



澳門理工學院  
Instituto Politécnico de Macau  
Macao Polytechnic Institute

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**COMP321 Information System Implementation  
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Online Shopping Mall

Team number: Group 3  
Team members: Tim, Xiao Yubin (P-12-0794-9)  
Sheldon, Xie Erchen (P-12-0792-0)  
Billy, Xu Qinmian (P-12-0786-1)  
Dennis, Yin Famin (P-12-0788-0)  
[Click here to enter text.](#)

Supervisor: Andrew Siu  
Assessor: [Put your assessor name here]

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# 1 INTRODUCTION

## 1.1 OVERVIEW

The Web has provided a unique opportunity for retail businesses. Over the past five years, through the prosperity of numerous online commerce websites, could we witnessed a significant progress of electronic commerce (e-commerce). The web shopping reveals its great superiority over traditional business models. It can be illustrated in the following two aspects: customers may do window shopping over a wide range of products without geographical limitations on business hours and transportation. And on the other side, vendors save huge amount of expense by not running a brick-and-mortar shops which cost more on infrastructure, thus they can provide services for both large and niche markets.

This project aims at providing an elegant online shopping experience to tentative customers. The system contains one vendor and multiple potential customers. And the interaction between the two parties can be stated as follows. The vendor displays the products in a manner which is easy for customers to select, place orders, and make purchases. The major products sold in our website are routers, including wired and wireless. They could be classified by brand names, wireless speed (for wireless routers), WAN/LAN speed, CPU models, etc. Customers could select any routers they prefer and place the order.

The back-end software system will be implemented by using Django, a high-level Python Web framework which encourages rapid development and clean, pragmatic design. In addition to this, front-end will be fulfilled using Bootstrap, which is a sleek, intuitive, and powerful mobile first front-end framework for faster and easier web development.

## 1.2 OBJECTIVES

All the functions we wishes to implement in this project are listed below. In this project, we mainly anticipate to implement the basic functions of an online shopping mall, including product display, customer registration and login, shopping cart, order processing, and

administration. The functions adorned with inverse typeface are the ones that are compulsory to implement.

A customer can browse and search product in product list

- (A1) A customer may browse products in a list of products by selecting one of the existing product categories. The list shows basic information of products, including product name, price and a thumbnail image.
- (A2) The product list supports paging. I.e. the customer can navigate the product list by 'page up', 'page down' and jumping to a specific page.
- (A3) The customer may filter the product list by searching keywords in product name.
- (A4) The customer may order the product list by price.
- (A5) The customer may order the product list by customers' average rating. The ratings are also shown in the product list.

The product detail page shows detail information about one product.

- (A6) The customer may select a product in the product list to go to the product detail page. The product detail page shows the product name, product category, price and a thumbnail image. In addition, the product detail page also shows detail description as a list of properties. For example, the product detail page for a book shows authors, ISBN, publisher, release date and number of pages.
- (A7) The product detail page supports display of more than one photo of the selected product.

The system has basic account management for customers. The product list and product detail page are accessible to customers before and after login. On the other hand, the shopping cart and purchase tracking functions are only accessible after login.

- (B1) A customer may register a new account. He/she has to provide full name, email address, password and shipping address.
- (B2) Login and logout: If a customer tries to access the shopping cart or purchase tracking before login, the system will redirect the customer's browser to a login page, and then redirect it back to the shopping cart or purchase tracking page after successful

authentication. This can also be implemented as a login dialog box. The customer can log out after using the web site.

- (B3) The server only saves hash values of customers' passwords. Passwords are never saved in plain text.
- (B4) The customer can change password. There is strength requirement for password.

To make any purchase, a customer must add products to his/her shopping cart. The customer can check out all items in the cart to place an order.

- (C1) The customer adds a product to his/her shopping cart by clicking a button or link in the product detail page. The quantity to buy is assumed to be 1. The items in shopping cart are persisted across user sessions. Next time the customer logs in, he/she can still see the items in the shopping cart.
- (C2) The customer can list the products in his/her shopping cart in a shopping cart page. In this page, the entry for each product shows the product name, price and the quantity to buy. The page also shows the total price of products in the shopping cart. The customer can click an item in the shopping cart to go to the product detail page of the entry.
- (C3) The customer can press a button in the shopping cart page to check out all items in the shopping cart. This action creates a purchase order, and clears the content of the cart.
- (C4) The shopping cart page allows the customer to change the quantity. This allows the customer to order more than one piece of a product (e.g. buy two copies of a book).
- (C5) The customer can remove an item from the shopping cart.

Purchase tracking: After placing an order, the customer can trace the processing status of the order in a current purchase page and past purchase page. For simplicity, we assume that each purchase order is fulfilled in a single shipping package. The purchase order status describes the various stages of order processing. Possible values include 'pending', 'shipped', 'received', 'hold', and 'cancelled'.

- (D1) The current purchase page lists the purchase orders that the customer has placed, but has not received or cancelled. In other words, the status of purchase orders shown is either 'pending', 'shipped', or 'hold'. This page shows, for each purchase order, the purchase date, the total order amount and the purchase order status. The purchase orders are displayed in reverse chronological order.



- (D2) The customer can expand an entry in the list of purchase orders to show a purchase order detail page. This includes, for each product in the purchase order, the product name, the quantity, the unit price and the subtotal. The detail page also shows the purchase date, the customer name, the shipping address, the total order amount and the purchase order status. In addition, this page shows the shipment date, receipt date and order cancel date if applicable.
- (D3) After receiving the purchased products from logistics service, the customer should confirm the receipt. In the purchase order detail page, the customer can click a button to confirm the receipt of all products in the purchase order. This will change the status of the purchase order from 'shipped' to 'received'. Note that this action is only available for 'shipped' purchase orders.
- (D4) The customer can add one or more short messages to a purchase order. Each message is in plain text. The messages are shown in the purchase order detail page in reverse chronological order. The page also displays who writes the message (either the customer or the vendor) and the time it is written.
- (D5) Before a purchase order is shipped, the customer can cancel the order. This can be done by clicking a button in the purchase order detail page. This action will change the status of the purchase order to 'cancelled'. In addition, a comment 'cancelled by customer' is automatically appended to the purchase order. Note that this action is only available for purchase orders in the status 'pending' or 'hold'.
- (D6) The past purchase page lists the fulfilled or cancelled purchase orders. In other words, the status of purchase orders shown is either 'received' or 'cancelled'. This page shows, for each purchase order, the purchase date, the total order amount and the purchase order status. The orders are displayed in reverse chronological order. The customer can click an entry in the list to show detail of a purchase order (refer to requirement D2).

The vendor maintains a product catalog in the shopping mall. He/she can also process purchase orders from customers, and has access to basic sales reports. The vendor is not a customer, e.g. he/she cannot place purchase orders. Because there is only one vendor, the system only needs to implement a single vendor user account. No account management of vendor accounts is necessary in this project. The application provides the following functions.

Product catalog maintenance: The vendor can browse the product catalog, edit some properties of a product, and add new products.

- (E1) The vendor may browse the product catalog in an interface similar to customers. (Refer to requirements A1, A2 and A6).
- (E2) In addition to the basic info in E1, the vendor can also see sales quantity and sales dollar amount of each product in the product catalog and product detail page. He/she can order the product catalog by sales quantity or sales dollar amount.
- (E3) The vendor can filter the product list by searching keywords in product name, and order the product list by price. (Refer to requirement A3 and A4.)
- (E4) The vendor may add a new product to the catalog. The vendor enters basic information of the product, including product name, product category, price and a thumbnail image. He/she can enter detail information of the new product as a list of properties.
- (E5) The vendor can upload more than one photo for a product. These photos are displayed in the product detail page in a user-friendly interface. (Refer to requirement A7.)
- (E6) The vendor can edit information of a product in a product detail page. He/she can change the product name and product category. He/she can also change detail information as a list of properties. (Refer to requirement E3).

Purchase orders processing: The vendor can list purchase orders in the pending orders page and on-delivery orders page. He/she may ship, hold, or cancel a purchase order in the purchase order detail page.

- (F1) The pending orders page lists purchase orders that are created when customers confirm purchases in their shopping carts, but are not yet shipped or cancelled. The status of 'pending orders' should be 'pending' or 'hold'. This page shows purchase dates, customer names, total order amounts and purchase order status. The vendor can expand an entry to open a purchase order detail page (similar to requirement D2).
- (F2) In the purchase order detail page, the vendor can click a button to ship a purchase order. This action changes the status of the purchase order from 'pending' to 'shipped' and starts the shipping process.

- (F3) The on-delivery orders page lists purchase orders that are shipped, but the customers have not confirmed receipt yet. The status of 'on-delivery orders should be 'shipped'. This page shows purchase dates, shipment dates, customer names, total order amounts and purchase order status. The vendor can expand an entry to open a purchase order detail page (similar to requirement D2).
- (F4) In the purchase order detail page, the vendor can click a button to hold a purchase order. This is useful, for example, if some product in the purchase order is temporarily out-of-stock. This action is only available when the status of the purchase order is 'pending', and this action changes the status to 'hold'.
- (F5) In the purchase order detail page, the vendor can click a button to un-hold and ship a purchase order. This action changes the status of the purchase order from 'hold' to 'shipped' and starts the shipping process.
- (F6) The vendor can view short messages for a purchase order in the purchase order detail page. He/she can also add a short message. (Refer to requirement D4.)
- (F7) In the purchase order detail page, the vendor can click a button to cancel a purchase order. This is useful, for example, to inform the customer that the ordered products are no longer available. This action is only available for purchase orders in the status 'pending' or 'hold'. This action changes the status of the purchase order to 'cancelled'. In addition, a short message 'cancelled by vendor' is automatically appended to the purchase order.

The vendor has access to some basic sales reports.

- (G1) The fulfilled order report lists the fulfilled purchase orders, i.e. purchase orders that are delivered to customers and for which the customers have confirmed the receipt. This report shows the purchase date, the customer names and the total order amounts. The vendor can indicate a reporting period by selecting a start and end date of purchase date.
- (G2) The fulfilled order report shows shipment dates and receipt date (the date that the products are received by customers). It also shows the number of days elapsed between the purchase date and the receipt date.
- (G3) The cancelled order report lists cancelled orders, which should have a status of 'canceled'. The report shows purchase dates, cancel dates, customer names, total order

amounts. The vendor can indicate a reporting period by selecting a start and end date of purchase date.

The system also implements some advanced features.

- (H1) The vendor can change the price of an existing product. This change should not affect the price in existing purchase order and other historical records.
- (H3) A customer can still add an out-of-stock product to shopping cart and place the order. The shopping cart and the product detail page should show clearing which product is currently out-of-stock.
- (H5) If the vendor and the customer change the status of a purchase order at almost the same time, the purchase order may result in an inconsistent state. Implement suitable concurrency control to prevent the following invalid state change: pending -> shipped -> cancelled and hold ->cancelled->shipped.
- (H6) The vendor can temporarily remove a product from shelves by marking it as 'off-shelf' in the product detail page. Such products are no longer available for purchase, and will not be shown in the product list for the customers. However, the vendor can still see off-shelf products in the product catalog. That page should mark the product as 'off-shelf'. The vendor can put the product on shelves again later.
- (H7) If the shopping cart contains a product that is removed from shelves afterwards, the customer cannot check out the product. One way to handle this is to indicate the product as off-shelf and asks the customer to remove it from the shopping cart manually before check-out. Another way is to remove the off-shelf product automatically, but leave a note to explain the case to the customer.

## **2 BACKGROUND AND RELATED WORK**

### **2.1 BACKGROUND**

Electronic commerce, commonly known as E-commerce or e-Commerce [1], is trading in products or services using computer networks, such as the Internet. Electronic commerce draws on technologies such as mobile commerce, electronic funds transfer, supply chain management, Internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle, although it may also use other technologies such as e-mail.

The development of shopping centers and the commercial culture they engender continue apace in China, with record levels of construction and new openings. Ongoing urbanization, the growing affluence and sophistication of Chinese consumers and increasing demand for a personalized shopping experience all contribute to their increasing familiarity on the consumer landscape. In tandem, the prevalence of online shopping has forced mall operators and retailers to rethink their strategies. The winners are those that constantly innovate and rethink business practices in response to the evolving retail environment. Investment in China's commercial property continues to grow; shopping malls receive increasing attention. China's commercial property market has drawn a great deal of attention from investors over recent years since the government's tighter control on the residential property market. [2] In 2013, total investment in commercial properties increased by 28.3% year-on-year (yoy) to 1,194.5 billion yuan (Exhibit 1).

Nine cities out the world's top 10 for completed new shopping center space were located in China that year, namely Chengdu, Tianjin, Shanghai, Chongqing, Shenzhen, Hangzhou, Beijing, Wuhan and Shenyang [3].

**Exhibit 1: Total investment in China's commercial properties, 2004-2013**



**Figure 1: from National Bureau of Statistics**

The purpose for conducting this study is to establish an e-commerce website, selling various routers in a credible, rapid, and concessional way. These three features are the main characteristics of this website. Especially in the period of fleetly evolving of the Internet, Online shopping websites have been reviewed as a business which owns infinite potential today. Therefore, building an e-commerce website is the core objective in this study.

## 2.2 RELATED WORK

Mainstream E-Commerce shopping website on the market nowadays are investigated in hierarchy, and their major features are listed as follows.

For domestic E-Commerce websites, Taobao and JD.com are mainstream online shopping malls.

Taobao, a wholly-owned subsidiary of Alibaba, is undeniably of the most prevalent online shopping mall in mainland China, or even in large, the whole world. In terms of E-commerce business model, Taobao is a Consumer-to-Consumer (C2C) website of mega size, whose

individual vendors could register as online dealers and display their goods (products or services) in so-called virtual shops. In a typical virtual shop, all the products, as well as their corresponding description, inventory, credential, and rates can be viewed by any buyers. After an order is placed, both the vendor and the buyer could modify the order until the order has been marked as 'shipped'. Alipay, an escrow-based online payment platform, which is the preferred payment solution for transactions on Taobao Marketplace, was launched in 2004. It is the most widely used third-party online payment solution in China. To ensure safe transactions, According to the Alibaba Group web site, Alipay is partnered with multiple financial institutions such as Union Pay, Visa, MasterCard, and JCB to facilitate payments in China and abroad.

Another key online shopping mall, as mentioned before, is JD.com, formerly called 360Buy. Sort of different from Taobao, JD.com is a Business-to-Customer (B2C) online shopping mall, aiming on customer electronics, mobile phones, computers, garment, foodstuff, etc. In order to ensure logistics securely and timely, all the commodities are stocked and delivered by JD.com logistics. When an order is placed, it will be processed and shipped by JD.com, similar to Taobao, the customer could keep tracking the status of his or her orders or cancel them before they are shipped. Multiple payment methods are supported by JD.com, whereas Alipay is not available due to competition, which means customer may use traditional payment such as Union Pay, MasterCard, Visa and Union Pay etc.

As for international online shopping malls, taking eBay as an instance, eBay, which was founded in 1995 in California, has now been a global C2C online shopping and auction website. Millions of collectibles, decor, appliances, computers, furnishings, equipment, domain names, vehicles, and other miscellaneous items are listed, bought, or sold daily on eBay. In 2006, eBay launched its Business & Industrial category, breaking into the industrial surplus business. Generally, anything can be auctioned on the site as long as it is not illegal and does not violate the eBay Prohibited and Restricted Items policy. Services and intangibles can be sold, too. Large international companies, such as IBM, sell their newest products and offer services on eBay using competitive auctions and fixed-priced storefronts. Separate eBay sites such as eBay US and eBay UK allow the users to trade using the local currency. Another world-renowned online shopping mall is Amazon. Amazon product lines include media (books, DVDs, music CDs, software, videotapes, and software), apparel, baby

products, consumer electronics, beauty products, gourmet food, groceries, health and personal-care items, industrial & scientific supplies, kitchen items, jewelry and watches, lawn and garden items, musical instruments, sporting goods, tools, and toys & games. Amazon derives about 40% of its sales from third-party sellers who sell products on Amazon. Associates receive a commission for referring customers to Amazon by placing links on their websites to Amazon, if the referral results in a sale. Unlike eBay, Amazon sellers do not have to maintain separate payment accounts; all payments are handled by Amazon similar to JD.com.

After reviewing different features of all above-mentioned online shopping malls, their common features can be listed as follows:

- **Providing an online platform, usually a website for displaying goods**
- **A wide range of products and services are available on online shopping malls**
- **Goods are usually in lower price than traditional shops**
- Vendors take the full control of his or her commodities, including modifying the price, description, and inventory of the products or services
- **Customers are able to overview all the information available of specific products or services, as well as place orders**
- Orders could be seen by both vendors and customers
- **Simplify trading by using online payment system**
- **Tracking status of orders**
- For C2C shopping malls, products are usually duty free.

Citing the splendid features listed above, those in bold are commonly recognized as brilliant functions, and were attempted to invoked and implemented during the period of building website structure and main functions.



Providing a splendid platform for the purpose of making online shopping more reliable and convenient is permanent aim of ISI store. According to the system functioning which is used in ISI, this project website can be viewed as the B2B business model. In other words, ISI store provides abandon commodities satisfied various kinds of customer.

Major household router routers could be found in our website. In order to make convenient for shoppers, the routers listing on ISI store are classified in various parameters and categories such as wideband, coverage, etc. The specific products satisfied customer demand can be easily searched and displayed after retrieval.

Real time tracking status of orders can be viewed as an instance, ISI store provides order status record and track. In this way, the order information and logistics status are clearly display for customer.

Commodity price has been seemed as a key judged factor whether website will be welcomed. All the products showing on the ISI store have lower price than other website even taobao.com. Moreover, the quality of product can be guaranteed, because ISI store executes in a B2C business model.

Major features of ISI online shopping mall includes the detailed and professional description, multiple sorting methods, pellucid classification, and easy registration. Compared to our main competitors, Taobao, Amazon, and JD, we offer more specialized products as well as more details, come of them are suitable for router enthusiasts.

As for the detailed and professional description, in addition to common attributes like price, speed, and brand, each product listed are described with their CPU model, USB support, and power consumption, which is rare to find in the other websites but may be valuable to potential customers.

The product could be sorted in four different manners, including default order, ascending order of price, descending order of price, descending order of rating. These types are the most frequently used by most customers.

In addition, the classification, unlike some mega-sized shopping malls, are displayed in an extremely concise and pellucid way. Those routers, although have many distinguishable

characteristics, such as speed, coverage, and brand, are categorized by the property of whether wired or wireless. Since this is the first distinction raising up to our mind.

### **3 SYSTEM DESIGN**

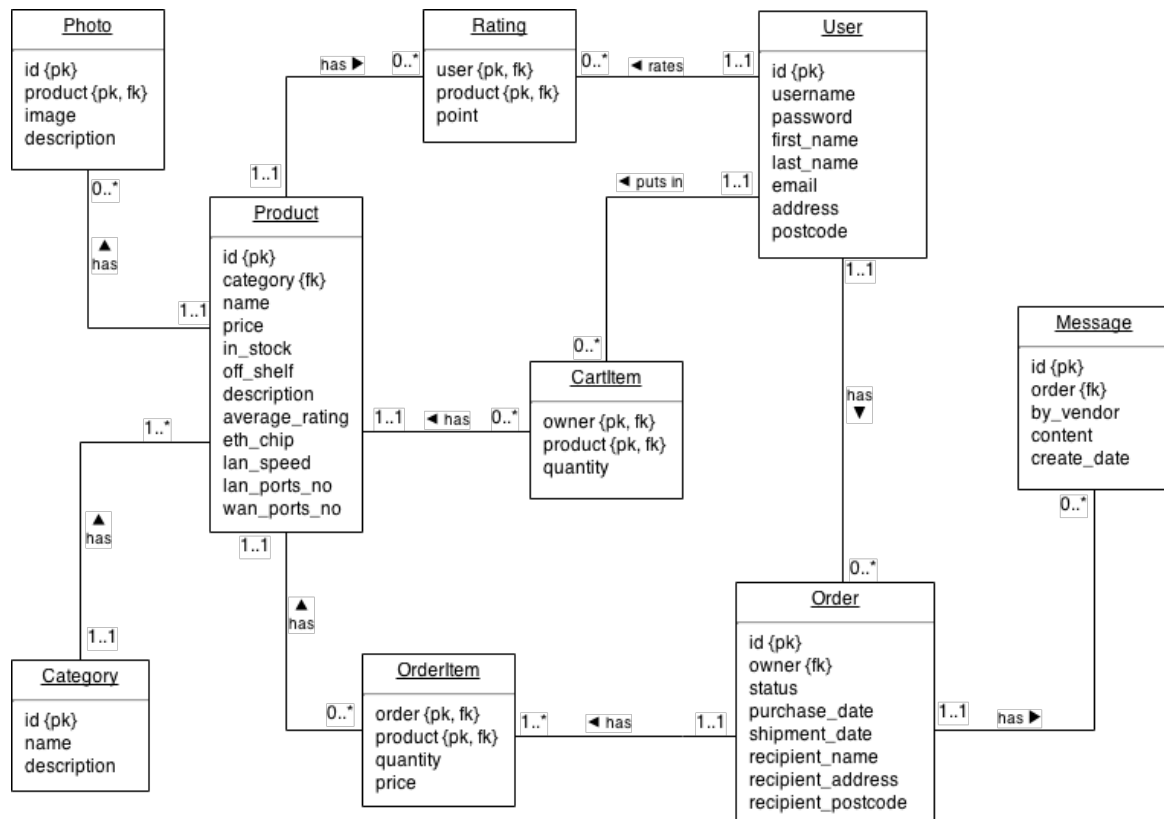
This section reveals the process of defining the architecture, components, modules, interfaces, and data storage for this system to satisfy specified requirements. The data modeling emphasizes on the database architecture, which defines and analyzes data requirements needed to support the business processes within the scope of our requirements. Additionally, dynamic modeling demonstrates the essential system behavior in the process of dealing with transactions, namely, placing an order.

#### **3.1 DATA MODELING**

The data modeling demonstrates the database layout of our software system. There are nine tables in our databases, and they are interconnected with each other, thus could support the interoperable queries in our business processes.

##### **3.1.1 ENTITY—RELATIONSHIP DIAGRAM**

The following diagram demonstrates the entities and their relationships to each other in the database. It includes nine tables, namely photo, category, product, rating, order item, cart item, user, order, and message.



**Figure 2: Entity—Relationship diagram**

### 3.1.2 DATA STRUCTURE

The data structure in detail of each table is shown in the following tables. The data type, primary key, and nullability of each field is represented below.

Product:

Field	Description	Data type	PK/FK	Nullable
<b>Id</b>	An unique id assigned by Django	CharField	PK	No
<b>Category</b>	The category a product belongs to	CharField	FK	No
<b>Name</b>	The full name of a product	CharField	/	No
<b>Price</b>	The price of a product, noted in dollar	CharField	/	No
<b>In_stock</b>	Indicate whether a product is currently in stock	Boolean	/	No
<b>Off_shelf</b>	Indicate whether a product is removed off shelves by the vendor	Boolean	/	No
<b>description</b>	The detailed verbal description of a product	CharField	/	Yes

<b>Average_rating</b>	The mean rating points from previous customers to a product	CharField	/	Yes
<b>Eth_chip</b>	The CPU of a product	CharField	/	No
<b>Lan_speed</b>	The transmission speed of LAN port	IntegerField	/	No
<b>Lan_port_no</b>	The number of LAN ports	IntegerField	/	No
<b>Wan_ports_no</b>	The number of WAN ports	IntegerField	/	No
<b>Wireless_type</b>	The wireless type supported, e.g. 802.11 a/b/g/n/ac	CharField	/	Yes
<b>Power</b>	Power consumption of a product, e.g. 12VDC 2A	CharField	/	Yes

**Table 1: Data Structure (Product)**

Photo:

Field	Description	Data type	PK/FK	Nullable
<b>Id</b>	An unique id assigned by Django	CharField	PK	No
<b>Product</b>	The product a photo refers to	CharField	PK, FK	No
<b>Image</b>	The name to an image	CharField	/	

**Table 2: Data Structure (Photo)**

Category:

Field	Description	Data type	PK/FK	Nullable
<b>Id</b>	An unique id assigned by Django	CharField	PK	No
<b>Name</b>	The name of a category	CharField	/	No
<b>description</b>	The detailed description of a category	CharField	/	Yes

**Table 3: Data Structure (Category)**

Rating:

Field	Description	Data type	PK/FK	Nullable
<b>User</b>	Link to the user who left the rating	CharField	PK, FK	No
<b>Product</b>	The product being rated	CharField	FK, FK	No
<b>Point</b>	The point of rating, with 5 the highest and 0 the lowest	FloatField	/	Yes

**Table 4: Data Structure (Rating)**

OrderItem:

Field	Description	Data type	PK/FK	Nullable
<b>Order</b>	The order an order item belongs to	CharField	PK, PK	No
<b>Product</b>	The product an order item refers to	CharField	PK, FK	No
<b>Quantity</b>	The quantity of this item in an order	IntegerField	/	No
<b>Price</b>	The price of each item	FloatField	/	No

**Table 5: Data Structure (Order Item)**

CartItem:

Field	Description	Data type	PK/FK	Nullable
<b>Owner</b>	The user to whom this item refers	CharField	PK, FK	No
<b>Product</b>	Foreign to product table	CharField	PK, FK	No
<b>Quantity</b>	Number of this item in the shopping cart	CharField	/	No

**Table 6: Data Structure (Cart Item)**

User:

Field	Description	Data type	PK/FK	Nullable
<b>Id</b>	The order id assigned by Django	CharField	PK	No
<b>Username</b>	Username of a registered customer	CharField	/	No
<b>Password</b>	Password a user set for protecting his account	CharField	/	No
<b>First_name</b>	The first name of the user	CharField	/	No
<b>Last_name</b>	The last name of the user	CharField	/	No
<b>Email</b>	The email address of the user	CharField	/	Yes
<b>Address</b>	Residential address, can be used for primary shipment address	CharField	/	No
<b>postcode</b>	The postcode of his address	IntegerField	/	Yes

**Table 7: Data Structure (User)**

Order:

Field	Description	Data type	PK/FK	Nullable
-------	-------------	-----------	-------	----------

<b>Id</b>	The id of an order assigned by Django	CharField	PK	No
<b>Owner</b>	The user who placed the order	CharField	FK	No
<b>Status</b>	Indicate whether the order is pending, shipping, received, hold, or cancelled	CharField	/	No
<b>Purchase_date</b>	The date a customer purchases the order	CharField	/	No
<b>Shipment_date</b>	The date an order is shipped	CharField	/	Yes
<b>Recipient_name</b>	The date an order is received	CharField	/	No
<b>Recipient_address</b>	The shipping address of an order	CharField	/	No
<b>Recipient_postcode</b>	The shipping postcode	IntegerField	/	Yes

**Table 8: Data Structure (Order)**

Message:

Field	Description	Data type	PK/FK	Nullable
<b>Id</b>	The id of a message, assigned by Django		PK	No
<b>Order</b>	The order this message refers to	CharField	FK	No
<b>By_vendor</b>	Indicate if the message is left by vendor or customer. Yes if it is left by vendor, no if it is by customer	CharField	/	No
<b>content</b>	The message body	CharField	/	No
<b>Create_date</b>	The date when a message is created	CharField	/	No

**Table 9: Data Structure (Message)**

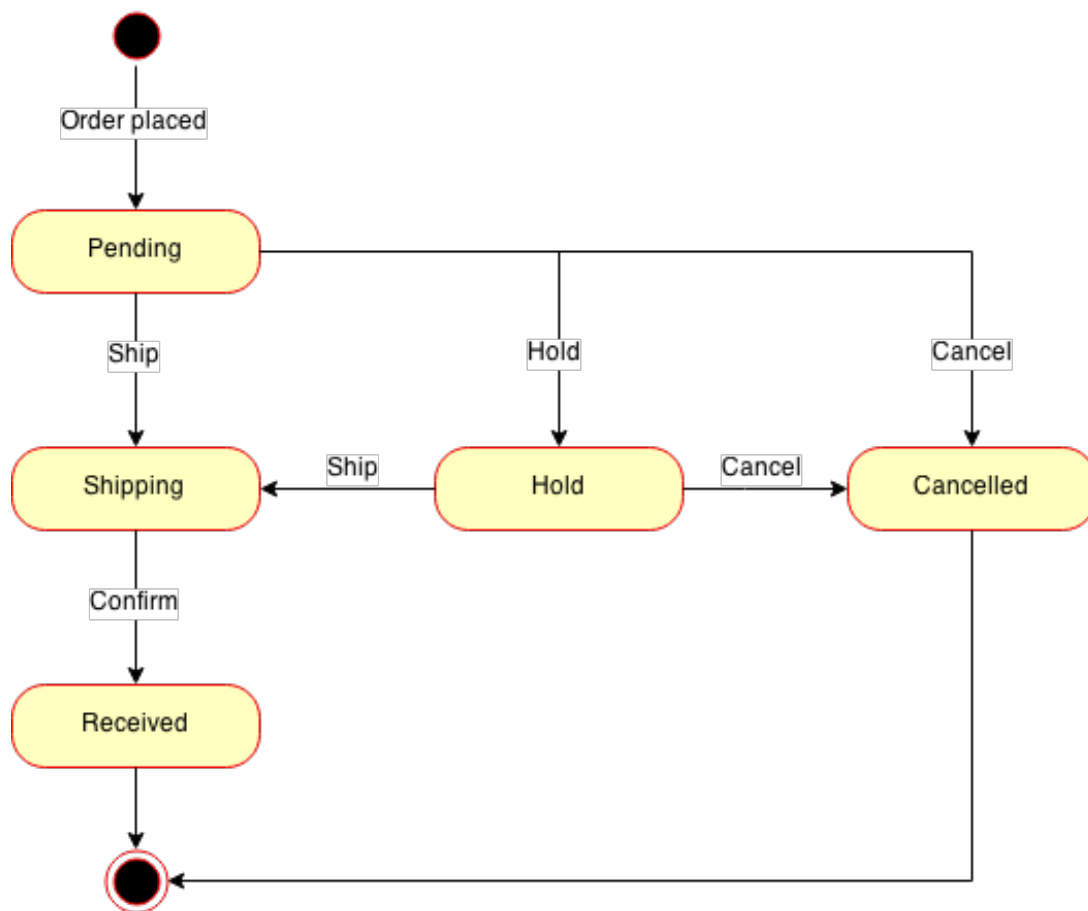
## 3.2 DYNAMIC MODELING

The dynamic model is used to express and model the behavior of the system over time. It includes support for state diagrams, sequence diagrams, and activity diagrams.

### 3.2.1 STATE DIAGRAM FOR PLACING AN ORDER

This diagram details the transitions or changes of state an order placement process can go through. It begins with an order been placed, and end up with the product been received,

reveals all possible transitional states throughout this process, including pending, shipping, hold, cancelled, and received.



**Figure 3: State diagram for order**

### 3.2.2 PURCHASE SEQUENCE DIAGRAM

Sequence diagram exhibits the interactions among customer, shopping cart, order, product, and vendor within this software system. It provides a sequential map of message passing between objects over time. The graph below demonstrates a typical chronological order from choosing products, through to placing orders, and the vendor confirm the order in the end.



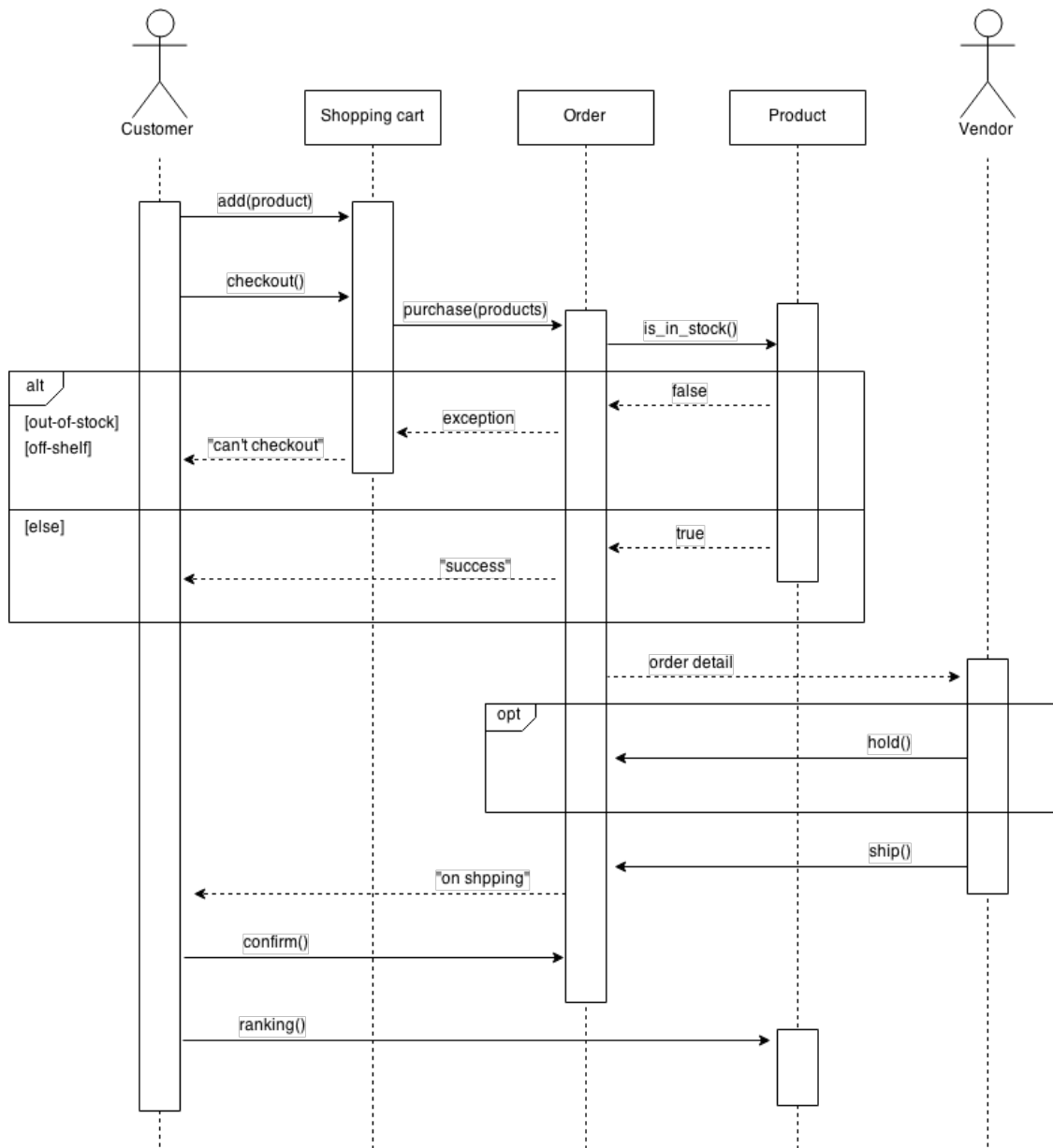


Figure 4: Purchase sequence

### 3.2.1 PURCHASE ACTIVITY DIAGRAM

Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration, and concurrency. This graph exhibits an order purchasing process,

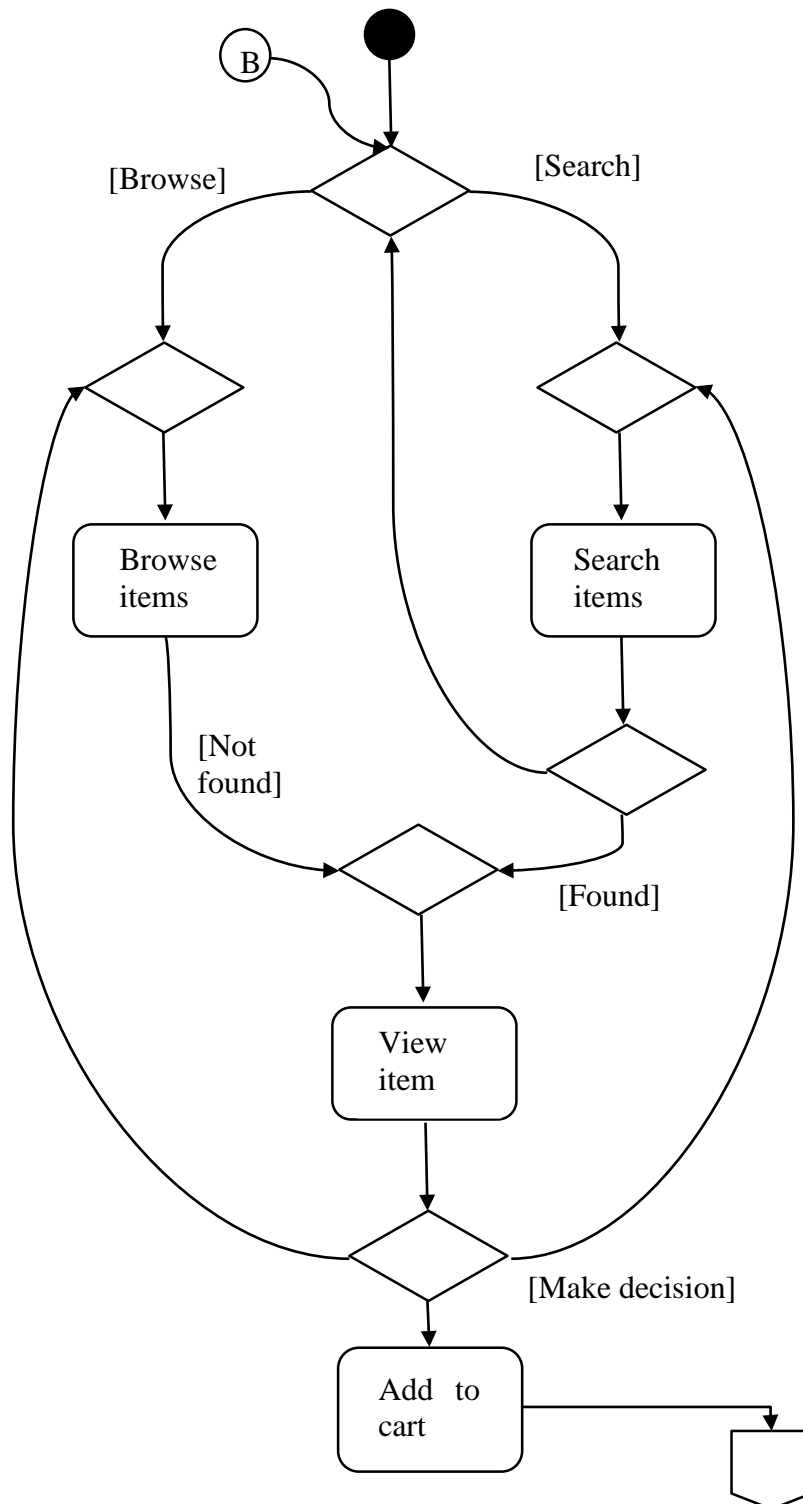
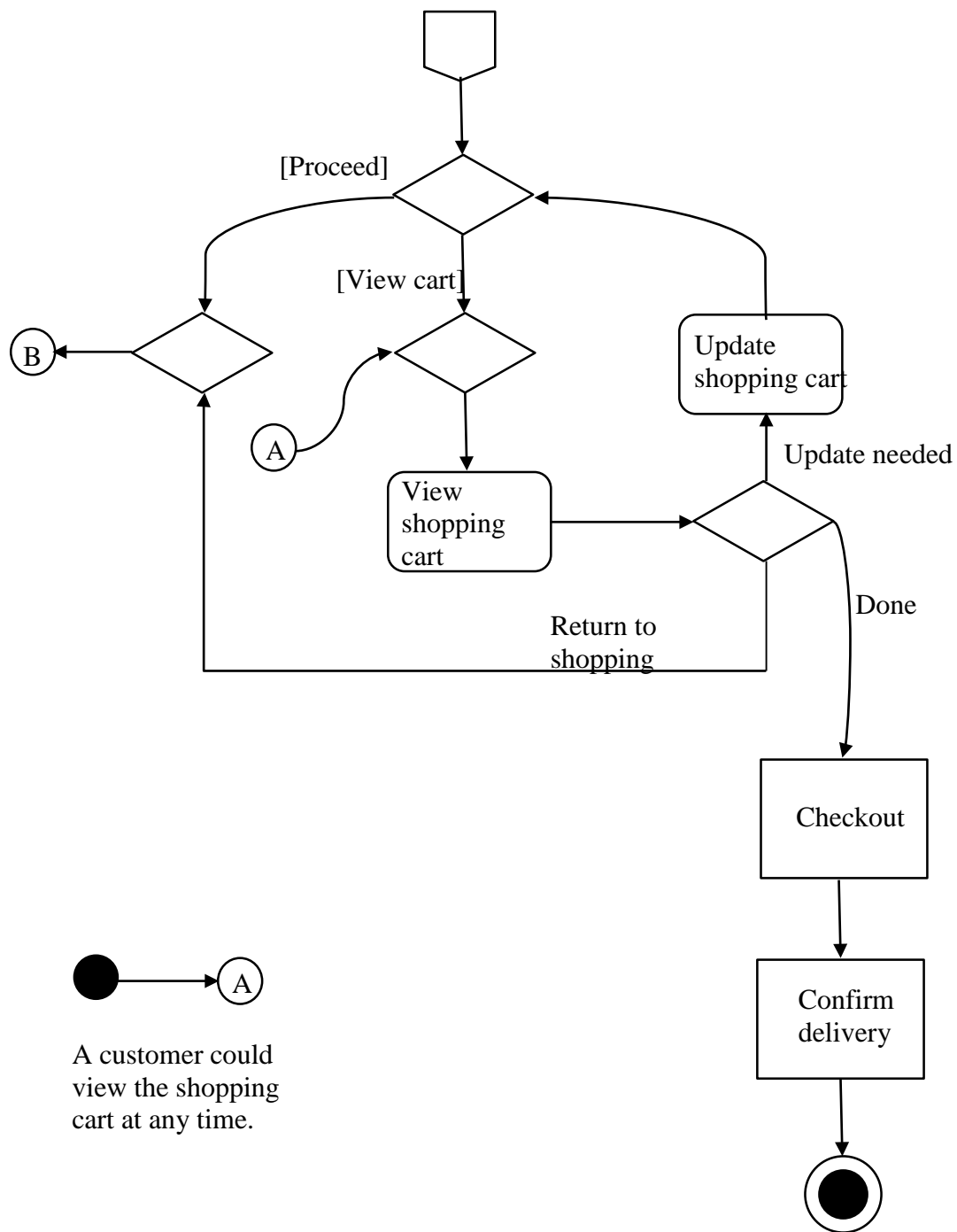


Figure 5: Purchase activity diagram



**Figure 6: Purchase activity diagram (cont'd)**

## 4 SYSTEM IMPLEMENTATION

This section denotes the implementation of this system in reality, including the programming languages, environment settings, and modules being used.

### 4.1 PLATFORMS

The following chart demonstrates the major programming languages, framework, and libraries which we used to implement this business system.

Focusing on the programming language at the back end, we used Python to generate the back-end system. Python is a widely used general-purpose, high-level programming language. [4][5][6] Its design philosophy emphasizes code readability, and its syntax allows programmers to express concepts in fewer lines of code than would be possible in languages such as C++ or Java. [7][8] The language provides constructs intended to enable clear programs on both a small and large scale. [9]

In the front end, HTML5, CSS3, and JavaScript were being utilized to ensure the modern web page rendering, interaction, and compatibility, some latest functions in HTML5 are implemented. HTML5 is a core technology markup language of the Internet used for structuring and presenting content for the World Wide Web. As of October 2014 this is the final and complete [10] fifth revision of the HTML standard of the World Wide Web Consortium (W3C). [11] The previous version, HTML 4, was standardized in 1997.

Concerning about the framework, Django is used as the back-end framework, containing all basic logics. It is also responsible for processing all business transactions, manipulating database, generating HTML pages, and managing products. Django is a free and open source web application framework, written in Python, which follows the model–view–controller (MVC) architectural pattern. [12] It is maintained by the Django Software Foundation (DSF), an independent organization established as a non-profit.

Django's primary goal is to ease the creation of complex, database-driven websites. Django emphasizes reusability and "plug-ability" of components, rapid development, and the

principle of don't repeat yourself. Python is used throughout, even for settings, files, and data models. Django also provides an optional administrative create, read, update and delete interface that is generated dynamically through introspection and configured via admin models.

As for the front end, all the page are rendered by using Bootstrap framework, ascertaining a consistent, Spartan, and modernized web page. Bootstrap, originally named Twitter Blueprint, was developed by Mark Otto and Jacob Thornton at Twitter as a framework to encourage consistency across internal tools. It is a free and open-source collection of tools for creating websites and web applications. It contains HTML- and CSS-based design templates for typography, forms, buttons, navigation and other interface components, as well as optional JavaScript extensions.

<b>Development</b>	<b>Back-end</b>	<b>Front-end</b>
Language	Python	HTML5, CSS3, JavaScript
Framework	Django, Django REST framework	Bootstrap
Libraries	django-bootstrap3, django-bower, sorl-thumbnail, ...	jQuery, jquery.cookie, bootstrap-datepicker...
Package manager	PyPI	Bower
VCS & Cooperation	Git, GitHub	
IDE/Tool	PyCharm	PyCharm, Browsers (Chrome, Firefox, IE)

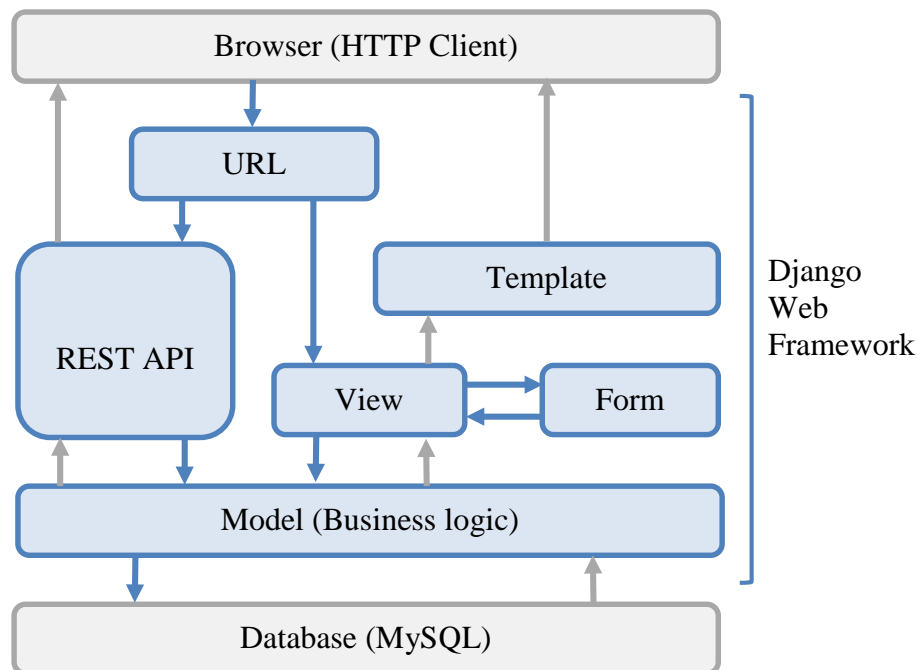
### **Deployment**

Server IP	<a href="https://isi.sorz.org/">https://isi.sorz.org/</a>
Operating system	Linux
HTTP Server	Nginx, uWSGI
Database	MySQL (MariaDB)
Package manager	PyPI, Bower

Automatic Deployment	Git, GitHub Webhooks
----------------------	----------------------

## 4.2 ARCHITECTURE

This graph represents the highest level of abstraction of this software system. Including how each module connects to and interacts with others, as well as the functionality of each module.



**Figure 7: Abstraction architecture of system**

## 4.3 MODULE DESIGN

Module design which is also called "low level design" has to consider the programming language which shall be used for implementation. This business system, as shown below, is subdivided into the following six modules, each focusing on some certain functions.

### 1) Account

User registration, logging in and profile modification.

- 2) Category  
Categories of products, list (filter and order) products of a certain category.
- 3) Product  
Product attributes, photos and rating.
- 4) Shopping Cart  
Add/delete item.
- 5) Order  
Checkout, maintain status of orders, short messages.
- 6) Dashboard  
Add/delete/edit products and categories, reports.

## **5 RESULTS AND DISCUSSION**

### **5.1 PROJECT OUTCOME**

This section exhibits the outcome of our project. The system has been put into execution on our server. The following screenshots are captured directly by using Chrome browser. Each picture is attached with its corresponding description. There are three major sections, Home page and product displaying, customer side purchasing, and vendor side management.

To begin with, the home page and product displaying mainly displays the product and their sorting functions, it is available for all the users, including those non-registered. After accessing the website, they could view the products, query the system for certain product models, and sort the product through 4 parameters.

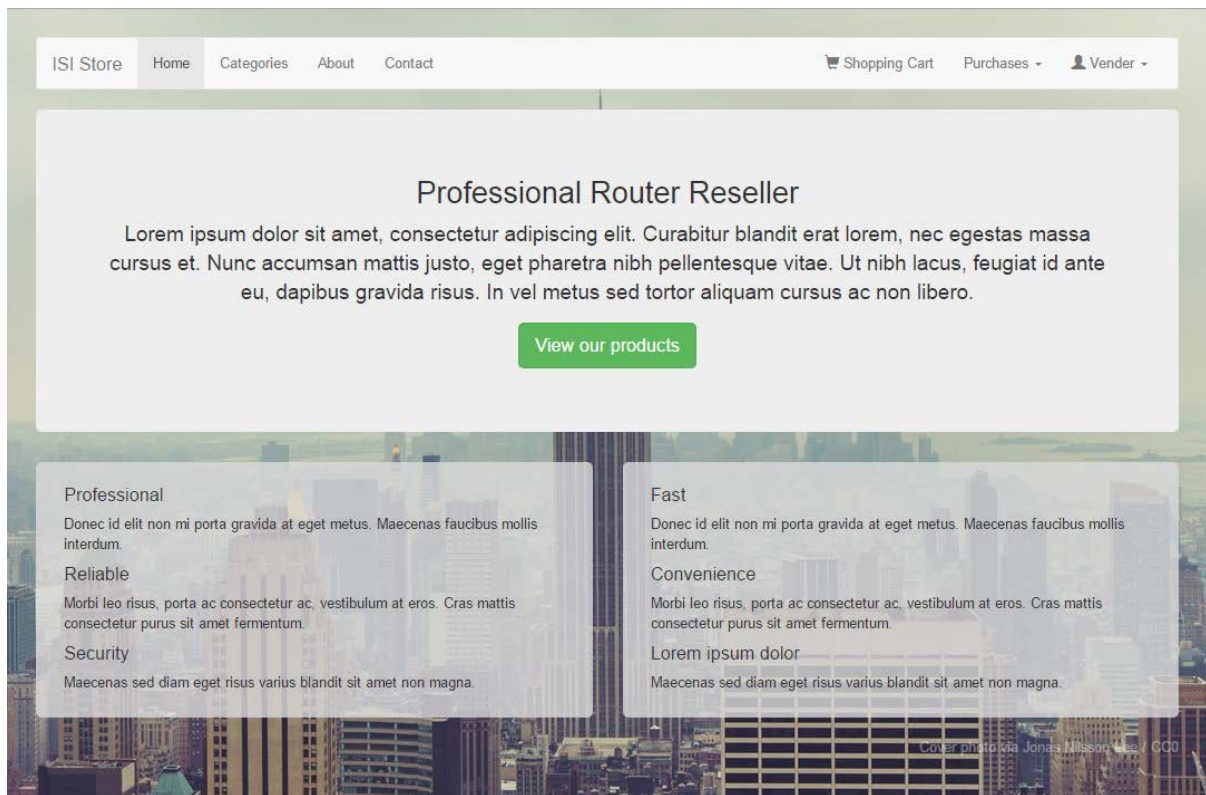
Second part focuses on the user registration and the whole purchasing process, starting from selecting product, throughout to the end of confirmation.

Last part, which demonstrates the vendor management operations, mainly shows the product management and selling report generation process.

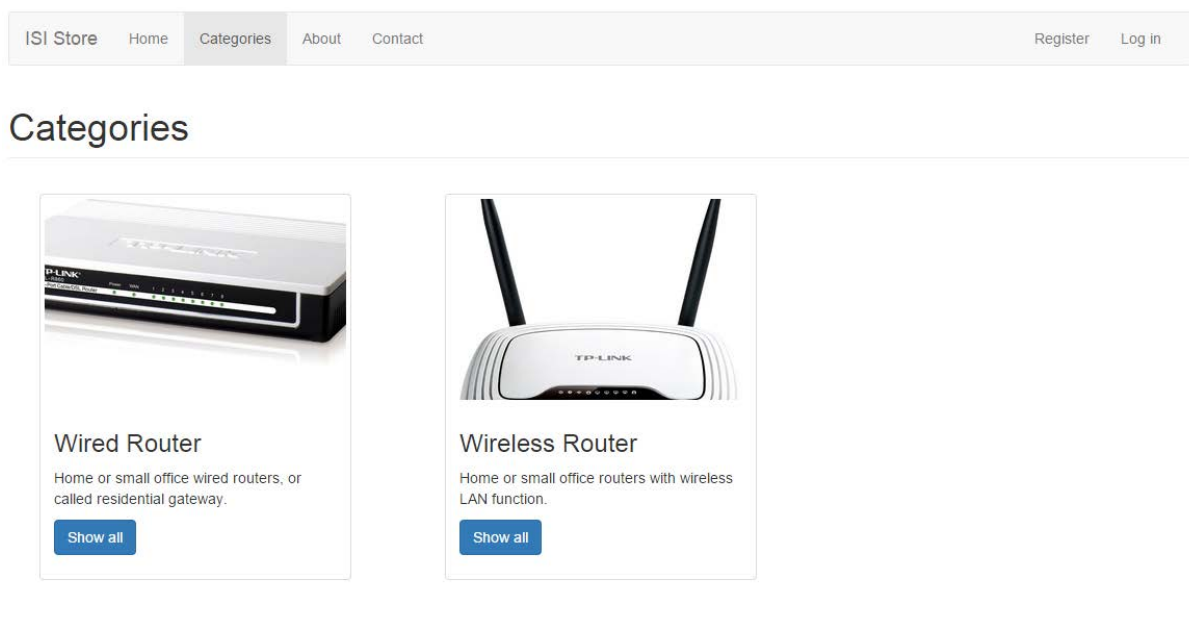


### 5.1.1 HOME PAGE AND PRODUCT DISPLAYING

Home page of the ISI online shopping mall:



Products are displayed in two categories, wired and wireless routers:




Select a category and view the detail of a page.


[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Register](#) [Log in](#)

## Wireless Router All products

Home or small office routers with wireless LAN function.



**TP-LINK TL-WR841N**  
**\$19.99**  
Fantastic 5.0



**TP-LINK TL-WR940N**  
**\$24.99**


There are 4 different sorting functions available for customers to choose from.

Sorting by price in ascending order:


[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Register](#) [Log in](#)

## Wireless Router All products

Home or small office routers with wireless LAN function



**TP-LINK TL-WR841N**  
**\$19.99**  
Fantastic 5.0




**NETGEAR WNR1000**  
**\$21.99**

Sorting by price in descending order:


[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Shopping Cart](#) [Purchases](#) [customer](#)

## Wireless Router All products


Home or small office routers with wireless LAN function.



**TP-LINK Archer C8**  
\$109.99



**NETGEAR WNDR4500**  
\$99.99



**TP-LINK Archer C7**  
\$99.98


Sorted by price in descending order.

Sorting by average rating in descending order:


[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Shopping Cart](#) [Purchases](#) [customer](#)

## Wireless Router All products


Home or small office routers with wireless LAN function.



**TP-LINK TL-WR841N**  
\$19.99  
Fantastic 5.0



**TP-LINK TL-WR940N**  
\$24.99  
Good 4.0



**TP-LINK TL-WR1043ND V2**

Sorted by rating in descending order.

It is easy to query the product by feeding the keywords, either the full product model, or part of it.

TP-LINK

Typing keywords to filter the products.



TP-LINK TL-R860  
\$26.49  
Good 4.0

Detailed description of a product will be shown after clicking the model or clicking ‘View detail’.

## TP-LINK TL-R860 Wired Router



Price: **\$26.49**  
Status: **In stock**  
Rating: **Good** (4 out of 5 points, by 1 customers)

### Properties

Max LAN speed	100 Mbps
No. of LAN ports	8 ports
No. of WAN ports	1 ports
Power	9V DC

### Description

TP-Link 8-Port Cable/DSL Router; 8 10/100Mbps LAN ports for Internet sharing locally, ideal for home and office users

## Customer registration and purchasing sequence:

ISI Store

Home

Categories

About

Contact

Register

Log in

# Home Page

- Categories
- Shopping Cart
- My Purchases
- Dashboard

Register

COMP321 Information System Implementation

Fill in the form with all the necessary information to accomplish the registration process.

ISI Store

Home

Categories

About

Contact

Register

Log in

# Register

**Username**

customer

Required. 30 characters or fewer. Letters, digits and @/./+/-/\_ only.

**First name**

aaa

**Last name**

bbb

**Email address**

Email address

**Password**

Password

**Password confirmation**

Password confirmation

Enter the same password as above, for verification.

**Address**

Address

**Address (2th line)**

Address (2th line)

**Zip**

Zip

Register

Welcome to join us.

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Etiam metus mauris, porttitor id lectus a, auctor tempor dolor. Suspendisse sit amet posuere justo, ut feugiat ante. Fusce metus nulla, cursus id sodales lacinia, pharetra non mauris.

In consectetur blandit velit, ut hendrerit magna ultricies id. Nullam lectus nunc, ornare vitae eros id, tincidunt feugiat eros.

Integer ac rutrum urna, luctus egestas turpis. Mauris vitae arcu quis neque bibendum molestie eu ac orci. Nam a luctus lacus. Nulla efficitur id sem ut finibus. Phasellus ac leo id lacus gravida venenatis vel at lacus.

Integer ut diam non mauris ultrices volutpat. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos.

Already has a account? [Log in now.](#)

Register Done

Thank you

Log in now

Page 37

## Customer login page:

[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Register](#) [Log in](#)

## Login

**Username**

**Password**

[Log in](#)

Welcome back.

After logged in, you are able to enjoy all excellent service offered by us. Including shopping cart, orders tracking and management and so on.

Need a account? [Register now!](#)

COMP321 Information System Implementation

## Purchasing a product by first adding it to the shopping cart:


[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Shopping Cart](#) [Purchases](#) [customer](#)

## Wireless Router All products

Product added into shopping card. ✕

Home or small office routers with wireless LAN function.

[Default](#) [Price](#) [Price](#) [Rating](#)



**TP-LINK TL-WR841N**

**\$19.99**

Fantastic 5.0



**TP-LINK TL-WR940N**

**\$24.99**

Good 4.0

[Buy now](#)  
[View detail](#)

[Buy now](#)  
[View detail](#)

Click the 'buy now' button and a message will turn up, signaling the success of adding it the

Go to the shopping cart. Process to check out.

[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Shopping Cart](#) [Purchases](#) [customer](#)

## Shopping Cart

### Quantity modification

Name	Unit Price	Quantity	Total Price	
<a href="#">TP-LINK TL-WR841N</a>	\$19.99	<input type="text" value="1"/>	\$19.99	<a href="#">Delete</a>
<a href="#">TP-LINK TL-WR940N</a>	\$24.99	<input type="text" value="1"/>	\$24.99	<a href="#">Delete</a>

Total amount: **\$44.98**

Modification on the quantity of each product is available in the shopping cart.

[Checkout](#)

Provide appropriate shipping information and finish the checkout process.

[ISI Store](#) [Home](#) [Categories](#) [About](#) [Contact](#) [Shopping Cart](#) [Purchases](#) [customer](#)

## Checkout

### Order Detail

Name	Unit Price	Quantity	Total Price
<a href="#">TP-LINK TL-WR841N</a>	\$19.99	1	\$19.99
<a href="#">TP-LINK TL-WR940N</a>	\$24.99	1	\$24.99

Total price: \$44.98

[Back to shopping cart](#)

### Shipping Information

**Recipient name**

**Address**

**Address (2th line)**

**Zip**

[Checkout](#)

‘Purchase detail’ indicates the order information. Order cancellation will be in effect before the shipment starts.

ISI StoreHomeCategoriesAboutContact

Shopping CartPurchasescustomer

Congratulation. Your order will be handled sooner if possible.

Purchase Detail

StatusPending

Purchase onApril 8, 2015, 1:55 p.m.

Recipientcustomer X

AddressMacao

Cancel

Products

Name	Unit Price	Quantity	Total Price
TP-LINK TL-WR841N	\$19.99	1	\$19.99
TP-LINK TL-WR940N	\$24.99	1	\$24.99

Total amount: \$44.98

A bar indicating the success of this purchase

Customer could leave messages to vendor after purchasing.

ISI StoreHomeCategoriesAboutContact

Shopping CartPurchasescustomer

Purchase Detail

StatusPending

Purchase onApril 8, 2015, 1:55 p.m.

Recipientcustomer X

AddressMacao

Cancel

Products

Name	Unit Price	Quantity	Total Price
TP-LINK TL-WR841N	\$19.99	1	\$19.99
TP-LINK TL-WR940N	\$24.99	1	\$24.99

Total amount: \$44.98

Messages

more queries about this product.

Send

Leave messages to vendor about this

CustomerApril 08, 2015, 13:59:01 CST

Please ship as soon as possible.



Customer could confirm receiving the product after the vendor shipped the product.

## Purchase Detail

Status Shipping Recipient customer X  
Purchase on April 8, 2015, 1:55 p.m. Address Macao  
Shipment on April 8, 2015, 3:19 p.m.

Received Confirm

Confirm reception of goods.

## Products

Name	Unit Price	Quantity	Total Price
TP-LINK TL-WR841N	\$19.99	1	\$19.99
TP-LINK TL-WR940N	\$24.99	1	\$24.99

Total amount: **\$44.98**

## Messages

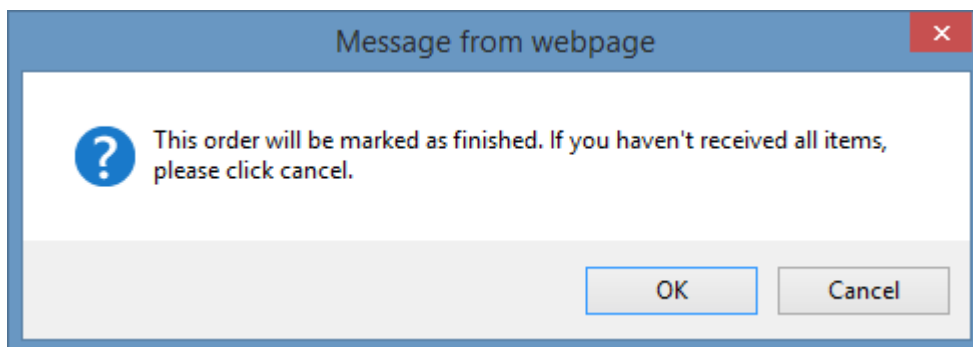
Context

Send

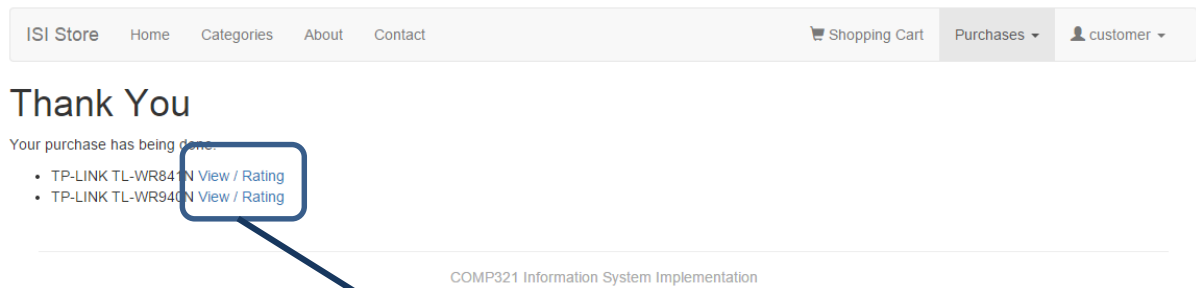
Vendor April 08, 2015, 15:18:58 CST  
we will work on your order soon.

Customer April 08, 2015, 13:59:01 CST  
Please ship as soon as possible.

A message will eject, notifying the user to confirm again before proceed.



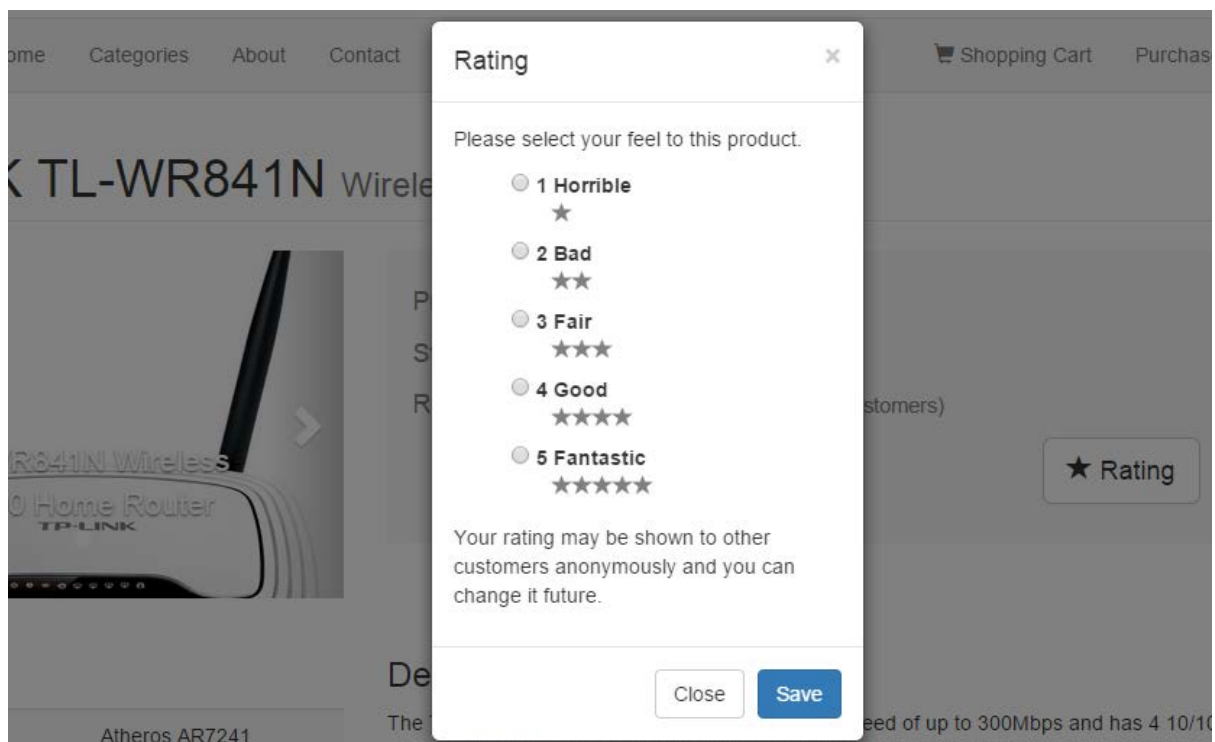
Accomplishing the whole purchasing process.



Rating the product.

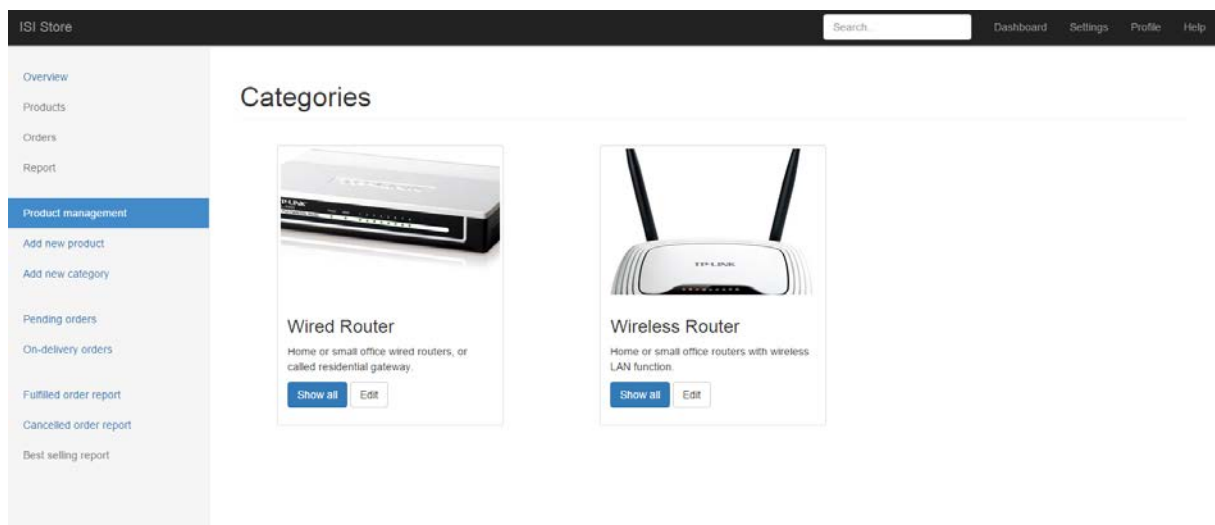


Select the rating from 1 to 5 in the window.



## Vendor side administration

Product management dashboard, providing more sorting functions and product modification.



The product management provides two more sorting functions for the vendor, sorting by sales quantity in descending order and sorting by sales amount in descending order.

ISI Store

Search...

Dashboard Settings Profile Help



Overview  
Products  
Orders  
Report

**Product management**  
Add new product  
Add new category  
Pending orders  
On-delivery orders  
Fulfilled order report  
Cancelled order report  
Best selling report

### Wired Router

Home or small office wired routers, or called residential gateway.

Product name  Filter

	<b>TP-LINK TL-R860</b> \$26.49 Good 4.0	Sale quantity: 0 Sale amount: \$0.00	<input type="button" value="View &amp; Edit"/>
	<b>Test</b> \$5.00	Sale quantity: 1 Sale amount: \$5.00	<input type="button" value="View &amp; Edit"/>

ISI Store

Search...

Dashboard Settings Profile Help

Overview  
Products  
Orders  
Report

**Product management**  
Add new product  
Add new category  
Pending orders  
On-delivery orders  
Fulfilled order report  
Cancelled order report  
Best selling report

### Information

Product name

Price (\$)

Status

Category

Description

Ethernet chip

CPU model

Max LAN speed

No. of LAN ports

No. of WAN ports

Wireless type

### Photos

Image

Description

Image

Description

Image

Description

Adding a new product:

ISI Store

Search

Dashboard

Settings

Profile

Help

Overview

Products

Orders

Report

Product management

Add new product

Add new category

Pending orders

On-delivery orders

Fulfilled order report

Cancelled order report

Best selling report

## Add product

### Information

Product name

Product name

Price (\$)

Price (\$)

Status

In stock

Category

\*\*\*\*\*

Description

Description

### Photos

Image

选择文件 未选择任何文件

Description

Description

Delete

Image

选择文件 未选择任何文件

Description

Description

Delete

Image

选择文件 未选择任何文件

Description

Description

Adding a new category:

ISI Store

Search

Dashboard

Settings

Profile

Help

Overview

Products

Orders

Report

Product management

Add new product

Add new category

Pending orders

On-delivery orders

Fulfilled order report

Cancelled order report

## Add Category

Category Name

Category Name

Description

Description

Add

Cancel

Management of pending orders:

ISI Store

Search...

Dashboard

Settings

Profile

Help

Overview

Products

Orders

Report

Product management

Add new product


Add new category

Pending orders

On-delivery orders

Fulfilled order report

## Pending Orders




Purchase date: April 8, 2015

Status: Pending

Customer: customer X (customer)

Total amount: \$44.98

View detail



Purchase date: April 8, 2015

Status: Pending

Customer: Dennis YIN (Dennis)

Total amount: \$124.47

View detail

Viewing details of an order and take certain actions.

## Purchase Detail

Status Pending Recipient customer X  
Purchase on April 8, 2015, 1:55 p.m. Address Macao

Ship

Cancel

## Products

Name	Unit Price	Quantity	Total Price
TP-LINK TL-WR841N	\$19.99	1	\$19.99
TP-LINK TL-WR940N	\$24.99	1	\$24.99
			Total amount: <b>\$44.98</b>

## Messages

Confirm 'shipped' status after an order has been shipped.

## Purchase Detail


Status Shipping Recipient customer X  
Purchase on April 8, 2015, 1:55 p.m. Address Macao  
Shipment on April 8, 2015, 3:19 p.m.

## Products

Name	Unit Price	Quantity	Total Price
TP-LINK TL-WR841N	\$19.99	1	\$19.99
TP-LINK TL-WR940N	\$24.99	1	\$24.99
			Total amount: <b>\$44.98</b>

## Messages

Context

Vendor  April 08, 2015, 15:18:58 CST  
we will work on your order soon.

## Fulfilled order report

Overview	
Products	
Orders	
Report	
Product management	
Add new product	
Add new category	
Pending orders	
On-delivery orders	
Fulfilled order report	
Cancelled order report	
Best selling report	

IS| Store

Search..

Dashboard

Settings

Profile

Help

# Fulfilled Order Report

From

2015-04-01

to

2015-04-08

Filter

Clear

#	Purchase date	Customer name	Total amount	Shipment date	Receipt date	Elapsed days
15	April 8, 2015, 11:35 a.m.	customer X (customer)	\$24.99	April 8, 2015, 11:35 a.m.	April 8, 2015, 11:35 a.m.	0

«

1

»

## Cancelled order report

[\(S\) Store](#)
[Search...](#)
[Dashboard](#)
[Settings](#)
[Profile](#)
[Help](#)

[Overview](#)
[Products](#)
[Orders](#)
[Report](#)
[Product management](#)
[Add new product](#)
[Add new category](#)
[Pending orders](#)
[On-delivery orders](#)
[Fulfilled order report](#)
[Cancelled order report](#)
[Best selling report](#)

## Cancelled Order Report

#	Customer name	Total amount	Cancel date	Cancelled by	Elapsed days
10	Vender Is me (vender)	\$19.99	March 3, 2015, 11:54 a.m.	TODO	0
6	Heinel Halia (guest)	\$26.49	March 2, 2015, 11:02 p.m.	TODO	0

From

« April 2015 »

yyyy/mm/dd

Filter

«

3 4 5 6 7 8 9

## 5.2 TESTING

For the sake of rigor and comprehensiveness when the website is put into running, we have designed some test cases to ensure the correctness of this system. The test mainly falls on the following three parts, focusing on those trivial parts such as form fill-in and password matching where error checking should take the appropriate actions to prevent users from performing erratically. As for the comprehensiveness of the whole system, it is done by Django, using the unittest module.

### ● Registration and login

Test Case Number:	1			
Test Case Name:	Duplicate user ID			
Short Description:	User ID may already be used when creating a new account			
Module :	account			
Pre-condition:	User ID 'abcd' has been used by someone already			
Step	Action	Expected System Response	Pass/Fall	Comment
1	Enter "abcd" as			
2	Enter "abc" as			
3	Click the register button	The system displays a message about the ID has been used	Pass	

**Table 10: Testing (Duplicate ID)**

Test Case Number:	2			
Test Case Name:	Missing some required information in registration			
Short Description:	Leaving first name, last name, email address, password, or address blank.			
Module :	account			
Pre-condition:				
Step	Action	Expected System Response	Pass/Fall	Comment
1	Leaving any compulsory field empty			



2	Click the register button	The system signals at the corresponding field.	Pass	
---	---------------------------	--	------	--

**Table 11: Testing (Missing info)**

Test Case Number:	3			
Test Case Name:	Password mismatches in the registration form			
Short Description:	User types a different password in confirming password section.			
Module :	account			
Pre-condition:	Password has already been typed above.			
Step	Action	Expected System Response	Pass/Fall	Comment
1	Enter password			
2	Repeat password			
3	Click the register button	The system displays a message about the password mismatching	Pass	

**Table 12: Testing (Password mismatch)**

Test Case Number:	4			
Test Case Name:	Wrong username in user login			
Short Description:	User types a wrong username or leave it blank			
Module :	Account			
Pre-condition:				
Step	Action	Expected System Response	Pass/Fall	Comment
1	Enter username			
2	Enter password			
3	Click the login button	The system displays a message about the wrong password or username	Pass	

**Table 13: Testing (Wrong username)**

Test Case Number:	5
Test Case Name:	Wrong password in user login

Short Description:	User types a wrong password			
Module :	Account			
Pre-condition:	Username has been typed above			
Step	Action	Expected System Response	Pass/Fall	Comment
1	Enter username			
2	Enter password			
3	Click the login button	The system displays a message about the wrong password or username	Pass	

**Table 14: Testing (Wrong password)**

● Purchasing

Test Case Number:	1			
Test Case Name:	Empty input in quantity of a product in the cart			
Short Description:	Add to cart text box with empty input			
Module:	cart			
Step	Action	Expected System Response	Pass/Fall	Comment
1	Select the content for the quantity			
2	Press Delete button to delete the number	The system calculates and displays	Pass	
3	Click the checkout button	The system changes automatically the quantity to 1.	Pass	

**Table 15: Testing (Empty Quantity)**

Test Case Number:	2			
Test Case Name:	Missing recipient name or address in purchase orders			
Short Description:	Either the recipient name or the receiving address is empty in the order			
Module:	order			
Step	Action	Expected System Response	Pass/Fall	Comment
1	Leave recipient name empty.			

2	Click checkout button	The system displays a message in the corresponding cell to inform the user.	Pass	
---	-----------------------	---	------	--

**Table 16: Testing (Missing order info)**

● Administration

Test Case Number:	1			
Test Case Name:	Select wrong start date or end date in order report			
Short Description:	The end date is earlier than start date or the format of date is incorrect			
Module:	Order admin			
Step	Action	Expected System Response	Pass/Fall	Comment
1	Select '2014-4-1' as start date			
2	Select '2014-3-1' as end date			
3	Press filter button	Displaying a message, indicating 'End date should be later than start date. Please select appropriate dates.'	Pass	

**Table 17: Testing (Wrong start/end date)**

## 6 CONCLUSION AND FURTHER WORK

### 6.1 CONCLUSION

In sum, the work described in this project has been concerned with the development of a user-friendly online shopping website focusing on selling routers. Django framework, which is implemented by using python, is utilized on server side to construct and process all business transactions. The web front-side is rendered by using bootstrap, an elegant framework used to handle web page interactions. A total of 44 requirements described in the first chapter are actualized, including account management, product operations, vendor-side dashboard, product view, sorting, filtering, order processing, rating, and comment subsystems. The work has been properly allocated and scheduled. All the four team members participate actively in this project, responsible for their own parts. All functionalities and layouts are discussed, scrutinized, and tested.

The project began with an investigation of the current market analysis, examining the mainstream competitors and their advantages. It helped us determine our major products to sell, as well as assisted us to develop better interface and user-friendly interactions.

Our development strictly follows the requirement list, among all these 50 requirements, we accomplished 44 of them. All the compulsory requirements are carefully carried out and checked.

The data of products and business transactions are stored in MySQL database, the whole software system contains 9 tables, namely, photo, category, product, rating, order item, cart item, user, order, and message. They are properly linked to each other, in order to support the account management and execution of business transactions.

This whole business system, labeled as Spartan and simple, however, is at the inchoate stage. On the vendor side, since the business system targets on selling routers, it provides only predetermined product categories: wired router and wireless router. It is not easy for the vendor to change the category without starting from the scratch, and the product management dashboard avails limited properties, photos, and descriptions.

## 6.2 FURTHER WORK

In the near future, it is viable to ingest more functions through evaluating other e-business website, like Taobao and amazon. More flexible category management and product modification should be available in the dashboard module. Webpage adornment is also in schedule, both in homepage and in product displaying, in order to refresh customers' eyes.

Concerning about the payment part, domestic widely-used payment methods will be fully supported in ISI store, such as E-bank, UnionPay, and Alipay. Simultaneously, world-renowned payment, such as Visa and MasterCard will also be available. In order to embed these online payment systems, one of the most crucial pre-requisites is security, some modules, especially account, order, and product management must be reinforced.

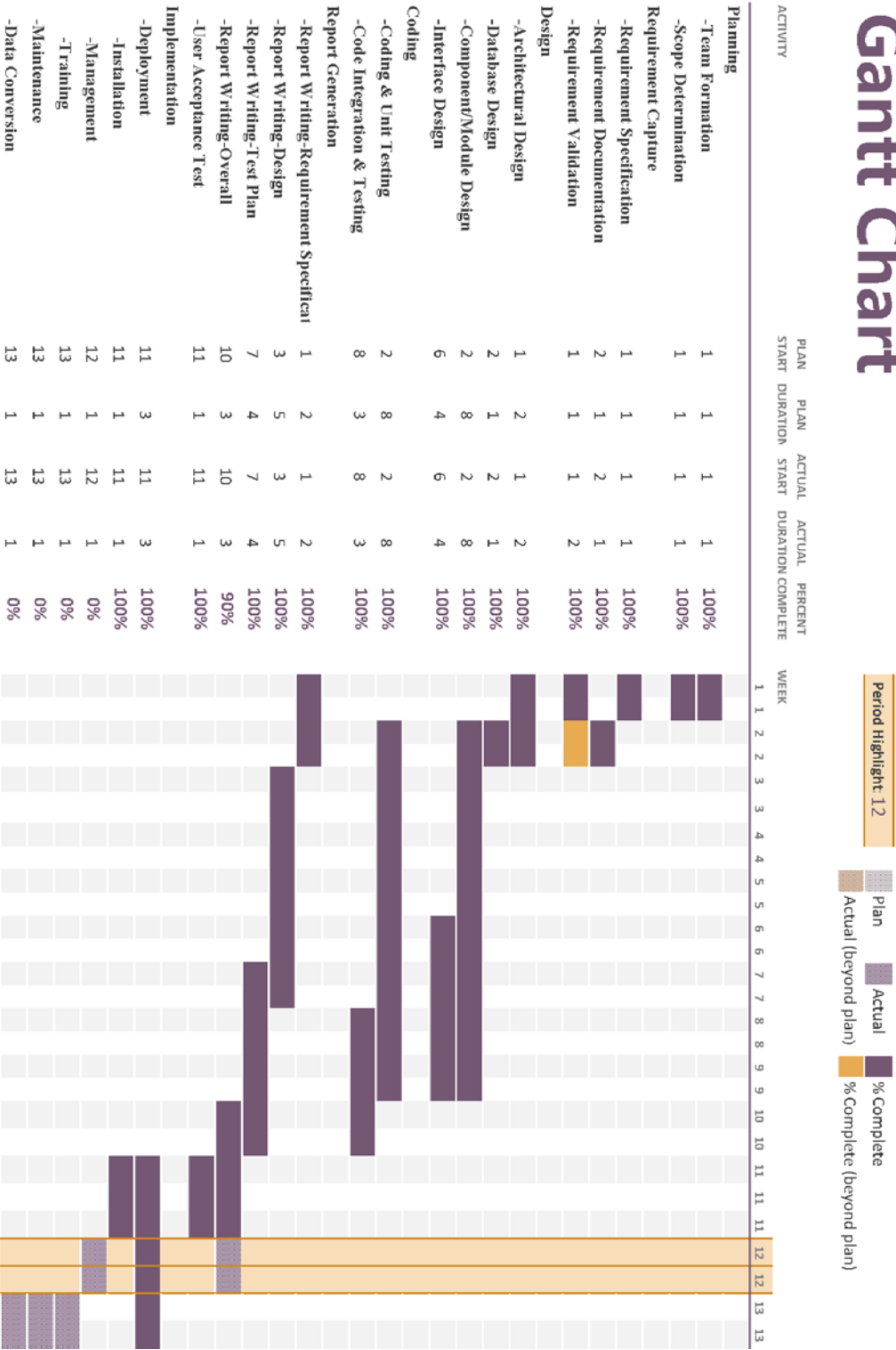
Last but not least, we also plan to optimize each module and database for the sake of better robustness and shorter interaction responses in practical application.

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# Gantt Chart



## APPENDIX

### PROJECT PLAN



## TEAM MEMBERS

Tim (P-12-0794-9), Team Leader

Sheldon (P-12-0792-0)

Billy (P- 12-0786-1)

Dennis (P-12-0788-0)

## DEVELOPMENT DURATION

The development duration, according to the document, is 12 Weeks.

## JOB DISTRIBUTION

### **Billy:**

Requirement group A & F

UI Design

Product display and details

Order list display

Unit Testing

Shopping cart

Purchasing

Product administration

Writing Reports: background and related work

**Dennis:**

Requirement group B & E

UI Design

Account management

Product display and details

Unit Testing

Account registration and management

Product modification on vendor side

Product administration

Writing Reports: background and related work

**Sheldon:**

Requirement group C & G

UI Design

Generating Documents

Writing Reports: state diagram, sequence diagram, and data modeling

**Tim:**

Requirement group D & H


UI Design

Generating Documents

Writing Reports: activity diagram, data structure, Gantt chart, and other parts

Coordinating

PEER ASSESSMENT FORM

 <p style="text-align: center;"><b>BSc. in Computing 2014/15</b> <b>COMP321 Information System Implementation</b> <b>Peer Assessment Form</b></p>					
Group number					
Group members	Student ID		Student name		
	1.				
	2.				
	3.				
	4.				
5.					
Contribution (Each row must total to 100%)					
	Member 1	Member 2	Member 3	Member 4	Member 5
1. Project leadership	%	%	%	%	%
2. Data modeling	%	%	%	%	%
3. User interface design	%	%	%	%	%
4. Program development	%	%	%	%	%
5. Solving technical problems	%	%	%	%	%
6. Testing and sample data	%	%	%	%	%
7. Report writing	%	%	%	%	%

8. Preparing / giving presentation	%	%	%	%	%
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By default, the eight items above have the same weight when calculating the overall contribution percentage. You are welcome to suggest different weight if you consider some aspects should carry more weight.