

Introduction of the work including an overall description of the project, customer, and the business

Cashless train ticket system application of State Railway of Thailand for both Android and IOS platforms. The main objective is to lay a structural foundation for clients who want to create a train ticket booking system to facilitate customers without cash for payment. The application has been systematically designed to have a simple operation mechanism that users can easily access and use by complete actions within the application on their phones.

The cashless train ticket system is to solve the problem of users who accidentally forgot to bring cash with them while already booking a ticket at the train station ticket booths. In the mentioned case, consequently the occurrence of crowding of people problems between ticket booths and the train station. Thereby our system can support up to ten thousand users at a time while they are using the application. Our cash system works by switching from cash to payment via three methods such as mobile banking, credit card, and counter service in which users can use the QR code to transfer money which satisfies the user's need for the ability to make fast online transactions in advance. So users don't have to buy a ticket through a ticket vending machine at a train station.

Process of Cashless train ticket system

1. The system provides a 'virtual wallet' for a user to be used to store the user's money in the system. The virtual wallet can support 3 payment channels: Mobile banking, Credit card, and Counter service (using QR codes to transfer money).
2. Users can deposit the balance in their wallet at any time with a maximum amount not exceeding one million baht. For each time of transfer, users can choose any amount that users want to transfer.
3. For each spent, users will receive reward points reaching up to 100 as a maximum. The reward points can be redeemed as money transfers in a virtual wallet. For our application, the reward points will be counted according to the distance users travel depending on a

ticket they buy; 1 point per 10 km and 69 points per 10 baht. For example, traveling from Bangkok to Chiang Mai receives 69 points.

4. Users can check how much money they have transaction history in their virtual wallet. In addition, users can transfer money between users who subscribe to the cashless train ticket system as well.
5. Users can use money in their wallet that a customer top-up to buy a virtual train ticket that shows and verifies at the station with a total of 4 tickets price and plans such as
 - A 1-way tickets
 - A daily pass: Buy for one single price and can travel how times they want throughout the day.
 - A Monthly pass: Buy for one single price and can travel many times they want in 1 / 3 / 6 months.
 - A Yearly pass: Buy for one single price and can travel many times they want in 1 year.
6. The application indicates the train schedule of all trains including time, train number, and destination, so users can search for certain train numbers.

Administration aspect

On the administration aspect, admins have the ability to add a seasonal promotion or other promotions such as discounts, specific tickets, etc. In addition, the admin will have a duty to take care of the orderliness of the train schedule, such as adjusting, increasing, and decreasing the train schedule in order to facilitate the customers as much as possible.

How to access the cashless train ticket system

To access the cashless train ticket system, users must register with our system by filling in their basic information including name, surname, national ID card number, and residence. After filling out the information, the user must scan the face for the system to recognize the user's face for identification and verification to complete registration. A national ID card number is required to track and monitor who boarded the train from where to where for the safety of all passengers. User information will be kept confidential by encryption of the user's data.

Functional requirements

1. Customers can register to the cashless train ticket system using basic information such as first name, last name, address, password, National ID.
2. Customers can login to the cashless train ticket using national ID and password.
3. Customers can view the guide on how to use our application.
4. Customers can view train schedules for all trains.
5. Customers can find available trains by using train numbers.
6. Customers can view train tracking status.
7. Customers can select the type of train.
8. Customers can book train tickets by specifying the origin and destination location.
9. Customers can deposit money to virtual wallets using mobile banking.
10. Customers can deposit money to virtual wallets using credit cards.
11. Customers can deposit money to virtual wallets at any convenient store.
12. Customers can check virtual wallets total balance.
13. Customers can transfer money between each account.
14. Customers can convert collection into money in virtual wallets.
15. Customers can exchange collection points for gifts.
16. Customers can subscribe to train passes.
17. Customers can check payment transactions and payment history.
18. Administrators can offer special discounts and promotions.
19. Administrators can adjust train schedules.
20. Train officers can validate the legitimacy of virtual train tickets by scanning QR codes.

Non-functional requirements

1. The cashless train ticket system must be a mobile application.
2. The system must support iOS.
3. The system must support AndroidOS.
4. The system must encrypt customer private information.
5. The customer information must be stored in the database.
6. The maximum money you can deposit in a virtual wallet is 1 millions baht.
7. The system must have good UX and UI design.
8. The system must support blind people.
9. The system must support color blind people.
10. The system availability must be 99.99 %.