

Database Application 2014

Introduction

The system which is going to be implemented is a simple online shopping cart for a flight company. Customers can use this system to order tax-free goods before they take specific flights, and then buy these products on the airplanes. In addition to tax-free shopping, customers could also be able to make some special requests through this system (e.g. reserve flight meals). Typically customers should ask the flight company to deliver the ordered products to their specific seats (but I guess it is also possible to book something only with the customer's name). Tax-free products are divided into several categories (e.g. electronics, watches, skin-care and makeup products) and displayed on the system.

The system should support the following functions:

- Login: Customers and Company personals could log into this system with their user accounts and passwords
- Making order: customers who have logged in could book tax-free goods from this system, and choose the time and flight to buy those goods
- Changing and cancelling orders: customers could change or cancel their orders some days before flights take off
- Order display: customers could view all their orders in a displaying page, and company staffs could choose to view all the orders of a specific flight
- Notifications: there will be notifications about the status of customers' order (e.g. orders have been confirmed by the flight company)
- Products information: personels of the flight company could change product information and remove some products from the system

This system will run on/with a common HTTP server (e.g. Apache, Nginx), and all the data will be stored in a PostgreSQL database. The server-side programs will be written in PHP, and some client-side JavaScript files might be used.

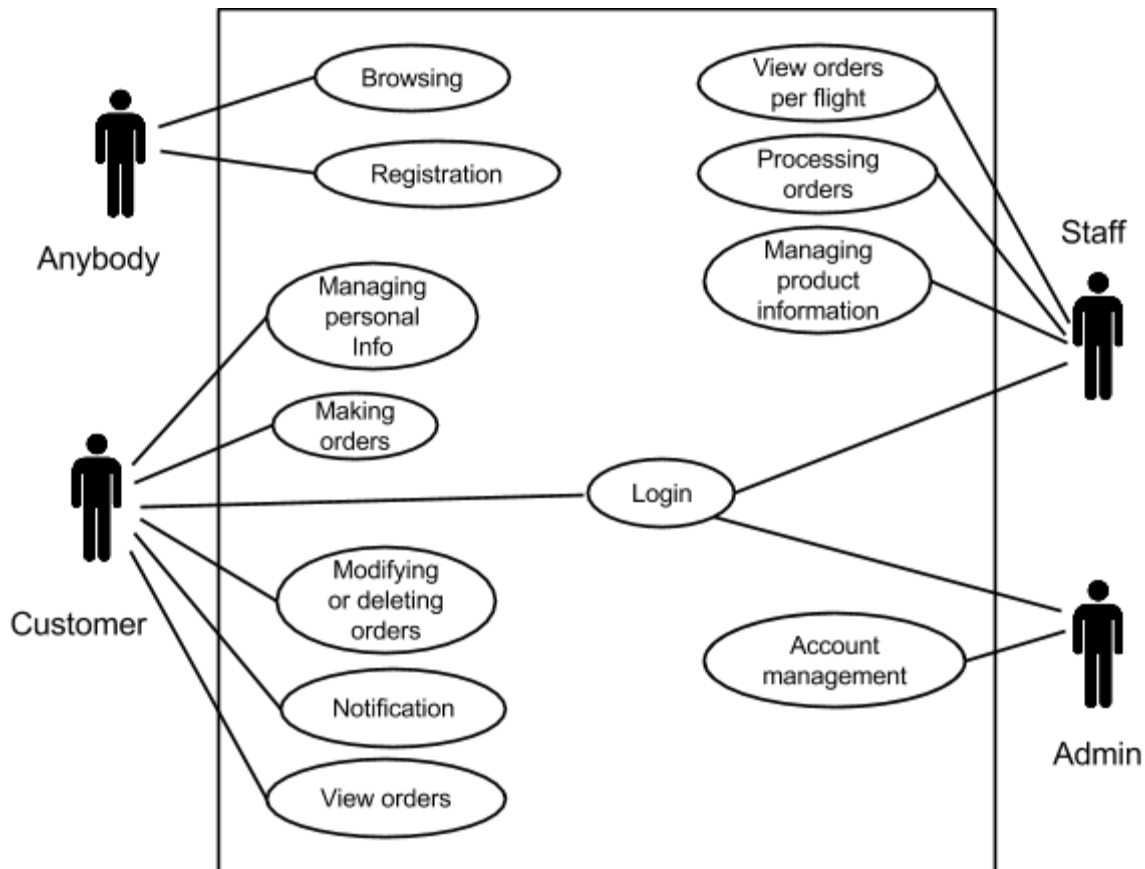
Overview of the system

User Groups

- Anybody: anyone who reads the web page
- Customer: customer is a registered user who could make orders
- Flight company staff: people who are responsible for processing orders and updating product information

- System administrator (optional for this system): super administrator to the system, could delete and add users/staffs

User Case Diagram



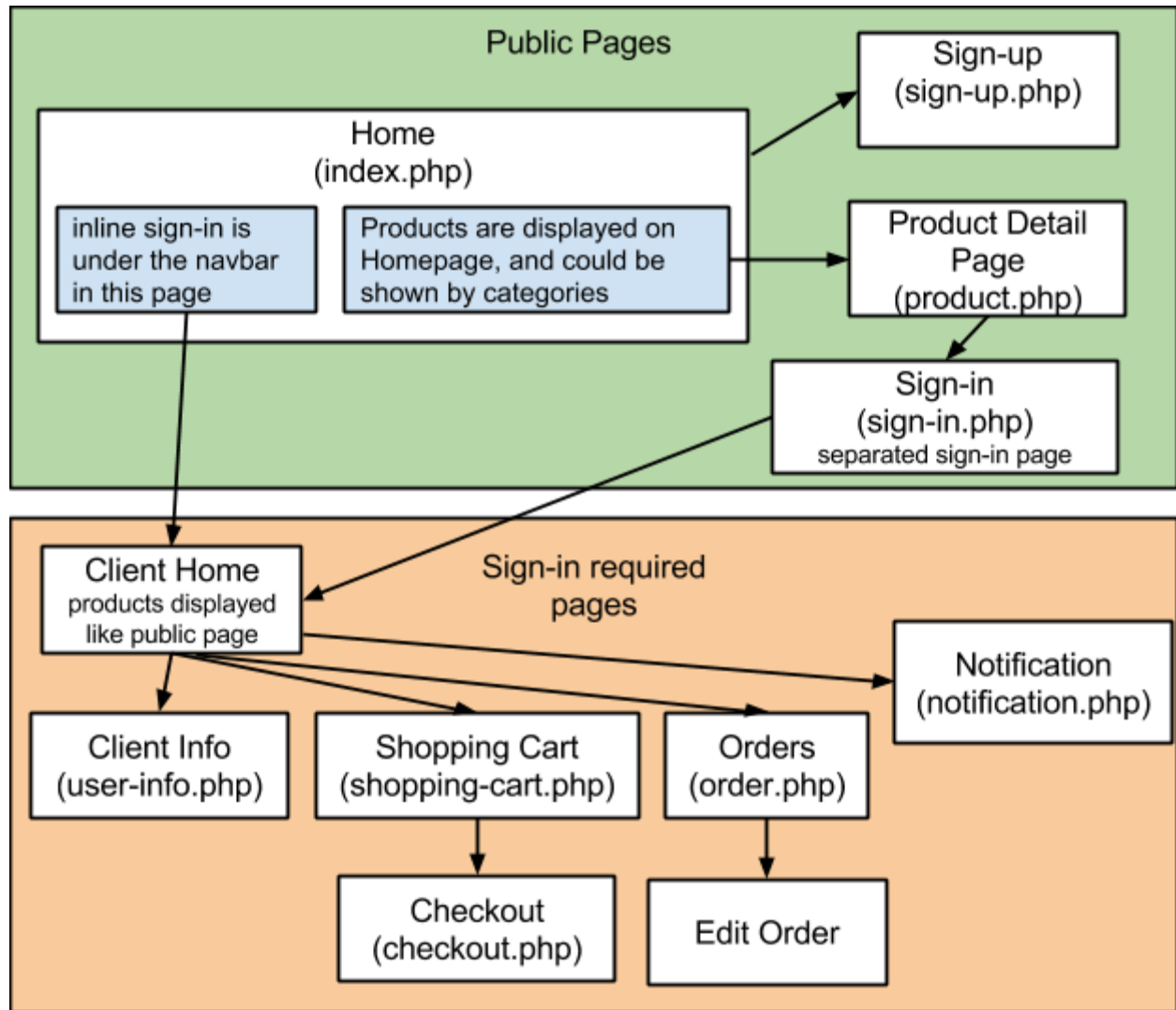
User Case Descriptions

- User cases for Anybody:
 - Browsing: anybody could read company's general information pages and product pages. They could see all the description of tax-free goods
 - Registration: by registering, the user could become a customer, and then some other services will be available to the user. Anybody could become a customer after completing a registration form via the web page
- User cases for Customer:
 - Login: registered customers could log into the system with their usernames and passwords, and then the following customer user cases will be available for them
 - Managing personal information: customers could store and edit their personal information (e.g. name, contact information) in the system

- Making orders: choose tax-free goods for a specific flight, add them in one shopping cart, and submit the shopping cart as one order. Customers may need to give more detailed information (e.g. seat number, flight number) when they make orders
- Modifying or deleting orders: customers could edit existing orders, or even delete them some days before the take-off time of the specified flight.
- View orders: view existing orders made by this customer
- View and delete notifications: when a order is confirmed by the flight company, the system will send the customer a notification message. The message will be stored in a message box under the customer's account, and the user could view and delete them
- User cases for Staff:
 - Login: log into this system with staff username and password, and then the following staff user cases will be available
 - Processing orders: when a new order is submitted, the staff could see it and confirm it. Order confirmation means that the company has finished processing phase, and been ready to deliver the goods to the customer. Then the system will send a notification to the user
 - Managing product information: company staff could add, edit or delete some products
 - View orders per flight: staff could choose to view all the orders for a specific flight
- User cases for Administrator:
 - Login
 - Account management: add or delete customers and/or staffs

Outline of the User Interface

The products are displayed in the home page, and users could choose to see a particular category of goods on this page. Some basic navigation links are added to this home page (e.g. sign-in, sign-up). The home page is public for everyone, but only when users sign in, they could add products to their shopping carts and manage their orders. The “Client Home” refers to the home page for users who have logged in, and it is almost the same to the public home page, but some new navigation elements would show up (e.g. shopping cart, order management, user info management). The “Product Detail Page” could also be used both for public and for users who have logged in. The following picture shows some basic components of the user interface.



The System Data

System information content

User Info

Each user should have one profile like this

| Attribute | Data Type | Description |
|-----------|---------------------------|---|
| Email | String, max 30 characters | user's email address, this is also used as the name of user account for sign up |

| | | |
|-----------|---------------------------|--|
| Password | String, max 20 characters | sign up password |
| Real Name | String, max 30 characters | User's real name, e.g. Albert Einstein |
| Type | String, max 15 characters | customer, staff or other |

Product

| Attribute | Data Type | Description |
|-------------|----------------------------|--|
| Name | String, max 50 characters | product name, e.g. "Luke Skywalker Bird Plush Toy" |
| Picture | Binary | product photo |
| Brand | String, max 30 characters | brand name of the product, e.g. "Fazar" |
| Category | String, max 30 characters | the category that the product belongs to, e.g. "Food", "Fun" |
| Price | Decimal | price in euro |
| Description | String, max 300 characters | short description of the product |

Item in Shopping Cart

The items in user's shopping cart. These items have not been submitted as one order yet.

| Attribute | Data Type | Description |
|-----------|----------------------------------|---|
| User | depend on the type of user ID | whose shopping cart this item belongs to |
| Product | depend on the type of product ID | product id |
| Quantity | Decimal | numbers of the product in the shopping cart |

Order

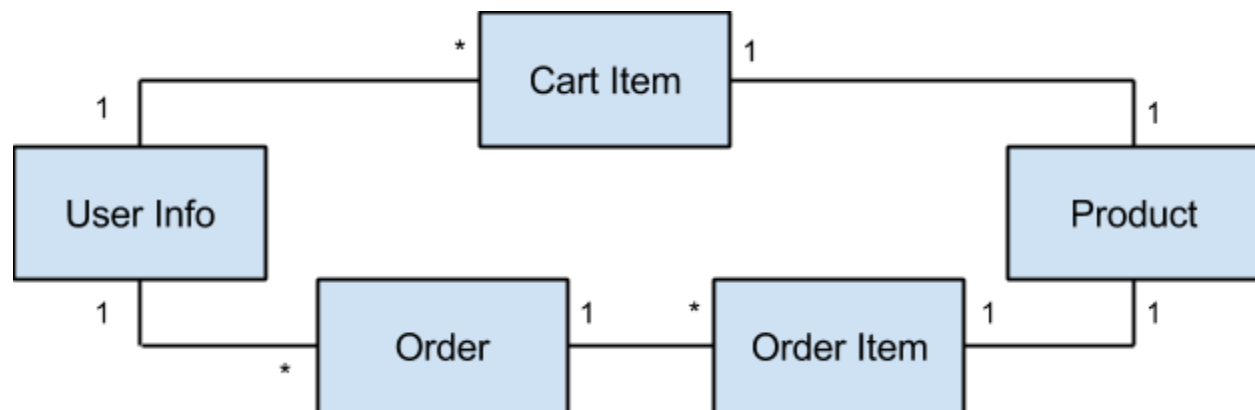
| Attribute | Data Type | Description |
|-----------|-------------------------------|---------------------|
| User | depend on the type of user ID | who made this order |

| | | |
|-------------|----------------------------|--|
| Flight No | String, max 10 characters | flight identical number |
| Flight Date | Date | flight date, e.g. 2014-10-21 |
| Flight Seat | String, max 10 characters | seat number on the flight, could be left as NULL |
| Date | Date | the date when the order is submitted to the system |
| Request | String, max 300 characters | special requests for the order |
| Status | String, max 20 characters | Processing, or Confirmed |

Order Item

| Attribute | Data Type | Description |
|-----------|----------------------------------|--|
| Order | depend on the type of order ID | which order this item belongs to |
| Product | depend on the type of product ID | product id |
| Quantity | Decimal | number of the product in the corresponding order |

Concept Relationships



Relational Database Scheme

