*COMP*9900 *Information Technology Project*

Group : 9900 − *H*16*P* − *PowerRangers*

ProPosal

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Contents

1 Background

1.1 Problem statement

With the rapid development of the economy, people's lives are becoming more and more colorful, and various events are launched all over the world, such as movies, performances, cocktail parties and so on. People are happy to attend events like this because they can relax and enjoy, and event organizers are happy to see them because they can make a lot of money. The development of web-based information not only provides people with a wider range of information, but also provides event organizers with more potential customers. People can go to events on the other side of the world if they get the news. And we want to achieve a platform with useful functions to make both event hosts and customers convenient.

This project aims to develop a non-profit event management system, which can easily allow event organizers to publish events and sell tickets, and also allow people who want to attend events to buy tickets with one click. Due to the impact of COVID-19 on the world situation, people now prefer to post events and buy tickets online, if there is an online event management system that everyone uses that enables organizers to post events and users to buy tickets, there is no need Download and log in to various other software and websites and even go out to buy tickets, because nowadays most events are published either on their own local website or on different ticketing software or even go to the designated ticketing point to buy tickets. Such software could facilitate the flow of information, making it more convenient for both event organizers and those who want to attend, and would also allow everyone to reduce exposure to prevent COVID-19.

The user group of the platform can be divided into prospective customers, event hosts and official users. For prospective customers, they are not registered in the platform but still could view a list of events coming up in the next month that have not sold out. They will firstly browse all the available events name and find out if there is one event they are interested in. If they want to go further to see more detailed information, or want to buy tickets, they need to register as an official user. For official users, once they are logged in, they could see various events which are recommended based on their user history, user profile and user preference or they can search what they are interested in. Also they could click any of the event to see detailed information and add one of the event ticket to their shopping cart or they could directly buy it in the event detailed page. For event hosts, they also need to register first, once they are logged in, they could see the events they published and edit them. Every event has detailed sales information, so that the host could adjust and analyse the market. Also, the host could add new event to publish. As for the other things, hosts canceling an event or user canceling an order will follow the particular rules, the user and hosts could communicate by writing reviews and replying to reviews.

1.2 Existing systems analysis

For reference, we took two famous event management and ticket sales sites ticketmaster (https://www.ticketmaster.com.au/) and eventbrite (https://www.eventbrite.com.au/) to learn.

For the not registered user, both sites could show list of the upcoming events which are the most popular events in the sites and the user could check detailed information of the events but cannot buy the tickets. For new user registration and guide module, both sites require the email and require receiving the verification code. But after registration, there are not too much guide in both sites. For the search module, both sites support various types of searches, such as person name, event name, address, type, etc. But the result in eventbrite has better performance than ticketmaster because the result in eventbrite has more filter selections and each event in the result list has a relevant picture which makes each event more intuitive, also has the name of the host. For the event host, the eventbrite supplies the excellent event management function, it is so easy to set and publish a event. But in ticketmaster, such function is not available, only the order transfer could be found. Thus, eventbrite is a more useful event management system. For the fee in event management, eventbrite has a more reasonable price to charge, but ticketmaster is famous for the high commission.

As for summarizing the disadvantages of these two sites, first, after user registration, the system do not provide the user preference survey, which could make benefit to the recommendation. Second, both sites have large amount of scalpers, same ticket could be sold with a fairly high price in the same site by different people, it can really harm the experience of the users. Third, every time user logs in, there are no verification such as verification code, which could lead to security problem.

2 User stories

The user stories of the event management system will be given below which will be separated by different epics. Every objectives will produce many user stories and some of the objectives were inspired by the learning of existing systems.

2.1 User registration and login

Objective: Users can register by filling in their personal information to become a full user and log in with their account password to use the functions available to full users.

User story:

- As a customer entering the site for the first time, I would like to be given an account information that I can use to login to the site, view the content and complete transactions thereafter.
- As a first time host user to the site, I would like to obtain an account information that I can use thereafter to log in to the site, post my activity and manage it.
- As a user, I would like to be protected during the registration process (e.g. by setting a security check on my password) so that my account cannot be easily stolen.
- As a user, I want to be directed to register or sign in for any feature scenario that requires me to log in to experience it, so that I don't have to search for the login portal every time I need to log in.
- As a host user, I need to upload my event qualification documents to prove that I am eligible to host an event.
- As a host user, I need to enter my receiving bank card details when I register to receive the campaign proceeds.
- As a customer, I need to enter my payment card details during registration to facilitate subsequent purchases.
- Email address must be valid email address.

Acceptance Criteria:

- To complete registration, users will need to submit a username, password, email address, contact number and choose whether they are a HOST or CUSTOMER.
- Basic information input check at registration.
  - Does the username and email already exist?
  - Whether the second time password is the same as the first time password
  - Is the email a valid format
  - User name compliance: English + numbers, no more than 8 characters
  - Is the contact number a valid format
  - Password specification is 8+ digits, consisting of numbers and upper and lower case letters
  - Does the password pass the security
  - Customer users: support for entering and binding bank card numbers
- Host special information input checks. Host users: support uploading up to 5 images to prove eligibility for the event, the size of this image is limited to 5M
- Each user needs to generate a unique userID in the backend after successful registration
- After each user has registered successfully, the back office needs to record the user's registration information
- The user information of host and costumer needs to be managed in separate databases and the data is not interoperable

- If you want to log in, you will need to fill in your username, password and choose whether you are a host or a customer.
- When logging in, enter the checksum.
  - In the database corresponding to the identity selected by the user: does the user name exist
  - Is the password for the username entered correctly?
- If the user does not pass the check during the input check, an error message will pop up and the user will not be able to proceed to the next step

2.2 User password reset

Objective: Users can quickly reset their password if they forget it and use the new password for future login operations.

User story:

- As a user, I would like the system to record my personal information (e.g. my email address, mobile phone number) so that I can retrieve my password through other channels if I forget it.
- As a user who has forgotten my password, I would like the process of retrieving it to be less complicated and to allow me to quickly retrieve my password to log in in a limited amount of time.
- As a user who has forgotten my password, I would like to have a human service to help me retrieve my password if the mobile number and email address I used when I registered is no longer in use.

Acceptance Criteria:

- The login page needs to have a Forgotten Password entry button, which the user can click to enter the authentication process
- The authentication process requires the user to submit personal information: username, email or mobile phone number reserved during registration
- After the user submits the email or mobile phone number, the backend needs to send a verification code to the corresponding email or mobile phone number
- Input checks.
  - Whether the user name entered by the user exists
  - Does the mobile phone number and email address entered by the user meet the specification
  - Whether the user has entered the correct verification code
- If the user does not pass the check during the input check, an error message will pop up and the user will not be able to proceed to the next step
- If the user forgets the password and the email/mobile phone number bound during registration is no longer valid, the user will be directed to click on the ”Human Service” button to provide the user with the phone number reserved on the website to solve the identity verification problem through voice customer service.
  - Below the ”Customer Service” button, the words ”Please click if you have a problem” are displayed
  - Click on ”Manual Customer Service” to bring up a toast pop-up that says ”Please call 10241024 for identity verification between 8:00 and 22:00”

2.3 host event creation

Objective: Once logged in, host users can create and publish their own campaigns for customer users to view and purchase.

User story:

- As a host user, I am more concerned about posting and managing events after logging in and would like to have a clear interface to guide me
- As a host user, when creating a ticketed event, I would like to be able to customise the event name, promotional image, event time, ticket price, available stock, etc.
- As a host user who sometimes needs to check out offline when creating events, I would like the system to generate a random offline QR code for each user who has bought a ticket to facilitate checkout

Acceptance Criteria:

- After the user has logged in successfully, if the user is judged to be a host, the user will enter the interface corresponding to the host and the home page will show the created activities and the Create Activity button
- Users click on ”Create Event” to enter the event creation process, users need to submit the event name, event main image, event time, event description, ticketing time, ticket price, number of tickets available, you can also choose whether to generate the event offline verification code according to your needs, after the information format verification, you can successfully create the event.
- Input verification
  - String data types of 0-30 English characters can be entered for the event name
  - One image can be uploaded for the main event image and the size of this image is limited to 5M
  - The campaign start-end time period can be selected from the current time to 1 year later
  - Ticketing start - end time period can be selected from the ”Event Start - End Time” range
  - Activity descriptions can be entered as a string data type of 1-1000 characters, or up to 10 images can be added at the same time, each image size is limited to 5M, image formats support png, pdf, jpg
  - Fares can be entered as floating point data types in the range 0-9999
  - Ticketable numbers can be entered as integer data types in the range of 1 to 9999
  - Whether or not to generate an event offline QR code is mandatory, with the option of yes or no possible
- If the user does not pass the check during the input check, an error message will pop up and the user will not be able to proceed to the next step
- Once the event has been created, a unique event ID needs to be generated and recorded in the back office for each event
- If a user chooses to generate an offline QR code for an event, the back office will need to record the event ID and reserve the QR code inventory based on the number of tickets available as entered by the user
- The backend database needs to store the host user ID corresponding to the activity ID

2.4 host event management

Objective: host users can modify and stop the activity after it has been created successfully

User story:

- As a host user, I may need to change some information about an activity after I have created it, depending on the reality of the situation

- As a host user, after creating an activity, you may encounter unexpected situations that require early termination of this activity
- As a host user, if I terminate the campaign early, I would like to be able to send a reminder email to users who have already bought tickets and have the transaction amount automatically refunded to them
- As a host user, I would like to be able to delete an event if it has ended, so as not to retain too much unnecessary information
- As a host user, if I have created too many activities and want to find an activity, I would like to be able to search and filter the activities so that I can find an activity quickly

Acceptance Criteria:

- After the host user has logged in, the home page will display the activities created, and for each open activity, the user can edit and end it early
- After the host user has logged in, the home page shows the activities created and for each completed activity, the user can delete it
- After the host user selects to edit the activity, the activity editing process is entered and the activity information is automatically populated with the last saved information data. Activity Editor Input Checks:
  - Edit checks for event name, event main image, event start-end time, ticket start-end time, event location, event description, ticket price, and whether to generate an event offline QR code are consistent with the input checks in the creation process
  - The number of tickets available can be an integer type in the range of current tickets sold - 9999, not less than the current number of tickets sold for the event
- If the user does not pass the check during the input check, an error message will pop up and the user will not be able to proceed to the next step
- If the host user chooses to terminate an open activity early, a second confirmation pop-up appears, after which the termination is confirmed.
  - The campaign will become 'closed' and the customer cannot make any further purchases for the campaign
  - For those who have already purchased the event, they will automatically receive an email reminding them of the event cancellation
  - For those who have already purchased the campaign, the transaction amount will be refunded to the user's account according to the original payment route
- If a host user chooses to delete an activity that has ended, a second confirmation pop-up will appear and the activity will no longer be displayed in the activity list on the home page after confirmation of deletion
- A search box is displayed on the homepage, allowing users to conduct a fuzzy search based on the name of the event. After clicking on the search, the front-end filters the events containing the search keywords entered by the user and displays them in the form

2.5 host client management

Objective: host users can choose to send reminders and promotional emails to those who have purchased in real time or at regular intervals

User story:

- As a host user, I would like to make it possible for users who have bought tickets for the event to receive a reminder email to facilitate their participation in subsequent events
- As a host user, I would like to be able to manage the regular maintenance of my customers, to categorise them, to facilitate follow-up promotional emails and to keep them active.

- As a host user, I would like to be able to search for specific customers and see their spending history with me to give me a deeper understanding of my customers

Acceptance Criteria:

- After the host user has logged in, the home page will display the campaigns that have been created. For each campaign, the user can send a reminder email, click on send reminder email to bring up a message editing pop-up, by default select all customer customers who have purchased the campaign, enter the information and click send to send the message to the email address reserved by the customer who booked the campaign.
- After the host user logs in, the ”Customer Management” tab button will be displayed on the homepage. After clicking on it, the homepage will display the records of the customers who have recently spent money: the name of the customer who placed the order, the name of the activity in which the money was spent, the amount of payment, the time of payment, the customer’s mobile phone number and the customer’s email address
- Host users can perform: customer search and bulk email operations on the customer management page
- The recent customer records displayed on the customer management page are arranged in reverse chronological order with the time of purchase as the main key
- The search box is displayed at the top of the customer management page, host users can conduct a fuzzy search based on customer name, customer mobile number or customer email in the search box, after clicking search, the front-end filters out activities containing the search keywords entered by the user and displays them in the form
- After each customer record in the customer management page, there is a send email button, host users click the send email button to evoke the message editing box, enter the content of the email and click send, then the email will be sent to the customer’s reserved email address
- The ”Bulk Email” button is displayed at the top of the customer management page, click on it to bring up the bulk user selection pop-up window, which by default displays the customer name and email address in reverse order according to the customer’s purchase time, host users can filter users who have purchased the campaign according to the campaign name, or quickly filter users who have purchased in the last week or month.
  After the host user has made a bulk selection of customers, he/she will enter the email content editing interface, enter the message and click send to send the message to the email address reserved by the selected user.
  Input check: information must not be empty
- If the user does not pass the check during the input check, an error message will pop up and the user will not be able to proceed to the next step

2.6 CustomerView Event Flow

Objective: Once logged in, the CUSTOMER user can browse, select to view the active topics of interest and make purchases.

User story:

- As a customer, I would like to be able to log in and have an overview of recent events, so that I can see the name, venue, time, price and number of tickets remaining for the event at first glance.
- As a customer, I would like to have the option to view specific information about an event and learn about the content and features of the event.

Acceptance Criteria:

- After the user has logged in successfully, if the user is judged to be a customer, the activity list display page will be displayed, and the activity list display page will show the activities created by different host users in reverse order of the activity start time.

- The event listings page displays the event information in modules by floor, showing the main event image, event name, event time, event location, event ticket price, number of tickets left and the ”Participate” interactive button set by the host user.
- When users click on a specific event in the event list, they will be redirected to the event details page, which displays the main event image, event name, event time, event location, event ticket price, number of tickets remaining, event description and the ”Participate” interactive button set by the host user.
- The current time is compared with the end time of the activity, and activities that have already ended are displayed as ”ended”.

2.7 Customer Purchase / Participation Process

Objective: After browsing and selecting the activity of their choice, the customer initiates the payment process and pays for the activity.

User story:

- As a customer, I want to be the first to pay and get access to an event I like when I find out about it.
- As a customer user, I would like to be able to verify the activity twice when paying for it to avoid incorrect actions
- As a customer, I would like the order to be held for a period of time if I do not pay first when initiating the payment process
- As a customer user, for some activities where there is an authentication or payment pre-process, you can wait for my payment to be completed before performing the pre-process
- As a customer, if you are temporarily unable to participate in an event after making a purchase, you can cancel your order and get the amount paid back according to the payment path

Acceptance Criteria:

- Customer users can click on the ”Participate” button on the event list screen or event details page to initiate the transaction process.
- Customer users click on ”Participate” to enter the order payment screen, showing the payment amount, payment method, ”Cancel” and ”Pay Now” interactive buttons.
  - Payment amount: shows the final payment amount, in floating point format (to two decimal places)
  - If a coupon is available, the difference between the active ticket price set by the host user and the available coupon amount will be displayed, with the words ”Coupon for $X” in small numbers below the amount
  - If no coupons are available, the active ticket price set by the host user is displayed
- Payment method: default is the bank card number filled in by the customer user during registration, with the ”switch bank card”/”add bank card” button displayed on the side.
  - Clicking on ”switch cards” brings up the card selection pop-up and switches between the added cards for payment.
  - Click on ”Add a bank card number” to bring up a pop-up window to fill in your bank card number, and the customer can add it by entering the new bank card number and passing the checks.
  - Click on the ”Cancel” button to cancel the payment process, the order is then locked for 15 minutes, within 15 minutes you will be able to enter and pay for your order by following the original path.
  - Click on ”Pay Now” to bring up the secondary verification pop-up window, the user confirms the payment is successful

- After purchasing and participating in the campaign, users can find the paid orders through the personal centre - My Orders, and can cancel the paid orders, after the cancellation of the amount paid back to the original way
- Within 30 minutes after the user has paid for the order, he/she can enter the user identity verification process, enter his/her name and registered mobile phone number and get the verification code for identity confirmation. If the order is not verified after 30 minutes, the order will be cancelled and the paid amount will be returned to the original way

2.8 Customer Activity Evaluation Process

Objective: Customer users can rate the activities they have participated in

User story:

- As a customer, I would like to be able to write reviews of the activities I have participated in and share my experiences.
- As a user, I would like to be able to view the reviews of closed events to understand the details of the event and the user experience

Acceptance Criteria:

- Users can click on the details of a closed event to display the evaluation portal at:
  - The customer who participates in the campaign clicks on the evaluation portal to bring up the evaluation pop-up, which has a rating, text evaluation and image upload module
  - For those who have not participated in the campaign, you can view the campaign evaluation details by entering
  - Customer users who have already commented can ”delete” their own comments
- After participating in the campaign, customer users can receive an email reminder to rate the campaign
- The list page of closed events shows the average rating of the event (i.e. the average of the ratings of the customers who participated in the event)

2.9 host issues coupons

Objective: host users can create coupons for a particular campaign or send targeted coupons to certain users

User story:

- As a host user, I would like to be able to create coupons for my events so that customers who view the event can claim the coupons, so that users are more likely to claim and participate when they view the event
- As a host user, I would like to give my customers some coupons for the event, so that they can increase their interest in the event through coupon promotions

Acceptance Criteria:

- After the host user has logged in, the homepage will display the created campaigns and for each open campaign, the user can perform a coupon issuance operation
- Click on Issue Coupon to bring up the coupon setting pop-up window, which can be customized with the coupon name, coupon amount, usage threshold amount, redeemable time and coupon quantity
  - The name of the coupon can be entered in English up to 10 characters
  - Coupon amount can be entered as a number from 0-9999
  - The coupon threshold amount can be entered as a number from 0-9999
  - Vouchers can be used for the time period in which the event is available for ticketing

  - The number of coupons issued can be entered as a number from 0-999

- The ”Bulk Coupon Issuance” button is displayed at the top of the ”Customer Management” page of the host user, click on it to bring up the bulk user selection pop-up window, in which the customer name and email address are displayed in reverse order according to the customer’s purchase time by default, the host user can filter the users who have purchased the activity according to the activity name, or quickly filter the users who have purchased in the last week or month
  - After the host user has made a bulk selection of customers, they will enter the activity selection pop-up screen, where the host user can single or multiple select the created activities
  - After the host user selects a specific activity, he/she enters the coupon setting process, which is the same as the interaction logic and verification logic of ”click to issue coupons in the created activity”.
- If the user does not pass the check during the input check, an error message will pop up and the user will not be able to proceed to the next step

2.10 customer receives coupons

Objective: Customer users can collect and use coupons for specific events and can also use coupons issued by targeted merchants

User story:

- As a CUSTOMER user, I want to be able to know if I have a voucher that I can use when I buy a ticket so that I don’t miss out on a discount that I could have used!
- As a customer, I would like to have a complete interface to view all the coupons I currently have
- As a customer, I would like to be able to quickly see which campaign the coupon is for when I view my coupons

Acceptance Criteria:

- After the user enters the event details page, determine whether there are coupons available for the event, and if there are coupons for the event, display the coupon name, coupon amount, coupon usage threshold and remaining quantity and claim button
- Clicking on the ”Get Coupon” button will determine in order whether the user is logged in and whether the number of coupons remaining is 0.
  If the user is not logged in, go to the prompt login process
  If the number of coupons remaining is 0, an error message will pop up
- After logging in, customer users can view all the coupons they currently have in the ”My Coupons” screen of their personal centre and filter by ”Used/Unused”.
- ”In the ’My Coupons’ screen, there is a ’Go Use’ button for each coupon, which will open up the campaign details page for that coupon when clicked.
- During the payment process of an event, if the user has a coupon for this event, and the coupon is valid, and the amount of the user’s order meets the threshold criteria for the coupon, then the ”Coupons Available” option will appear on the payment screen, where the user can select the specific coupon
- After the user has selected a specific coupon in the payment screen, the payment amount will be reduced according to the coupon amount and the latest payment amount will be displayed on the page

2.11 Event filtering recommendation system

Objective: When a customer views an event, the system will make intelligent recommendations based on the user's browsing history, and at the same time, the user can also search for events; or view events by filtering the time and hotness of the event

User story:

- As a customer, when browsing events, I would like the system to suggest some events that I might be interested in
- As a customer, when browsing events, I would like to have some filters so that I can quickly find the event that suits me
- As a customer, when browsing events, I want to be able to search by keyword for the type of event I'm looking for and quickly find the event I'm looking for

Acceptance Criteria:

- The content of the event list can be filtered by the filter operation on the home page of the website for both non-logged-in and logged-in users
  - Users can filter by activity start-end time, with the available time range judged according to the current time: 1 year ago - 1 year later time interval
  - Users can sort the display of activities according to their hotness, and the list of activities will display all activities from highest to lowest according to the purchase volume of the activity after the user selects
  - Users can sort the display of activities according to the time of the event, choosing to sort them in positive or reverse chronological order
- After the customer user logs in and enters the homepage, he/she clicks on the "Guess Your Favorite" button. The content of the activities in the activity list will be filtered based on the user's historical browsing data, the type of activities the user has purchased, and the amount range of activities the user has purchased as characteristics, and will be sorted and displayed according to the results of the recommendation algorithm

2.12 Host Customer Management / Data Analysis Process

Objective: host users can perform exact/batch search by user name and mobile phone number for users who have participated in the activities they have created and display the details of the queried users (history of orders, evaluation records, coupon issuance records) to perform coupon issuance operations for selected users

User story:

- As a host user, I would like to be able to know the basic information about the customer users participating in my campaign
- As a host user, I want to refine my operations for customer users at different life stages
- As a host user, I would like to be able to issue targeted coupons to selected customer users to promote customer conversion and repeat business.

Acceptance Criteria:

- Host users can access the customer management system via the 'Customer Management' page
- Customer management system displaying a list of users with their names, contact numbers, email addresses, number of participations and reviews
- The filter box at the top of the 'Customer Management' page allows the host user to search for a specific customer by user name, contact number and email address.
  - User name, contact telephone number and email address are the information given to the customer at the time of registration.

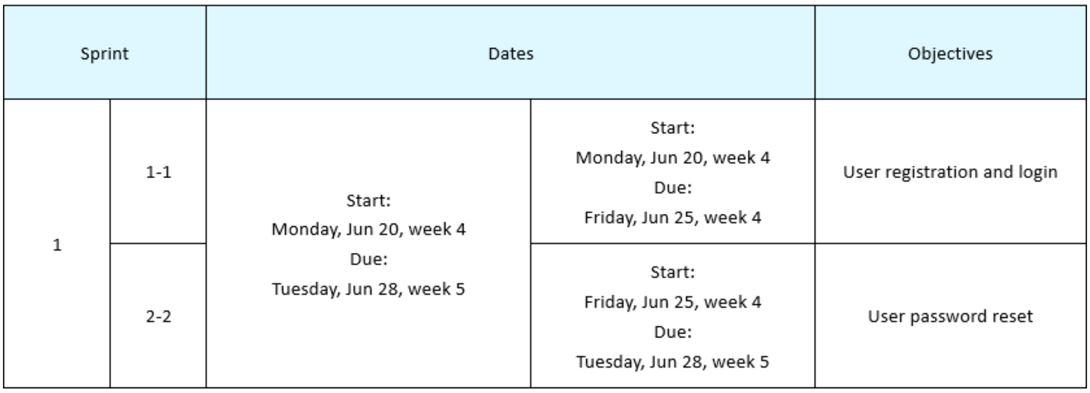
  - Number of activities participated, number of evaluations shows the number of activities and evaluations created by the host that the customer has participated in, showing positive integers and clickable jumps and details.
    Click on the number of times you have participated in an event: you will be redirected to the order history of the customer, where you can view the events created by the host that the customer has participated in.
    Click on "Number of Activity Reviews": Jump to the list of reviews by the customer user to see the reviews of the activity created by the host by the customer user

- The filter box at the top of the 'Customer Management' page allows the host user to set a range for the number of activities and the number of reviews for a bulk search of customer users.
  - Check the valid format of the user name, contact number and email address after the host user has entered the specific information
  - If the input value does not pass the checksum, an error is returned and no query is performed
  - If the input value passes the check, the search is performed and the users matching the search criteria are displayed on the user information list page.
    If the return value is null, a toast pop-up is invoked

- Host users can perform bulk selection operations on the user information list page to select specific users for the "Issue Coupon" operation

3 Sprints

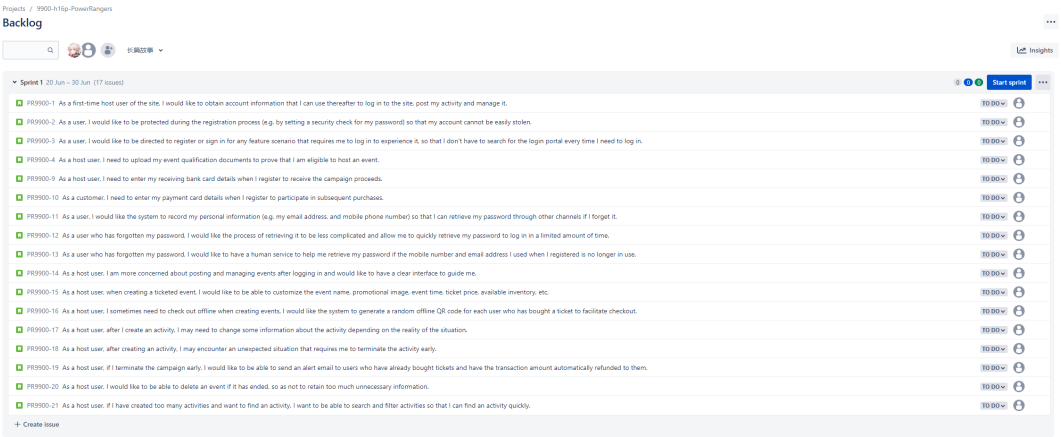
3.1 First Sprint



Sprint		Dates		Objectives
1	1-1	Start: Monday, Jun 20, week 4 Due: Tuesday, Jun 28, week 5	Start: Monday, Jun 20, week 4 Due: Friday, Jun 25, week 4	User registration and login
	2-2		Start: Friday, Jun 25, week 4 Due: Tuesday, Jun 28, week 5	User password reset

Figure 1: Sprint 1

The screen shot below Figure 2 reveals the creation of the Sprint 1.



Projects / 9900-h16p-PowerRangers

Backlog

Sprint 1 20 Jun – 30 Jun (17 issues)

PR9900-1 As a first-time host user of the site, I would like to obtain account information that I can use thereafter to log in to the site, post my activity and manage it. TO DO

PR9900-2 As a user, I would like to be protected during the registration process (e.g. by setting a security check for my password) so that my account cannot be easily stolen. TO DO

PR9900-3 As a user, I would like to be directed to register or sign in for any feature scenario that requires me to log in to experience it, so that I don't have to search for the login portal every time I need to log in. TO DO

PR9900-4 As a host user, I need to upload my event qualification documents to prove that I am eligible to host an event. TO DO

PR9900-9 As a host user, I need to enter my receiving bank card details when I register to receive the campaign proceeds. TO DO

PR9900-10 As a customer, I need to enter my payment card details when I register to participate in subsequent purchases. TO DO

PR9900-11 As a user, I would like the system to record my personal information (e.g. my email address, and mobile phone number) so that I can retrieve my password through other channels if I forget it. TO DO

PR9900-12 As a user who has forgotten my password, I would like the process of retrieving it to be less complicated and allow me to quickly retrieve my password to log in in a limited amount of time. TO DO

PR9900-13 As a user who has forgotten my password, I would like to have a human service to help me retrieve my password if the mobile number and email address I used when I registered is no longer in use. TO DO

PR9900-14 As a host user, I am more concerned about posting and managing events after logging in and would like to have a clear interface to guide me. TO DO

PR9900-15 As a host user, when creating a ticketed event, I would like to be able to customize the event name, promotional image, event time, ticket price, available inventory, etc. TO DO

PR9900-16 As a host user, I sometimes need to check out offline when creating events, I would like the system to generate a random offline QR code for each user who has bought a ticket to facilitate checkout. TO DO

PR9900-17 As a host user, after I create an activity, I may need to change some information about the activity depending on the reality of the situation. TO DO

PR9900-18 As a host user, after creating an activity, I may encounter an unexpected situation that requires me to terminate the activity early. TO DO

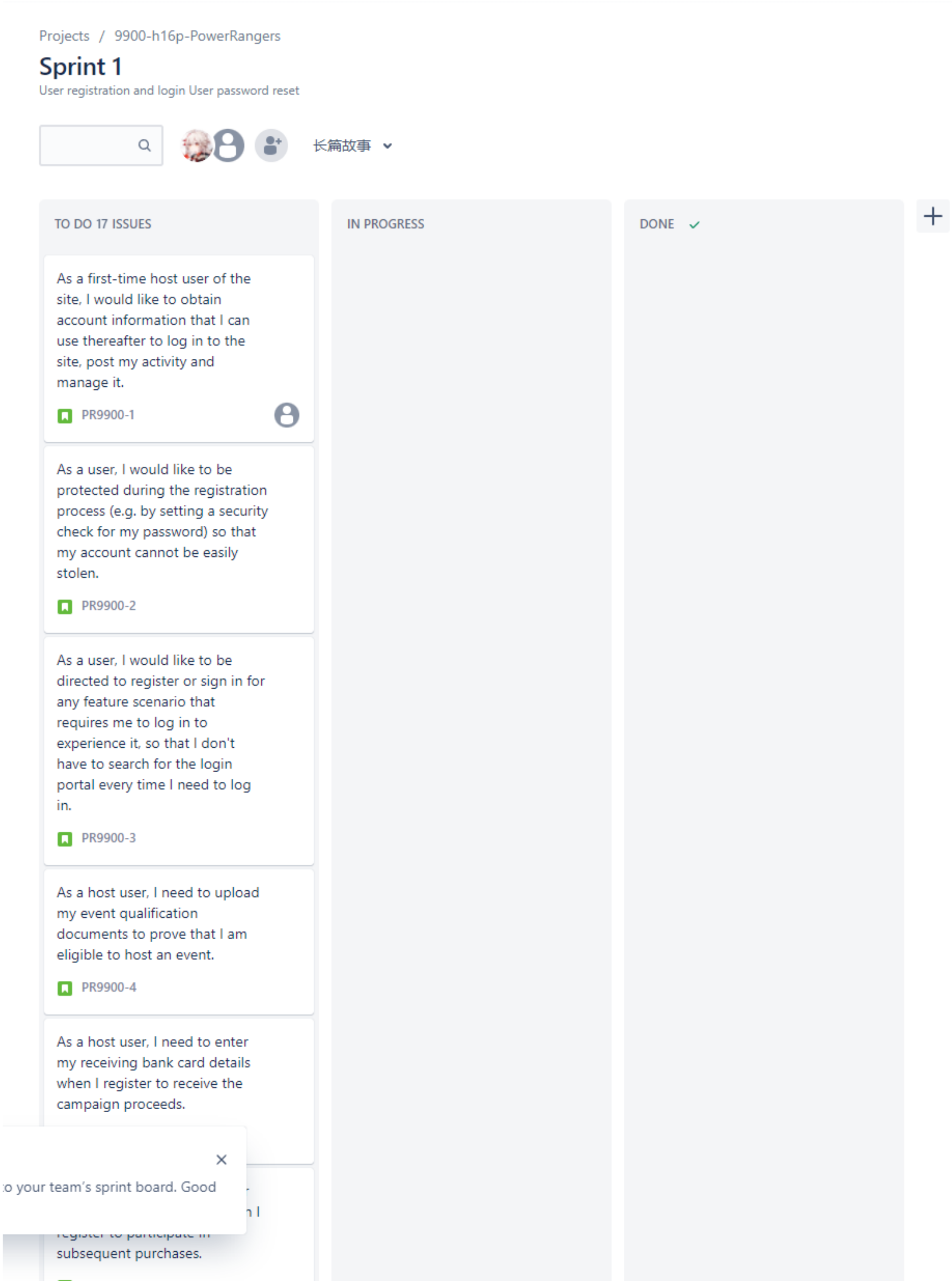
PR9900-19 As a host user, if I terminate the campaign early, I would like to be able to send an alert email to users who have already bought tickets and have the transaction amount automatically refunded to them. TO DO

PR9900-20 As a host user, I would like to be able to delete an event if it has ended, so as not to retain too much unnecessary information. TO DO

PR9900-21 As a host user, if I have created too many activities and want to find an activity, I want to be able to search and filter activities so that I can find an activity quickly. TO DO

Figure 2: backlog_Sprint1

The screen shot below Figure 3 reveals the commencement of the Sprint 1.



Projects / 9900-h16p-PowerRangers

Sprint 1

User registration and login User password reset

As a first-time host user of the site, I would like to obtain account information that I can use thereafter to log in to the site, post my activity and manage it.

PR9900-1

As a user, I would like to be protected during the registration process (e.g. by setting a security check for my password) so that my account cannot be easily stolen.

PR9900-2

As a user, I would like to be directed to register or sign in for any feature scenario that requires me to log in to experience it, so that I don't have to search for the login portal every time I need to log in.

PR9900-3

As a host user, I need to upload my event qualification documents to prove that I am eligible to host an event.

PR9900-4

As a host user, I need to enter my receiving bank card details when I register to receive the campaign proceeds.

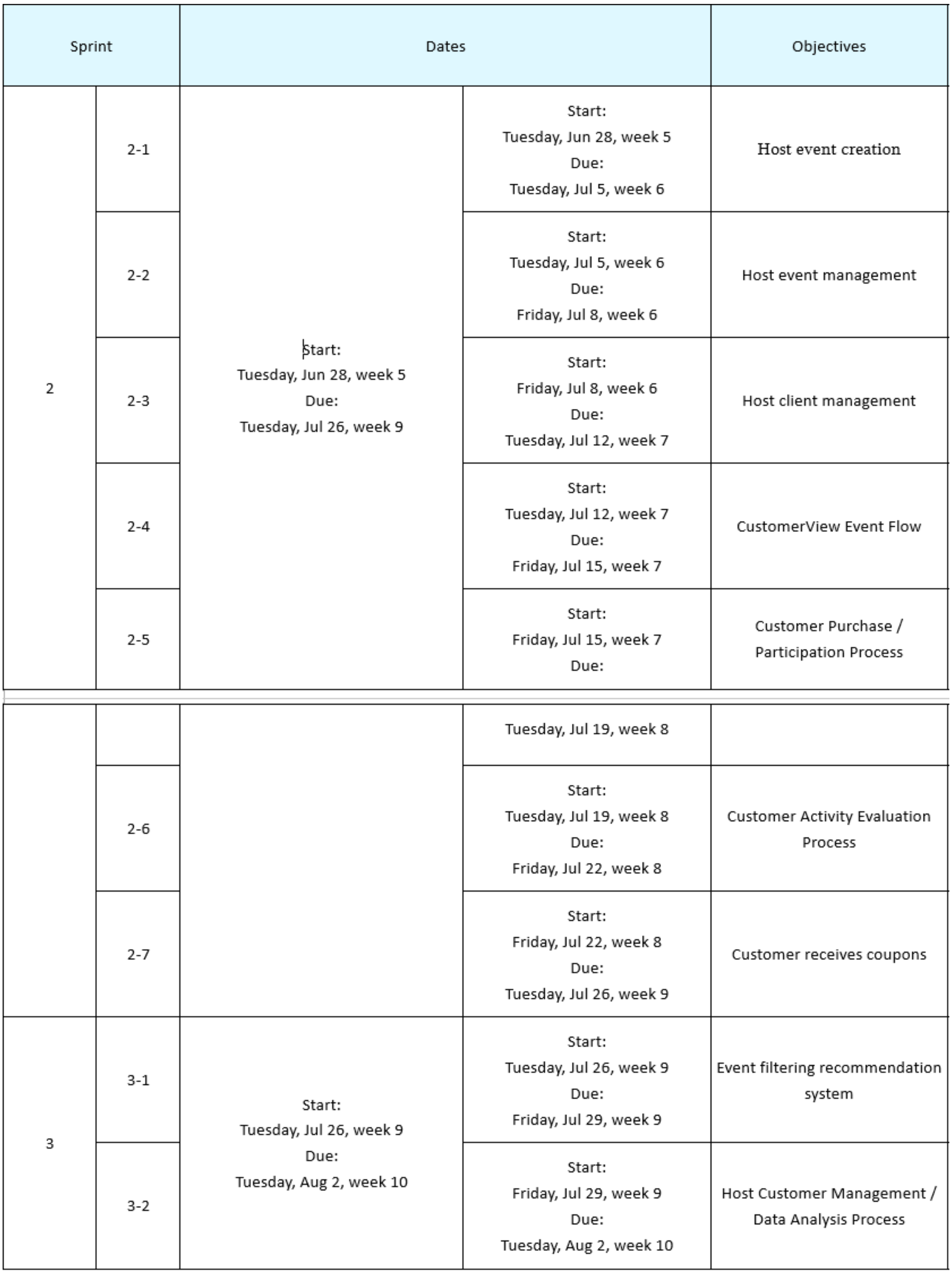
o your team's sprint board. Good

n I

subsequent purchases.

Figure 3: boardSprint

3.2 Coming Sprint



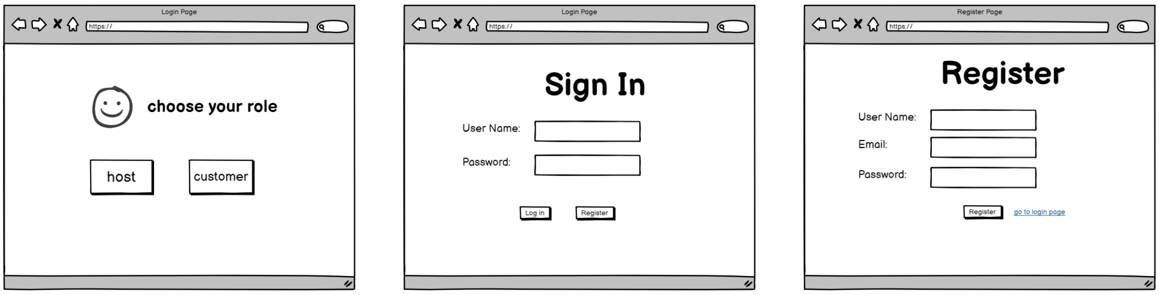
Sprint		Dates		Objectives
2	2-1	Start: Tuesday, Jun 28, week 5 Due: Tuesday, Jul 26, week 9	Start: Tuesday, Jun 28, week 5 Due: Tuesday, Jul 5, week 6	Host event creation
	2-2		Start: Tuesday, Jul 5, week 6 Due: Friday, Jul 8, week 6	Host event management
	2-3		Start: Friday, Jul 8, week 6 Due: Tuesday, Jul 12, week 7	Host client management
	2-4		Start: Tuesday, Jul 12, week 7 Due: Friday, Jul 15, week 7	CustomerView Event Flow
	2-5		Start: Friday, Jul 15, week 7 Due: Tuesday, Jul 19, week 8	Customer Purchase / Participation Process
	2-6		Start: Tuesday, Jul 19, week 8 Due: Friday, Jul 22, week 8	Customer Activity Evaluation Process
	2-7		Start: Friday, Jul 22, week 8 Due: Tuesday, Jul 26, week 9	Customer receives coupons
3	3-1	Start: Tuesday, Jul 26, week 9 Due: Tuesday, Aug 2, week 10	Start: Tuesday, Jul 26, week 9 Due: Friday, Jul 29, week 9	Event filtering recommendation system
	3-2		Start: Friday, Jul 29, week 9 Due: Tuesday, Aug 2, week 10	Host Customer Management / Data Analysis Process

Figure 4: Sprint 2-3

4 Interface and Flow Diagram

4.1 Login and Register Page

When users first enter the page, they can choose host/ customer identity to register, and complete the registration process by completing the user name, email, password, contact information, etc. If you forget your password, you can recreate it by using your email address/contact number or by contacting human services to reset your password.

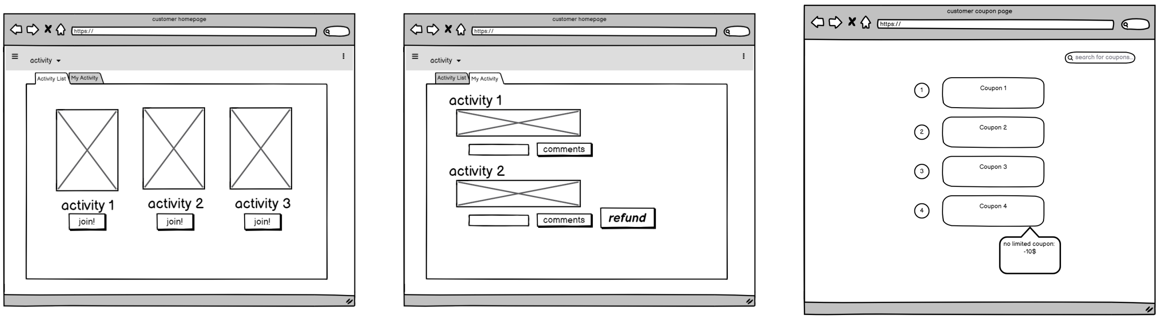


(a) role choose (b) login (c) register

Figure 5: User Authentication Page

4.2 Customer Page

The customer user interface has an ”Activity List” and a ”Personal Centre” tab, which allows customers to join activities or view activities directly through the ”Activity List”. The event list has a search box and a ”Guess your favourite” interactive button, where you can search for an event by typing in the event you want to know about, and click on ”Guess your favourite” to recommend the right event for the user with their participation/viewing information. The ”Personal Centre” allows you to view and rate the activities you have participated in, or to view the coupons in your account, and click on a coupon to jump to the activity page where the coupon can be used.

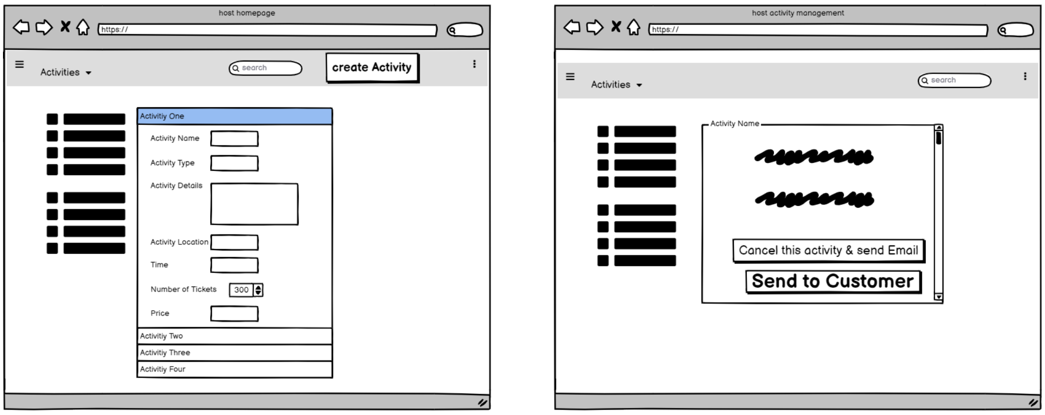


(a) homepage1 (b) homepage2 (c) coupon page

Figure 6: Customer Page

4.3 Host Page

After logging in, the host can create activities by entering the corresponding parameters of the activities, and can ”delete” the created activities, and can also filter the specified users by ”user name”, ”email”, ”contact number”, ”number of times participated in activities”, ”number of times evaluated”, etc. through the customer management system, and can also send mass emails/coupons to the filtered users, view and manage users, etc.



(a) host main1 (b) host main2

Figure 7: host homepage

4.4 Page Relations

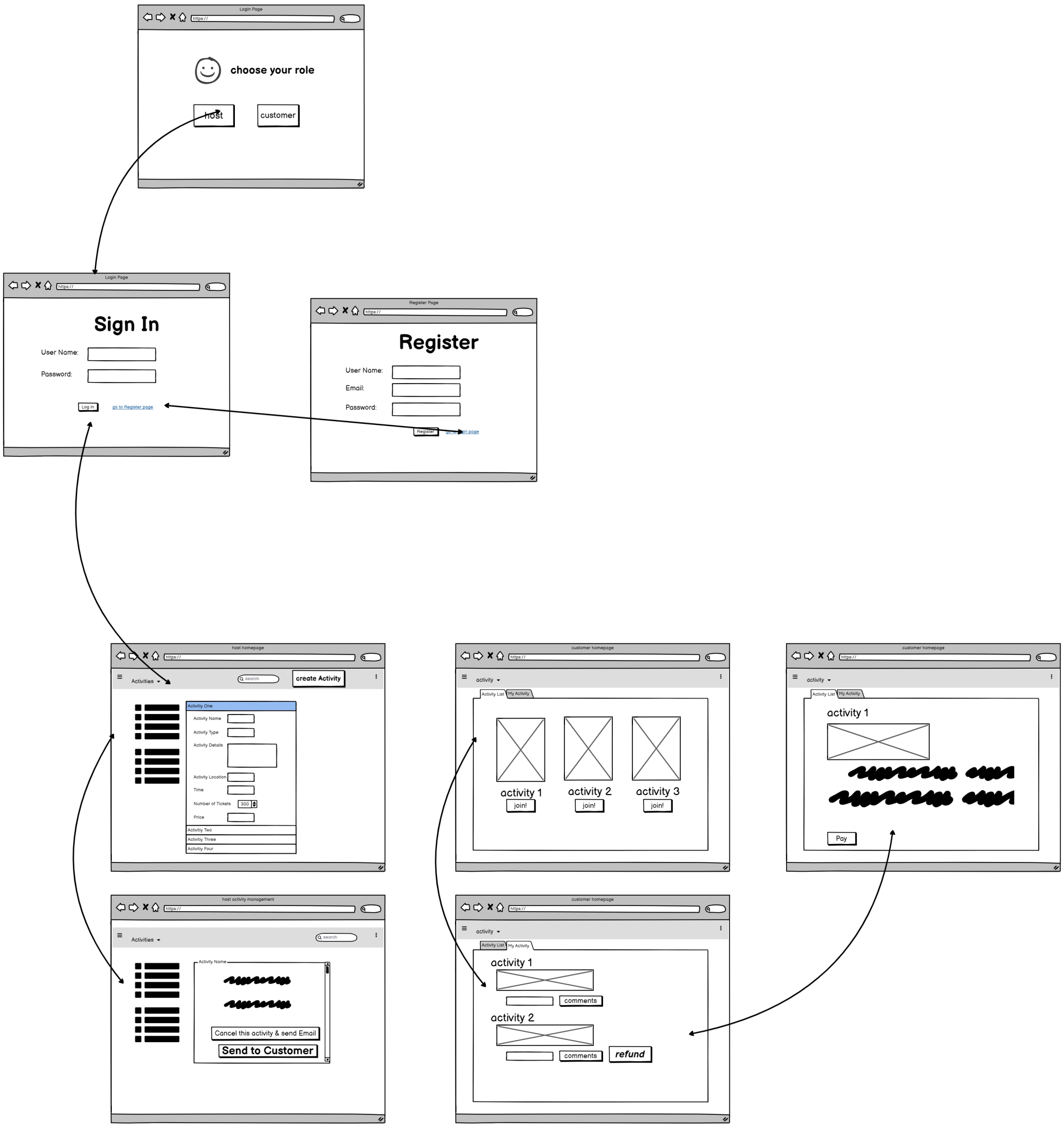


Figure 8: interface flowchart

5 System Architecture

5.1 Front-end and back-end separated System

To improve the development efficiency and code maintenance, the project is separated into the front-end and back-end systems. As shown in Figure 9, In the front-end, Bootstrap and React are implemented simultaneously to develop websites, and Material UI is selected to improve the beauty and mitigate the workload of developing components. When it comes to collaboration between the front-end and back-end, ApiFox is implemented for more clear interface definitions and documents. In the back-end, Springboot is the best choice since it is easier to deploy and develop micro-services. Besides, ORM (Object Relational Mapping) framework called Mybatis-Plus provides a convenient way to access the Mysql database. For those data accessed frequently or related to configuration, Redis can be a pretty choice to store them.

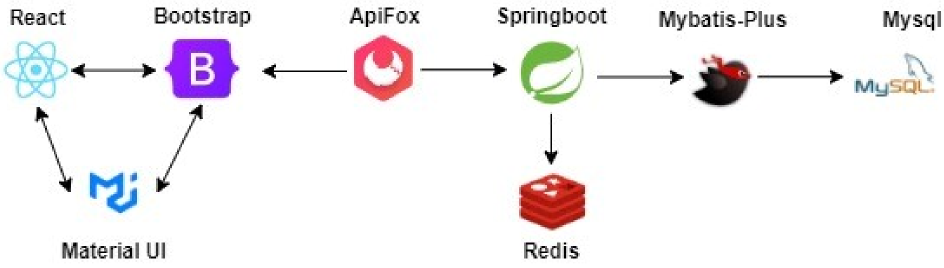


Figure 9: software structure of frontend and backend

5.2 Front-end

5.2.1 Presentation layer

The presentation layer is what a system user sees or interacts with users will directly access our website and use the function that we provide on the interface. This layer is able to render website pages by using frontend frameworks and tools in order to provide a user-friendly interface. We choose React as the framework of our website, which is one of the most popular frameworks in the industry.

5.2.2 Bootstrap framework

Bootstrap is a powerful toolkit - a collection of HTML, CSS, and JavaScript tools for creating and building web pages and web applications. Bootstrap offers consistent design by using re-usable components. With Bootstrap, we can concentrate on the development work, without worrying about design, and get a good-looking website up and running quickly.

5.2.3 React framework

As the uses of JavaScript have increased in recent years, we now have multiple options available in the market like Angular and Vue.js. React is very a simple and lightweight library that only deals with the presentation layer. Since React is a JavaScript library and our team members are familiar with JS functions, they will have an easier start with ReactJS.

5.3 Back-end

5.3.1 Tools and frameworks

Java is selected as the development language. On this basis, Spring Boot (aims to simplify environmental construction and development procedure), Spring Security and JWT (aims to implement permission control and secure access), Mybatis-Plus (aims to eliminate database access-related code and manual parameter setting), Redis (aims to maintain high performance of data access) and Mysql chooses to support back- · end system development.

5.3.2 Back-end structure

To separate the complicated web application into logical parts for easier cooperative development, the design pattern of MVC (**M**odel, **V**iew, and **C**ontroller) is implemented, the details of each layer are present below:

1. Model layer
   In order to further decouple and simplify development, it can be divided into service layer, POJO (**P**lain **O**rdinary **J**ava **O**bject) and DAO (**D**ata **A**ccess **O**bject). Complicated business logic is handled in service layer, POJO is an entity class that supports business logic processing, and DAO is used for data persistence and implemented by Mybatis-Plus to access the database.

2. View layer
   In this project, React is implemented to be the framework of the view layer. It only focuses on data transmission and page rendering based on components.

3. Controller layer
   Lots of functions in specific classes required by business are defined to receive data or requests from the front-end (i.e., view layer), then specific business classes are implemented to process and return data to the front-end. In this project, basic data types and JSON objects are used for data transmission between the front-end and back-end.

5.3.3 Interaction between front-end and back-end

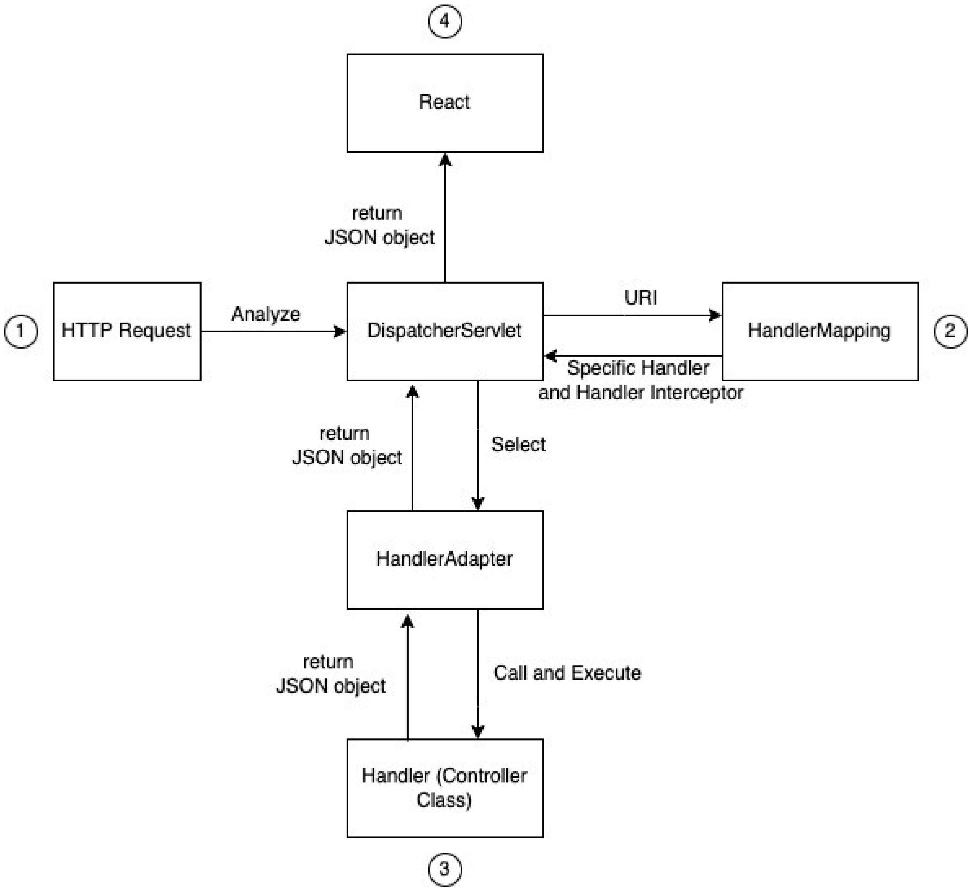


Figure 10: The process of interaction between front-end and back-end

Spring provides convenient way to connect the front-end and back-end to support data transmission. The general process can be seen in Figure 10. Firstly, the front-end seed an HTTP request to the back-end, and it is intercepted by DispacherServlet which is in spring configuration. Secondly, DispacherServlet analyzes the HTTP package and extracts URI, then calls HandlerMapping to find the specific Handler object and Handler Interceptor which are injected by Spring Container through keywords in URI. Thirdly, feature, it extracts data from HTTP requests as input parameters, then starts business logic processing. Finally, returned data (In this project it is JSON objects), is sent to the front-end (React) through DispatcherServlet.

5.3.4 Security access

Spring Security and JWT (**J**SON **W**eb **T**oken) are used for security access, token in the request header is compulsory when operations on websites needs to access interface in the back-end. Its format is: Authorization: Bearer "token field". The whole procedure of security access shows in Figure 11, when the browser in the process of login, the HTTP request with a username and password is intercepted by the authorization interceptor and returns the authorization token. Front-end store the token in its session and continue to call the business interface with the token and get returned data for further web display.

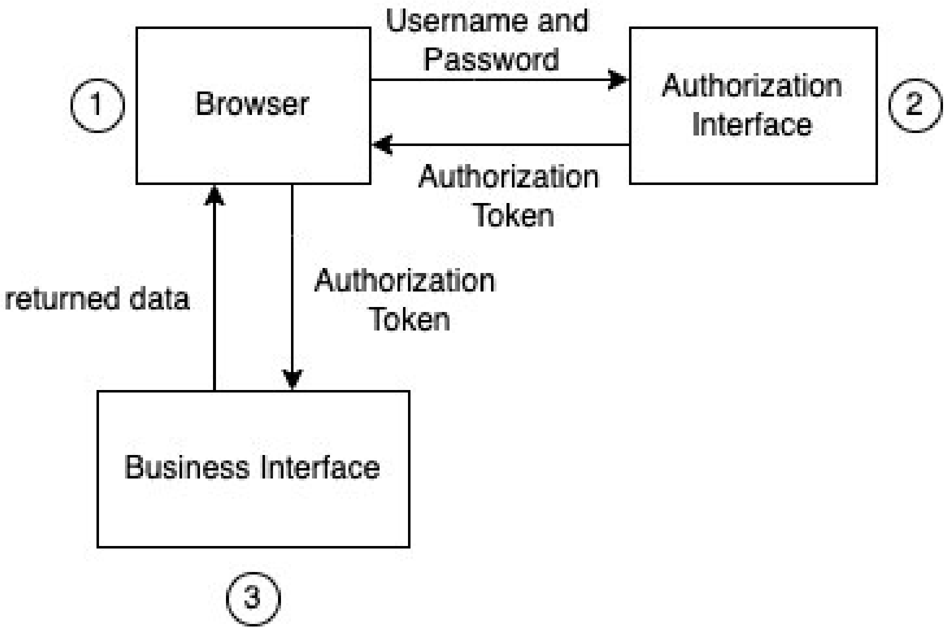
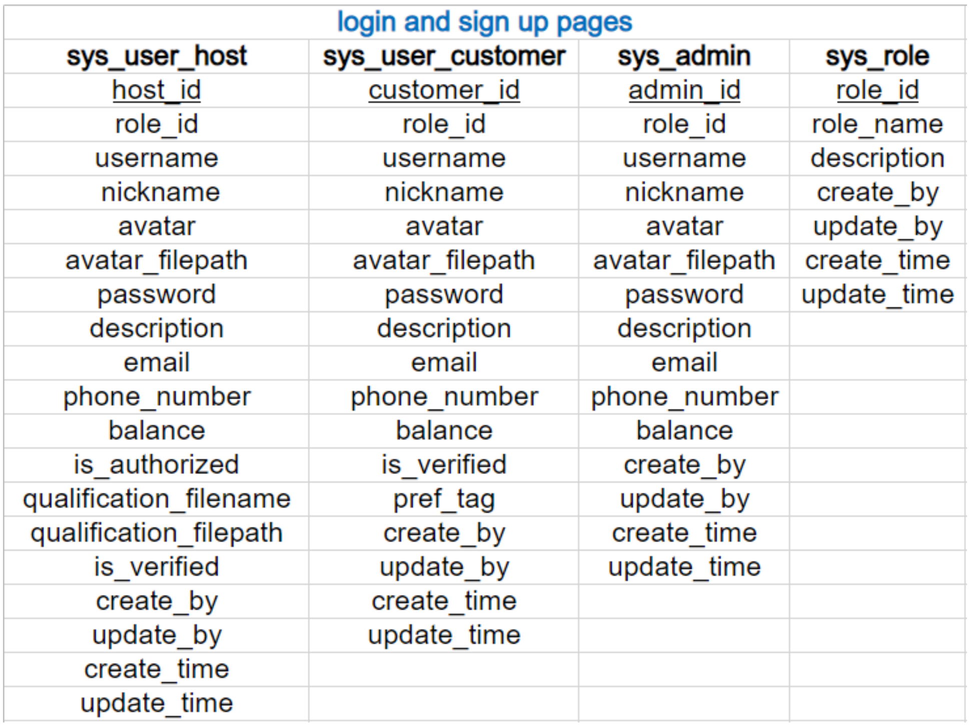


Figure 11: The process of security access from front-end to back-end

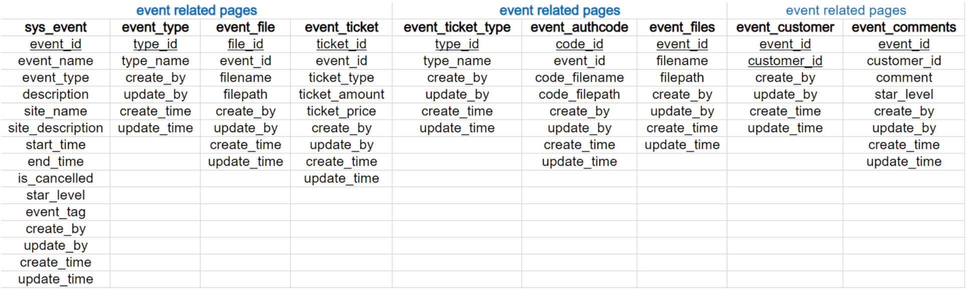
5.4 Database structure

Based on user story and project objectives, database is built with 4 parts: login and sign up pages, event related pages, order pages and coupon pages, which can see the details of each diagram in Figure 12, 13, 14 and 15 respectively. It is more convenient and comprehensive to understand the structure of the project and then develop.



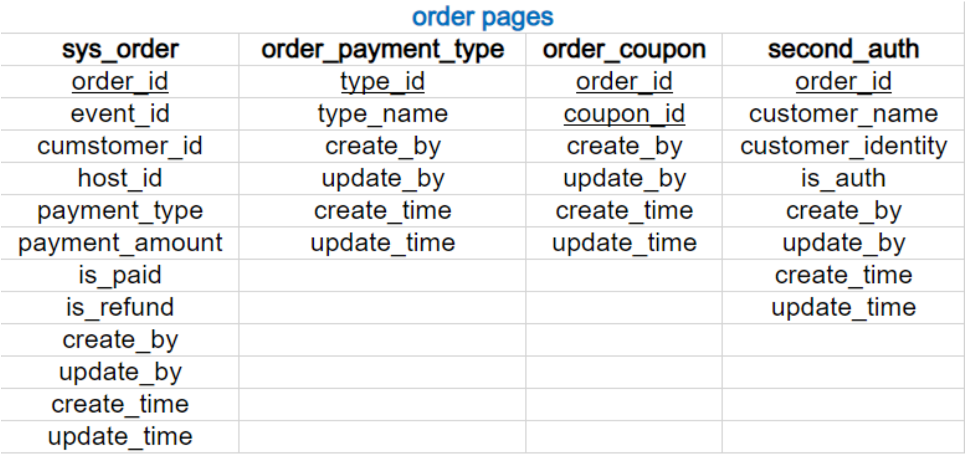
login and sign up pages			
sys_user_host	**sys_user_customer**	**sys_admin**	**sys_role**
host_id	customer_id	admin_id	role_id
role_id	role_id	role_id	role_name
username	username	username	description
nickname	nickname	nickname	create_by
avatar	avatar	avatar	update_by
avatar_filepath	avatar_filepath	avatar_filepath	create_time
password	password	password	update_time
description	description	description	
email	email	email	
phone_number	phone_number	phone_number	
balance	balance	balance	
is_authorized	is_verified	create_by	
qualification_filename	pref_tag	update_by	
qualification_filepath	create_by	create_time	
is_verified	update_by	update_time	
create_by	create_time		
update_by	update_time		
create_time			
update_time			

Figure 12: details of attributes of login and sign up pages



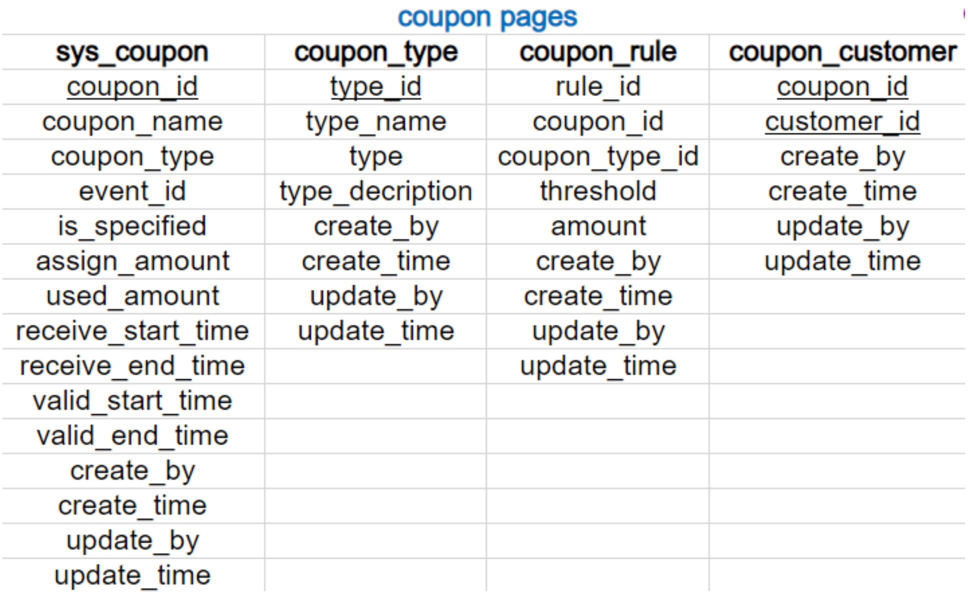
event related pages				event related pages			event related pages	
sys_event	**event_type**	**event_file**	**event_ticket**	**event_ticket_type**	**event_authcode**	**event_files**	**event_customer**	**event_comments**
event_id	type_id	file_id	ticket_id	type_id	code_id	event_id	event_id	event_id
event_name	type_name	event_id	event_id	type_name	event_id	filename	customer_id	customer_id
event_type	create_by	filename	ticket_type	create_by	code_filename	filepath	create_by	comment
description	update_by	filepath	ticket_amount	update_by	code_filepath	create_by	update_by	star_level
site_name	create_time	create_by	ticket_price	create_time	create_by	update_by	create_time	create_by
site_description	update_time	update_by	create_by	update_time	update_by	create_time	update_time	update_by
start_time		create_time	update_by		create_time	update_time		create_time
end_time		update_time	create_time		update_time			update_time
is_cancelled			update_time					
star_level								
event_tag								
create_by								
update_by								
create_time								
update_time								

Figure 13: the details of attributes of event related pages



order pages			
sys_order	**order_payment_type**	**order_coupon**	**second_auth**
order_id	type_id	order_id	order_id
event_id	type_name	coupon_id	customer_name
cumstomer_id	create_by	create_by	customer_identity
host_id	update_by	update_by	is_auth
payment_type	create_time	create_time	create_by
payment_amount	update_time	update_time	update_by
is_paid			create_time
is_refund			update_time
create_by			
update_by			
create_time			
update_time			

Figure 14: the details of attributes of order pages



coupon pages

sys_coupon	coupon_type	coupon_rule	coupon_customer
coupon_id	type_id	rule_id	coupon_id
coupon_name	type_name	coupon_id	customer_id
coupon_type	type	coupon_type_id	create_by
event_id	type_decription	threshold	create_time
is_specified	create_by	amount	update_by
assign_amount	create_time	create_by	update_time
used_amount	update_by	create_time	
receive_start_time	update_time	update_by	
receive_end_time		update_time	
valid_start_time			
valid_end_time			
create_by			
create_time			
update_by			
update_time			

Figure 15: the details of attributes of coupon pages

5.5 Conclusion

The project is a the front-end and back-end separated system, implements the design pattern of MVC for easier development. Technologies used show below:

Front-end: React, Bootstrap, Material UI.

Back-end: Springboot, SpringSecurity + JWT, Mybatis-Plus, Mysql, Redis.

Collaboration between the front-end and back-end: ApiFox.

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[3] Stuper, A.J. and Jurs, P.C., 1976. ADAPT: A computer system for automated data analysis using pattern recognition techniques. Journal of Chemical Information and Computer Sciences, 16(2), pp.99-105.