit Testing

8. Implementation

- Transfer the tool to the production environment
- Declare Tool Arability

Task Scheduling:

Task	Time (days)	Starting date	Finish date
Project Initiate	2	29-07-22	31-07-22
Project Develop	4	30-07-22	03-08-22
Finalize and Approval	3	01-08-22	04-08-22
Planning	2	02-08-22	04-08-22
Development Plan (Work)	2	03-08-22	05-08-22
Project Control Plan	3	03-08-22	06-08-22
Design	2	05-08-22	07-08-22
Build	5	06-08-22	11-08-22
Implementation	8	07-08-22	15-08-22
Test	4	12-08-22	16-08-22
Project Close	2	16-08-22	18-08-22

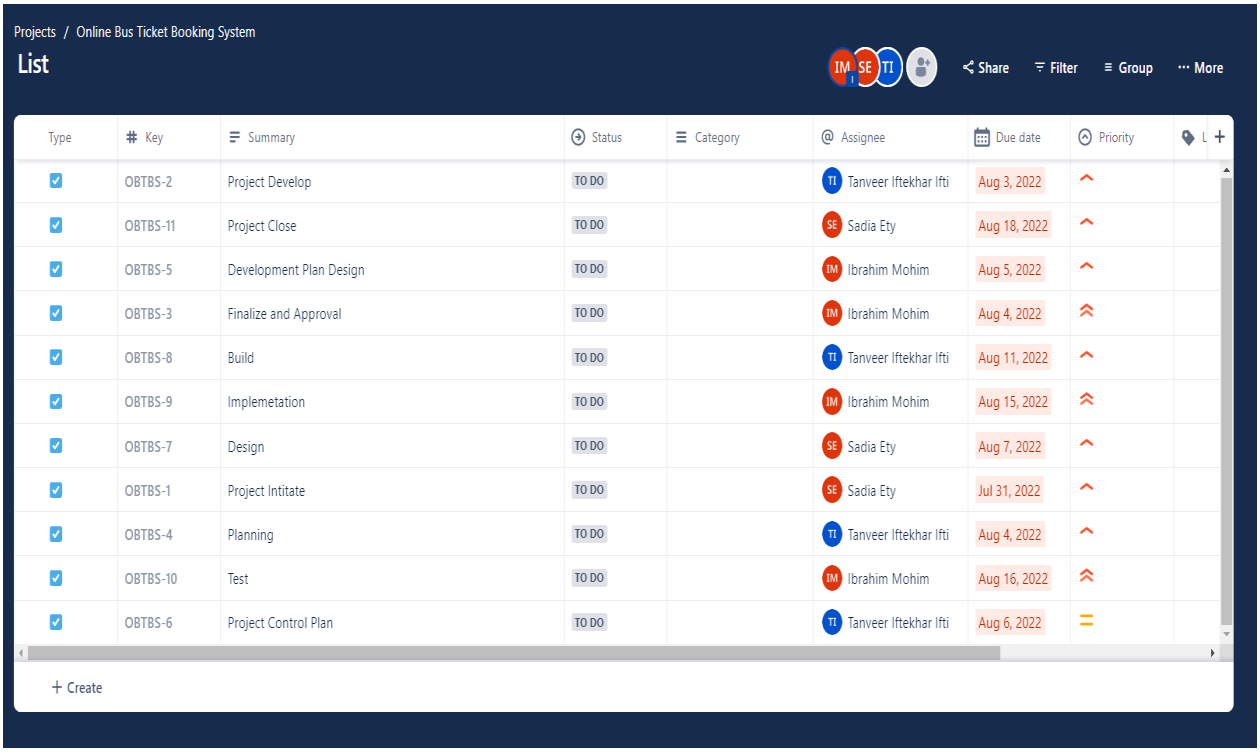


Fig 1: project status

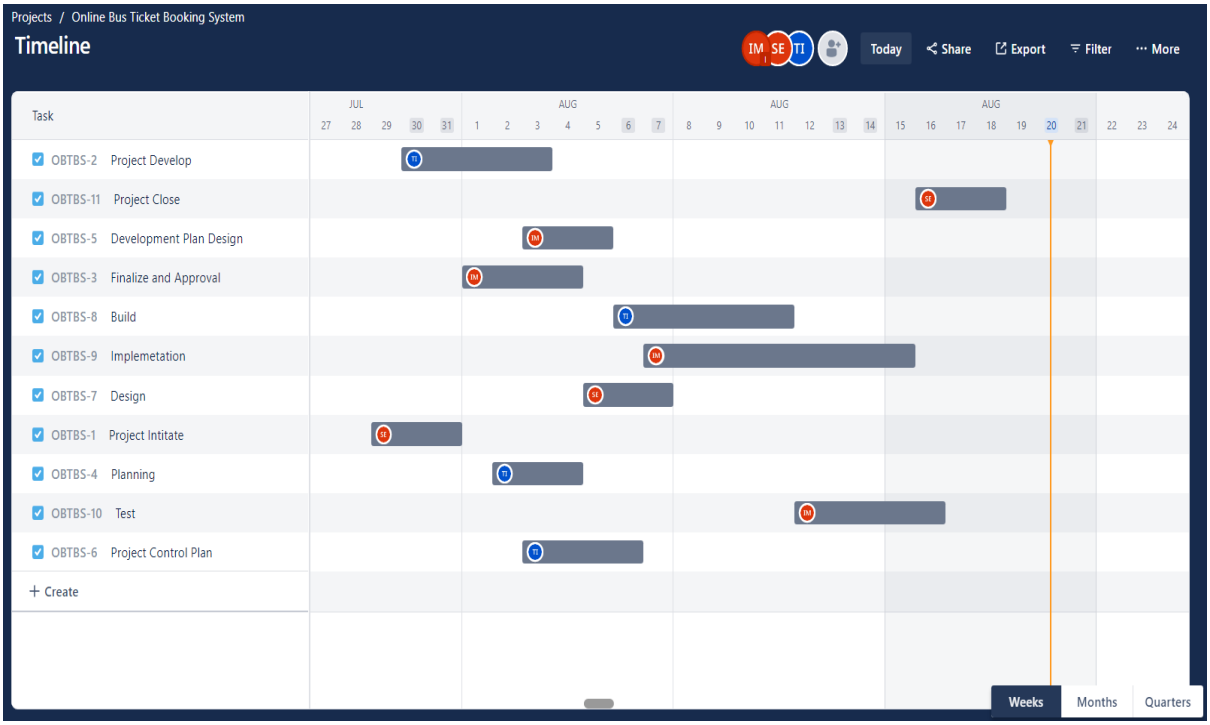


Fig 2: Task scheduling timeline

5. Marketing Plan

1. **Host an event:** Hosting an event we can spend quality time with our clients. There we can talk about our future plane of it.

2. **Story:** Storytelling enables marketers to develop a deeper connection with the audience. Storytelling is a fundamental human experience that unites people and drives stronger, deeper connections. From the earliest recorded history, storytelling was a method used by cavemen to communicate, educate, share, and connect Storytelling brings language learning alive and creates a participatory and immersive experience that allows Young Learners to enjoy hearing the language in a dynamic, sometimes stylistic and entertaining way.

3. **Facebook Ads:** Facebook has more than 2.91 billion active users Facebook ad formats for marketing plan will make sales funnel. Carousel ads are more interactive than the single image or single video format, and typically create more engagement and increase time spent on the ad

4. **Impact Creating**: By ensuring digital transformation of the service provided you will be doing a service towards the improvement of the society as the society is moving towards a rapid digital change. It will ensure that the current customer is devoted to your services. It will ensure that individuals who knows about the bus company's work will admire it and this is a valuable achievement for any marketing campaign. This mutual interest and regard can develop in a relationship of trust between the customer and the service providers. Customers who trust a firm will always purchase a ticket from that company, even if the company charges them more money. As a result, reach out to people both offline and online, reaching more customer base and ensuring the chain of advertising due to good services.

5. **Offer for enthusiastic travelers:** Several airlines have capitalized on passengers' desire for adventure ensuring the additional bus services are provided as a packaged service. Furthermore, offering cheaper trips and stopovers, they enhance overall revenues and generating more customer base. Many passengers can't pass up the opportunity to visit a new city with just a tiny fraction of the cost. Passengers are increasingly choosing buses since they provide the greatest vacation stopover spots and beautiful scenic routes when traveling.

6. **Social Media:** We can contact with influencer to prompt our business. Smart bus firms pay or allow social influencers to travel for free because they know it will bring in a whole new set of clients. Customer satisfaction and value for money are important factors. The profit you make is directly proportionate to the value you provide to your consumer.

7. **Cost and Profit Analysis**

According to the cost profit analysis estimates provided below, the system has a nearly positive return on investment over the next three years, and the profit closes to the development cost in the first year.

Marketing Cost:

Revenue Budget($)	**18-08-22 to 18-12-23**	**18-01-22 to 18-05-22**	**01-09-22 to 01-03-23**	**Total**
Hosting event	30 $			30 $
Ads(facebook)	30 $	35 $	40 $	105 $
Social media	40 $	65 $	70 $	175 $
Story	20 $		10 $	30 $
Providing travel perks	65 $		40 $	105 $
Impact creating	10 $		20 $	30 $
Offer for travellers	40 $		40 $	80 $
Video adds	125 $	150 $	155 $	430 $
Total				985 $ (93,000 tk)

Cost Profit Analysis	**29-07-22 to 18-08-22**	**18-08-22 to 18-02-23**	**18-03-22 to 18-08-22**	**01-01-23 to 01-06-23**	**Total**
Software License	15,000				15,000
Design	20,000				20,000
Training		4,000	4,000	4,000	12,000
Data cost	2,500				2,500
Total					49,500 TK

Total Cost: Development Cost + Marketing Cost = (49,500 + 93,000) TK

= 142,500 TK

Income	**18-08-22 to 18-02-23**	**18-03-22 to 18-08-22**	**01-01-23 to 01-06-23**	**Total**
Ticket Sales	1,10,000	1,60,000	2,10,000	4,80,000
Emergency Ticket Sales	60,000	90,000	1,10,000	1,10,000
Less Computer	20,000	22,000	28,000	70,000
Less Labour Cost	50,000	60,000	70,000	1,90,000
Total				8,50,000 tk

Profit: Total Income – Total Cost = 8,50,000 – 1,42,500 TK

= 7,07,500 TK

8. Reference

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