

Phase III Report

YABE



Team Error 404 Members:

Aiyu Cui, Inyoung Lee, Yuzhen Liu, Yang Chen

Source Code Available:

<https://github.com/cuiaiuyu/YABE2018>

Table of Content

1.	Introduction.....	6
2.	Requirement Analysis.....	6
2.1.	Auction Items.....	6
2.2.	Categories.....	7
2.3.	Registered Users.....	8
2.3.1.	Companies.....	8
2.4.	Rating.....	9
2.5.	Browsing.....	9
2.6.	Searching.....	10
2.7.	Bidding.....	10
2.8.	ButItNow.....	11
2.9.	Auction Statistics.....	12
2.10.	Delivery.....	12
2.11.	Reports to Telemarketers.....	13
2.12.	User-Behavior Based Recommendation	13
2.13.	Donation.....	13
2.14.	Membership.....	14
2.15.	Cash Back.....	14
3.	Conceptual Database Design.....	14
4.	Refined Schema.....	18
5.	SQL Statements.....	20
5.1.	User.....	21
5.2.	Item.....	21
5.3.	Bidding_Item.....	21
5.4.	Regular_Item.....	22
5.5.	Sell.....	22
5.6.	Bid.....	22
5.7.	Biddong_Record.....	23
5.8.	Category.....	23
5.9.	Address.....	23
5.10.	Payment_Method.....	23
5.11.	Order.....	23
5.12.	Review.....	24
6.	Technology Overview.....	24
6.1.	Programming Language.....	24
6.2.	IDE.....	24

6.3.	Django.....	25
7.	Populating Database.....	26
8.	Transaction.....	27
8.1.	Register User.....	27
8.2.	User Log In.....	28
8.3.	Add Auction Item.....	28
8.4.	Add Regular Item.....	28
8.5.	Browsing Items.....	29
8.6.	Searching Items.....	29
8.7.	Bid Item.....	29
8.8.	Buy Regular Item.....	30
8.9.	Leave Rating.....	31
8.10.	Terminate Auction.....	31
8.11.	TeleMarketing Report.....	31
8.12.	Donation.....	32
8.13.	Membership.....	32
8.14.	Cash Back.....	33
9.	System Framework.....	34
10.	Reflection.....	34
11.	Conclusion.....	35
12.	Appendix A - The comparison of ER diagrams.....	36
13.	Appendix B - The Overview of Populating Database.....	39
14.	Appendix C - The Overview of MySql Creation.....	47
15.	Appendix D - Schema Normalization.....	54
16.	Appendix E - Web Transactions.....	56
17.	Appendix F - Group Progress Report	
18.	Appendix G - Individual Progress Report	

List of Figures

1. Figure 1: Conceptual Design Overview.....	16
2. Figure 2: ERD of Item with Categories.....	17
3. Figure 3: ERD of Users Make Orders.....	17
4. Figure 4: ERD of Order Processing.....	18
5. Figure 5: ERD of Reviews of Items.....	18
6. Figure 6: Overview of Refined Schema.....	20
7. Figure 7: Sign-Up Page.....	27
8. Figure 8: Log-In Page.....	28
9. Figure 9: Searching Items Page.....	29
10. Figure 10: Products for Bidding.....	30
11. Figure 11: Products for Selling.....	30
12. Figure 12: Rating.....	31
13. Figure 13: TeleMarketing Report.....	32
14. Figure 14: Donation Page.....	32
15. Figure 15: VIP Page.....	33
16. Figure 16: Cash-Back History Page.....	33
17. Figure 17: System Framework.....	34
18. Figure 18: Conceptual Design of Phase 1.....	36
19. Figure 19: Conceptual Design of Phase 2.....	37
20. Figure 20: Conceptual Design of Phase 3.....	38
21. Figure 21: Table of User in Database.....	39
22. Figure 22: Table of Seller in Database.....	39
23. Figure 23: Table of Item in Database.....	40
24. Figure 24: Table of Bidding_Item in Database.....	40
25. Figure 25: Table of Regular_Item in Database.....	40
26. Figure 26: Table of Sell in Database.....	41
27. Figure 27: Table of Bid in Database.....	41
28. Figure 28: Table of Categories in Database.....	41
29. Figure 29: Table of Belong_to in Database.....	42
30. Figure 30: Table of Contents in Database.....	42
31. Figure 31: Table of Address in Database.....	42
32. Figure 32: Table of Ship_From in Database.....	43
33. Figure 33: Table of Ship_To in Database.....	43
34. Figure 34: Table of Payment_Method in Database.....	43
35. Figure 35: Table of Retrieve in Database.....	44
36. Figure 36: Table of Order in Database.....	44

37. Figure 37: Table of Place in Database.....	44
38. Figure 38: Table of Track in Database.....	45
39. Figure 39: Table of Review in Database.....	45
40. Figure 40: Table of Write in Database.....	46
41. Figure 41: Old Version of Schema.....	53
42. Figure 42: Home Page.....	56
43. Figure 43: Browsing Items Page.....	57
44. Figure 44: Dashboard My Account.....	58
45. Figure 45: Add Auction Item.....	59
46. Figure 46: Add Regular Item.....	60
47. Figure 47: Bid Item.....	61
48. Figure 48: Buy Regular Item.....	62
49. Figure 49: Sold History.....	62
50. Figure 50: Bidding History.....	63
51. Figure 51: Purchase History.....	63
52. Figure 52: Auction Statistic.....	64
53. Figure 53: Edit Address.....	65
54. Figure 54: Edit Payment Method.....	65

1. Introduction

If you want to buy everything special at home, YABE is one of your top choices. YABE is a fantastic website that provides excellent products of all categories, which would satisfy your daily demands. We offer new, used, and virtual items with the lowest prices in the world. Any users can be sellers and buyers, and we are glad to provide our fantastic services for everyone. YABE is the best auction platform in the world because of our three features, which are User-Behavior Based Recommendation, Donation, and Membership. YABE will be based on your behaviors to give our best recommendation. For our responsibility, our website also encourages customers to donate a little bit to help many people who need help. Then we provide more benefits for our VIP members; VIP members can use very little money to save a lot on our website, and they will enjoy more valuable services. Our website also provides the features of cash back and monthly payment that will help our customers enjoy more happiness. Then the most critical item is that we auction the future success. You will make more money on our website in the future. In this report, our group will introduce our requirement analysis and conceptual database design. Our goal is to present what is the best on our website.

2. Requirement Analysis

2.1 Auction Items

The items that are auctioned by YABE are unique products from many sellers. The source of the items can be either an individual and a company. Everyone can be a registered user to auction items on our website. Main categories of items on our website that are new, used, virtual and future success. For new and used items, they are set a starting price, once price

increment, and maximum price for BuyItNow option. For the virtual item, it includes the electronic bookstore, video store, applications and electronic licenses, and so on. Our website also provides same auction option for virtual items. The item of future success is an investment plan for seeking funds. If a user has a very wonderful program but no money, he or she can also auction the plan on our website. If the project is profitable, it needs to distribute dividends to investors. investors of a plan can be multiple users, and the sellers can choose bidders who they want when the bidders give a price for this program. There are two options for an item to sell that are buy once payment, and payment by installment if the sellers accept this option. For the item of future success, it can be once funded and phased funded that depends on the sellers.

After we finished the implementation, our team gives a virtual tag to each virtual item. Sellers can sell any virtual items on our webpage. Then, the item of future is not provided on our webpage because we think it is not necessary our current business.

2.2 Categories

- All
 - Bookstore
 - Collectibles & Art
 - Electronics
 - Fashion
 - Home & Garden
 - Sporting Goods
 - Toys & Hobbies
 - Others

All items sold at YABE are categorized by the classification tree above, The highest subject of the tree is “All” that can represent all items on our website. There are ten branches of the department since we tried to categorize our products. Ours next step is add more subcategories under each category, which was proposed in our phase 2 report.

In addition, our website would like to represent the products under each category in alphabetical order. In future, we plan to sort by priority the specific item recommended or with lowest price offer.

2.3 Registered Users

Customer can register as buyers and sellers to access YABEt. The users are requested to fill up personal information including name, address, and contact information. Any user can be both a seller and a buyer. If a user wants to purchase or auction an item, our website will ask about the address of shipping and billing, and payment methods such as debit card, credit card, banking account. Once the user set payment information in the profile, the record will be used for future transactions. After becoming a user on our website, he or she can purchase our VIP member. A VIP member can enjoy many benefits of our site such as free shipping, more cash back and so on. In the future, we plan to implement more types of sellers, like individual seller and company seller, to better manage our system. Here is our detailed plan of company seller:

2.3.1 Companies

Companies can stand for two type of users that are company providers and individual providers. Manufacturers are for firms or corporations that can produce a sale in a large quantity and long-term supply agreement. The individual provider is for individual who provider items what can be any little objects or recycle items. Our website welcomes every user to auction their handmade item with arts and skills. Any registered users can sell items on our website, and they require to submit an application that will be reviewed by our management. The application includes more specific information that users need to fill, such as social security number. For

manufacturers, they must provide their government certificate of the company. To guarantee the quality of products, all providers must accept our returning policy, and they are responsible for listing all descriptions of the items.

2.4 Rating

To provide the best shopping experience to our customer, we offer the feature of rating for buyers. All buyers can rate items that they have purchased and the service of sellers after a product has been finished delivery. Our website will provide a rating on a scale from 1 to 5, and the right to write a review for this item. The rate and review will present publicly under each item sorted by dates. The feature of rating will help customers to make decisions when they want to buy something.

For users, they can find a button of “Write A Review” under the main page of the items they has bought. After they received an ordered item, users have the right to rate the purchased products and the seller can also reply to review of their products. Sellers do not have permissions to delete or modify the evaluation. In future, we plan to enable users to use text, pictures, and videos to customize customer reviews and to edit their reviews later.

2.5 Browsing

On our website, users can trace everything from the classification tree under the function of categories. Users can browse the categories step by step, and narrow down branches under categories to specify what they want during browsing. In the future, we want achieve something like, for example, a VIP member wants to browse some special items, members can browse like Departments>>Bookstore>>Books Offer that path will give best results to the customer. Also,

our website provides special-off items, recommended items, and amazing items on the home page when every user get into our website.

2.6 Searching

Besides targeting items directly on the category trees, the user can also search items by keywords in the searching bar. Our website will return all items that match the keywords. The searching range includes the name of all items on our website. In future, we want that the matched items will be shown to users from highest rating to lowest rating, and the users can also change the type of item sorting by price, categories, etc. Also we want to our website can recommend items the customers may interested when there is no matching someday in the future.

2.7 Bidding

The auction is the primary business of our website. If many users are interested in one certain item, the seller can offer it up for bidding. All the buyers have to bid for this item, and that item would belong to the bidder with highest bidding price. For the bidding, the seller can set the start price, once-increment price, maximum price and end time of the auction. Buyers can choose to participate any auctions that are open on our website. Buyers can give the amount that must be higher than the start price and the last bidding price. If there is a once-increment price, they also need to follow it. When the period ends, the item would belong to the buyer with the highest price, or the buyer can buy the item with the maximum price that is set by the seller. That is allowance if the seller does not set the maximum price. Each buyer can bid an item multiple times. Once the buyer placed bidding, the bidding cannot be canceled, and that would be recorded in the bidding history of this item. In terms of implementation, each time when the

maximum amount of bidding price changes, the website would present the maximum bidding price at present. In case of bidding price has been canceled, all the bidding information must be stored in the database until all the process for bidding has been ended.

In the future, we want to achieve all information about the buyers is all protected on our website, so other customers cannot see any information about the buyers. After the auction is finished, the winner receives a notice, that notice can be text or email that would let the winner know that he or she wins the bidding, then he or she needs to pay the item. During the winner pay the item, the deposit will be a part of the bill. If the winner abandons this bidding result, our website will charge this deposit as penalty fee.

2.8 BuyItNow

This option is a relationship between sellers and buyers. Each regular item will at least set a basic price, time period and maximum price. If users like an item very well because of its description or figure, they can use BuyItNow option to buy the item directly with the maximum price of this item in its time period. If an item does not set a maximum price, our website does not provide BuyItNow option for this item. Then if users set one-click BuyItNow, they can buy an item without getting payment process, and our website will directly charge from users' payment record in profile. One-click BuyItNow is dangerous but that can avoid missing users' beloved items in a second. All users can cancel the function of one-click, next will go into payment process when users hit BuyItNow. By default, one-click BuyItNow is be turned off.

When user decided to purchase some items using BuyItNow feature and after the user made a payment, the process would continue for setting up the delivery information and shipping methods.

2.9 Auction Statistics

Our website will periodically provide auction statistics in any items to offer the best user experience for every customer. It is a report summarizing the statistics of auction items based on categories of item are generated. The auction statistics includes item id, list of bidding price, sales volume, and stock of the item. The auction statistics will provide much valuable information, and that is good for sellers to develop a better sales plan.

Auction Statistics feature could be implemented by simply manipulating the database for seller's products. Our website would be able to analyze the number of products sold, bidding information and number of stocks for seller's convenience to view the current sell status at glance.

2.10 Delivery

When the winner of an item is determined, the winner must pay the full amount of money to YABE's account, or payment with installment. After payment transaction, the item will start shipping processes, and send tracking number both to buyer and YABE. Then our open a permitted API to the shipping company to update the status of the shipment. The status of the shipment is suitable for both the seller and the winner to track their item. When the item is shipped, our website will pay the money to the seller or start the payment installation if the winner has no further request after the couple days. If the item is lost during shipping, we have the right to return money to the winner and report this situation to the seller, and the seller should go to talk to the shipping company. If the winner does not satisfy the item, he or she should report to the seller first and start the returning process. After both sides confirm the refund, the buyer will deliver the item to the seller at its own cost and the seller will give the money to us.

Once the seller receives the item, our website will give the money back to the buyer. If the winner does not receive the item in an estimated period of time for delivery, he or she can also report to our website and request to cancel the order. For virtual items, the seller will provide a download link or confirmation email to the winner after the winner pay for the item.

2.11 Report to Telemarketers

Our website has business with the telemarketers, and we will send users' information to the telemarketers such as username, address, purchase history, and selling history. They will send the required information to all users for every season of our website. That information will help users to consume on our website.

2.12 User-Behavior Based Recommendation

We did NOT implement this, because we realize it is meaningless to try to develop such a recommendation algorithm without real world big data. If one day we could have access of the real world data, we wish Our website could provide the featured recommendation that is based on the behavior of users on the website. Base on the searching history and order history of customers, our website will recommend items that are related to the personalized experience of customers. For example, if a user bought a laptop from our website, we will recommend the accessories of the computer such as bag, mouse, and protection cover. Our website will present the related items on the home page, and the users can browse everything related what they want at the beginning of opening our website. This feature is terrific for giving suggestions to our users so that they are more convenient to make decisions.

2.13 Donation

YABE provides an optional donation for our society as one of our three unique features. When a user places an order at the end of the payment process, our website will have a checkbox to ask the user to donate. The money will all be donated to the Red Cross.” and the option for the donation will be \$1, for each checkbox. Then our website will add this donating amount to the final bill without the tax, next the user just needs to pay the bill to finish the donation.

2.14 Membership

To better benefit the customers, our website offers the VIP membership for our loyal users. The annual fee of VIP membership is \$100 if users pay it once. Our website will provide many unique benefits for VIP member, which makes cost for VIP-ship totally worth. The benefits of VIP membership includes more cash back, free shipment with any bill, special item offer, and so on. In future, we want to achieve the distinguishment between regular user and VIP: regular users need to pay one-week ground shipping, but VIP members will enjoy free two-day shipping; Regular users will have 2% cash-back, then VIP members will enjoy 4% cash-back; More valuable and lower-priced items are offered to VIP members. More and more benefits will be severd to our VIP members.

2.15 Cash Back

To give back to our valuable customers, we have the feature of cash-back that is provided to our users. When users pay the final bill, regular users will earn 5% cash back that can be used for future consumption, and VIP member is the only customer who can use this benefit. Also, the part of the amount of donation does not earn any cash back.

3. Conceptual Database Design

Our team edited some errors in our ER diagram from the phase 1 to the phase 2. We fixed the weak entity mistakes. The mistakes always are the dotted line for the weak-entity primary keys, bold lines for the relation with weak entities, and bold rectangles for weak entities. From the phase 2 to the phase 3, we modified the attributes of the user table. We change some attributes to improve the quality of our database and remove the ISA relation in the user entity and change to an attribute - isSeller that can determine the seller in this database. We also modified some attributes in the item table, the category table, the review table and so on. Please see our ER diagrams to check the details of the reports of three phases.

NOTE: In Appendix A, we provide the comparison among the ER diagrams of three phases.

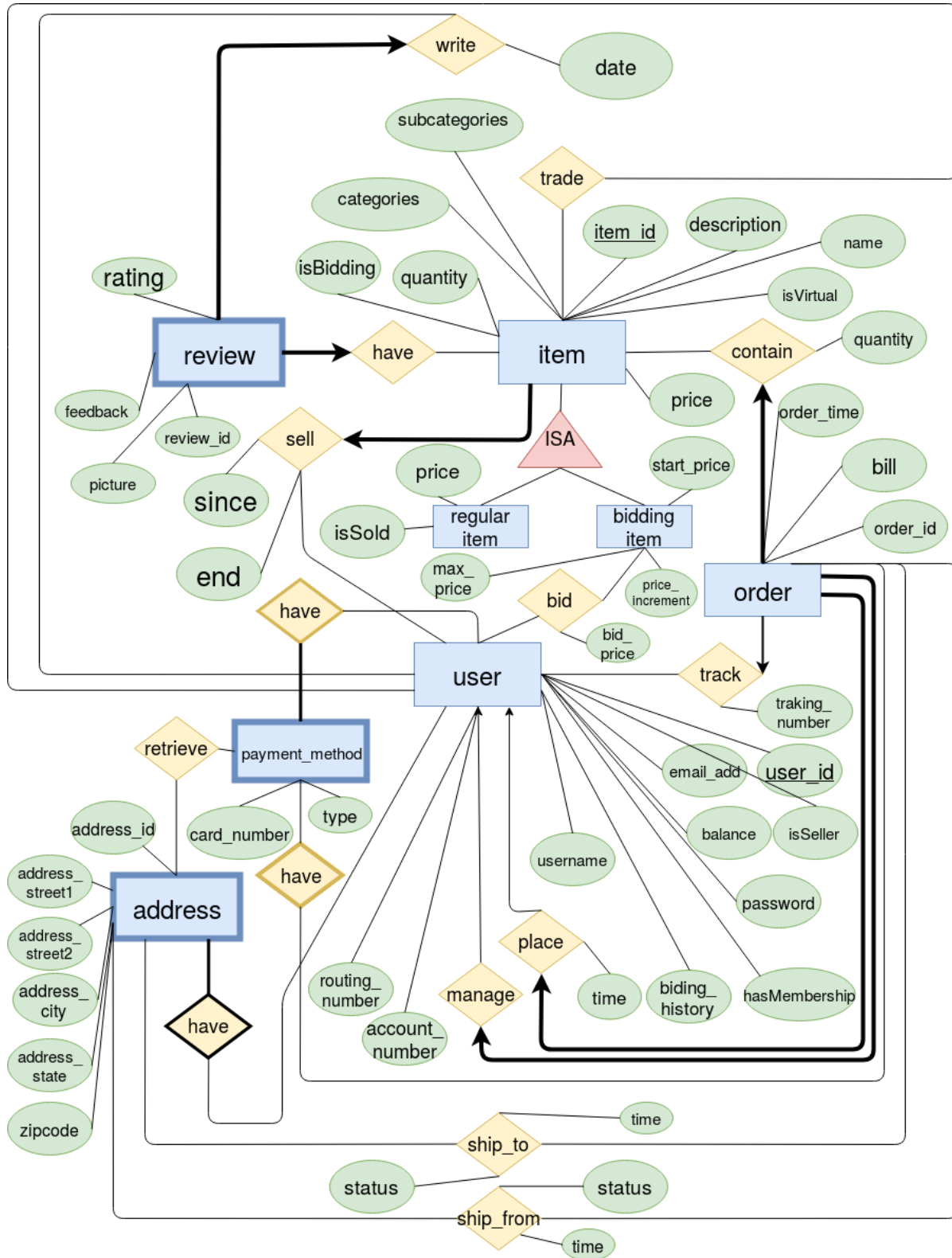


Figure 1: Conceptual Design Overview

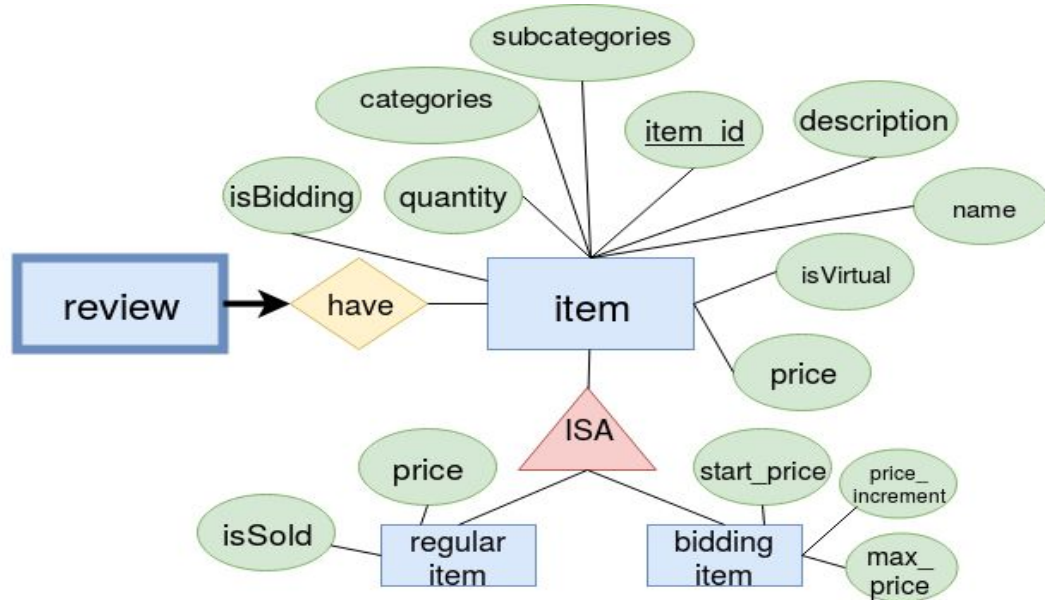


Figure 2: ERD of Item with Categories

In this Figure 2, all items belong to the categories, and some items can belong to couple categories. For the attribute of isVirtual, the database records 0 when items are not virtual. Otherwise, it marks 1.

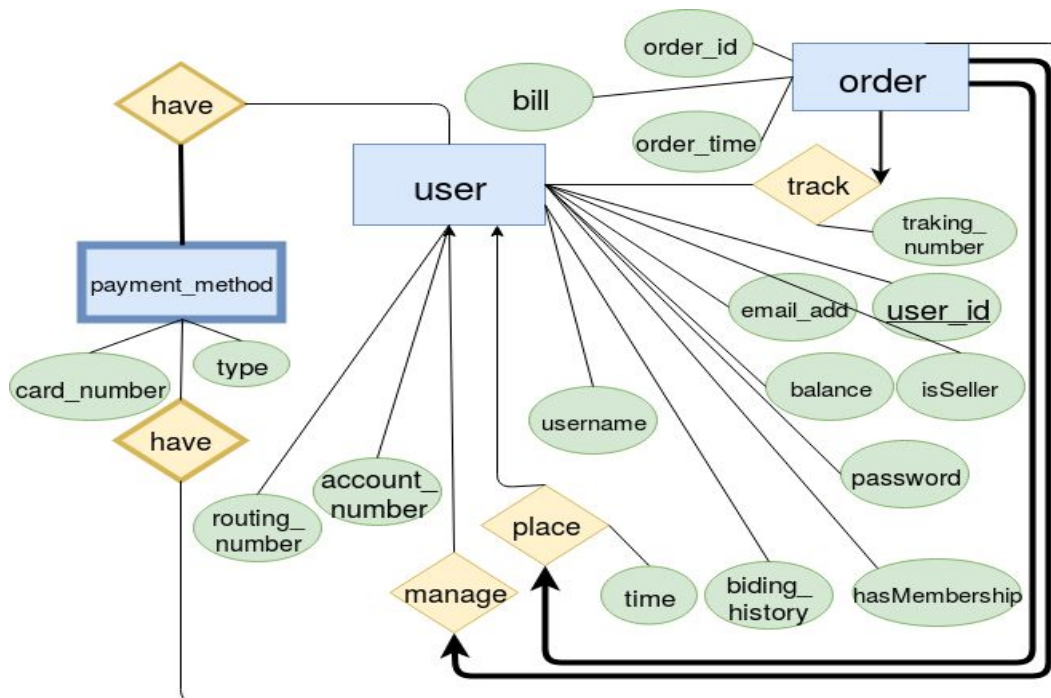


Figure 3: ERD of Users Make Orders

In this Figure 3, buyers can place orders, and seller can manage orders. When the order is placed, the user can make the order retrieve the payment method. For hasMembership of the user, the database will record 1 if the user is VIP member. Otherwise, it marks 0.

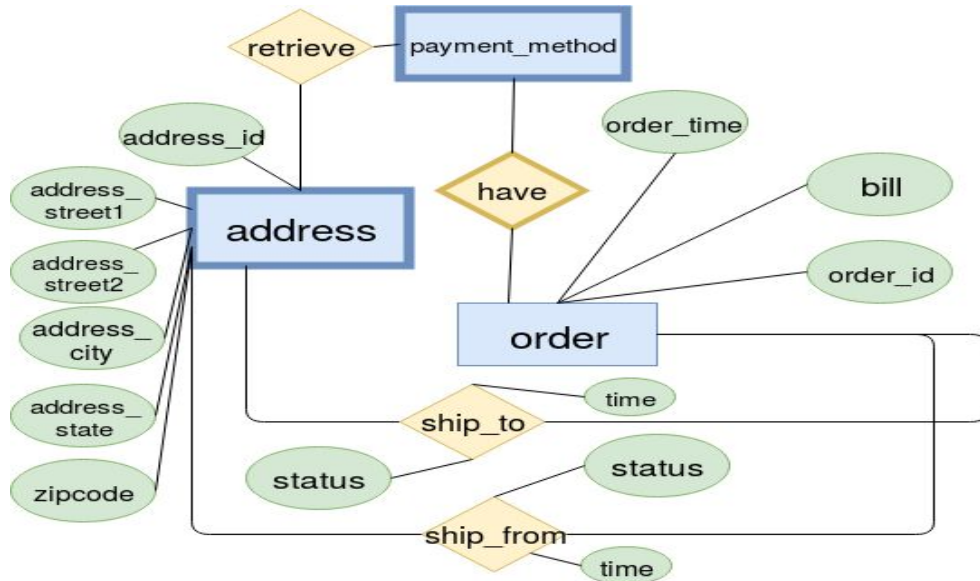


Figure 4: ERD of Order Processing

In Figure 4, the address is a weak entity, and the primary key is with dash underline.

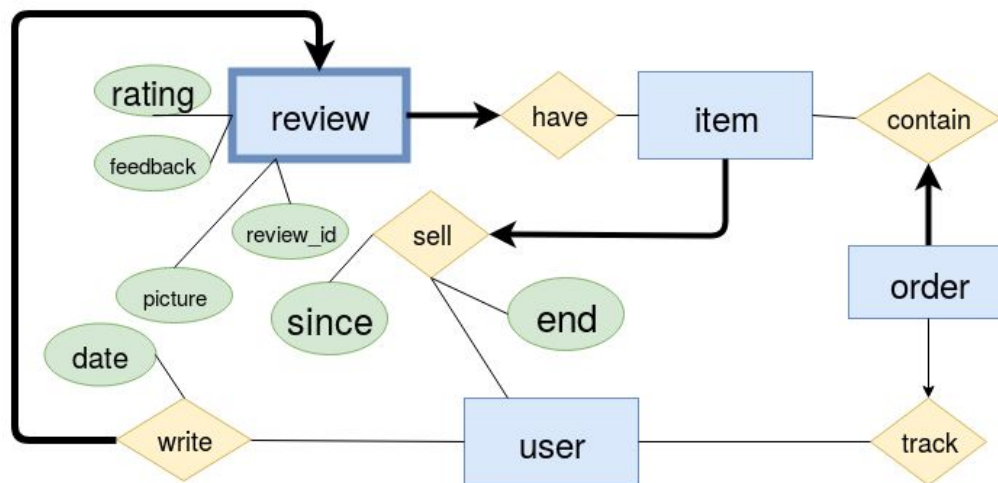


Figure 5: ERD of Reviews of Items

4. Refined Schema

From the phase1 to this final report, we optimized our database design. We used the third normalization to normalize the most part of the schema design. Therefore, the new schema design would reduce the possibility of inconsistent data, and it also applies the easier object-to-data mapping. We removed some tables of entities to improve the quality of our database design. And, we also merged some tables of relationships to other tables that could increase the consistency in our database.

NOTE: The details of the creation of tables are shown in Appendix C.

NOTE: The details of the schema normalization are shown in Appendix D.

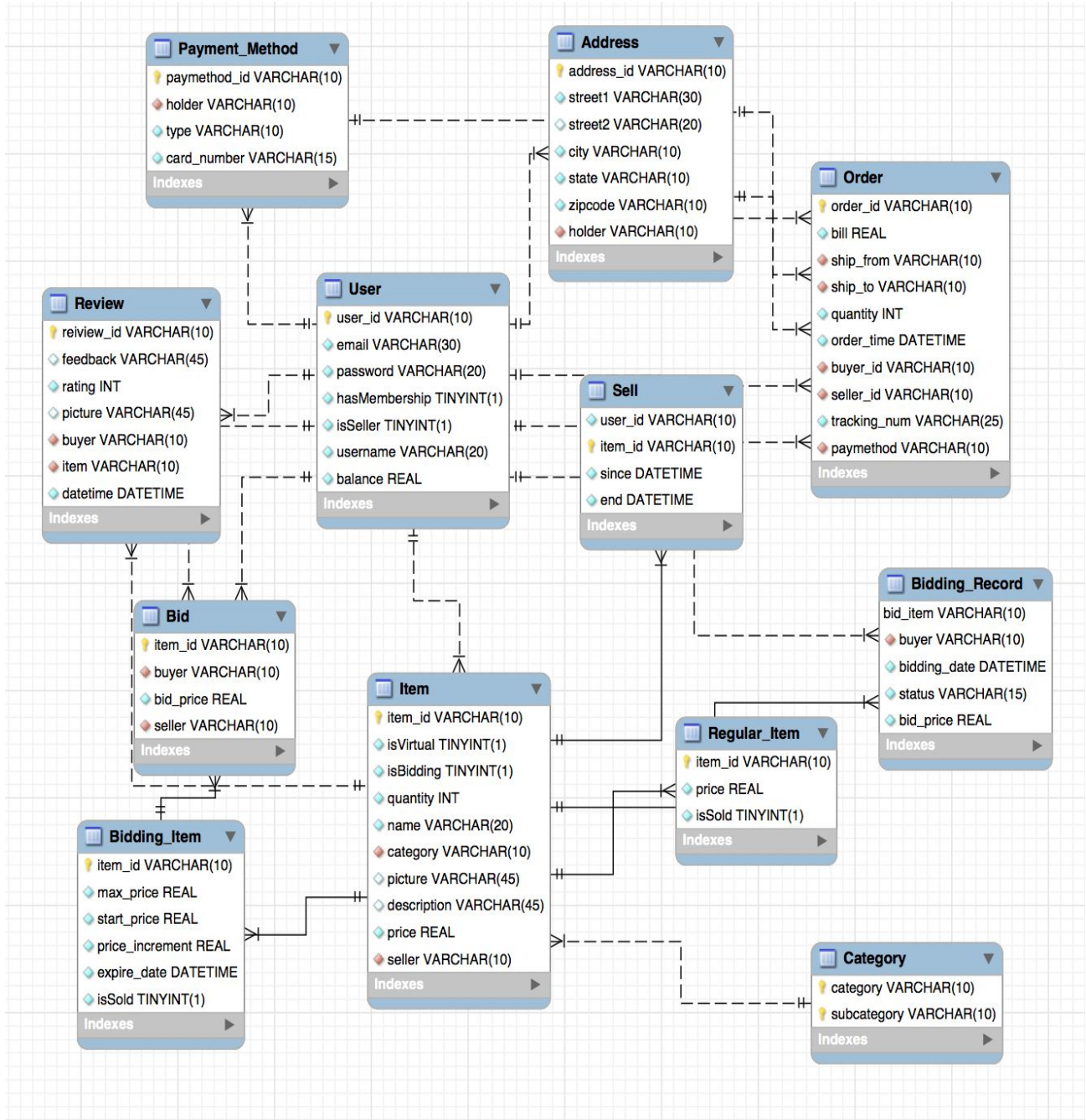


Figure 6: Overview of Refined Schema

5. SQL Statements

NOTE: The details of the creation of tables are shown in Appendix C.

NOTE: The details of the schema normalization are shown in Appendix D.

5.1. User

This table has seven attributes: user_id, email, password, hasMembership, isSeller, username, balance. We assign a ten-character string to user_id, 30-character string to email, 20-character string to a password and username, 0 or 1 to hasMembership and isSeller and a decimal number to balance. If hasMembership is 0, the user has the membership, and the isSeller is also supporting this. All attributes are not null, and the primary key is user_id because each item is unique.

5.2. Item

This table has ten attributes: item_id, isVirtual, isBidding, quantity, name, category, picture, description, price, and seller. We distribute 10 varchars to item_id, 0 or 1 determines the virtual item and isBidding, an integer to quantity, 20 varchars to name, 10 varchars to category, 45 varchars to picture, 45 varchars to the description, 10 varchars to seller name, and a decimal number to price. All attributes are not null. The primary key is item_id. It has foreign keys to reference to the table of seller and category. Then they apply the on-delete action.

5.3. Bidding_Item

This table has six attributes: item_id, max_price, start_price, price_increment, expire_date, and isSold. We distribute 10 varchars to item_id, a decimal number to max_price, a decimal number to start_price, a decimal number to price_increment, datetime type to expire_date, and bool type to isSold. All attributes are not null. The

primary key is item_id, and it is also foreign key and referencing to the Item table. And if the Item is deleted, the Bidding_Item table is also deleted.

5.4. Regular_Item

This table has three attributes: item_id, isSold and price. We distribute 10 varchars to item_id, bool type to isSold, and a decimal number to price. Item_id, isSold, and price are not null. The primary key is item_id, and it is also foreign key and referencing to the Item table. And if the Item is deleted, the Regular_Item table is also deleted.

5.5. Sell

This table is a relationship, and it contains four attributes: user_id, item_id, since and end. They are all not null. We distribute 10 varchars to item_id, 10 varchars to user_id, datetime to since, and datetime to end. The primary key is item_id, and it is also foreign key and referencing to the Item table. Another foreign key is user_id, and it references to the User table. And if the tuples of Item or User are deleted, the tuples of this table are also deleted.

5.6. Bid

This table is a relationship, and it contains four attributes: buyer, seller, item_id, and bid_price. They are all not null. We distribute 10 varchars to item_id, 10 varchars to buyer and seller, and a decimal number to bid_price. The primary key is item_id, and it is also foreign key and referencing to the Item table. Another primary key is user and buyer, and it is also foreign key and referencing to the User table. And if the tuples of Item or User are deleted, the tuples of this table are also deleted.

5.7. Bidding_Record

This table contains five attributes: bid_item, buyer, bidding_date, status, and bid_price. The primary key is bid_item and it is also the foreign key that is referencing to the table of the item. And another foreign key is buyer and it is referencing to the table of the user. They are both applying the on-delete cascade.

5.8. Category

This table contains two attributes: category and subcategory. They are both not null. We distribute 10 varchars to category and 10 varchars to the subcategory. The primary keys are both category and subcategory.

5.9. Address

This table contains seven attributes: address_id, street1, street2, city, state, zipcode, and holder. They are all varchars, and they are all not null except street2. The primary key is address_id. And the foreign key is the holder and it references to the table of the user. It applies to on-delete cascade.

5.10. Payment_Method

This table contains four attributes: paymethod_id, holder, type, and card_number. They are all varchar and not null. The primary key is paymethod_id. The foreign key is the holder and it references to the table of the user.

5.11. Order

This table contains nine attributes: order_id, bill, ship_from, ship_to, quantity, order_time, buyer_id, seller_id, and tracking_num. They are all not null. They are

varchar type such as order_id, ship_from, ship_to, buyer_id, seller_id, and tracking_num. The bill is a decimal number, quantity is a integer, and order_time is datetime type. The primary key is order_id. Ship_from and ship_to are both foreign keys and they are referencing to the table of address. Buyer_id and seller_id are also both foreign keys and they are referencing to the table of the user. And it has the constraint - paymethod, and it references to the table of Payment_Method. They all support on-delete cascade.

5.12. Review

This table contains seven attributes: review_id, feedback, rating, picture, buyer, item, and DateTime. They are all not null except picture_path. The rating is an integer from 1 to 10, DateTime is a DateTime type, and other attributes are varchar. The primary key is review_id. The foreign keys are buyer and item. Buyer is referencing to the table of the user, and item is referencing to the table of the item.

6. Technology Overview

6.1. Programming Language

As we select Django as our development platform, we naturally adapt HTML/CSS and python as our programming language. For the course purpose, HTML/CSS and Python should be sufficient to implement all the features we proposed.

6.2. IDE

We decide to use Microsoft Visual Studio 2017 as our IDE. There are three reasons make us select visual studio 2017.

1. Microsoft Visual Studio 2017 has Django built-in;

2. Microsoft Visual Studio 2017 has Github built-in;
3. Microsoft Visual Studio 2017 has implicitly tool to deploy the website on its public server, Microsoft Azure, if we decide to do this later.

6.3. Django

We decide to use Django as our development tool to implement YABE interfaces. To use Django, mastering Python and HTML/CSS would sufficient in terms of programming languages. The primary reason we choose Django is that Django seems to be the easiest options to us. Every member in our team are familiar with python, which makes the learning barriers become smaller. Besides, one of our team member has relatively hand-on experiences with Django, so that we can easily set up Django in the Visual Studio 2017, which has built-in interface with Github, this will allow us to control versions easily. Moreover, Visual Studio have very nice interface with Microsoft server Azure. Therefore, if we decide to deploy our YABE publicly, our tool will allow us to do that implicitly.

Besides, Django has nice features which can support all the functions that YABE has. Django is a nice framework which has every part set up –Therefore, the only part we need to do is to customize it based on YABE. Moreover, if we want to expend our YABE on mobile device, Django allow us to do this implicitly as well.

Pros of Django:

- Django is fast to convert an idea to an actual application. (the framework is human logic friendly)

- Django is pretty much self-contained, so that it can ensure that we will not be exposed security issue.
- Django is a single package, this is good for our simple app.
- Django is fully-loaded. Therefore, no matter what problem we have, we can view the source code of Django to debug and customize.

Cons of Django:

- There is an “admin” which is pretty useless for our application.
- Django does not support real time web applications, though we do not need it either.
- Knowledge of full system is required to work. This to say, we need to learn more from this perspective.

We list the pros and cons of Django above. Overall, we believe that 1) Django is sufficient for us to implement YABE; 2) Django is easy and convenient for us to adopt during the relative short course period (roughly two months); 3) Django built-in Visual Studio has friendly ports to public server and mobile device, which gives us more future potentials.

7. Populating Database

We created some user data in our database that are both buyers and sellers; we also created many items in the table of the item, that includes regular items and bidding items. We also distributed these items to our ten categories by the classification tree. Then we created many tuples for each table in our website database, that is based on their relationships. That would depend on the primary key and foreign key. We use Appendix B to explain our dataset clearly on

our website. Sample data sets are attached in Appendix B; people can check these details in Appendix B at the end of this report.

8. Transaction

NOTE: Please see more details of transaction in Appendix E.

8.1. Register User

YABE Home Products Biddings My Account LOG OUT

Sign up

Username: Required. 150 characters or fewer. Letters, digits and @/./+/-/_ only.

Password:

Your password can't be too similar to your other personal information.
 Your password must contain at least 8 characters.
 Your password can't be a commonly used password.
 Your password can't be entirely numeric.

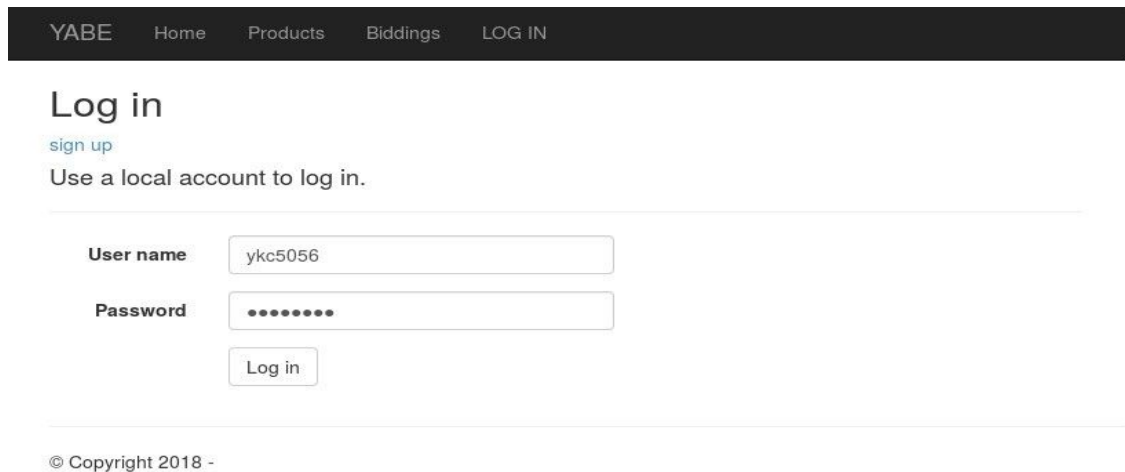
Password confirmation: Enter the same password as before, for verification.

© Copyright -

Figure 7: Sign-Up Page

Do you want to join us? That is very easy. Click the "Log In" located in the top left corner and go to the "Sign Up" button; then the page will jump to the sign-up page shortly. After the new page shows up, you can fill all required information. Last, click "Sign Up" to finish. Note that, we use the username as Login ID, which means it must be unique in the database. If the username you submit that is already used, the web page will return "A user with that username already exists." The users should enter a valid password to sign their account up. We list the conditions of a password in "Sign Up" page.

8.2. User Log In



YABE Home Products Biddings LOG IN

Log in

[sign up](#)

Use a local account to log in.

User name

Password

© Copyright 2018 -

Figure 8: Log-In Page

All transactions we provide in our page that requires users to log in. In the "Log In" page, users must correctly enter the username and the password that correspondence our database. Click "Log in" button to Log in. An error message will return if users enter username or password incorrectly.

8.3. Add Auction Item

Do you want to make money? Sure. you can find the button - "Add Bidding Item" in the page of "My Account". Click it and it will jump to the adding page. Then, you must enter all necessary information of your item in this page, and click the button "Add Item to Bidding" at the end of this page. If the item is added, the page will return the message of adding successfully.

8.4. Add Regular Item

We also provide the business of regular items. You can find the button - "Add Regular Item" in the page of "My Account". Click it and it will jump to the adding page.

Then, you must enter all necessary information of your item in this page, and click the button “Add Item to Sell” at the end of this page. If the item is added, the page will return the message of adding successfully.

8.5. Browsing Items

In the homepage, we have recommendation items that are displaying there. Besides, a user can browse items using category that is located on the home page of the web, and the right top at the other pages.

8.6. Searching Items



Figure 9: Searching Items Page

Anything that you are interested in, but the item is not displayed on a current page? Fortunately, our web has the search feature to fulfill your need. Simply click the search box, then enter any keywords you wish to search. And hit the enter key or click the "Search" button to see any items that are matching to your keywords.

8.7. Bid Item

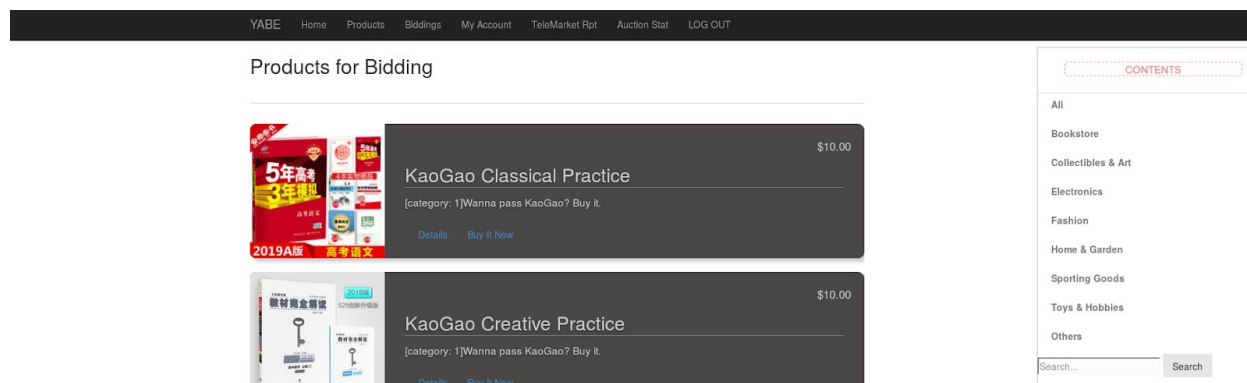


Figure 10: Products for Bidding

Once a user has clicked an item to view, a page with item detailed information will show up. If the item is biddable, the user will see bidding information under the description of an item with start price, current highest bidding price, buy-out price and an input box where you place your bid. Scrolling down the page, the user can check out the bidding history- bidding history will contain the bidding date, bidding price, and bidder. In the top of this page, the user can see the item detailed description, and the seller username. Under the bidding history, the user will see the reviews of this item.

8.8. Buy Regular Item

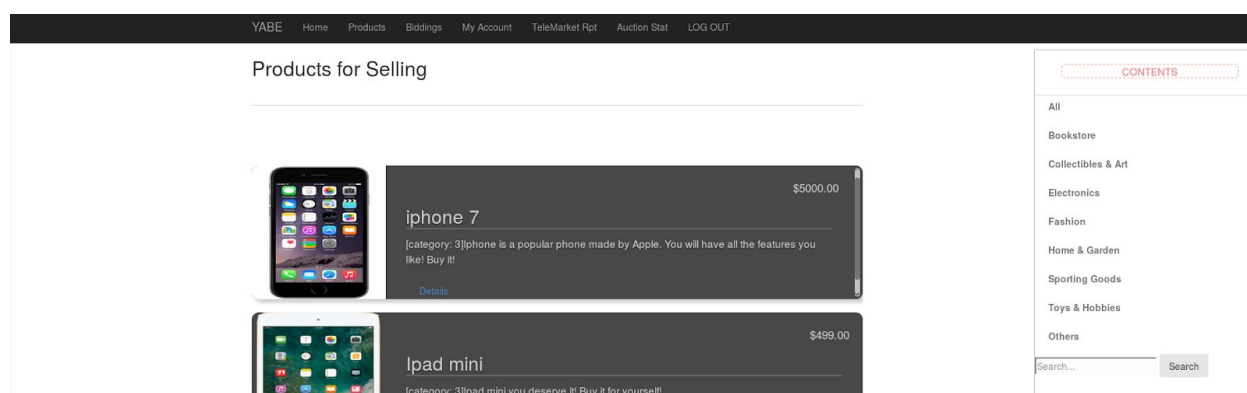


Figure 11: Products for Selling

Once a user has clicked a regular item to view, a page with item detailed information will show up on the top. In this page, the user will see the item's information with the price, the stock, and an input box where you place quantity you want to buy. Scrolling down the page, the user can see the reviews of this item.

8.9. Leave Rating



The screenshot shows a product page for 'Product Seller 11' with the username 'cuiaiyu'. A blue 'Leave Rating' button is visible. Below it, a 'Reviews' section contains a table with one review entry.

Reviews			
Buyer	Rating	Comments	Date
ykc5056	5	Nice Dress	April 26, 2018, 7:10 p.m.

Figure 12: Rating

After a user bought or bid an item, he or she can rate the item on the page of this page. And you can rate the item from 1 star to 10 stars and write a review which will be displayed on the item page.

8.10. Terminate Auction

If an auction reaches the end of time period, the bidding information and bidding button will no longer be visible to all users. And this item will be unsold. If a bidding item is unsold, it will be removed from the database immediately. Also, the winner will be determined if there is at least one legal bid, and the item will be also removed from the database.

8.11. TeleMarketing Report

User Bidding Behavior in the past week [Smirk Face]

Name	Address	Email	Age	Gender	Annual Income	# Total Bidding	# Won Bidding
xunzekun	Erie, PA	zxun@yabe.com	25	Male	50,000-100,000	1	0
cuiaiyu	Erie, PA	aiyu@yabe.com	22	Female	100,000-200,000	0	0
ykc5056	State College, Pennsylvania	898355011@qq.com	15	Male	50,000-100,000	10	0

Figure 13: TeleMarketing Report

We also have a feature for our managers. In each season, we will provide customers' information to the telemarketing firm, that firm can recommend best and valuable products to our customer by our provided information. By the privacy principle of our company, customers can contact us to cancel this function.

8.12. Donation

Wanna donate \$1 For charity? ☐



Figure 14: Donation Page

If you want to serve something to the world, you can do it in our web. When you buy or bid something, there is a checkbox of donation under the paying processing. If you check the checkbox, an item of the donation will be added to your final order automatically. You just need to pay the final bill to serve the world. The world will give you the best memory. Therefore, you are the hero.

8.13. Membership

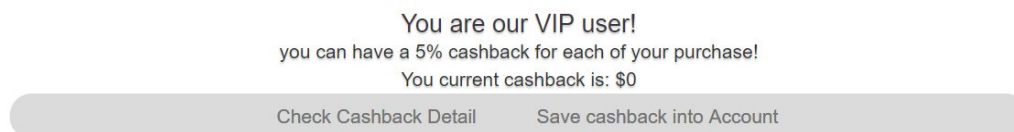


Figure 15: VIP Page

Do you want to have more benefits in your life? Yeah, that is easy. Our membership is valuable and enjoyable. Users just need to pay \$100 to buy the membership of our website, then you will enjoy the unparalleled and best experience on our website. There is an option in “My Account” page, you can click “Yes” to buy the membership. Our website will charge from your Yabe account, and you will become the membership immediately and use the benefits. You will earn 5% cash-back on any purchase and more benefits to enjoy in our benefits. You can check the cash-back details in the page of “Cashback History” that is located in “My Account.

8.14. Cash Back

YABE Home Products Biddings My Account TeleMarket Rpt Auction Stat LOG OUT					
Transaction History					
Date	Item	Quantity	Single Price	Cashback	
April 26, 2018, 5:14 a.m.	BISSELL SpotBot Portable Spot and Stain Cleaner with Antibacterial Formula, 1711	1	600.00	30.00	
April 26, 2018, 5:15 a.m.	test	10	10.00	5.00	
April 26, 2018, 5:15 a.m.	Mainstays Kristoff 8x10 White Gold Picture Frame	1	327.00	16.35	
April 26, 2018, 5:15 a.m.	Hosley Natural Bamboo/Seagrass Vase, Brown	1	1234.00	61.70	
April 26, 2018, 5:16 a.m.	Apple Watch Series 3 - GPS - Space Gray Aluminum Case with Black Sport Band - 42mm	1	599.00	29.95	

Figure 16: Cash-Back History Page

Our web also gives benefits back to our valuable customers. When users pay the bill, the cashback will be automatically earned to your Yabe account. If you are a VIP

member of our web, you will earn more cashback. Users can use the cashback to pay the future purchases.

9. System Framework

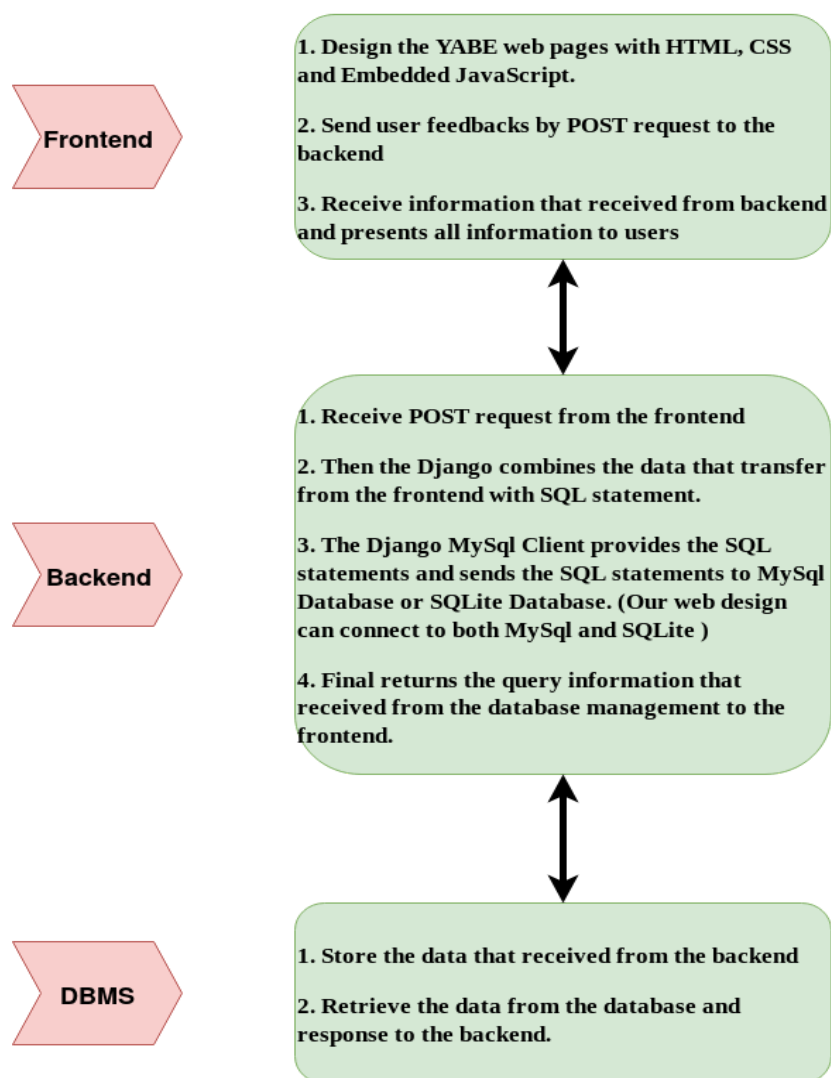


Figure 17: System Framework

10. Reflection

We finished all basic functions a website should have. Also, we believe that we have the best appearance for the web page, and good design for the backend and the application of

DBMS. Also, we implemented the portable interfaces to connect to two database management systems, which are MySQL and SQLite. However, we did not exactly hit the goal because we fail to implement the user-behavior advertisement. For this new feature, we do have our feasible ideas to implement them, and we did some parts of this feature. However, we don't have enough user's purchase data and are currently unable to embed it to our web frame, and it cannot show on our webpage. On the other hand, none of us has enough relative web development experience before, and we have already done a great job. With more time in the future, we can do better.

11. Conclusion

In conclusion, Our team Error 404 with members of Aiyu Cui, Inyoung Lee, Yuzhen Liu, and Yang Chen designed and implemented a webpage named YABE. YABE would provide a service of online selling, buying and bidding with unique and powerful features for the users to receive a tremendous online commerce experience. Our team completed the implementation of the basic features that are mentioned above and satisfied the user including buyers and sellers of YABE. Then we also implement four additional features in our web page, membership, cash-back, donation and recommendation. The software development tools are Django web framework along with HTML, CSS, and embedded Javascript. The most significant part of implementation is a database which would be structured by manipulating MySQL. Our team also provides two interfaces to connect both MySQL and SQLite. Our team members learned much knowledge from this report, and we will do better in the future.

Appendix A

The comparison of ER diagrams

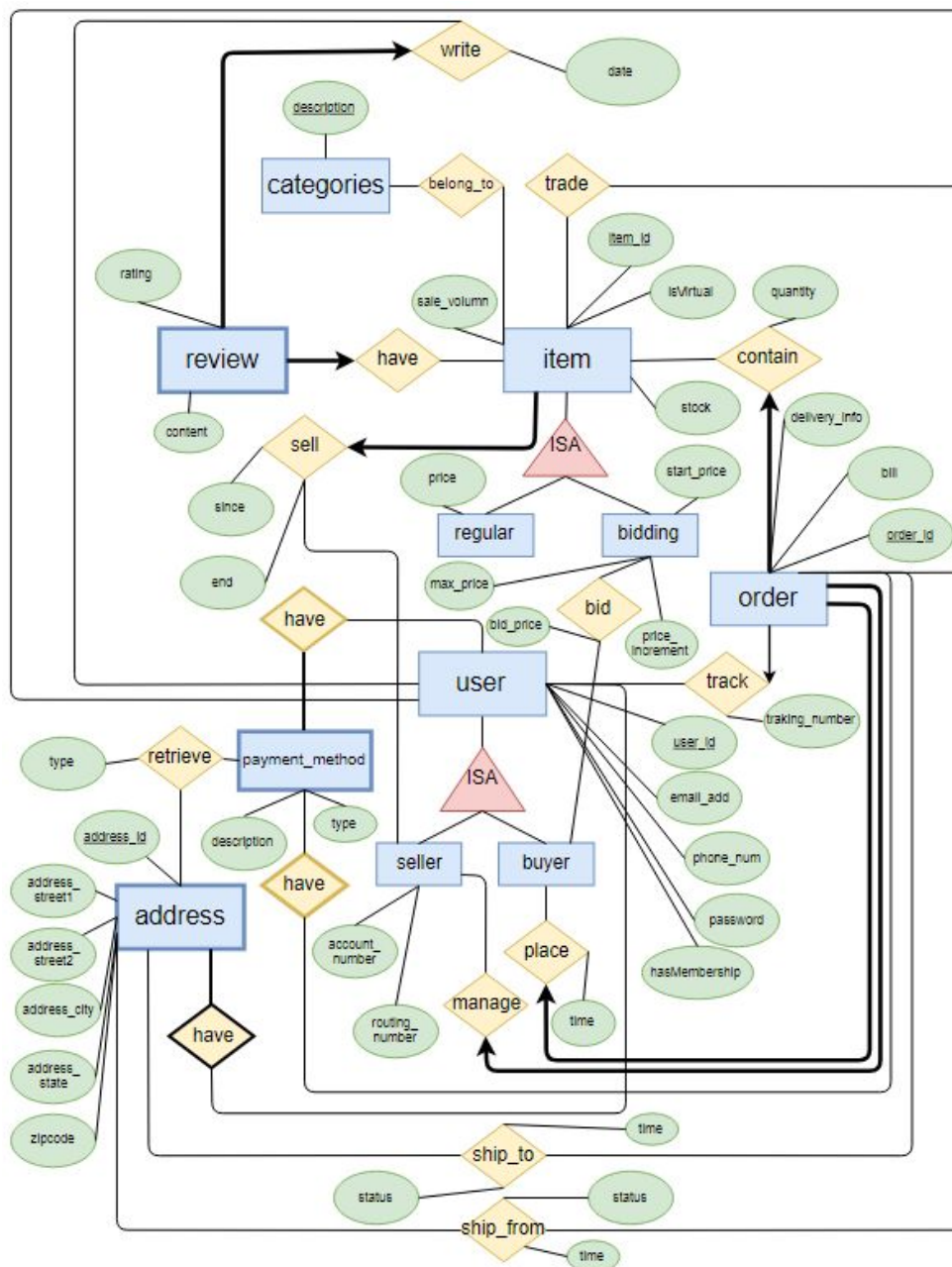


Figure 18: Conceptual Design of Phase 1

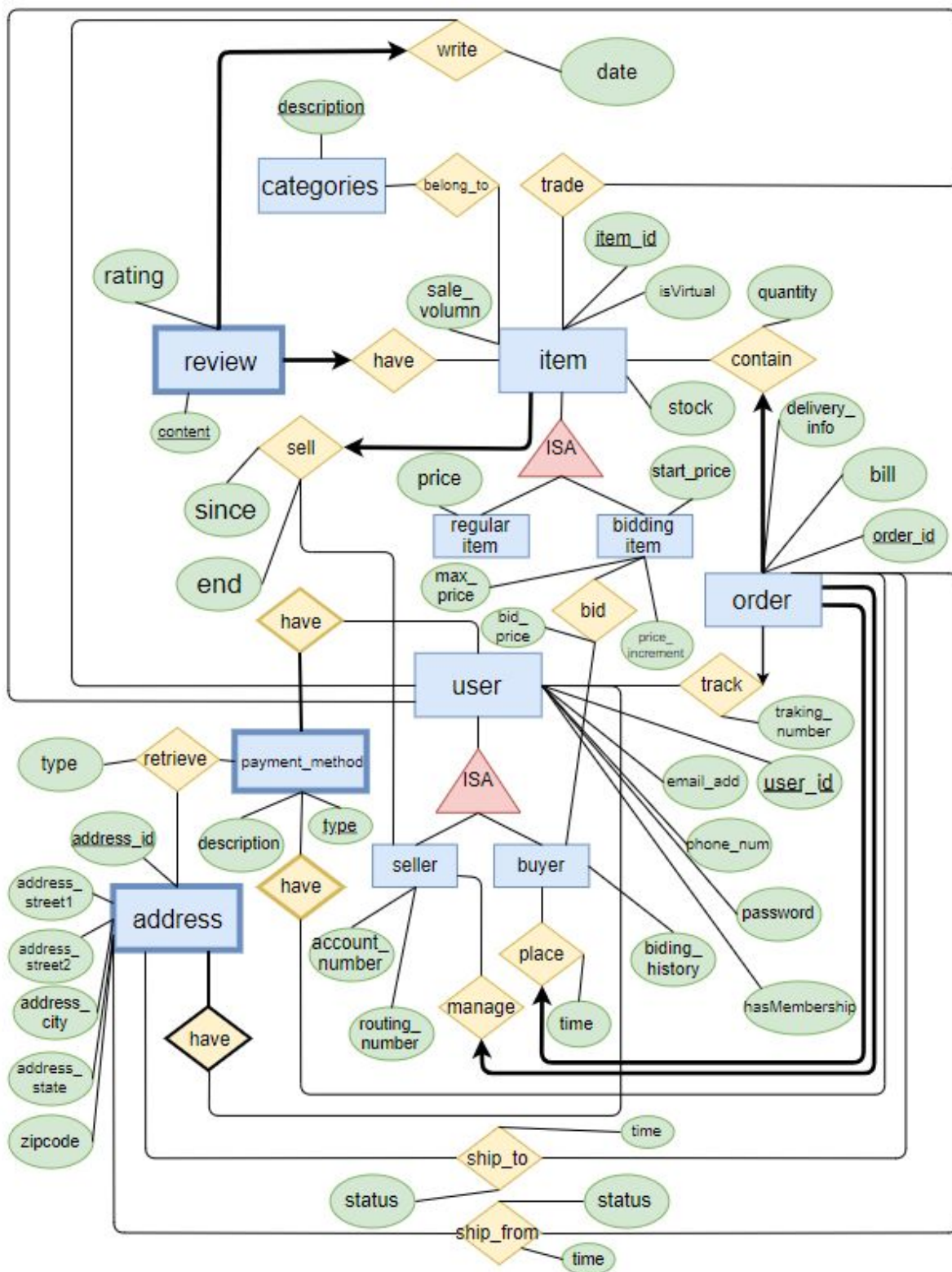


Figure 19: Conceptual Design of Phase 2

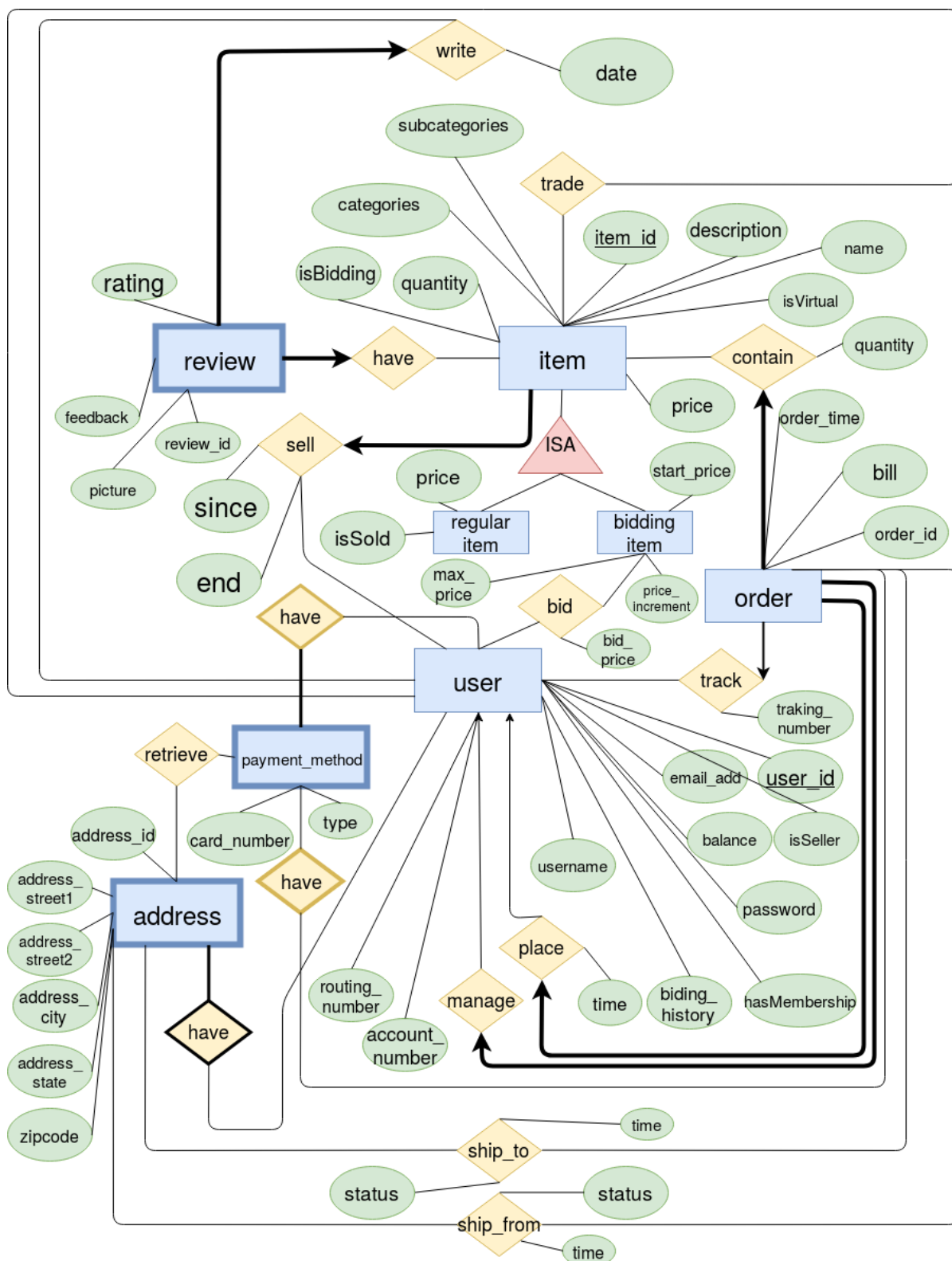


Figure 20: Conceptual Design of Phase 3

Appendix B

The Overview of Populating Database

Routine Groups (0 items)

User - Table

Name: User Schema: my

Filter Rows: Search Edit: Export/Import: Apply changes:

user_id	email	phone_num	password	hasMember...
B10012	godeke@aol.com	(336)756-8448	Sm&UY6;FU	1
B10298	portele@icloud.com	(228)994-2882	AyHv76v%V	0
B20939	mugwump@gmail.com	(681)209-7089	TluzT3cHy	0
S28833	sl7dyluai@gmail.com	(470)839-4659	&vBYS6fhe	1
S23392	mbswan@live.com	(610)265-3066	jwwy5KZ*X	0
S28293	portele@icloud.com	(508)874-2354	E#NSu9aUw	1
S27833	hdwuiho@gmail.com	(651)969-9236	%b8CMkFJa	1

Figure 21: Table of User in Database

Seller - Table

Name: Seller

Filter Rows: Search Edit: Export/Import: Apply changes:

user_id	account_num	routing_num
S28833	021000021	021000021
S23392	011401533	011401533
S28293	091000019	091000019
S27833	002579596	002570596

Figure 22: Table of Seller in Database

Item - Table

Name: Item Schema: mydb

Filter Rows: Search Edit: Export/Import: Apply changes:

item_id	isVirtual	stock	name	picture_path	description
I0001	0	200	DELL STRATIS M1500 15.1" LCD 1.6GHz 4GB 3200X1...	data:image/jp...	laptop
I0002	0	200	Dell XPS 13 9360 i7-8550U 16GB 512GB QHD+ 3200X1...	data:image/jp...	laptop
I0003	0	200	New 6000LM LED Focus Headlight Head Lamp Zoom +...	data:image/jp...	head lamp
I0004	0	45	Poulan Pro 18" 42CC 2 Cycle Gas Chainsaw PP4218A-...	data:image/jp...	gas chainsaw
I0005	0	400	8 LP Classic Blues Vinyl Record Lot - JOHN LEE HOOKE...	data:image/jp...	blues vinyl record
I0006	0	238	LEGO Architecture New York City	data:image/jp...	lego toy
I0007	1	3499	CHH Games 2609L 4 Deck Automatic Playing Card Shuf...	data:image/jp...	video game
I0008	0	348	The Matrix 70*48 D/S original poster NEVER USED Bus...	data:image/jp...	movies
I0009	0	34	Harry Potter 1-7 Hardcover Book Set, Beedle the Bard, J...	data:image/jp...	books

Figure 23: Table of Item in Database

Bidding_Item - Table

Name: Bidding_Item

Filter Rows: Search Edit: Export/Import: Apply changes:

item_id	max_price	start_price	price_increm...
I0004	20.34	13.34	7.00
I0009	230.99	30.99	200.00

Figure 24: Table of Bidding_Item in Database

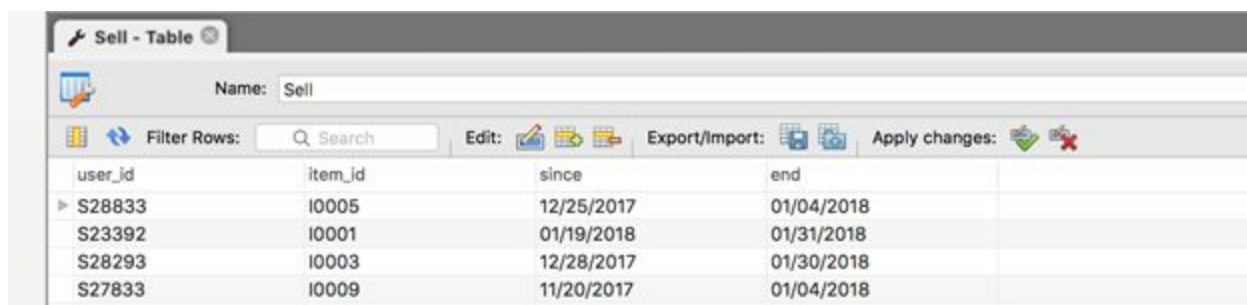
Regular_Item - Table

Name: Regular_Item

Filter Rows: Search Edit: Export/Import: Apply changes:

item_id	price
I0001	23.89
I0002	1300.90
I0003	33.09
I0005	21.23
I0006	39.20
I0007	44.38
I0008	20.34

Figure 25: Table of Regular_Item in Database



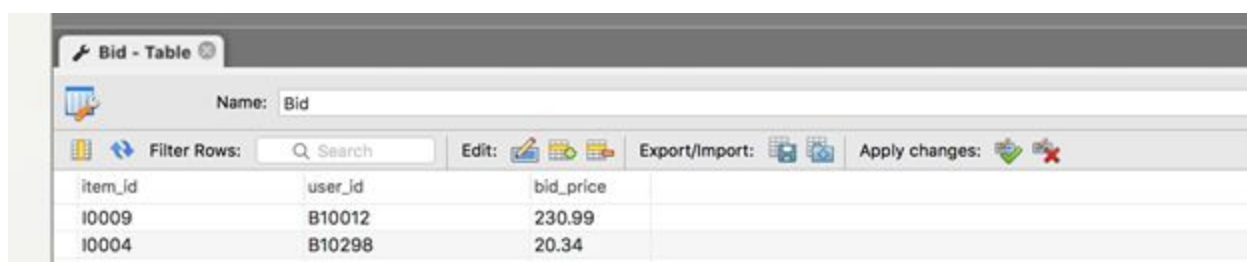
Sell - Table

Name: Sell

Filter Rows: Search Edit: Export/Import: Apply changes:

user_id	item_id	since	end
S28833	I0005	12/25/2017	01/04/2018
S23392	I0001	01/19/2018	01/31/2018
S28293	I0003	12/28/2017	01/30/2018
S27833	I0009	11/20/2017	01/04/2018

Figure 26: Table of Sell in Database



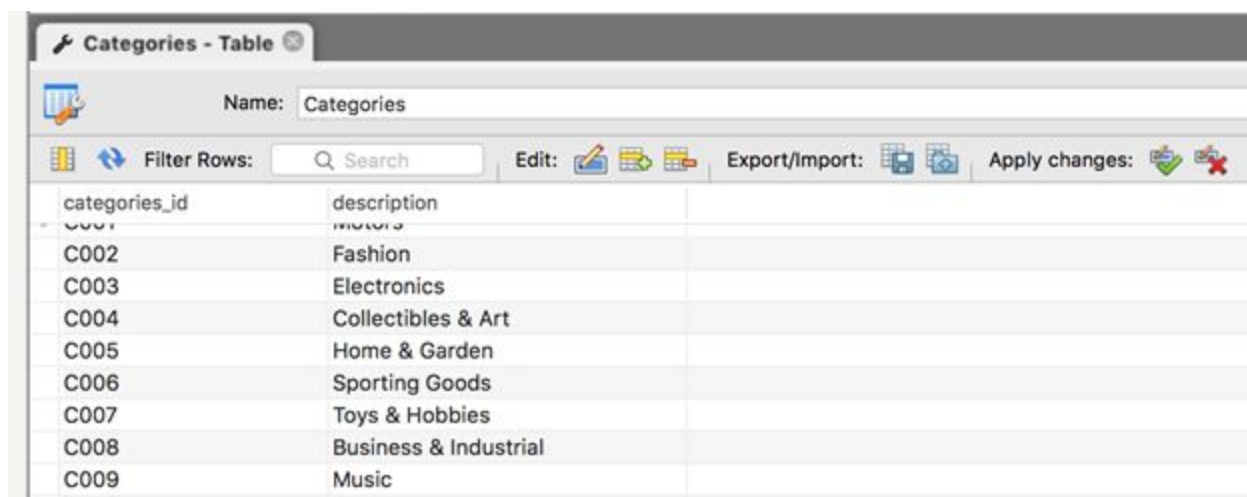
Bid - Table

Name: Bid

Filter Rows: Search Edit: Export/Import: Apply changes:

item_id	user_id	bid_price
I0009	B10012	230.99
I0004	B10298	20.34

Figure 27: Table of Bid in Database



Categories - Table

Name: Categories

Filter Rows: Search Edit: Export/Import: Apply changes:

categories_id	description
C001	motors
C002	Fashion
C003	Electronics
C004	Collectibles & Art
C005	Home & Garden
C006	Sporting Goods
C007	Toys & Hobbies
C008	Business & Industrial
C009	Music

Figure 28: Table of Categories in Database

Belong_to - Table

Name:

Filter Rows: Edit: Export/Import: Apply changes:

item_id	categories_id
I0001	C002
I0002	C003
I0003	C006
I0004	C005
I0005	C009
I0006	C007
I0007	C003
I0008	C003
I0009	C004

Figure 29: Table of Belong_to in Database

Contains - Table

Name:

Filter Rows: Edit: Export/Import: Apply changes:

order_id	item_id	quantity
O287318	I0005	3
O287319	I0003	1
O287320	I0009	1
O287321	I0007	1
O287322	I0003	1
O287323	I0004	2
O287324	I0001	3

Figure 30: Table of Contents in Database

Address - Table

Name: Schema: mydb

Filter Rows: Edit: Export/Import: Apply changes:

address_id	street1	street2	city	state	zipcode
A384983	4487 Bedford Street	HOUSE	Stamford	CT	06902
A349872	820 Bassell Avenue	2nd floor	Vilonia	AR	72173
A829100	1707 Oak Ridge Drive	HOUSE	Rolla	MO	65401
A904598	557 Hide A Way Road	Apt #304	Santa Clara	CA	95050
A389472	1301 Rocket Drive	HOUSE	Minneapolis	MN	55404
A3947829	849 Upton Avenue	HOUSE	Levant	ME	04456
A3984729	4027 Custer Street	HOUSE	State College	PA	16803

Figure 31: Table of Address in Database

Ship_From - Table				
Name: Ship_From				
Filter Rows: <input type="text" value="Search"/> Edit: Export/Import: Apply changes:				
order_id	address_id	date	status	
O287318	A3947829	02/01/2018	shipping	
O287319	A389472	11/22/2017	delivered	
O287320	A3947829	1/23/2018	prepared	
O287321	A3984729	01/19/2018	delivered	
▶ O287322	A904598	12/16/2017	shipping	
O287323	A3984729	2/1/2018	delivered	
O287324	A389472	01/14/2018	shipping	

Figure 32: Table of Ship_From in Database

Ship_To - Table				
Name: Ship_To				
Filter Rows: <input type="text" value="Search"/> Edit: Export/Import: Apply changes:				
order_id	address_id	date	status	
O287318	A384983	02/01/2018	shipping	
O287319	A349872	11/22/2017	delivered	
O287320	A829100	1/23/2018	prepared	
O287321	A384983	01/19/2018	delivered	
O287322	A829100	12/16/2017	shipping	
O287323	A349872	2/1/2018	delivered	
▶ O287324	A384983	01/14/2018	shipping	

Figure 33: Table of Ship_To in Database

Payment_Method - Table			
Name: Payment_Method			
Filter Rows: <input type="text" value="Search"/> Edit: Export/Import: Apply changes:			
paymethod_id	description	type	
P001	credit card	visa	
P002	credit card	mastercard	
P003	digital wallet	paypal	
▶ P004	bank account	debit card	

Figure 34: Table of Payment_Method in Database

Retrieve - Table

Name: Retrieve

Filter Rows: Search Edit: Export/Import: Apply changes:

address_id	type	paymethod_id
A384983	pay	P001
A349872	pay	P002
A829100	pay	P003
A904598	pay	P001
A389472	recieve	P004
A3947829	recieve	P001
A3984729	recieve	P002

Figure 35: Table of Retrieve in Database

Order - Table

Name: Order

Filter Rows: Search Edit: Export/Import: Apply changes:

order_id	bill	delivery_info
O287318	89.90	shipping
O287319	39.90	delivered
O287320	60.78	prepared
O287321	48.87	delivered
O287322	92.37	shipping
O287323	29.90	delivered
O287324	284.83	shipping

Figure 36: Table of Order in Database

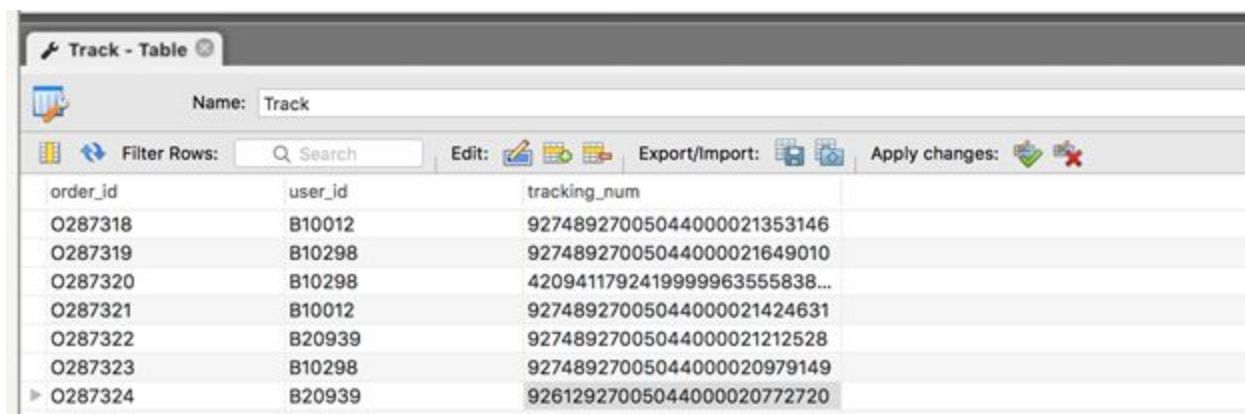
Place - Table

Name: Place

Filter Rows: Search Edit: Export/Import: Apply changes:

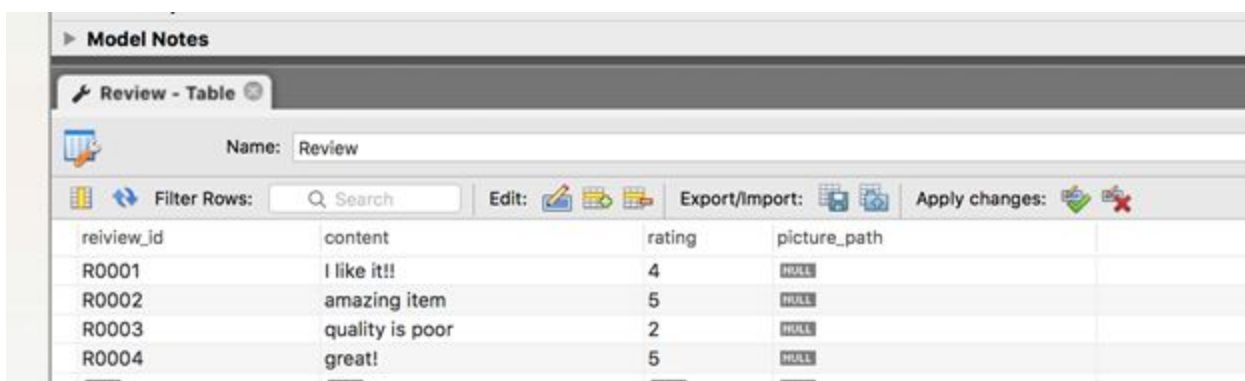
order_id	date	user_id
O287322	12/13/2017	B10298
O287319	11/20/2017	B20939
O287318	01/31/2018	B20939
O287321	01/17/2018	B10012
O287324	01/12/2018	B10012

Figure 37: Table of Place in Database



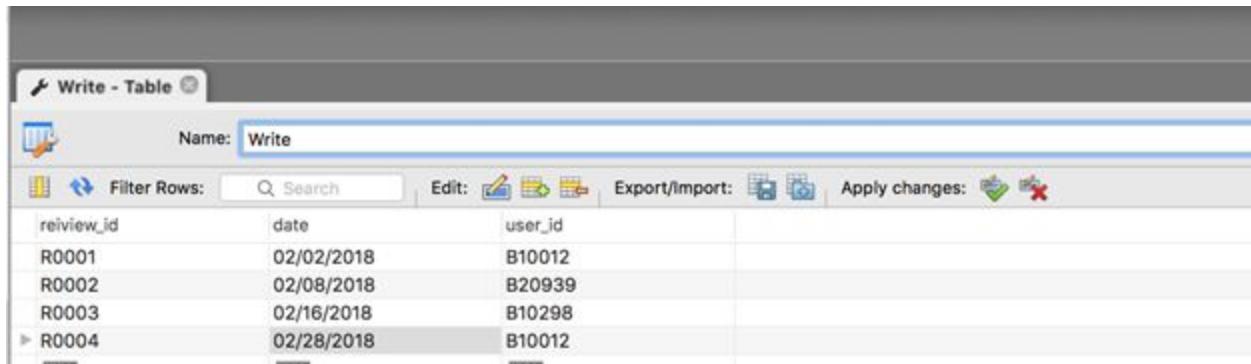
order_id	user_id	tracking_num
O287318	B10012	92748927005044000021353146
O287319	B10298	92748927005044000021649010
O287320	B10298	4209411792419999963555838...
O287321	B10012	92748927005044000021424631
O287322	B20939	92748927005044000021212528
O287323	B10298	92748927005044000020979149
O287324	B20939	92612927005044000020772720

Figure 38: Table of Track in Database



reiview_id	content	rating	picture_path
R0001	I like it!!	4	NULL
R0002	amazing item	5	NULL
R0003	quality is poor	2	NULL
R0004	great!	5	NULL

Figure 39: Table of Review in Database



The screenshot shows a software interface titled "Write - Table". Below the title bar, there is a "Name:" field containing the text "Write". Below this, there is a toolbar with icons for "Filter Rows", "Search", "Edit", "Export/Import", and "Apply changes". The main area of the interface displays a table with three columns: "reiview_id", "date", and "user_id". The table contains four rows of data. The first row is R0001 with date 02/02/2018 and user_id B10012. The second row is R0002 with date 02/08/2018 and user_id B20939. The third row is R0003 with date 02/16/2018 and user_id B10298. The fourth row is R0004 with date 02/28/2018 and user_id B10012. The fourth row is highlighted with a mouse cursor.

reiview_id	date	user_id
R0001	02/02/2018	B10012
R0002	02/08/2018	B20939
R0003	02/16/2018	B10298
R0004	02/28/2018	B10012

Figure 40: Table of Write in Database

Appendix C

The Overview of MySql Creation

1. User

```
CREATE TABLE User (  
    user_id VARCHAR(10) NOT NULL,  
    email VARCHAR(30) NOT NULL,  
    password VARCHAR(20) NOT NULL,  
    hasMembership TINYINT(1) NOT NULL,  
    isSeller TINYINT(1) NOT NULL,  
    username VARCHAR(20) NOT NULL,  
    balance REAL NOT NULL DEFAULT 0,  
    PRIMARY KEY (user_id)  
)
```

2. Item

```
CREATE TABLE Item (  
    item_id VARCHAR(10) NOT NULL,  
    isVirtual TINYINT(1) NOT NULL,  
    isBidding TINYINT(1) NOT NULL,  
    quantity INT NOT NULL,  
    name VARCHAR(20) NOT NULL,  
    category VARCHAR(10) NOT NULL,  
    picture VARCHAR(45) NULL,  
    description VARCHAR(45) NULL,  
    price REAL NOT NULL,  
    seller VARCHAR(10) NOT NULL,  
    PRIMARY KEY (item_id),  
    INDEX seller_idx (seller ASC),  
    INDEX category_idx (category ASC),  
    CONSTRAINT seller  
    FOREIGN KEY (seller)  
    REFERENCES User (user_id)  
    ON DELETE NO ACTION  
    CONSTRAINT category  
    FOREIGN KEY (category)
```

```

REFERENCES Category (category)
ON DELETE CASCADE
)

```

3. Bidding_Item

```

CREATE TABLE Bidding_Item (
    item_id VARCHAR(10) NOT NULL,
    max_price REAL NOT NULL,
    start_price REAL NOT NULL,
    price_increment REAL NOT NULL,
    expire_date DATETIME NOT NULL,
    isSold TINYINT(1) NOT NULL,
    PRIMARY KEY (item_id),
    CONSTRAINT item_id
    FOREIGN KEY ()
    REFERENCES Item ()
    ON DELETE CASCADE
)

```

4. Regular_Item

```

CREATE TABLE Regular_Item (
    item_id VARCHAR(10) NOT NULL,
    price REAL NOT NULL,
    isSold TINYINT(1) NOT NULL,
    PRIMARY KEY (item_id),
    CONSTRAINT item_id
    FOREIGN KEY ()
    REFERENCES Item ()
    ON DELETE CASCADE
)

```

5. Sell

```

CREATE TABLE Sell (
    user_id VARCHAR(10) NOT NULL,
    item_id VARCHAR(10) NOT NULL,
    since DATETIME NOT NULL,
    end DATETIME NOT NULL,
    PRIMARY KEY (item_id),
    CONSTRAINT item_id
    FOREIGN KEY ()

```



```
REFERENCES Item ()
ON DELETE CASCADE
)
```

6. Bid

```
CREATE TABLE Bid (
    item_id VARCHAR(10) NOT NULL,
    buyer VARCHAR(10) NOT NULL,
    bid_price REAL NOT NULL,
    seller VARCHAR(10) NOT NULL,
    PRIMARY KEY (item_id),
    INDEX buyer_idx (buyer ASC),
    CONSTRAINT item_id
    FOREIGN KEY ()
    REFERENCES Bidding_Item ()
    ON DELETE CASCADE
,
    CONSTRAINT seller
    FOREIGN KEY (seller)
    REFERENCES User (user_id)
    ON DELETE NO ACTION
,
    CONSTRAINT buyer
    FOREIGN KEY (buyer)
    REFERENCES User (user_id)
    ON DELETE NO ACTION
)
```

7. Bidding_Record

```
CREATE TABLE Bidding_Record (
    bid_item VARCHAR(10) NOT NULL,
    buyer VARCHAR(10) NOT NULL,
    bidding_date DATETIME NOT NULL,
    status VARCHAR(15) NOT NULL,
    bid_price REAL NOT NULL,
    PRIMARY KEY (bid_item),
    INDEX user_id_idx (buyer ASC),
    CONSTRAINT item_id
    FOREIGN KEY (bid_item)
    REFERENCES Item (item_id)
    ON DELETE CASCADE
```

```

        ,
        CONSTRAINT user_id
        FOREIGN KEY (buyer)
        REFERENCES User (user_id)
        ON DELETE CASCADE
    )

```

8. Category

```

CREATE TABLE Category (
    category VARCHAR(10) NOT NULL,
    subcategory VARCHAR(10) NOT NULL,
    PRIMARY KEY (category, subcategory)
)

```

9. Address

```

CREATE TABLE Address (
    address_id VARCHAR(10) NOT NULL,
    street1 VARCHAR(30) NOT NULL,
    street2 VARCHAR(20) NULL,
    city VARCHAR(10) NOT NULL,
    state VARCHAR(10) NOT NULL,
    zipcode VARCHAR(10) NOT NULL,
    holder VARCHAR(10) NOT NULL,
    PRIMARY KEY (address_id),
    INDEX holder_idx (holder ASC),
    CONSTRAINT holder
    FOREIGN KEY (holder)
    REFERENCES User (user_id)
    ON DELETE CASCADE
)

```

10.Payment_Method

```

CREATE TABLE Payment_Method (
    paymethod_id VARCHAR(10) NOT NULL,
    holder VARCHAR(10) NOT NULL,
    type VARCHAR(10) NOT NULL,
    card_number VARCHAR(15) NOT NULL,
    PRIMARY KEY (paymethod_id),
    INDEX holder_idx (holder ASC),

```

```

CONSTRAINT holder
FOREIGN KEY (holder)
REFERENCES User (user_id)
ON DELETE CASCADE
)

```

11.Order

```

CREATE TABLE Order (
    order_id VARCHAR(10) NOT NULL,
    bill REAL NOT NULL,
    ship_from VARCHAR(10) NOT NULL,
    ship_to VARCHAR(10) NOT NULL,
    quantity INT NOT NULL,
    order_time DATETIME NOT NULL,
    buyer_id VARCHAR(10) NOT NULL,
    seller_id VARCHAR(10) NOT NULL,
    tracking_num VARCHAR(25) NOT NULL,
    PRIMARY KEY (order_id),
    INDEX ship_from_idx (ship_from ASC),
    INDEX ship_to_idx (ship_to ASC),
    INDEX buyer_id_idx (buyer_id ASC),
    INDEX seller_id_idx (seller_id ASC),
    CONSTRAINT ship_from
    FOREIGN KEY (ship_from)
    REFERENCES Address (address_id)
    ON DELETE NO ACTION
,
    CONSTRAINT ship_to
    FOREIGN KEY (ship_to)
    REFERENCES Address (address_id)
    ON DELETE NO ACTION
,
    CONSTRAINT buyer_id
    FOREIGN KEY (buyer_id)
    REFERENCES User (user_id)
    ON DELETE NO ACTION
,
    CONSTRAINT seller_id
    FOREIGN KEY (seller_id)
    REFERENCES User (user_id)
    ON DELETE NO ACTION
,
    CONSTRAINT paymethod

```

```

FOREIGN KEY (paymethod)
REFERENCES Payment_Method (paymethod_id)
ON DELETE CASCADE
)

```

12.Review

```

CREATE TABLE Review (
    reiview_id VARCHAR(10) NOT NULL,
    feedback VARCHAR(45) NULL,
    rating INT NOT NULL,
    picture VARCHAR(45) NULL,
    buyer VARCHAR(10) NOT NULL,
    item VARCHAR(10) NOT NULL,
    datetime DATETIME NOT NULL,
    PRIMARY KEY (reiview_id),
    INDEX buyer_idx (buyer ASC),
    INDEX item_idx (item ASC),
    CONSTRAINT item
    FOREIGN KEY (item)
    REFERENCES Item (item_id)
    ON DELETE CASCADE
,
    CONSTRAINT buyer
    FOREIGN KEY (buyer)
    REFERENCES User (user_id)
    ON DELETE CASCADE
)

```

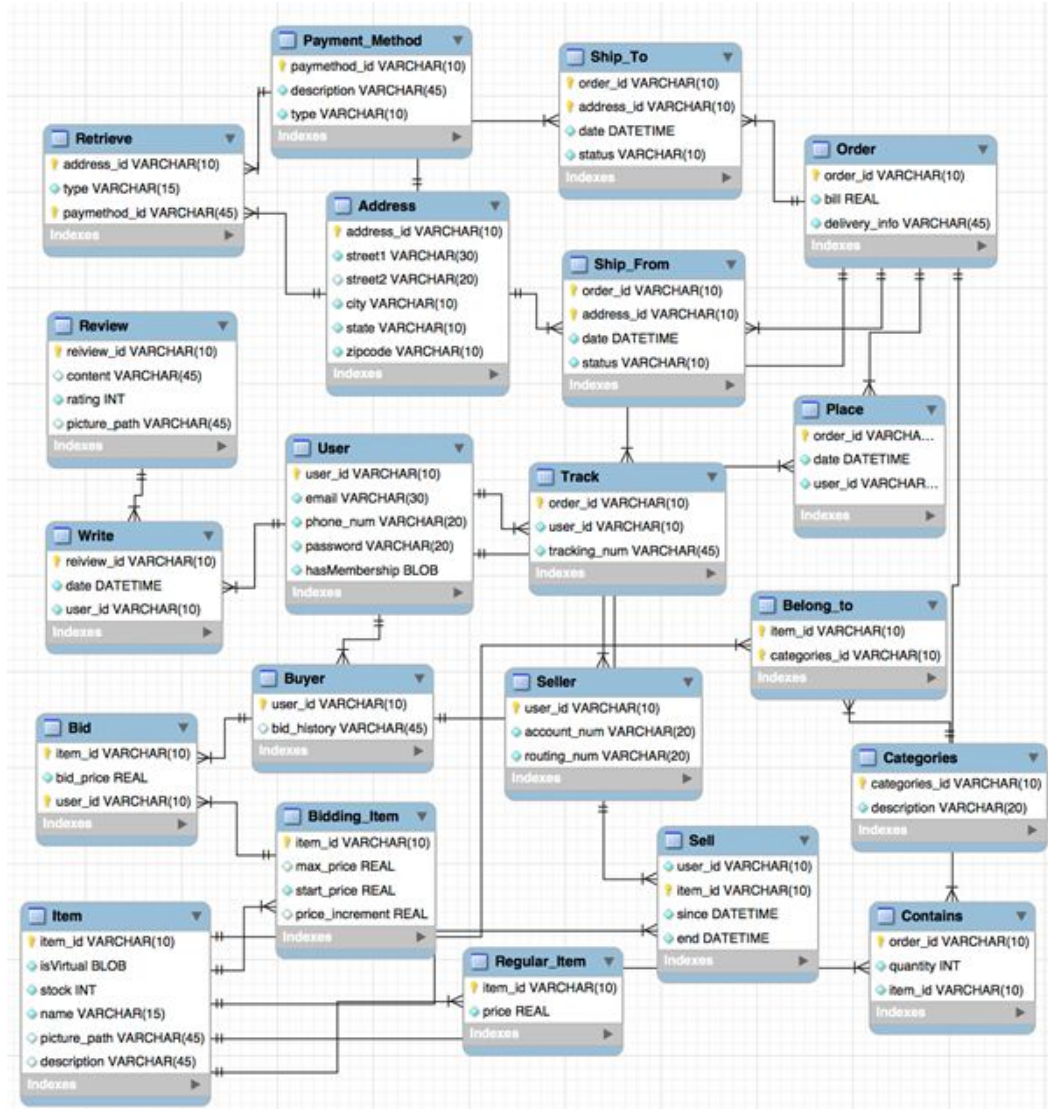



Figure 41: Old Version of Schema

Appendix D

Schema Normalization


Payment_Method

<u>paymethod_id</u>	card_number	type	holder
---------------------	-------------	------	--------




Item

<u>item_id</u>	isVirtual	quantity	name	category	picture	description	price	seller
----------------	-----------	----------	------	----------	---------	-------------	-------	--------




Address

<u>address_id</u>	street1	street2	city	state	zipcode	holder
-------------------	---------	---------	------	-------	---------	--------




Review

<u>review_id</u>	feedback	rating	picture	buyer	item	datetime
------------------	----------	--------	---------	-------	------	----------



User

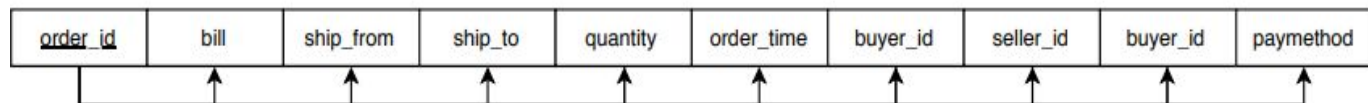
<u>user_id</u>	email	password	hasMembership	isSeller	username	balance
----------------	-------	----------	---------------	----------	----------	---------



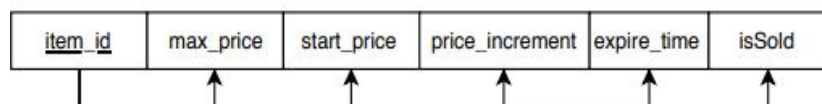
Sell



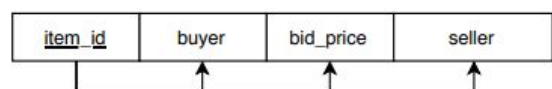
Order



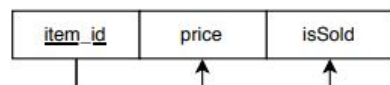
Bidding_Item



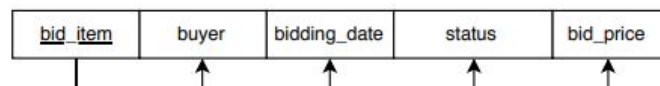
Bid



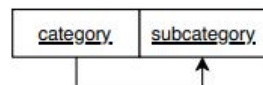
Regular_Item



Bidding_Record



Category



Appendix E

Web Transactions

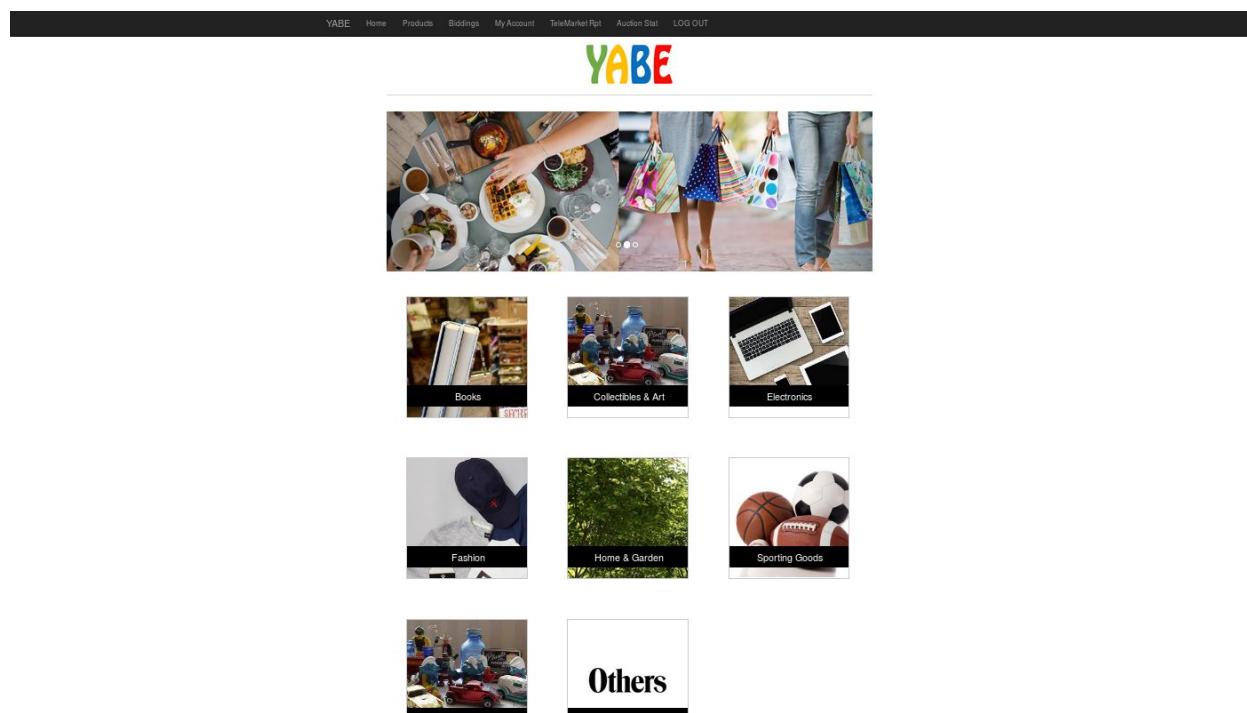


Figure 42: Home Page

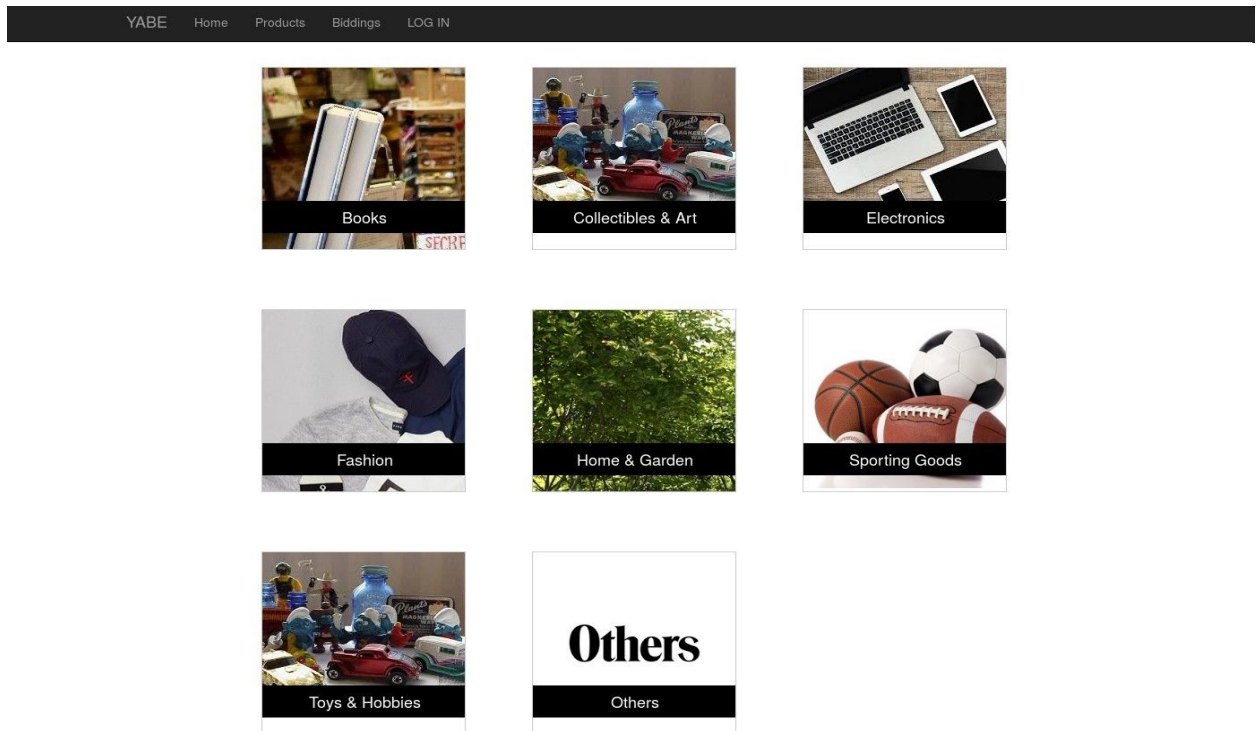



Figure 43: Browsing Items Page

YABE
Home
Products
Biddings
My Account
TeleMarket Rpt
Auction Stat
LOG OUT



ykc5056
Current Balance: \$7239.42

Save \$100
Save \$500
Save \$1000
Save \$5000

You are our VIP user!
you can have a 5% cashback for each of your purchase!
You current cashback is: \$143.00

Check Cashback Detail
Save cashback into Account

Edit My Info

Edit Address
Edit Payment Method
Edit My Info

Seller Section

Add Regular Item
Add Bidding Item
My Sold History

Buyer Section

My Bidding History
My Purchases History

Address:

Street1	Street2	City	State	Zipcode	Email
201 Vairo Blvd	Apt 336	State College	Pennsylvania	16803	898355011@qq.com

Payment Methods:

Card Number	Card Type

Figure 44: Dashboard My Account

[YABE](#) [Home](#) [Products](#) [Biddings](#) [My Account](#) [TeleMarket Rpt](#) [Auction Stat](#) [LOG OUT](#)

Add Item to Bidding

Itemname:

is Virtual Item?: ☐

Picture:

No file selected.

Description:

Category:

☐ Bookstore

☐ Collectibles & Art

☐ Electronic

☐ Fashion

☐ Home & Garden

☐ Sporting Goods

☐ Toys & Hobbies

☐ Others

Max Bidding Price:

Start Bidding Price:

Minum Bidding Increment:

How do you want this Item on bidding?

© Copyright -

Figure 45: Add Auction Item

[YABE](#) [Home](#) [Products](#) [Biddings](#) [My Account](#) [TeleMarket Rpt](#) [Auction Stat](#) [LOG OUT](#)

Add Item to Sell

Itemname:

Price:

Quantity: :

is Virtual Item?: ☐

Picture:

No file selected.

Description:

Category:


- ☐ Bookstore
- ☐ Collectibles & Art
- ☐ Electronic
- ☐ Fashion
- ☐ Home & Garden
- ☐ Sporting Goods
- ☐ Toys & Hobbies
- ☐ Others


Add Item to Sell

© Copyright 2018 -

Figure 46: Add Regular Item

YABE
Home
Products
Biddings
My Account
TeleMarket Rpt
Auction Stat
LOG OUT





KaoGao Classical Practice

sold by cuiaiyu
Item description: Wanna pass KaoGao? Buy it.

Start price: \$10.00
Current highest price: \$40.00
Buy-Out price: \$50.00

My Bidding Price: :



[Bid](#)

Bidding history:

Date	Bidding Price	Bidder
April 26, 2018, 2:50 a.m.	\$20.00	Racteckh
April 26, 2018, 2:50 a.m.	\$30.00	Racteckh
April 26, 2018, 2:50 a.m.	\$40.00	Farostize

Figure 47: Bid Item

YABE
Home
Products
Biddings
My Account
TeleMarket Rpt
Auction Stat
LOG OUT

iphone 7

94 in stock

Price: \$5000.00

How many do you want:

Wanna donate \$1 For charity? ☐

Wanna donate \$1 For charity? ☐

Buy

description:

Iphone is a popular phone made by Apple. You will have all the features you like! Buy it!

Product Seller Information:

xunzekun

Reviews

Buyer	Rating	Comments	Date
ykc5056	5	good	April 26, 2018, 5:04

Figure 48: Buy Regular Item

YABE
Home
Products
Biddings
My Account
TeleMarket Rpt
Auction Stat
LOG OUT

Transaction History

Seller	Buyer	ItemName	Date	Quantity	Single Cost	Shipping Status
ykc5056	ykc5056	meal	April 25, 2018, 9:37 p.m.	1	1000.00	Shipped
ykc5056	ykc5056	meal	April 26, 2018, 5:08 a.m.	1	1000.00	Ship it now!

© Copyright 2018 - YABE

Figure 49: Sold History

YABE Home Products Biddings My Account TeleMarket Rpt Auction Stat LOG OUT					
My Bidding History					
Seller	ItemName	End Date	Bid Date	My Price	Status
PenguinTeenage	Dorothea Tanning	May 19, 2018, 1:56 a.m.	April 26, 2018, 2:55 a.m.	444.00	waiting
PenguinTeenage	Dorothea Tanning	May 19, 2018, 1:56 a.m.	April 26, 2018, 2:55 a.m.	555.00	waiting
PenguinTeenage	Dorothea Tanning	May 19, 2018, 1:56 a.m.	April 26, 2018, 2:55 a.m.	2333.00	win
PenguinTeenage	golf course	May 29, 2018, 2:13 a.m.	April 26, 2018, 2:56 a.m.	120.00	waiting
PenguinTeenage	golf course	May 29, 2018, 2:13 a.m.	April 26, 2018, 2:56 a.m.	400.00	waiting
PenguinTeenage	golf court	May 29, 2018, 2:14 a.m.	April 26, 2018, 2:57 a.m.	1000000.00	waiting
cuiaiyu	KaoGao Creative Practice	April 28, 2018, 3:20 p.m.	April 26, 2018, 2:57 a.m.	20.00	waiting
PenguinTeenage	The Hunger Games (Hunger Games Series #1)	May 6, 2018, 1:51 a.m.	April 26, 2018, 2:57 a.m.	110.00	waiting
PenguinTeenage	The Hunger Games (Hunger Games Series #1)	May 6, 2018, 1:51 a.m.	April 26, 2018, 2:57 a.m.	113.00	waiting
PenguinTeenage	The 5th Wave (Fifth Wave Series #1)	April 29, 2018, 1:52 a.m.	April 26, 2018, 2:58 a.m.	121.00	waiting

© Copyright 2018 - YABE

Figure 50: Bidding History

YABE Home Products Biddings My Account TeleMarket Rpt Auction Stat LOG OUT						
Transaction History						
Seller	Buyer	ItemName	Date	Quantity	Single Cost	Shipping Status
YABEADMIN	ykc5056	YABEVIP	April 25, 2018, 9:26 p.m.	1	100.00	purchased
ykc5056	ykc5056	meal	April 25, 2018, 9:37 p.m.	1	1000.00	Shipped
YABEADMIN	ykc5056	YABEDONATION	April 25, 2018, 9:27 p.m.	1	1.00	purchased
xunzekun	ykc5056	lpad mini	April 26, 2018, 2:55 a.m.	1	499.00	purchased
YABEADMIN	ykc5056	YABEDONATION	April 26, 2018, 2:55 a.m.	1	1.00	purchased

Figure 51: Purchase History



Figure 52: Auction Statistic

YABE	Home	Products	Biddings	My Account	TeleMarket Rpt	Auction Stat	LOG OUT
------	------	----------	----------	------------	----------------	--------------	---------

Edit Address

Street1:

Street2:

City:

State:

ZipCode:

Email:

Figure 53: Edit Address

The screenshot shows the 'Edit Payment Method' form within the YABE application. At the top is a dark navigation bar with links: YABE, Home, Products, Biddings, My Account, TeleMarket Rpt, Auction Stat, and LOG OUT. The main heading is 'Edit Payment Method'. Below it, the 'CardNumber:' label is followed by a text input field containing the placeholder '16 digits card number'. Underneath, the 'Select Card Type:' label is followed by three radio button options: 'Visa', 'Discover', and 'Yabe'. At the bottom of the form is a button labeled 'Add Payment Method'.

YABE Home Products Biddings My Account TeleMarket Rpt Auction Stat LOG OUT

Edit Payment Method

CardNumber:

Select Card Type:

☐ Visa

☐ Discover

☐ Yabe

Add Payment Method

Figure 54: Edit Payment Method