

Report 3 – System Implementation

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Indiana University – INFO-C451

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(as in Report#1 and Report#2, revised to incorporate the use cases that will be completed for the final demo)	Error! Bookmark not defined.
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Instead of the section Plan of Work have the section History of Work which documents how the actual milestones and deadlines evolved. Compare these against the milestones as planned in Reports #1 and #2. Also, summarize (as a bulleted list) your key accomplishments in this project. Discuss the possible directions for future work.	Error! Bookmark not defined.
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1. Customer Statement of Requirements

CompanyA is looking to gain marketing data by capturing customer opinions.
CompanyA's goal is to use this data to develop a more strategic product portfolio.
A brief description of the functionality provided by your information system. 1)

Objectives of the system

- I. CompanyA wants to create an eCommerce website where customers can share their feedback, opinions, and ratings for products.
- II. CompanyA would then receive the results which will be compiled into marketing reports.
 - a) System requirements
 - Create a Survey
 - Publish a Survey
 - Secure the survey with customer login
 - Fill out the survey
 - Write results to CompanyA database
 - Indicate when survey is complete
 - Aggregate and Summarize survey results
 - b) Typical customers for your proposed system
 - CustomerA marketing employees
 - CustomerA administrators
 - Customer end users
 - CustomerA Leadership
 - c) Project planning (software, hardware, network requirement)

Software:

- Diagramming: Lucidchart
- Programming: VS Code
- Web Development: MAMP

Hardware: Windows 10 Dell Precision 5540

- Development approach
 - Apache web server,
 - PHP
 - javascript,
 - mySQL backend

Development plan (schedule for design and implementation process)

Week 2: Requirement gathering and analysis

Week 3-4: System design Conceptual Preliminary design

Week 5-6: Implementation (coding) Week 7: Testing

Week 8: Deployment

Week 9-10: User Acceptance Testing Week 10: User feedback
Week 11-12: Implementation of feedback Week 13: Final user sign-off

2. Glossary of Terms

Term	Definition
Customer	External user that visits site and creates login.
Cart	Online cart that holds items to be purchased for a given customer
Administrator	User role for company use. Admin role can be used to perform special functions that other users cannot perform.
Guest	External user that visits the site yet has limited functionality due to no login.
Products	Guitars that the company is selling
Review	Customer feedback form regarding specific products.
Rating	Rating from 1 to 5 stars produced by customers for specific products.
Admin Dashboard	Webpage on the site where an admin can view business performance details.

3. System Requirements

- a. System requirements
 - i. Create a Survey
 - ii. Publish a Survey
 - iii. Secure the survey with customer login
 - iv. Fill out the survey
 - v. Write results to CompanyA database
 - vi. Indicate when survey is complete
 - vii. Aggregate and Summarize survey results
- b. Typical customers for your proposed system
 - i. CustomerA marketing employees
 - ii. CustomerA administrators
 - iii. Customer end users
 - iv. CustomerA Leadership

4. Functional Requirements Specification

Functional Requirements		
ID	Priority Weight	Description
F-REQ-1	1	Secure account creation
F-REQ-2	1	Separate user/admin spaces
F-REQ-3	1	Product administration
F-REQ-4	1	Product Order Administration
F-REQ-5	1	User shopping session
F-REQ-6	2	Use of cookies for session tracking
F-REQ-7	2	Write-back and printing of reviews and ratings

Use Cases						
Use Case	Description	ID	Priority Weight	Functional	In Progress	Future
Create Account	Any user needs the ability to create an account.		1 High	x		
Customer login	As a customer, I need to securely login to save my browsing and purchasing sessions.		2 High	x		
Admin Login	As an admin, I need to securely login to view admin pages.		3 High	x		
View Inventory	As any user, I need the ability to see all products on hand.		4 High	x		
Add Products	As an admin, I would like to be able to add products as our inventory changes.		5 High	x		
Create Review	As a customer, I want to write reviews about the products I am knowledgeable about.		6 Medium		x	
Read published reviews	As a customer or admin, I would like to read customer sentiment about products		7 Medium		x	
Add to Cart	As a customer, once I find an item I want, I would like to place it into my shopping cart.		8 High	x		
Admin Dashboard	As an admin, view key performance stats about the business.		9 Medium		x	x
View Account	As any registered user, view my account details.		10 Low	x		

All use cases in the chart are functioning in the demo. The only area of opportunity is the **Admin Dashboard** (ID 9).

This dashboard has the potential in future releases to allow for more granular reporting of business metrics such as total revenue, revenue charts over time, customer product sentiment, top sellers, top product sentiment, and correlation of product sentiment and sales. For the time being, the demo shows totals for products, sales, reviews, etc. which are aggregated from the database.

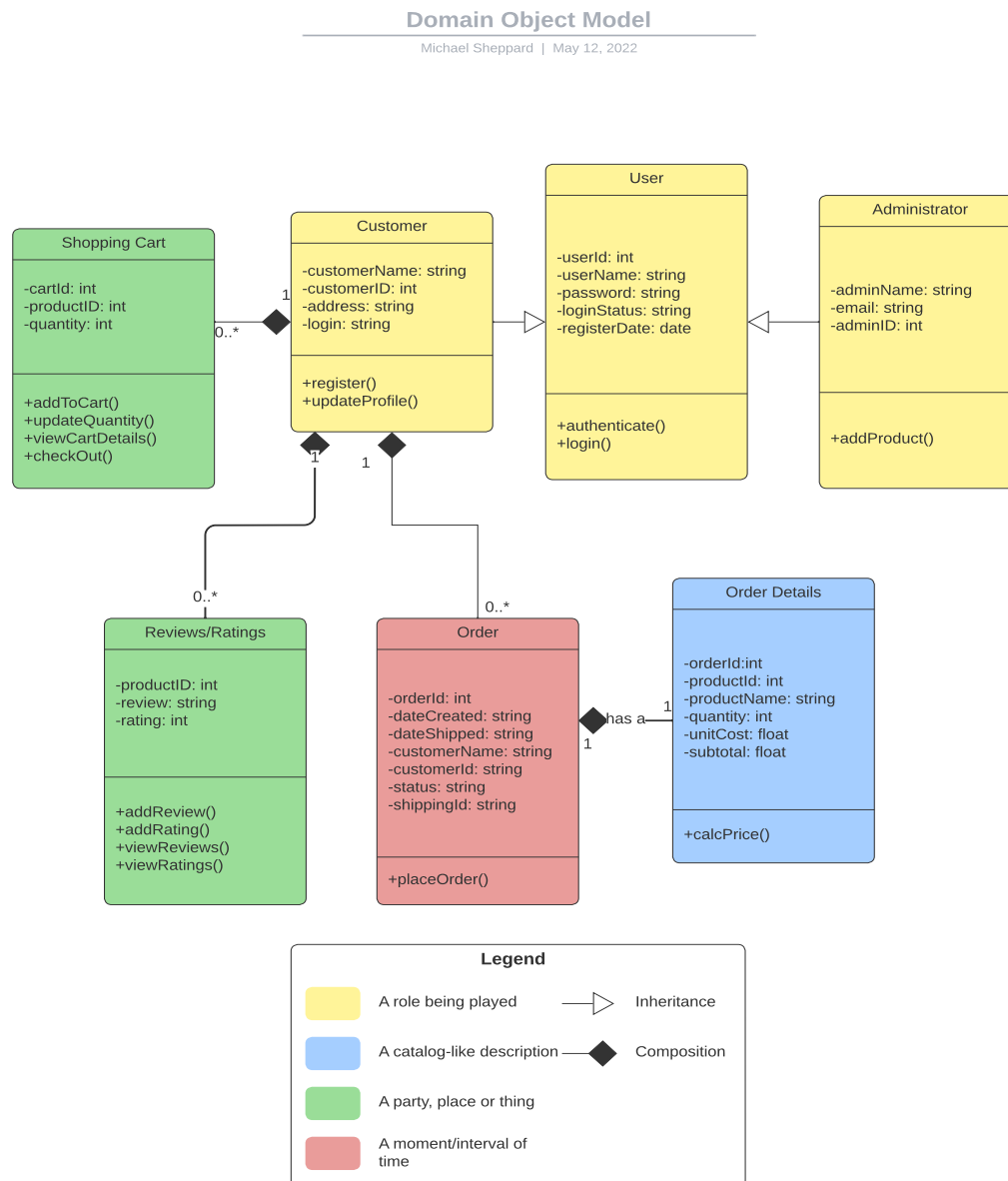
Traceability Matrix											
Requirement	PW	UC1	UC2	UC3	UC4	UC5	UC6	UC7	UC8	UC9	UC10
F-REQ-1	1	x	x	x							
F-REQ-2	1		x	x		x	x		x	x	x
F-REQ-3	1				x	x	x	x		x	
F-REQ-4	1					x				x	
F-REQ-5	1		x						x	x	x
F-REQ-6	2								x		x
F-REQ-7	2						x	x			

5. Effort Estimation using Use Case Points

Scenario	Sequence of Events	Keystrokes	Difficulty Level*
Create Account	1. Access Website	8	MEDIUM
	2. Select Register		
	3. Fill out Form		
	4. Press Submit		
View Products	1. Access Website	4	LOW
	2. Select Product Category		
Leave Review or Rating	1. Access Website	7	MEDIUM
	2. Select Product Category		
	3. Select Product		
	4. Enter Name		
	5. Enter Comment		
	6. Select Rating		
	7. Submit		
Add Product to Cart	1. Access Website	9	MEDIUM
	2. Select Log In		
	3. Enter Username		
	4. Enter Password		
	5. Press Login		
	6. Select Product Category		
	7. Select Product		
	8. Select Add to Basket		
	9. View Cart		
Admin - View Orders	1. Access Website	7	HIGH
	2. Select Log In		
	3. Enter Username		
	4. Enter Password		
	5. Press Login		
	6. Select Admin		
	7. Select Orders		
Admin - Add Product	1. Access Website	7	MEDIUM
	2. Select Login		
	3. Enter Username		
	4. Enter Password		
	5. Select Add Product		
	6. Fill out form		
	7. Submit Form		
Admin - View Stats	1. Access Website	6	MEDIUM
	2. Select Login		
	3. Enter Username		
	4. Enter Password		
	5. Select Admin		
	6. Select Admin Dashboard		

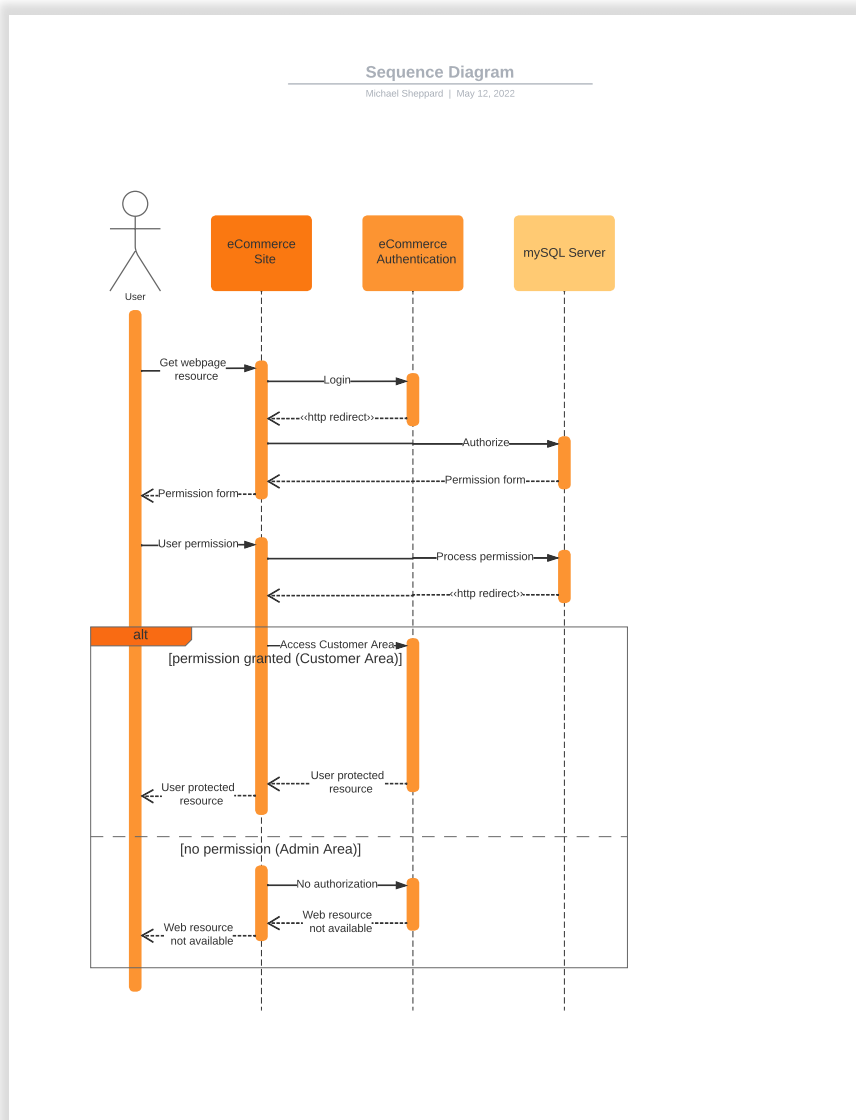
6. Domain Analysis

Domain object model includes use cases which are identified in final demo. Use cases include creating reviews, ratings and adding products (admin).

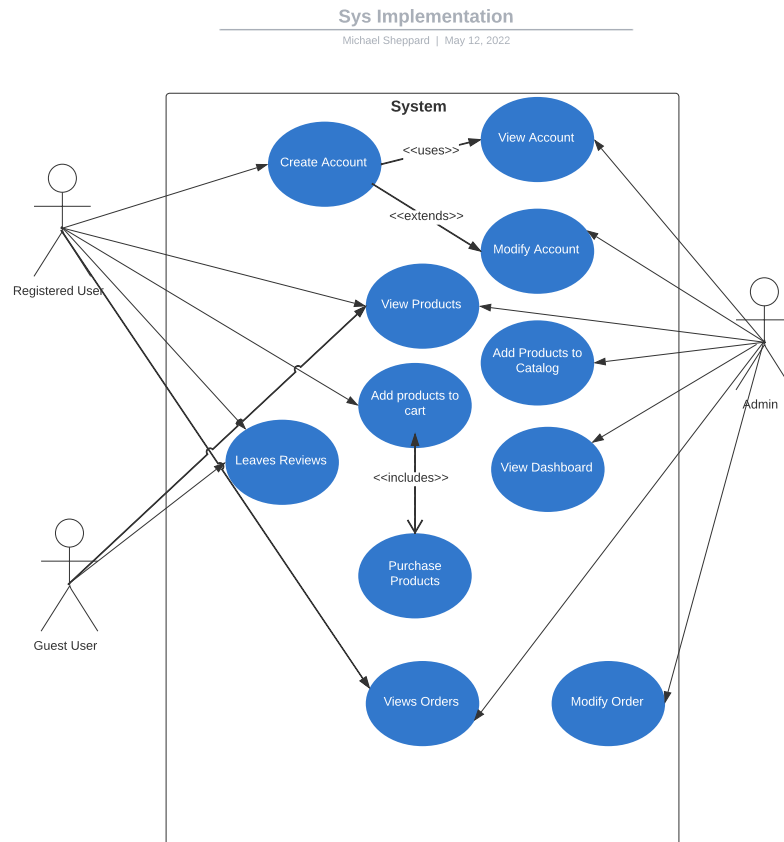


Traceability Matrix											
Requirement PW	UC1	UC2	UC3	UC4	UC5	UC6	UC7	UC8	UC9	UC10	
F-REQ-1	1	x	x	x							
F-REQ-2	1		x	x		x	x		x	x	x
F-REQ-3	1				x	x	x			x	
F-REQ-4	1					x				x	
F-REQ-5	1		x						x	x	x
F-REQ-6	2								x		x
F-REQ-7	2						x	x			

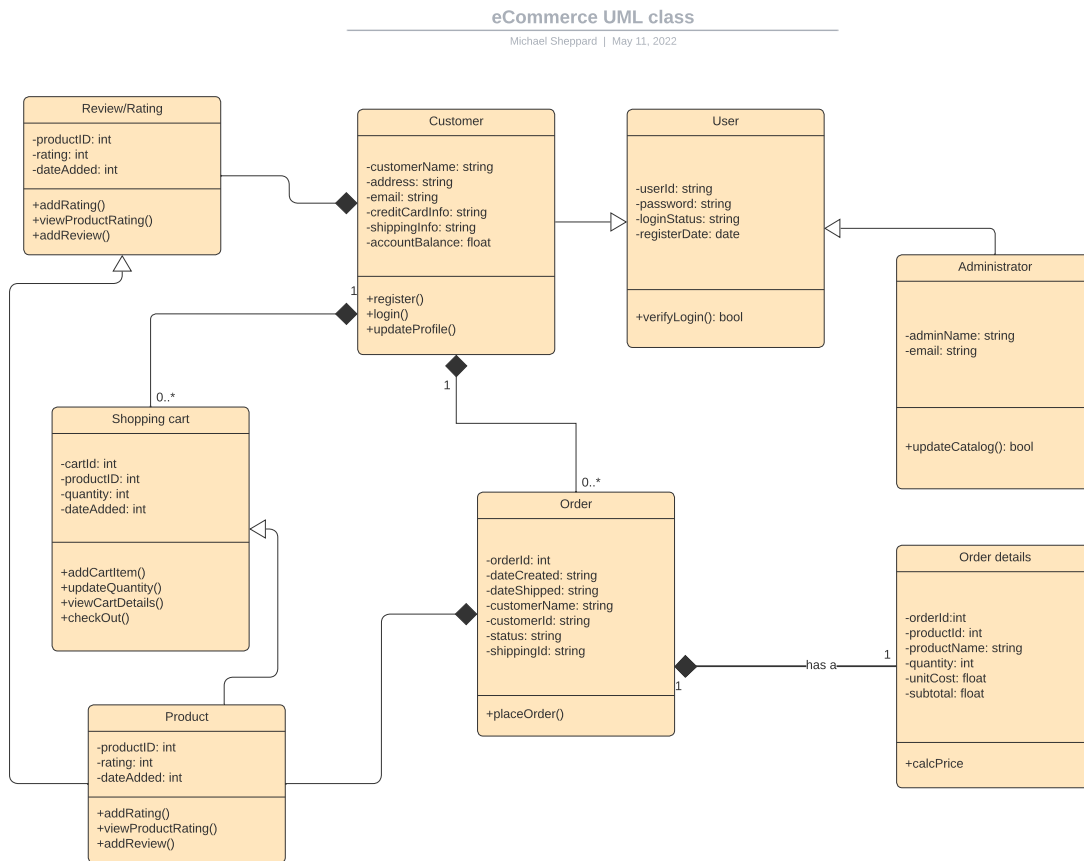
7. Interaction Diagrams



In the attached interaction diagrams, there has been provision made for the authentication of users, both customers and admins. This allows for discrete access to certain areas of the website such as admin utilities like the dashboard and product adding page. Otherwise, there was not much need to make drastic changes to the interactions.



8. Class Diagram and Interface Specification



Traceability Matrix											
Requirement	PW	UC1	UC2	UC3	UC4	UC5	UC6	UC7	UC8	UC9	UC10
F-REQ-1	1	x	x	x							
F-REQ-2	1		x	x		x	x		x	x	x
F-REQ-3	1				x	x	x	x		x	
F-REQ-4	1					x				x	
F-REQ-5	1		x						x	x	x
F-REQ-6	2								x		x
F-REQ-7	2						x	x			

The functional requirements and use cases which are represented in the traceability matrix are likewise represented in the class diagram. The classes implemented in the final project are very representative of the class model and implement each of the identified requirements as well as addressing the use cases. For instance, in the class diagram the User class is a parent to the Customer and Administrator classes. In practice, this has been worked so

that the user can change from customer to administrator by simply altering the role value in the database. In all other respects, the user class is the same for admin and customer.

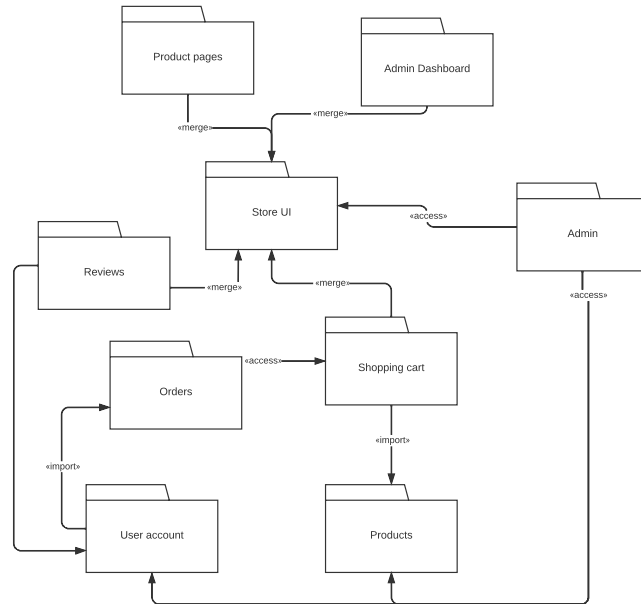
Functional Requirements			
ID	Priority Weight	Description	
F-REQ-1	1	Secure account creation	
F-REQ-2	1	Separate user/admin spaces	
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F-REQ-6	2	Use of cookies for session tracking	
F-REQ-7	2	Write-back and printing of reviews and ratings	

Use Case	Description	ID	Priority Weight
Create Account	Any user needs the ability to create an account.	1	High
Customer login	As a customer, I need to securely login to save my browsing and purchasing sessions.	2	High
Admin Login	As an admin, I need to securely login to view admin pages.	3	High
View Inventory	As any user, I need the ability to see all products on hand.	4	High
Add Products	As an admin, I would like to be able to add products as our inventory changes.	5	High
Create Review	As a customer, I want to write reviews about the products I am knowledgeable about.	6	Medium
Read published reviews	As a customer or admin, I would like to read customer sentiment about products	7	Medium
Add to Cart	As a customer, once I find an item I want, I would like to place it into my shopping cart.	8	High
Admin Dashboard	As an admin, view key performance stats about the business.	9	Medium
View Account	As any registered user, view my account details.	10	Low

9. System Architecture and System Design

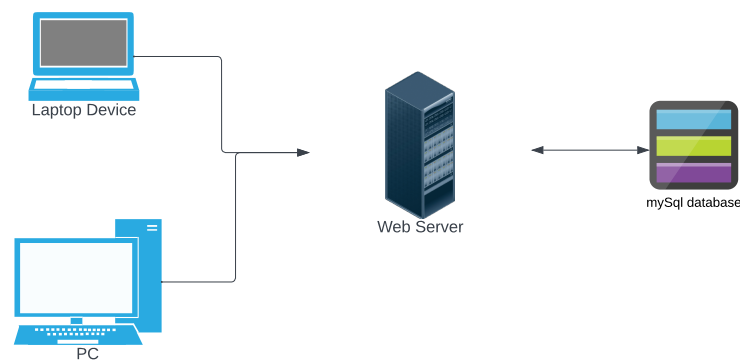
UML package diagram

Michael Sheppard | May 12, 2022



The system architecture and design for the eCommerce site follow the domain model as the classes and tables are closely aligned. This has allowed the system to remain simple and easy to understand.

Objects are logically separated and placed into their own PHP files. This is also evident in the admin area where the admin php files are stored together. Within the system, the structure and naming conventions follow the simple methodology and track tightly with the eCommerce business which can be evidenced by domain and class sections such as customer, product, orders, and so on.



Hardware Requirements

Client Requirements

- Browser – Latest Version of Google Chrome, Internet Explorer, Internet Edge or Firefox.
- 50mbps+ recommended
- Processor: Intel Core i3+
- Ram: 4GB+

Servers

This system is running on an Apache web server and MySQL database but can be adjusted to use a different relational database.

Item	Web server (minimal)	Web server (recommended)	Combined Web & Database Server (minimal)	Combined Web & Database Server (recommended)
Processor	1,6 GHz CPU	2 x 1,6 GHz CPU	2 x 1,6 GHz CPU	4 x 1,6 GHz CPU
RAM	1,75 GB RAM	3,5 GB RAM	3,5 GB RAM	7 GB RAM
HDD	1x 40 GB of free space or more is recommended for the webshop data (non-system drive is preferred) 1x 40 GB of free space or more is recommended for the software that is listed in the software requirements (system drive)			

10. User Interface Design and Implementation

Product Area:

[Register](#) | [Login](#)



Fender Stratocaster Electric Guitar Black

Brand: Fender

Category: Electric Guitar



\$1899

[ADD TO BASKET](#)

Product Details

Electric guitar from Fender

Comments

Name :

Comment :

Rating : ▼

Admin Dashboard:

Michael Sheppard | [Admin Panel](#) | [Back to Guitar Shop](#) | [Logout](#)

Dashboard

No of Products

7

No of Customers

3

No of Sales

3

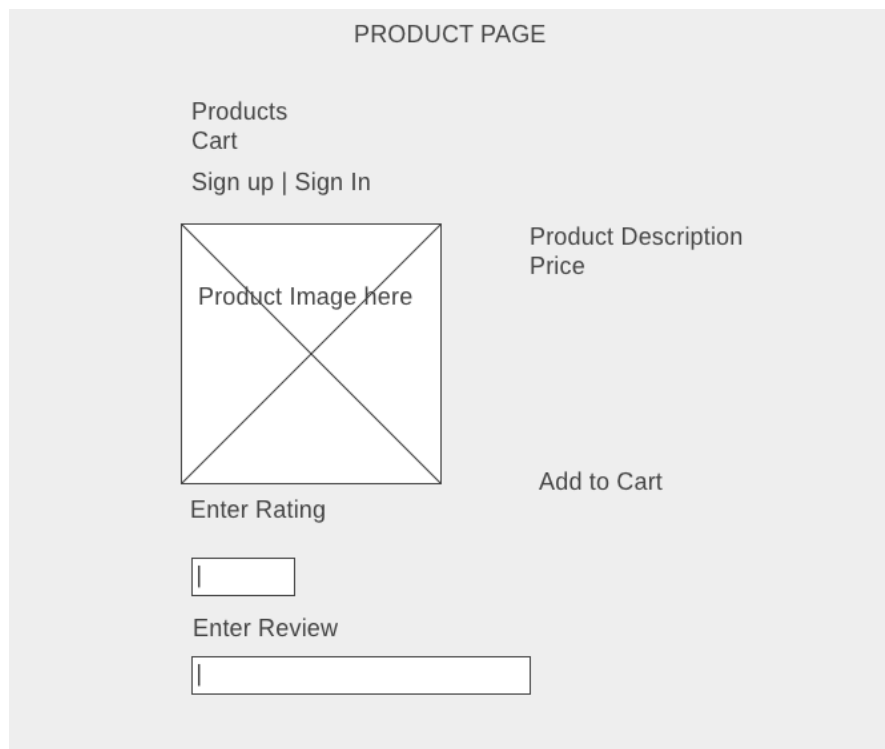
No of Feedback

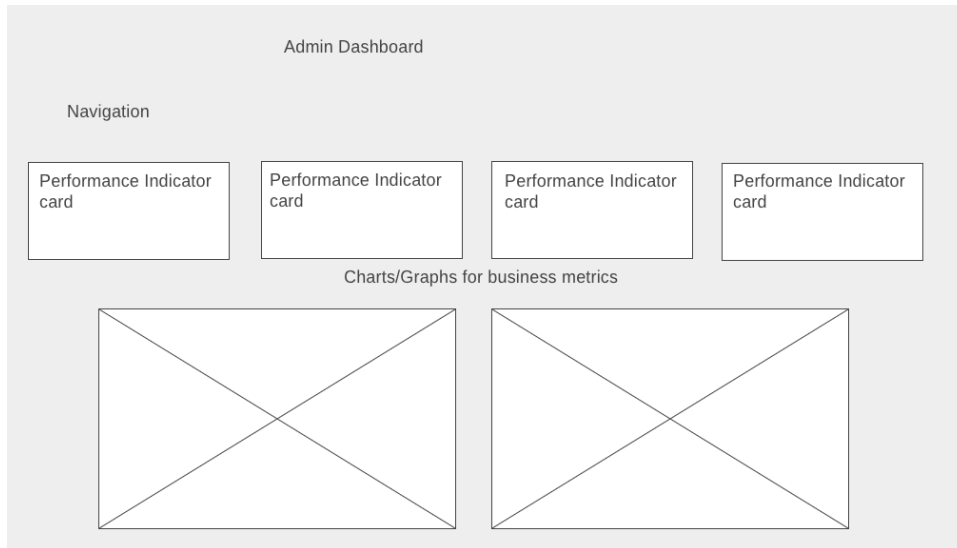
6

No of Ratings

7

Original mockup:





Here we see that the original mockups differed in the admin dashboard due to time constraints. Additional graphs and other measures of business success would be planned for future revisions.

11. Design of Tests

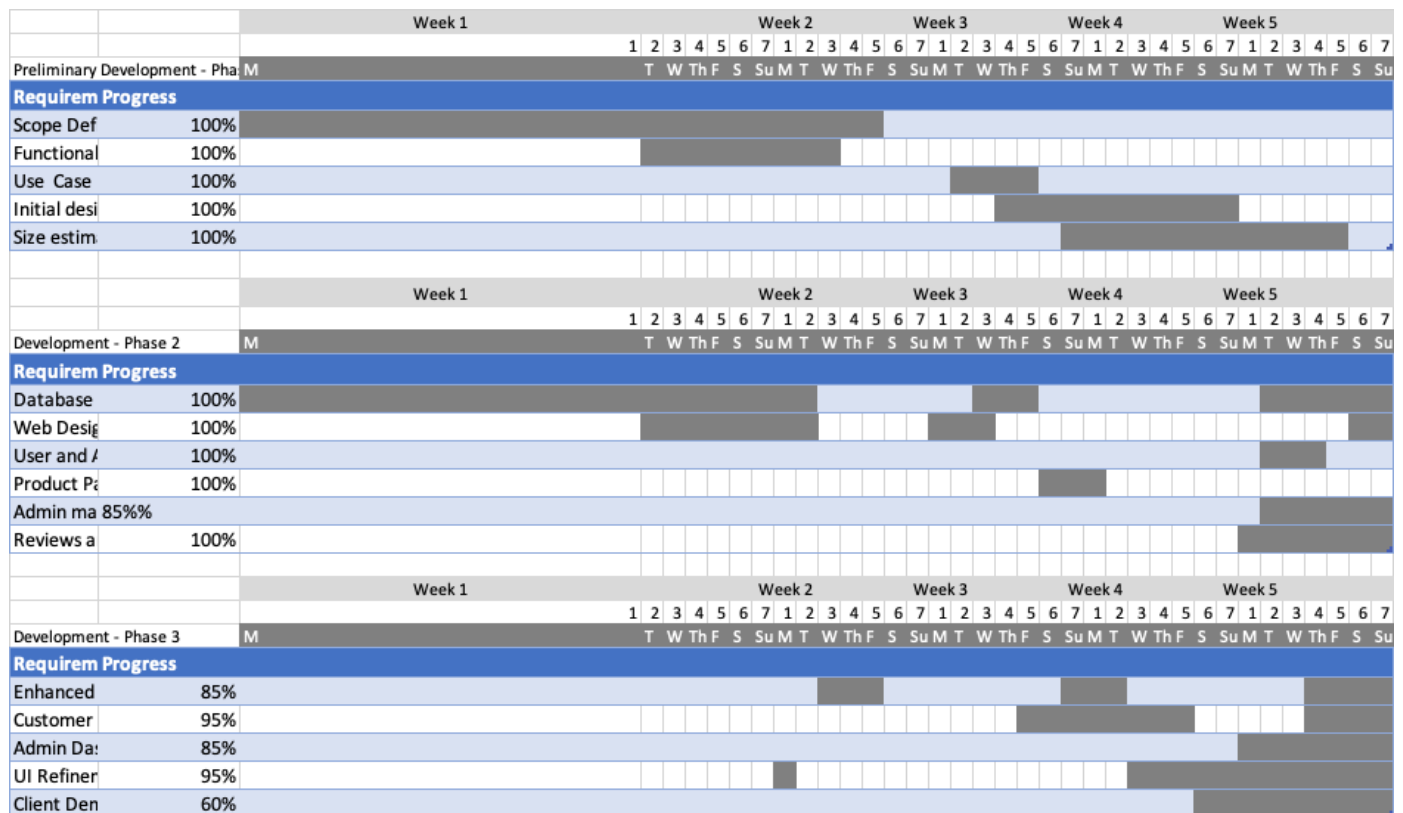
Functional Requirement	Test
Secure account creation	Type values for customer and admin roles. View 'users' table to ensure passwords are encrypted and role is set to default - zero value.
Separate user/admin spaces	Once customer logged in, ensure user is unable to access localhost/admin/index.php -- Likewise, ensure admin role is able to access.
Product administration	Ensure only admin role (role == 2) is able to access and add products to database.
Product Order Administration	Customer Account should be able to view cart, Check admin page to see order details for all customers.
User shopping session	Ensure cookies are working and user cart selections are remembered when navigated away and back again.
Use of cookies for session tracking	As above
Write-back and printing of reviews and ratings	User account able to write review and select star rating. Review and star rating should appear in database and product page.

*All tests have been completed successfully as shown in the demo.

12. History of Work, Current Status, and Future Work –

History of work on this project was very non-linear which deviated from the original plan. This was due to outside factors, namely heightened job obligations at the large software company where I work. I am a business analyst and our department is severely short staffed, leading to me completing all tasks relating to ad-hoc reporting and large-scale business intelligence executive dashboards. In order to maintain a more linear work structure, I plan to utilize more of the project management skills that I have picked up in INFO-C452. Managing such items as scope creep, stakeholder management, etc. will serve me well in my career so that projects will be given appropriate attention.

Future work on the project should include expansion of admin reporting capabilities around business performance. Rather than just a conduit for sales, this platform allows customer sentiment to provide insight into buying habits when coupled with order data. This is currently a semi-untapped resource in the system and should be leveraged in coming revisions.



References

Kleppmann, M. (2021). *Designing data-intensive applications: The big ideas behind reliable, scalable, and maintainable systems*. O'Reilly.

Rosenblatt, H. J. (2017). *Systems analysis and design*. Course Technology Cengage Learning.