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Project Phase 0

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ITCS371 Introduction to Software Engineering

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Project Description

Convenience in the contemporary era of digital transformation is paramount since the world has been gradually evolving into a digital world. Therefore, the conception of this software engineering project is to revolutionize the way passengers interact with train ticketing by executing the creation of Cashless Train Ticket Systems. As a cashless society has been introduced widely into the world, it is crucial for organizations to integrate a new system into their business process. By taking advantage of the potential of mobile devices, the organization that owns this cashless train ticket system is the organization that operates railways; it aims to provide convenience to customers by allowing users to seamlessly access, purchase, and utilize train tickets using only a single mobile device. This application also prioritizes the security system of the users, so non-registered users cannot access the application unless they provide their basic information including their name, national ID, and address which will be protected with password and high-level encryption. These measures serve as a guarantee that the users who use this application will be able to thoroughly entrust the security of online financial transactions that are made within the application. The system of this mobile application is designed to be compatible with both IOS and Android operating systems and serves as the gateway for users to access a multitude of features designed to simplify their train travel experience. The users of this mobile application will be able to effortlessly purchase every type of train ticket including top-up train tickets, daily passes, and annual passes by depositing money into the virtual wallets of their accounts. The system also offers numerous money deposit methods that the users can choose from, namely via mobile banking application, credit card, 7-Eleven convenience store counter, and transferring money between one account to another account. After purchasing train tickets, the users can collect points that can be converted to funds to purchase further tickets or they can use these points to redeem special gifts. Moreover, they can check the train schedules of a specific time, date, and train number that are displayed within the application in real-time. Therefore, this mobile application is primarily suitable for Thai young adult users and adult users who have a mobile and regularly use a train to commute in their daily lives. Furthermore, travelers who require train transportation will be able to utilize this application to carefully plan their trips according to the train schedules. The interfaces and features of the application also support individuals with disabilities such as people with visual impairments and people with

color blindness. In addition, administrators of this mobile application will be able to gain access to exclusive special promotions. The cashless train ticket system is designed to offer exceptional uptime of 99.99 to ensure that users can access the systems whenever they need it which enables reducing disruptions and inconveniences associated with traditional ticketing. This system represents a significant leap forward in the realm of public transportation by compiling the principles of convenience, security, accessibility, and efficiency.

Requirements

No.	Functional requirements
1.	The mobile application must allow the users to make a registration.
2.	The system asks for the user's information input, including first name, last name, national ID, and address.
3.	The users must access the login verification of the application by entering their username and password.
4.	The users can purchase any kind of train ticket within the mobile application.
5.	The users must be able to create their virtual wallets.
6.	The system must allow the users to transfer funds from their virtual wallet to the virtual wallet of another account.
7.	The system must allow the users to see the record of a transaction history.
8.	The system can generate the payment code for money deposits via convenience stores (7-Eleven).
9.	The users can see their balance in their virtual wallet.
10.	After the users purchase a train ticket via the system, they will gain reward points.
11.	The users can convert the collected points to train tickets or additional rewards.
12.	The mobile application must display the train schedule and train information.
13.	The organization administrator can edit and add information about train schedules and trains on the mobile application.
14.	The system must encrypt the user’s information in the database.

15.	The organization administrators must be able to receive special promotions.
16.	The mobile application must allow the users to search for a train ticket by inputting the date, time, and specific train number.
17.	The mobile application must support people with disabilities.
18.	The administrators can collect the records of the ticket journey history of the users.
19.	The organization can see the user's information, especially the national ID of the customer for security.
20.	The payment function must allow users to use online banking and credit cards.
21.	The mobile application must withdraw the amount in the user's virtual wallet when the user purchases the train ticket.

No.	Non-Functional Requirements
1.	The cashless train ticket system must support the mobile application.
2.	The mobile application must support both IOS and Android.
3.	The mobile application should feature a user-friendly UI and UX design to ensure customers can use it effortlessly.
4.	The application should provide support for individuals with disabilities, including those who are blind or color blind.
5.	The systems should enable users to view their money usage history, including details about how it has been utilized and the amount spent per transaction.
6.	The systems need to possess the capability to tackle security issues effectively.
7.	The application has a special promotion for admin on a season-specific event.
8.	The systems should be accessible and available for users to utilize most of the time (99.99%).
9.	There are two types of train tickets: the top-up train ticket and the annual pass ticket.
10.	The user interface of the mobile application should incorporate voice commands for controlling and navigating within the application, especially for users with low vision.
11.	The systems should validate that the virtual wallet balance remains below 1 thousand baht while also not imposing a minimum limit.
12.	The systems must ensure that the accumulation of points for purchasing train tickets does not exceed a maximum limit of 100 points.
13.	The systems should be capable of supporting a diverse range of screen resolutions.
14.	The systems must use an encryption process or other security process for security

	functions.
15.	The systems must ensure that the users can only buy one top-up train ticket at a time.

Identifying Actors

Actor	Associated Use Case
Organization Staff (Administrator)	- Modify the information on train and train schedules. - Validate the user's information for logging in. - View the user's information. - Receive the special promotions.
Ordinary Person (User)	- Register his/her account in the system. - Purchase train tickets via his/her virtual wallet. - Deposit money to his/her virtual wallet. - Transfer money from his/her virtual wallet to another account's virtual wallet. - Check his/her virtual wallet balance. - Review his/her transaction history. - Search for train schedules by date, time, or train number. - Obtain a reward point after purchasing a train ticket. - Exchange the reward point for a train ticket or gift. - Use a screen reader or voiceover function.
Convenient store Staff	- Top-up money to users' virtual wallets.
Bank	- Top-up money to users' virtual wallets.