Book Exchange

Paul Clef Ube, Guadalupe Sahagun, Alex Huang, Sandip Hodkhasa, Kevin Crespin

Section 1: Introduction

1.1 Describe the purpose of this document

The purpose of this software design specification (SDS) is to describe the implementation details of the CSULA Book Exchange software for students.

1.2 Describe the scope of this document

The scope of this document are web-systems

1.3 Describe this document's intended audience

The document's intended audience will be those who are familiar with web-based system.

1.4 Identify the system/product using any applicable names and/or version numbers.

CSULA Book Exchange software

1.5 Provide references for any other pertinent documents such as:

The CSULA Book Exchange software design is derived from the functional and non-functional software requirements detailed in the software requirement specification (SRS)

1.6 Define any important terms, acronyms, or abbreviations

CSULA – Cal State University, Los Angeles
SDS – Software Design Specification
SRS – Software Requirement Specification
GUI – Graphical User Interface

Section 2: System Overview

Provide a general description of the software system including its functionality and matters related to the overall system and its design.

The CSULA Book Exchange software is modeled to provide functionalities for students to be able to sell their books to other students. Users would be able to buy and sell books, hopefully for the purpose to reuse the books and/or save money.

The CSULA Book Exchange software will be coded in PhP with front-end HTML and CSS. It will keep a database of users, books, forum discussion, and comment/rating.

Section 3: Design Considerations

3.1 Assumptions and Dependencies

- ***As a web-based system, CSULA Book Exchange assumes that the client machines running the software will have popular browsers installed.***
- ***CSULA Book Exchange will provide a graphical user interface for administrative capabilities and user capabilities implemented the above software codes.***

3.2 General Constraints

- ***Client machines must have popular browsers, such as chrome, installed.***
- ***CSULA Book Exchange must have a server component.***

3.3 Goals and Guidelines

- ***Other than network errors and SQL injections, no internal software failures are acceptable***
- ***Where possible, use known design patterns and employ software best practices***

3.4 Development Methods

- ***An incremental software development process will be used for the CSULA Book Exchange architecture development***

Section 4: Architectural Strategies

4.1 Use of a particular type of product (programming language, database, library, etc.)

Windows, Apache, PhP, MySQL, HTML, CSS

4.2 Reuse of existing software components to implement various parts/features of the system

None

4.3 Future plans for extending or enhancing the software

Email notification – send email notification to users that have balance overdue, any book that is due soon or overdue, and a book that becomes available if user has it bookmarked.

Multiple discussion threads – more threads in the "Forum" page for users to discuss things in specific thread in an organized manner.

4.4 User interface paradigms (or system input and output models)

The CSULA Book Exchange application will require a system administration and user graphical user interface. One of the design constraints will be the use of PhP, SQL, HTML, and CSS.

4.5 Hardware and/or software interface paradigms

The CSULA Book Exchange application will keep a database software. One of the design contraints will be the use of SQL and a server through Apache.

4.6 Error detection and recovery

The CSULA Book Exchange application shall verify user's login information with database information

4.7 Memory management policies

None

4.8 External databases and/or data storage management and persistence

The CSULA Book Exchange application shall keep a database designed with SQL and kept in the server through Apache.

4.9 Distributed data or control over a network

None

4.10 Generalized approaches to control

None

4.11 Concurrency and synchronization

None

4.12 Communication mechanisms

Http Protocol

Section 5: System Architecture

The CSULA Book Exchange application will be partitioned into subsystems components of major functionality and responsibilities. This section describes how the system is decomposed and how the major subsystems interact to provide the desired functionality.

THE CSULA Book Exchange system is composed of three major subsystems: Server, Client, and Administration. The CSULA Book Exchange easily decomposes into these three subsystems. The system requires a user interface to administer the server component that provides incoming data to the program.

5.1 Server Architecture

5.1.1 Apache

This component serves as a database that receives response messages from the program and sends request to the provider service at the External System. It serves as a handler and dispatcher component.

5.1.2 MySQL

This component is the programming code that creates and fills in the database. It creates the properties, variables, and data required for the external system to get the necessary data.

5.2 Client Architecture

Within the PhP environment, the request payload received by the server component will be dropped into the HTML/CSS component where the users receives it through a visual graphical user interface.

5.2.1 HTML/CSS Interface

The client component gives the users the visual graphical interface to help them interact with the application. It sends the data that users requested to the PhP component and handles the data it sends back. In addition to receiving request and sending data, it is also responsible for translating the incoming PhP message into a html/css code that is recognizable by the user through the graphical user interface.

5.3 Administration

The administration subsystem provides administration function and a graphical user interface for admins to manage the system easier. The administration subsystem is composed of the following components: Monitor and Control. The Monitor and Control subcomponents will interface with the Server subsystem to monitor user status and control their configuration and profile.

5.3.1 Monitor

The monitor component of the administration subsystem monitors the current statistics of members in the application. The status information will include their balance, admin privilege, status, and etc.

5.3.2 Control

The control component of the administration subsystem controls the configuration and status of the application members. It includes the control of their balance, admin privileges, current status, and option of deleting user accounts.

Section 6: Detailed System Design

6.1 Login/Logout Architecture

- *Definition*

  The purpose of this module is to keeps track of the user who uses the application.

- *Responsibilities*

  One of its responsibility is to serve as a layer of security to prevent unregistered users from accessing most of the application. It also behaves as a way for the system to extract the correct data of the user from the database and update it based on user's interaction with the system through the graphical user interface.

- *Constraints*

  There are many constraints in this module. The two textboxes only accept numbers and letters. It doesn't account for symbols and vulnerable to SQL injections. It also only accepts the English character.

- *Uses/Interactions*

  Users can interact with the module by click on the two text boxes: Username and password. User clicks on "Login" button to submit their information. User can also click on the "Sign Up" button to register in the system.

- *Processing*

  If the information they provided is correct, it will direct them to the homepage with their profile information loaded. If the information they provided is incorrect, it will clear the fields and redirect them back to the login/logout page.

6.2 Register Architecture

- *Definition*

  The purpose of this module is to give unregistered users the opportunity to register in the system.

- *Responsibilities*

  One of its responsibility is to serve as a gateway for users to be able to interact with the application by recording their registration in the system. It's behavior is to keep a record of the registered user to a database.

- *Constraints*

  There are many constraints in this module. The two textboxes only accept numbers and letters. It doesn't account for symbols and vulnerable to SQL injections. It also only accepts the English character.

- *Uses/Interactions*

  Users can interact with the module by click on the two text boxes: Name and Email. User clicks on "Register" button to submit their information.

- *Processing*

  The module will take the information in the two text boxes after the user clicks on "Register" and record it to the database. It will redirect them to the homepage after it completes the process.

6.3 Homepage and Navigation Bar Architecture

- *Definition*

  The purpose of this module is to give users the graphical user interface to access the different other modules of the system.

- *Responsibilities*

  One of its responsibility is to serve take user's interaction to make sure users are redirected to the right page and/or do the intended action.

- *Constraints*

  The constraints are user's are only able to click on the 5 options available.

- *Uses/Interactions*

  Users can interact with the module by clicking on the options: "Shop,"

"Sell," "Forum," "Profile," and "Log out."

- *Processing*

  After the user click on any of the options, the system process their request by sending it to the server and sending the correct document show to the user. If the user clicks on "Log Out," it ends their session.

6.4 Administrative Architecture

- *Definition*

  The purpose of this module is to give user with administrative privilege to view registered users and the control to delete any of the user and edit their information.

- *Responsibilities*

  One of its responsibility is to serve to manage the system if anything goes wary or high-level control is required. It also behaves as a way for the system to edit the database of the user and the user's information.

- *Constraints*

  There are many constraints in this module. Administrators are only able to click on the options. The "Increase Balance" option only increases the balance by 100s.

- *Uses/Interactions*

  Administrators can interact with the module by clicking on the options: "Delete," "Increase Balance," "Revoke Administrator" or "Make Administrator," and "Active" or "On Hold." They can also click on the buttons below to go to the main menu page, enrollment page, and to log them out and end their session.

- *Processing*

  The "Delete" option deletes the specified user from the database. The "Increase Balance" option edits the database and edit's the user's balance by 100 at a time. The "Revoke Administrator" removes the admin privileges of the user. The "Status" button changes their status to either "Active" or "On Hold." The 3 buttons redirects the administrator to the intended page.

6.4 Shop Architecture

- *Definition*

  The purpose of this module is to give users the ability to view the list of books and their information. It also gives them the change to add the book to the cart and give a comment and rating to the book.

- *Responsibilities*

  It's responsibility is to give the user the organized listed information of the book. It also makes sure to add the book to the cart and remove the book from the list after the order. It behaves as a way for user's to view and access the right book.

- *Constraints*

  It only accept user's mouse click on the book title and cover page and the submit button of the comment and rating. It only accepts numbers and letters in the comment text box and the rating is a radial choice of 1-5.

- *Uses/Interactions*

  Users can interact with the module by click on the book title and the book cover page. In the detailed page, it only accepts user's mouse click on the add to cart and comment/rating submit button. It only accepts letters and numbers on the comment text box and a radial choice of 1-5 in the rating.

- *Processing*

  After the user clicks on the book title or the book cover page, the system redirects them to the more detailed page of the corresponding book. If the user clicks "Add to Cart" option, the book is added to the cart of that user and can be viewed in their profile. The "Submit" button in the bottom takes the contents of the comment text box and the choice of the rating to record it to the database. It then updates the book average rating and adds the comment to the list of comments for user's to view.

6.5 Sell Architecture

- *Definition*

  The purpose of this module is to provide the user the ability to provide a book's basic information to sell.

- *Responsibilities*

  One of its responsibility is to serve as a way to keep a record of the book in the database. It behaves as a blank document that user fills out and then the system puts the document into file.

- *Constraints*

  The textboxes: Title, Author, and Description only accepts strings. The textboxes: ISBN-10 and Price only accepts 10 numbers and currency number respectively. The picture only accepts an image.

- *Uses/Interactions*

  Users can interact with the module by click on the text boxes and typing the correct formation of information about the book. The user clicks on "Submit" to list the book to sell for other users.

- *Processing*

  The system takes the information of the textboxes and image to add it to the record of the book's database.

6.6 Forum Architecture

- *Definition*

  The purpose of this module is to user's the ability to interact with other users.

- *Responsibilities*

  One of its responsibility is to make sure it provides the user a way to view the comments on the discussion. It makes sure to provide for the user a way the ability to chat with other users.

- *Constraints*

  The constraints are numbers and letters only for the post textbox and a user's mouse click on the "Post" button.

- *Uses/Interactions*

  Users can view the list of comments in the discussion. User's can also type numbers and letters in the post textbox and click "Post" to submit their post in the thread.

- *Processing*

  The system keeps a record of a string database and sends it to the user for viewing. Once the user types a string in the post textbox and clicks "Post," it takes the content of the textbox and records it to the string database and updates the page.

6.7 Profile Architecture

- *Definition*

  The purpose of this module is to give users the ability to view their balance, add money to their balance, view the list of books their selling, view their cart, delete an item in their cart, and order the items in the cart.

- *Responsibilities*

  One of its responsibility is to keep a database of the user's information: balance, list of books they're selling, and items in the cart. It behaves as a way to interface the database information to the users.

- *Constraints*

  User's can only click on the options to increase their balance, delete an item in their list of books being sold and/or item in the cart, and order their cart.

- *Uses/Interactions*

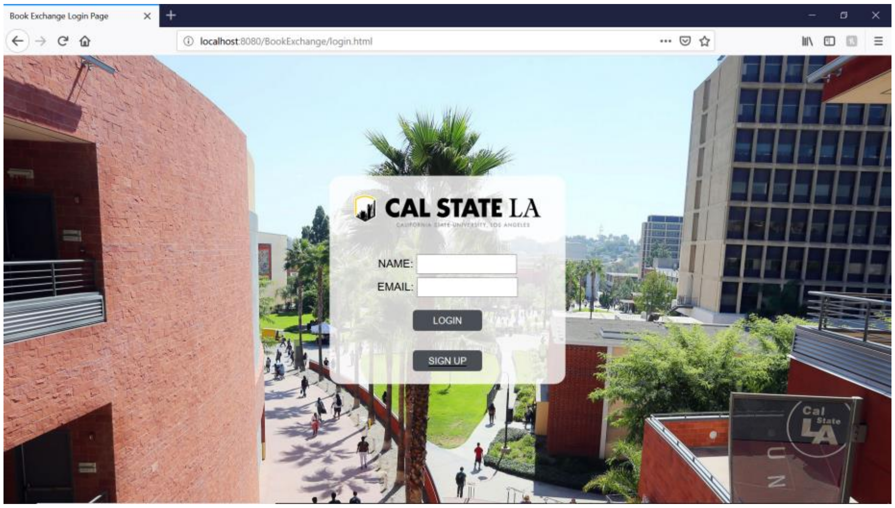
  Users can interact with the module by clicking on the "Delete Item" for both list of books being sold and items in the cart. They can also click "Order" to order the items in the cart.

- *Processing*

  The system gets the information of the user from the database and make sure it's available for user to view. It removes the item in the list of books of being sold if the user clicks on "Delete Item" in that list. It also does the same thing in the cart list and "Delete Item" in that list. The system updates the user's balance after the user clicks on "Order."

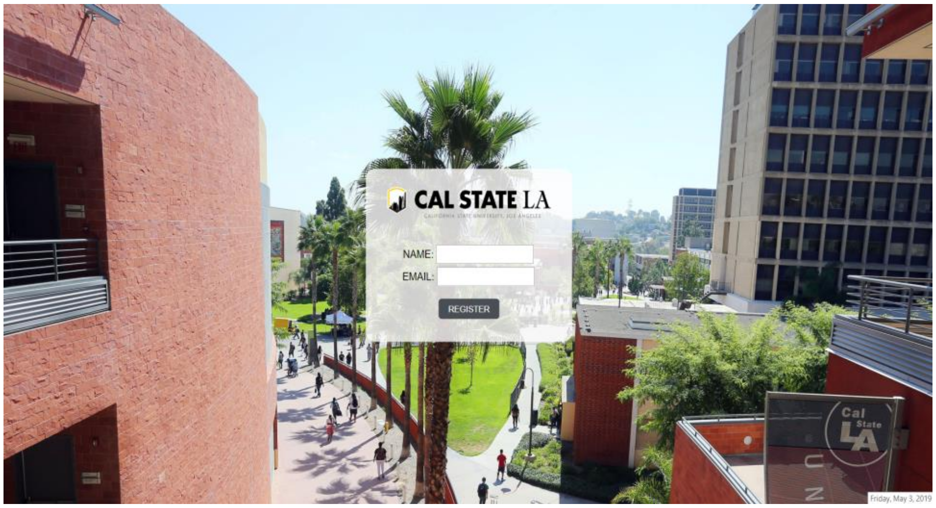
Section 7: Graphical User Interface Design

Login Graphical UI:


Book Exchange Login Page
localhost:8080/BookExchange/login.html
CAL STATE LA
CALIFORNIA STATE UNIVERSITY, LOS ANGELES
NAME:
EMAIL:
LOGIN
SIGN UP
Cal State LA

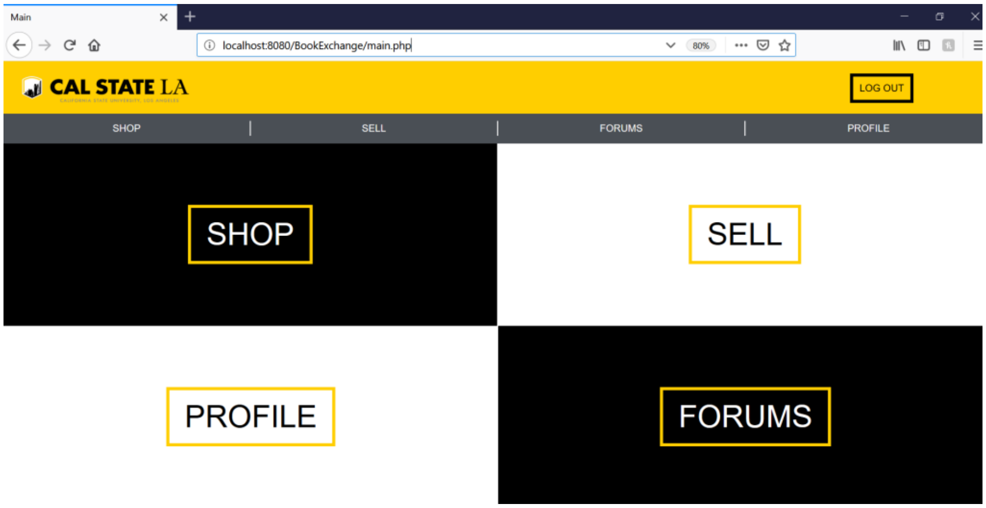
This is the picture of the graphical user interface when user wants to login. User, who has an account, can login by typing their registered name in the name textbox and their email in the email text box. The user then clicks the button "Login." The user will be redirected to the homepage if successful. If not, it will stay in the login page.

User Enrollment Graphical UI:



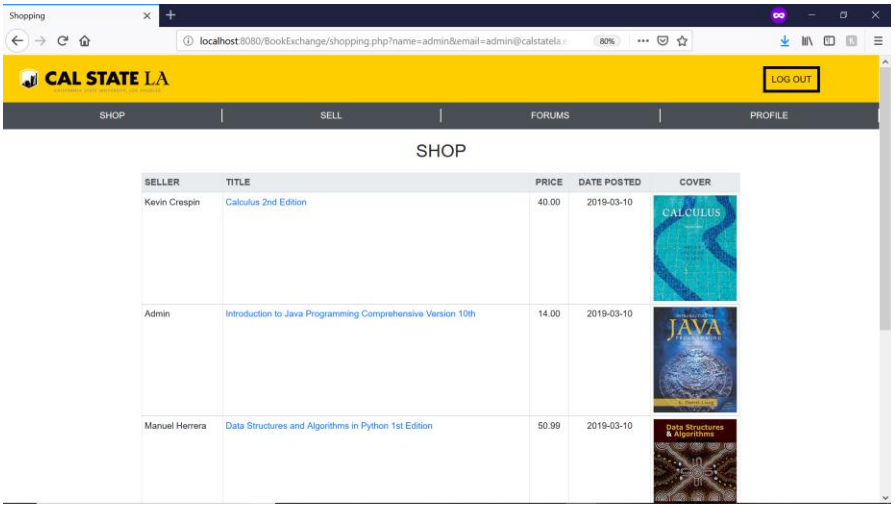
The picture above is the graphical user interface for user to sign up to be able to gain access to most of the application after login. It looks very similar to login but with only one button. The user types a name, an email and clicks "Register" to register in the system. The user can then user that information to login.

Home Page Graphical UI:



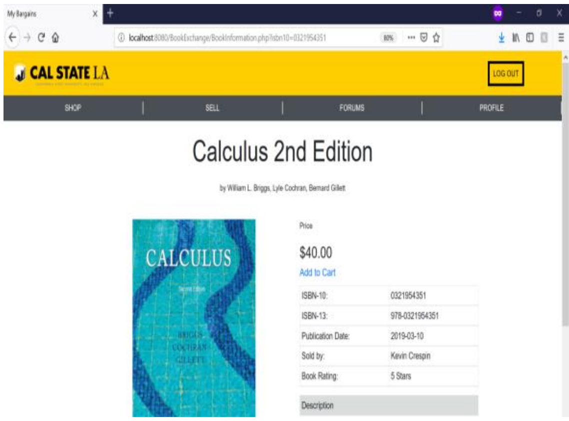
This is the picture of the graphical user interface of the homepage document. The user can click on any of the options: "Shop," "Sell," "Profile," and "Forums." In addition, the user can also logout anytime by pressing the logout button on the top right.

Shop Graphical UI:


Shopping
localhost:8080/BookExchange/shopping.php?name=admin&email=admin@calstatela.
80%
CAL STATE LA
LOG OUT
SHOP
SELL
FORUMS
PROFILE

SHOP

SELLER	TITLE	PRICE	DATE POSTED	COVER
Kevin Crespin	Calculus 2nd Edition	40.00	2019-03-10	
Admin	Introduction to Java Programming Comprehensive Version 10th	14.00	2019-03-10	
Manuel Herrera	Data Structures and Algorithms in Python 1st Edition	50.99	2019-03-10	



Calculus 2nd Edition

by William L. Briggs, Lyle Cochran, Bernard Gillett

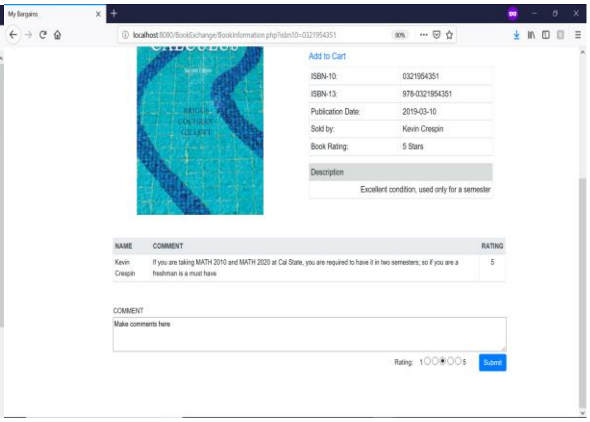
Price

$40.00

Add to Cart

ISBN-10:	0321954351
ISBN-13:	978-0321954351
Publication Date:	2019-03-10
Sold by:	Kevin Crespin
Book Rating:	5 Stars

Description


My Bargains
localhost:8080/BookExchange/BookInformation.php?isbn10=0321954351
80%
BRIGGS
COCHRAN
GILLETT
Submit

Add to Cart

ISBN-10:	0321954351
ISBN-13:	978-0321954351
Publication Date:	2019-03-10
Sold by:	Kevin Crespin
Book Rating:	5 Stars

Description

Excellent condition, used only for a semester

NAME	COMMENT	RATING
Kevin Crespin	If you are taking MATH 2010 and MATH 2020 at Cal State, you are required to have it in two semesters; so if you are a freshman is a must have	5

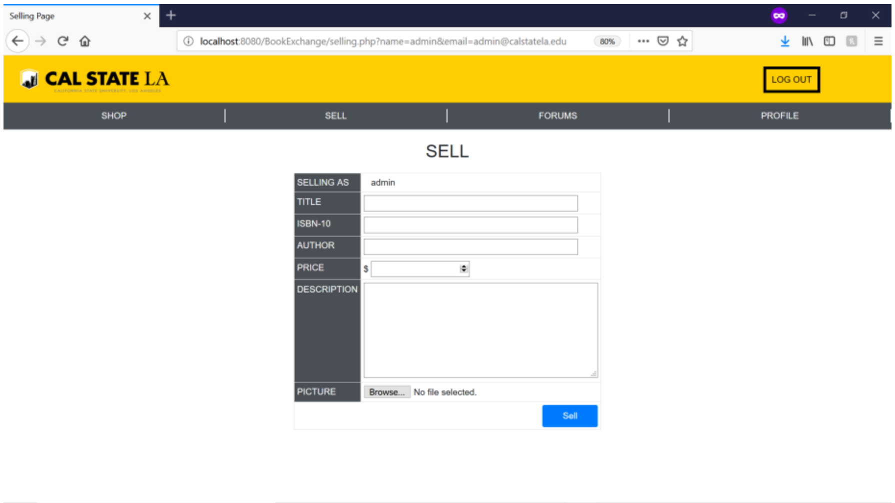
COMMENT

Make comments here

Rating: 1 ○ ○ ● ○ ○ 5

The 3 pictures above are the graphical user interface for the "Shop" page documents. The firs picture is where user are directed after clicking "Shop" in the home page or the navigation bar. The user can view the books listed for sale. Once the user clicks the title or the cover page of any book, they are take to another page that shows more detailed information of the book.

Sell Graphical UI:



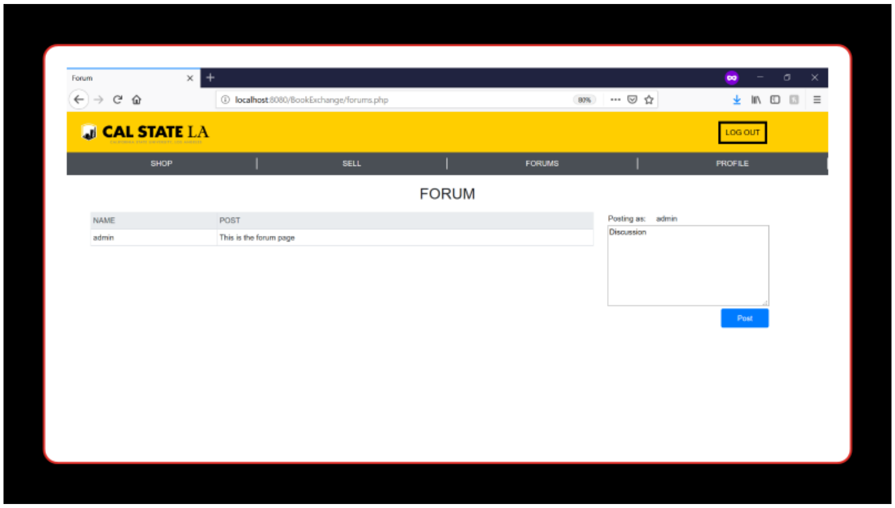
localhost:8080/BookExchange/selling.php?name=admin&email=admin@calstatela.edu

SELL

SELLING AS	admin
TITLE	
ISBN-10	
AUTHOR	
PRICE	$
DESCRIPTION	
PICTURE	No file selected.

This is the picture of the graphical user interface for the "Sell" page document. It is where the user is directed after the user clicks "Sell" in the homepage or the navigation bar. The user can provide the book's information corresponding the text boxes. Once the user clicks the sell button, the books will be listed for sale, which can be seen in the shop page.

Forum Graphical UI:



localhost:8080/BookExchange/forums.php

FORUM

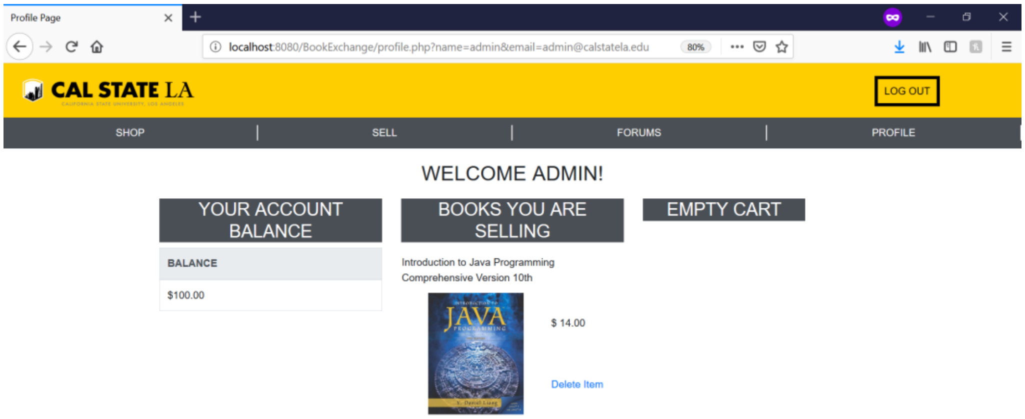
NAME	POST
admin	This is the forum page

Posting as: admin

Discussion

The picture above is the graphical user interface for the "Forum" page document. It is where the user is directed after the user clicks "Forum" in the homepage or the navigation bar. The user can view people's past and present discussion. The user can also do a post by typing their post comment on the right textbox and clicking the post button.

Profile Graphical UI:


Profile Page
localhost:8080/BookExchange/profile.php?name=admin&email=admin@calstatela.edu
80%
CAL STATE LA
CALIFORNIA STATE UNIVERSITY, LOS ANGELES
LOG OUT
SHOP
SELL
FORUMS
PROFILE
YOUR ACCOUNT BALANCE
BOOKS YOU ARE SELLING
EMPTY CART
Delete Item

WELCOME ADMIN!

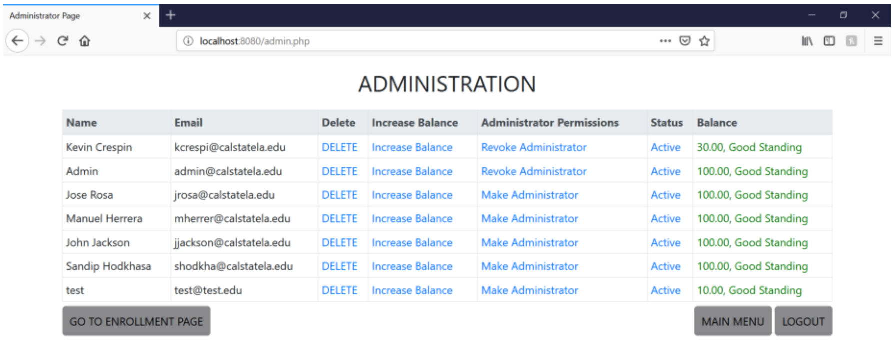
BALANCE
$100.00

Introduction to Java Programming Comprehensive Version 10th

$ 14.00

__This the picture of the graphical user interface for the "Profile" page document. It is where the user is directed after clicking "Profile" in the homepage or the navigation bar. The user can view their balance, view their books listed for sale, and view the items in their cart. The user can also delete an item from the books listed for sale and/or an item from the cart. This is the page where the user can also order the items in the cart by clicking the order button.__

Administration Graphical UI:



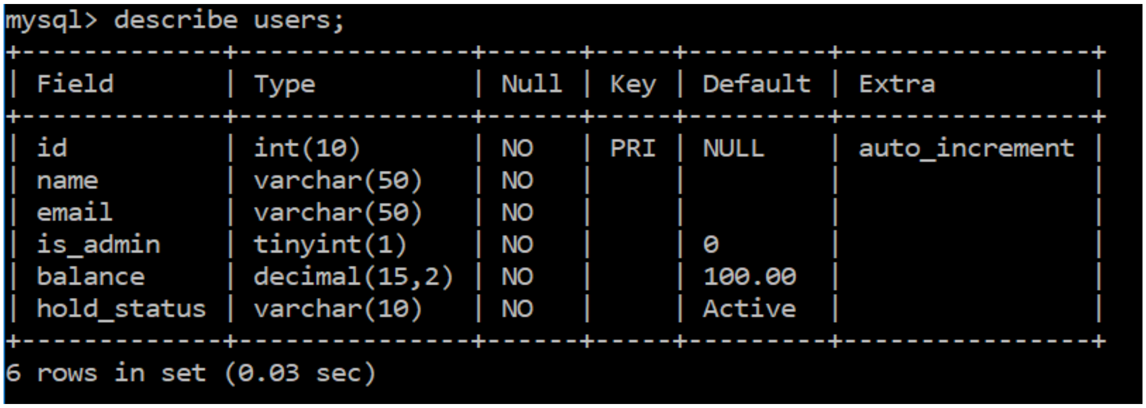
ADMINISTRATION

Name	Email	Delete	Increase Balance	Administrator Permissions	Status	Balance
Kevin Crespin	kcrespi@calstatela.edu	DELETE	Increase Balance	Revoke Administrator	Active	30.00, Good Standing
Admin	admin@calstatela.edu	DELETE	Increase Balance	Revoke Administrator	Active	100.00, Good Standing
Jose Rosa	jrosa@calstatela.edu	DELETE	Increase Balance	Make Administrator	Active	100.00, Good Standing
Manuel Herrera	mherrer@calstatela.edu	DELETE	Increase Balance	Make Administrator	Active	100.00, Good Standing
John Jackson	jjackson@calstatela.edu	DELETE	Increase Balance	Make Administrator	Active	100.00, Good Standing
Sandip Hodkhasa	shodkha@calstatela.edu	DELETE	Increase Balance	Make Administrator	Active	100.00, Good Standing
test	test@test.edu	DELETE	Increase Balance	Make Administrator	Active	10.00, Good Standing

__The picture above is the graphical user interface of the Administration page document. It is where any administrator is directed after logging in. The administrator can view enrolled accounts and their information. The administrator can delete an account, increase an account's balance, make/revoke admin privilege, and set status of an account. From this page, the administrator can go to the enrollment page, main menu (homepage), and log out by clicking on the corresponding button.__

Section S: Data Dictionary

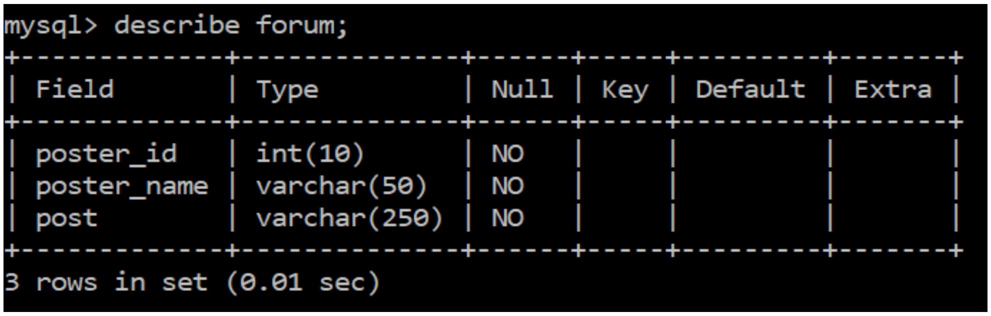
8.1 Data Item 1 (users)



```
mysql> describe users;
+-------------+---------------+------+-----+---------+----------------+
| Field       | Type          | Null | Key | Default | Extra          |
+-------------+---------------+------+-----+---------+----------------+
| id          | int(10)       | NO   | PRI | NULL    | auto_increment |
| name        | varchar(50)   | NO   |     |         |                |
| email       | varchar(50)   | NO   |     |         |                |
| is_admin    | tinyint(1)    | NO   |     | 0       |                |
| balance     | decimal(15,2) | NO   |     | 100.00  |                |
| hold_status | varchar(10)   | NO   |     | Active  |                |
+-------------+---------------+------+-----+---------+----------------+
6 rows in set (0.03 sec)
```

The user table of the database has 6 fields: id, name, email, is_admin, balance, and hold_status with it's corresponding type: int(10), varchar(50), varchar(50), tinyint(1), decminal(15,2), varchar(10) respectively. It also shows that none can of them can me null. The primary key is id and it auto increment as more users are added to the database. An item gets added to the table when the user register an account in the system.

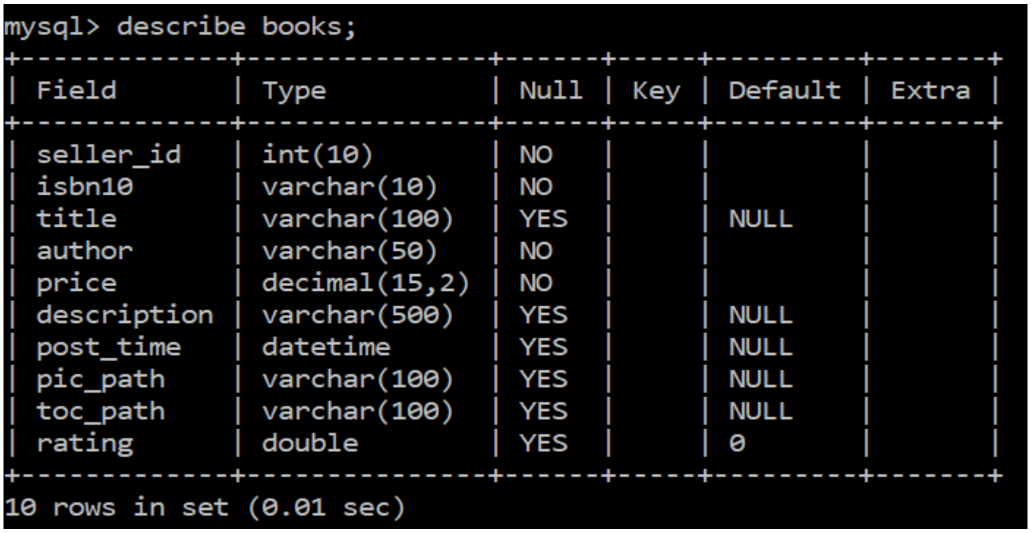
8.2 Data Item 2 (forum)



```
mysql> describe forum;
+-------------+--------------+------+-----+---------+-------+
| Field       | Type         | Null | Key | Default | Extra |
+-------------+--------------+------+-----+---------+-------+
| poster_id   | int(10)      | NO   |     |         |       |
| poster_name | varchar(50)  | NO   |     |         |       |
| post        | varchar(250) | NO   |     |         |       |
+-------------+--------------+------+-----+---------+-------+
3 rows in set (0.01 sec)
```

The forum table of the database has 3 fields: poster_id, poster_name, and post with it's corresponding type: int(10), varchar(50), and varchar(50) respectively. The table shows that none of the fields can be null. An item gets added to the system when a user post a comment in the forum page.

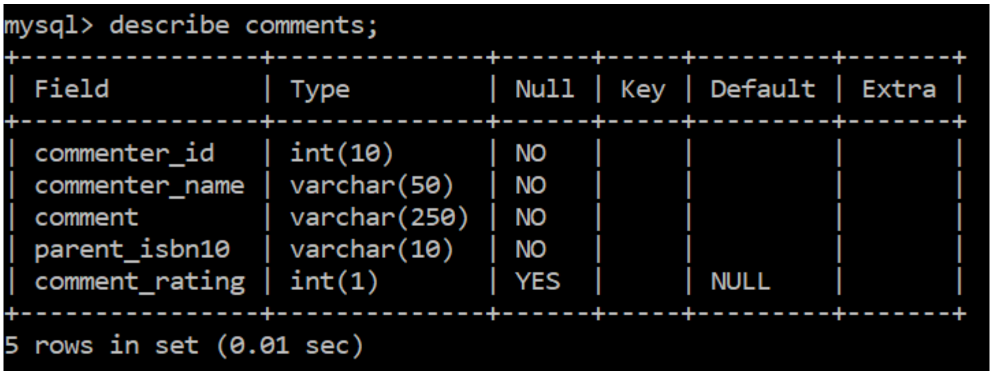
8.3 Data Item 3 (books)



```
mysql> describe books;
+-------------+---------------+------+-----+---------+-------+
| Field       | Type          | Null | Key | Default | Extra |
+-------------+---------------+------+-----+---------+-------+
| seller_id   | int(10)       | NO   |     |         |       |
| isbn10      | varchar(10)   | NO   |     |         |       |
| title       | varchar(100)  | YES  |     | NULL    |       |
| author      | varchar(50)   | NO   |     |         |       |
| price       | decimal(15,2) | NO   |     |         |       |
| description | varchar(500)  | YES  |     | NULL    |       |
| post_time   | datetime      | YES  |     | NULL    |       |
| pic_path    | varchar(100)  | YES  |     | NULL    |       |
| toc_path    | varchar(100)  | YES  |     | NULL    |       |
| rating      | double        | YES  |     | 0       |       |
+-------------+---------------+------+-----+---------+-------+
10 rows in set (0.01 sec)
```

The books table of the datable has the following fields and corresponding type shown above. The table accepts null only for the field title, description, post_time, pic_path, toc_patch, and rating. In the other hand, it doesn't accept null for the seller_id, isbn10, author, and price. An item gets added to the table when the user list books to sell.

8.4 Data Item 4 (comments)



```
mysql> describe comments;
+----------------+--------------+------+-----+---------+-------+
| Field          | Type         | Null | Key | Default | Extra |
+----------------+--------------+------+-----+---------+-------+
| commenter_id   | int(10)      | NO   |     |         |       |
| commenter_name | varchar(50)  | NO   |     |         |       |
| comment        | varchar(250) | NO   |     |         |       |
| parent_isbn10  | varchar(10)  | NO   |     |         |       |
| comment_rating | int(1)       | YES  |     | NULL    |       |
+----------------+--------------+------+-----+---------+-------+
5 rows in set (0.01 sec)
```

The comments table of the database has 5 fields and it's corresponding type as shown above. Only comment_rating can be null while the rest cannot be null. An item gets added to the table when the user adds a comment and rating in one of the books listed for sale.

Section S: Glossary

An ordered list of defined terms and concepts used throughout the document.

CSULA – Cal State University, Los Angeles
SDS – Software Design Specification
SRS – Software Requirement Specification
GUI – Graphical User Interface
External System – Client Program and client user interface