

System Proposal - Stokes Gallery Information System

Systems Analysis and Design - Section #001

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Team Collective

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Overview

Client Jasmine Stokes has requested an information system built on the basis of a virtual art gallery that can withstand functionality with all involved entities. Ms. Stokes needs include increasing customer engagement with an improvement on efficiency, maintaining good customer relationships, and providing value to customers while receiving value through revenue. Through our system proposal for Ms. Stokes we have created a business case which includes a technical feasibility analysis that lists potential issues with solutions along with potential impacts regarding the technical system. A cost benefit analysis along with the economic feasibility analysis was conducted in the business case that explains the return on investment which decided why we implemented the solution.

Along with our business case, we created a work plan that contains a gantt chart that has documented our progress as well as the tasks completed by each team member.

As our tasks were documented throughout the project, a requirements definition was created that includes both functional and nonfunctional requirements. The functional requirements include the technical specifications on how the website interface, cybersecurity certification, tracking sales, transaction handling will operate and aid the system. The nonfunctional requirements describe how the information system will operate based on operational, performance, security, and cultural and political factors.

Using our requirements definition, we developed use cases on viewing the virtual gallery, managing purchases and sales transactions, optimizing transactions, and tracking sales. The use cases developed were three regular use cases, and two fully dressed use cases, respectively listed previously.

Using our use cases we developed a context diagram for a virtual gallery system, managing purchases and sales transactions data flow, tracking transactions data flow, viewing virtual gallery data flow, and a level 0 diagram which combines all data flows.

Next, we created an entity relational diagram (ERD) which identifies the entities, appropriate attributes, primary keys, and relationships necessary for the system to function.

To give an idea to Ms. Stokes on how the website would function, we developed prototypes for different principal situations performed on the website.

Overview cont.

To progress the project further, we developed a usability report which contains the goals, procedures, outcomes, issues, actions for issues, and disclaimers for the information system. To conclude the system proposal, an executive summary was developed which contains what has been completed, suggestions for improvements to the current system once the original user requirements have been implemented, and recommendations on how to proceed.

System Request

Business Case

Statement of Purpose or Business Need

Recreate gallery/performance experience virtually, manage auction and employee schedules, transaction processing, financials and accounting, keep track of business contacts (artists, dealers) and clientele (for marketing/donor support).

Business value

Improve engagement/analytics to increase revenue, increase customer base, improve efficiencies and maintain good relations with contacts and clientele.

Scope Statement

The functional requirements to be included in this project are to facilitate and manage the business operations in order to schedule and manage work requests/events; establish a way to present exhibits/performances virtually; manage employees, purchases, advertising/web presence, and sales transactions; manage and generate business reports; keep track of inventory, business contacts, and customers; and take advantage of newer technologies.

Technical Feasibility Analysis

Potential Issues

- Having an actual camera setup, allowing the ease of movement.
- Since there will be auctions there should be a website with a secured payment check-out point.
- Since they are working from home, they need the necessary materials for packaging also ensuring the safety of the package.
- Need to familiarize with newer software which could potentially help with technical issues.

Solutions for Potential Issues

- Since the whole operation is being run online, there needs to be someone who is already familiarized with newer software to take care of the issues that could happen during initial setup. Hire someone with the knowledge to take care of newer software and then learn on the side.
- Auctions that are being run online need to have a safe and secure checkout point so that there isn't any sensitive information being leaked. To solve this issue, they definitely need to hire someone with a deep understanding of cybersecurity and also programming knowledge to ensure safe payment.

- Materials will definitely be needed to ensure the package is delivered in a safe manner without any issues. Since Covid occurred, there has been a lack of materials. They would need to buy the needed materials early.

Business Case cont.

Potential Impacts

- Without a proper external camera setup, it'll give buyers a bad view of the art, not capturing the art to its full potential. This can not only ruin satisfaction with the artist, but those who may potentially want to purchase.
- Without secured checkout, customers are exposed to risk of their information being leaked from data breaches. This will ruin the trust between the buyer and the auctioneer.
- Without proper materials, the art that is being bought will inevitably be destroyed during the shipping process. This will again lead to trust being ruined between the buyer and the auctioneer.
- Not having the proper software usage, will give the buyers a rough time when it comes to having proper visual appeals.

Cost Benefit Analysis

	Year 0 (\$)	Year 1 (\$)	Year 2 (\$)	Year 3 (\$)	Year 4 (\$)	Year 5 (\$)	Total (\$)
Benefits							
<i>Increased sales--Public</i>	-	40,000	48,000	57,600	69,120	82,944	297,664
<i>Increased sales--Catering</i>		20,000	23,000	26,450	30,418	34,980	134,848
<i>Website Advertising (suppliers & other business links)</i>		6,000	6,300	6,615	6,946	7,293	33,154
<i>Reduce Inventory Losses</i>		5,000	5,250	5,513	5,788	6,078	27,628
Total benefits	-	66,000	77,300	90,665	106,483	125,217	493,294
Development costs							
<i>Labor:</i>							
<i>Management & Planning Oversight</i>	2,500	-	-	-	-	-	2,500
<i>Analysis and design (160 hrs @ \$50/hr)</i>	8,000	-	-	-	-	-	8,000
<i>Programming and Web design (200 hrs @ \$60/hr)</i>	12,000	-	-	-	-	-	12,000
<i>Training</i>	1,000	-	-	-	-	-	1,000
<i>Hardware</i>	8,000	-	-	-	-	-	8,000
<i>Software (utilities, office, misc)</i>	1,500	-	-	-	-	-	1,500
<i>Office space and equipment</i>	5,000	-	-	-	-	-	5,000
Total development costs	35,500	-	-	-	-	-	35,500
Operational costs							
<i>Software upgrades</i>	-	1,500	1,500	1,500	1,500	1,500	7,500
<i>Hardware upgrades</i>	-	1,000	1,000	1,000	1,000	1,000	5,000
<i>Wages and Salaries</i>							

<i>Business manager (part-time)</i>	25,000	25,750	26,523	27,318	28,138	28,982	77,273
<i>Staff (part-time)</i>	-	10,000	10,000	10,000	10,000	10,000	50,000
<i>Staff (part-time--anticipated after year 1)</i>	-	-	5,000	5,000	5,000	5,000	20,000
<i>Office expenses</i>	2,000	2,000	2,000	2,000	2,000	2,000	12,000
<i>Office Space</i>	7,200	7,560	7,938	8,335	8,752	9,189	48,974
<i>User training</i>	500	1,000	1,000	1,000	1,000	1,000	5,500
<i>Internet Service Provider fees</i>	1,200	1,200	1,200	1,200	1,200	1,200	7,200
<i>Media Advertising (e-magazine click-throughs)</i>	1,000	1,050	1,103	1,158	1,216	1,276	3,153
Total operational costs	61,900	76,810	83,786	85,829	87,943	90,129	313,871
Total costs	97,400	76,810	83,786	85,829	87,943	90,129	521,896
Net benefits	(97,400)	(10,810)	(6,486)	4,836	18,541	35,088	(56,231)
Return on Investment	-100.00%	-14.07%	-7.74%	5.63%	21.08%	38.93%	-5.48%
NPV of Net benefits (@ 5% discount rate)	-\$92,762	-\$10,295	-\$6,177	\$4,606	\$17,658	\$33,417	-\$63,480
NOTES: Assumptions							
<i>Annual Projected Sales Revenue Growth--Public</i>	20%						
<i>Annual Website suppliers link fees</i>	5%						
<i>Projected annual salary adjustment %</i>	3%						
<i>Anticipated annual lease increase</i>	5%						
<i>Advertising fee(s) annual increase</i>	5%						

<i>Annual Project Sales Revenue</i> <i>Growth--Catering</i>	15%						
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Requirements Definition

Functional Requirements

Website interface:

- Creating a proper UI allows better user interaction and satisfaction.
- UI should display each section with precision.
- Using a good color scheme that is easy on the eyes and easy for customers to read.

Cybersecurity certification:

- Provides a secure network and prevents attacks while auctions are going on.
- Block oncoming traffic and attacks and be able to diagnose the oncoming traffic.
- Being quick to resolve the oncoming traffic or defend from oncoming cyber attacks.

Tracking sales:

- Be able to access sales data on every auction made.
- Be able to calculate sales on every every auction made.
- Be able to display which artists sold the most based on each auction and be able to display which artists sold the least based on each auction.

Transaction handling:

- Be able to accept different types of payments.
- Be flexible to move towards different types of payments such as cryptocurrency.
- Creating a safe and secured checkout point.

Non-functional Requirements

Operational:

- The system shall be able to run on numerous platforms.
- The system shall be available for use 24 hours a day.
- The system shall be able to show web based images of the gallery.
- The system shall be able to be accessible from any device.

Performance:

- The system should generate reports for large volumes of data stored.
- The system should be able to provide a response time of 3 seconds or less.

- Modified data in the database should be updated for all users accessing it within 2 seconds.

Requirements Definition Cont.

Security:

- The system should validate user credentials before granting access to the system.
- The system should conduct all transactions relating to any finances with proper validation.
- The system must ensure the integrity of the customer account information.

Cultural and political:

- The system should be written in compliance with the government regulations.
- The system shall not use any terms or icons that might offend anyone.

Use Cases

Case Studies:

Use Case Name: View Virtual Gallery	ID: UC-1	Priority: High
Actor: Customer		
Description: The customer views the virtual gallery on the website.		
Trigger: The customer wants to view the virtual gallery.		
Type: External		
Preconditions: 1. The customer will verify identity by creating and logging into their account.		
Normal Course 1.0 Customer views the virtual gallery 1. The customer selects a tab that brings the user to the virtual gallery. 2. The system will provide a variety of virtual galleries that will be shown at specific times. 3. The customer selects which gallery they would like to view. 4. The system will allow the user into the virtual gallery to view what gallery they selected. 5. The system will display 4 options (left, right, up and down) to view and navigate through the virtual gallery. 6. The system will show the name of each artwork as the customer swipes past each one.		
Postconditions: 1. The customer will verify identity by creating and logging into their account.		
Use Case Name: Managing purchases and sales transaction	ID: UC-2	Priority: High
Actor: Jasmine Stokes		
Description: Jasmine manages purchases and sales transactions.		
Trigger: Jasmine wants to manage purchases and sales transactions.		
Type: External		

Preconditions:		
1. A tracking system must be created which includes inputs of customer transactions.		
2. Jasmine will verify her identity when logging in.		
Normal Course:		
1.0 Jasmine views transactions made		
1. Jasmine will input sales transactions and customer information into the system.		
2. Jasmine can utilize tracking software to make connections between certain customers and their transactions.		
Postconditions:		
1. Jasmine will verify her identity when logging in.		
Use Case Name: Optimize transactions	ID: UC-3	Priority: Medium
Actor: Jasmine Stokes		
Description: Transaction handling.		
Trigger: Jasmine wants to appeal to different customers using different payment methods		
Type: External		
Preconditions:		
1. Set up a payment page that offers regular and well used payment methods.		
2. Explore other payment methods such as cryptocurrency.		
Normal Course		
1.0 Exploring different payment method		
1. Provide the known payment methods such as credit cards and paypal.		
2. Exploring the possibility of using Cryptocurrency as a payment method.		
3. Customers pay using a digital wallet to send Crypto to Jasmine.		
4. Jasmine receives Crypto payment to her digital wallet, which then she can send out the artwork.		
Postconditions:		
1. Set up a payment page that offers regular and well used payment methods		
2. Explore other payment methods such as cryptocurrency.		

Fully Dressed Cases:

Actor: Jasmine Stokes	
Description: Jasmine tracks sales.	
Trigger: Jasmine wants to track sales on every auction.	
Type: External	
Preconditions: <ol style="list-style-type: none"> 1. Set up a form that allows input of artist/dealer name, photos of pieces associated with them, and payment information (includes a section about agreeing to fee deducted from sales due to utilizing the auction). 2. Set up a calculation that allows one to see which artists/dealers are making the most and least profits. 	
Normal Course 1.0 Track Sales <ol style="list-style-type: none"> 1. Artists/dealers fill in their information inform. 2. Auctions allow customers to bid on their pieces. 3. Customer purchases piece. 4. Payment is delivered via payment information provided, subtracted by a fee to use auction. 5. Information is tracked throughout time to see which artists/dealers bring in the most profits. 	Information for Steps Artist ID Auction in progress Order details Payment submitted

Use Case Name: Track Sales	ID: DC-11	Priority: High
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Trigger: Jasmine wants to track the shipping on the artwork sold.
Type: External
Preconditions: <ol style="list-style-type: none"> 1. Setting up a form for customers to enter their shipping credentials. If Jasmine stands in as a middle-man, requirements of both the customer and the artist's shipping credentials are needed. 2. Calculating the shipping amount required, especially if shipping overseas.

Normal Course 1.0 Tracking shipments <ol style="list-style-type: none"> 1. Artist ships art to Jasmine (if she is acting as a middle-man) and customers provide their shipping address. 2. Providing customers with tracking numbers once art is shipped. 3. Providing communication if there is a delay on the art being shipped. 4. Customers receive art and Jasmine/artist receives their funds. 	Information for Steps: Artists will have a special ID for login and customers will need to create an account. Tracking number will be sent once the art has been shipped out. Communicating with the customer for satisfaction on shipping. Customer receives art, artist and Jasmine receive funds
Alternative Courses: 1.1 Shipping address is inputted incorrectly. <ol style="list-style-type: none"> 1. Give customers a review of their shipping address 2. Have a support chat or email in case they need help changing information 3. Reach out to the shipping carrier if a problem arises 4. Resolving the missing art piece 	Provide them with a preview of their information Communication with customer Assessing the situation (shipment error) If art is shipped to the wrong address, resolve the solution by helping customers receive support from the shipping carrier.

Postconditions:

1. Setting up a form for customers to enter their shipping credentials. If Jasmine stands in as a middle-man, requirements of both the customer and the artist's shipping credentials are needed.
2. Calculating the shipping amount required, especially if shipping overseas.

Summary Inputs:

Shipping details
Billing address
Communication
Assessing situation

Source:

Customer
Customer
Jasmine
Jasmine

Summary Outputs:

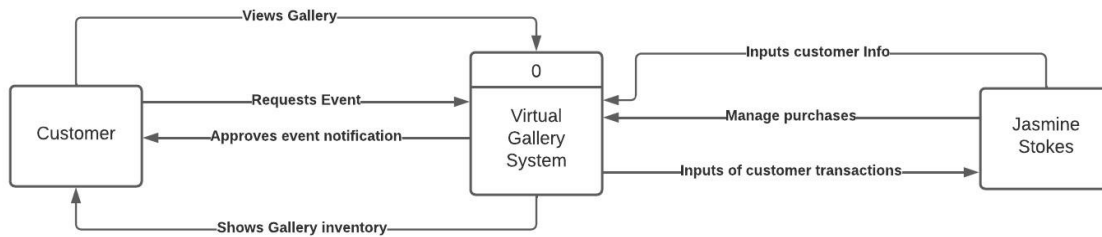
Shipping
address inputted
Billing address
inputted
Communication
Assessing situation

Destination:

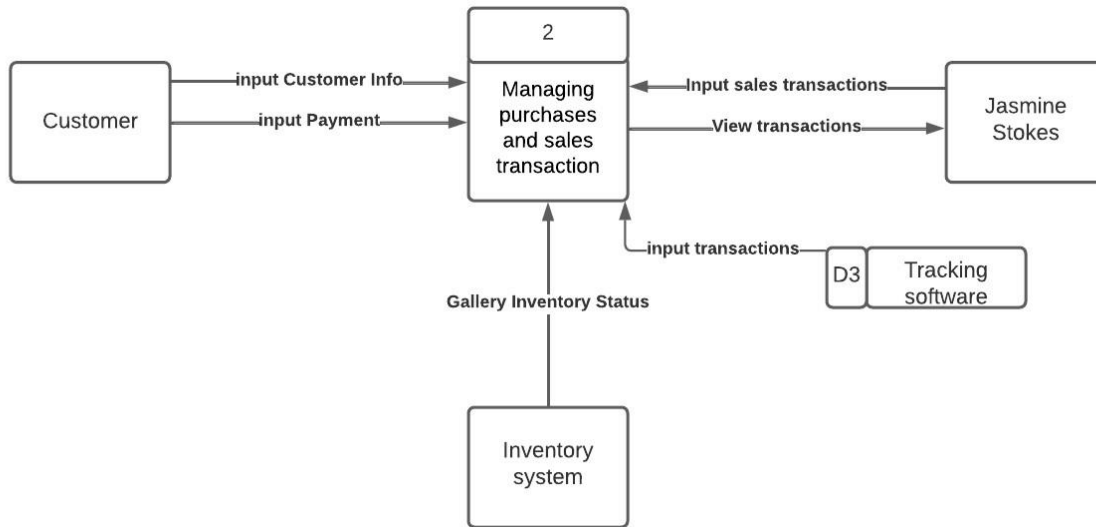
Jasmine

Data Flow Diagrams

Context Diagram for Virtual Gallery System

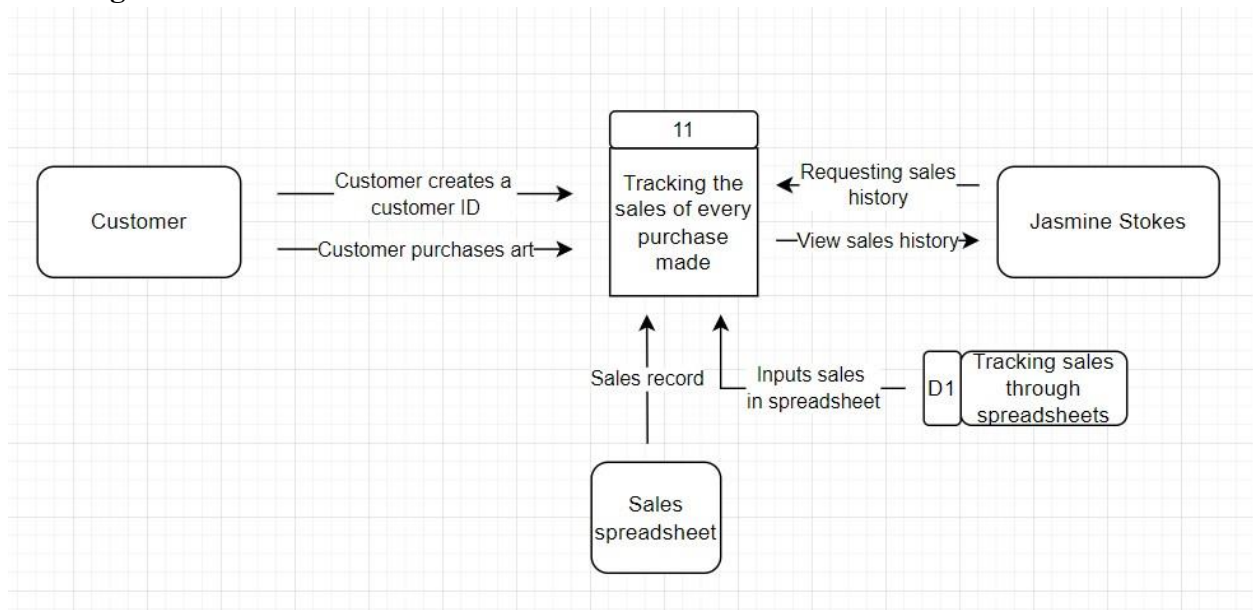


Managing Purchases and Sales Transactions Data Flow

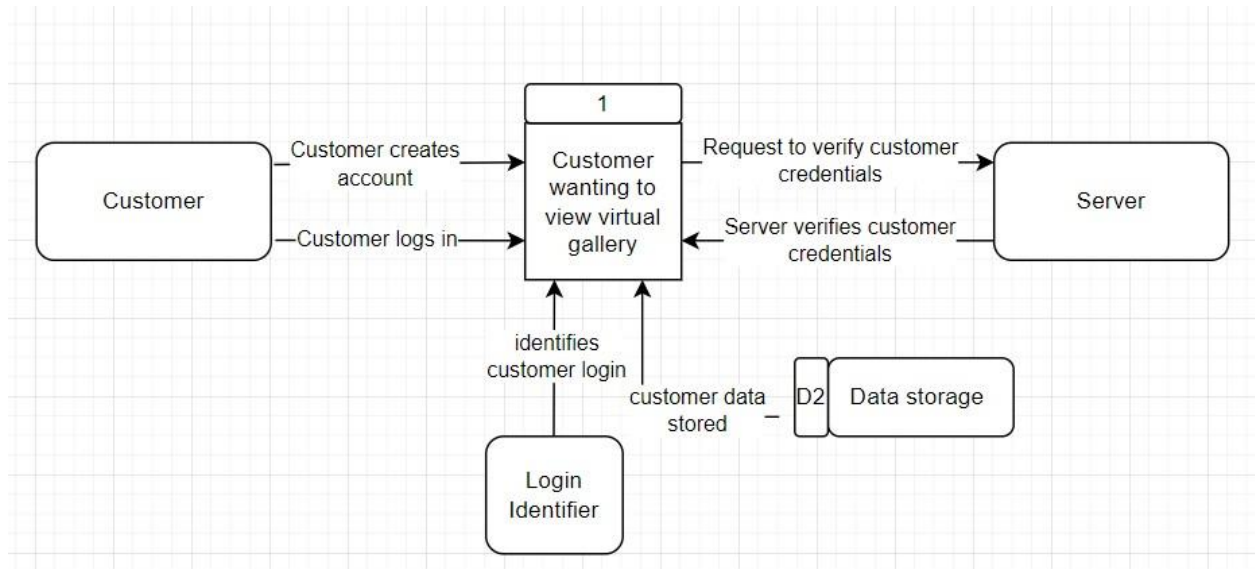


Data Flow Diagrams cont.

Tracking Transactions Data Flow

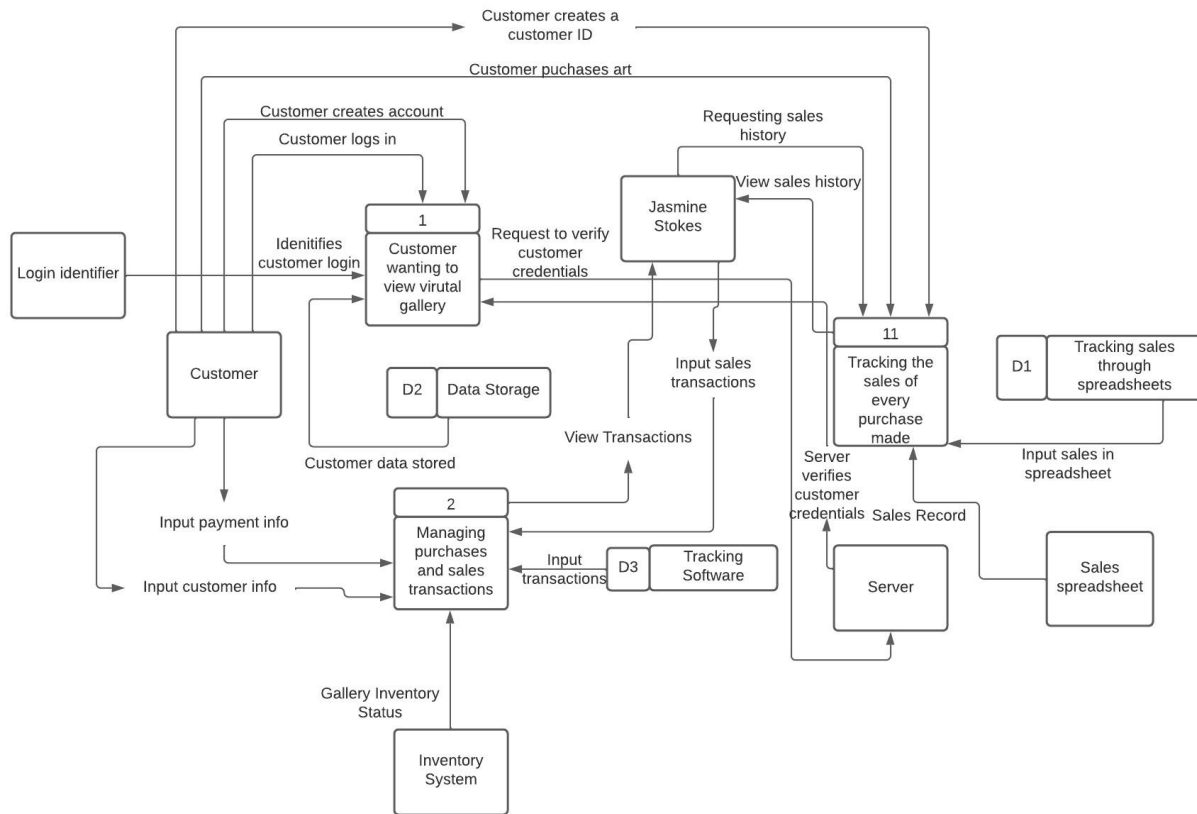


View Virtual Gallery Data Flow

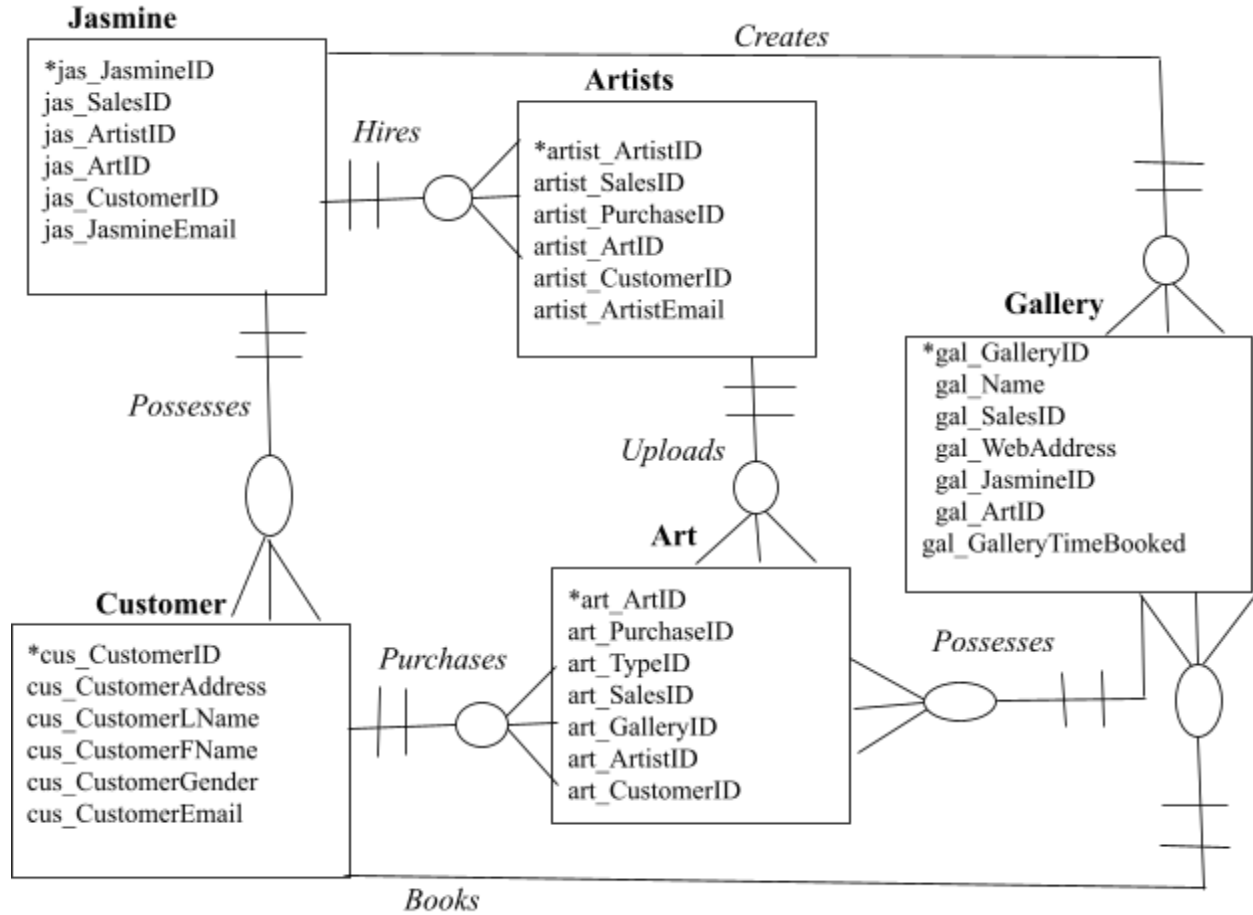


Data Flow Diagram

Level 0 Diagram

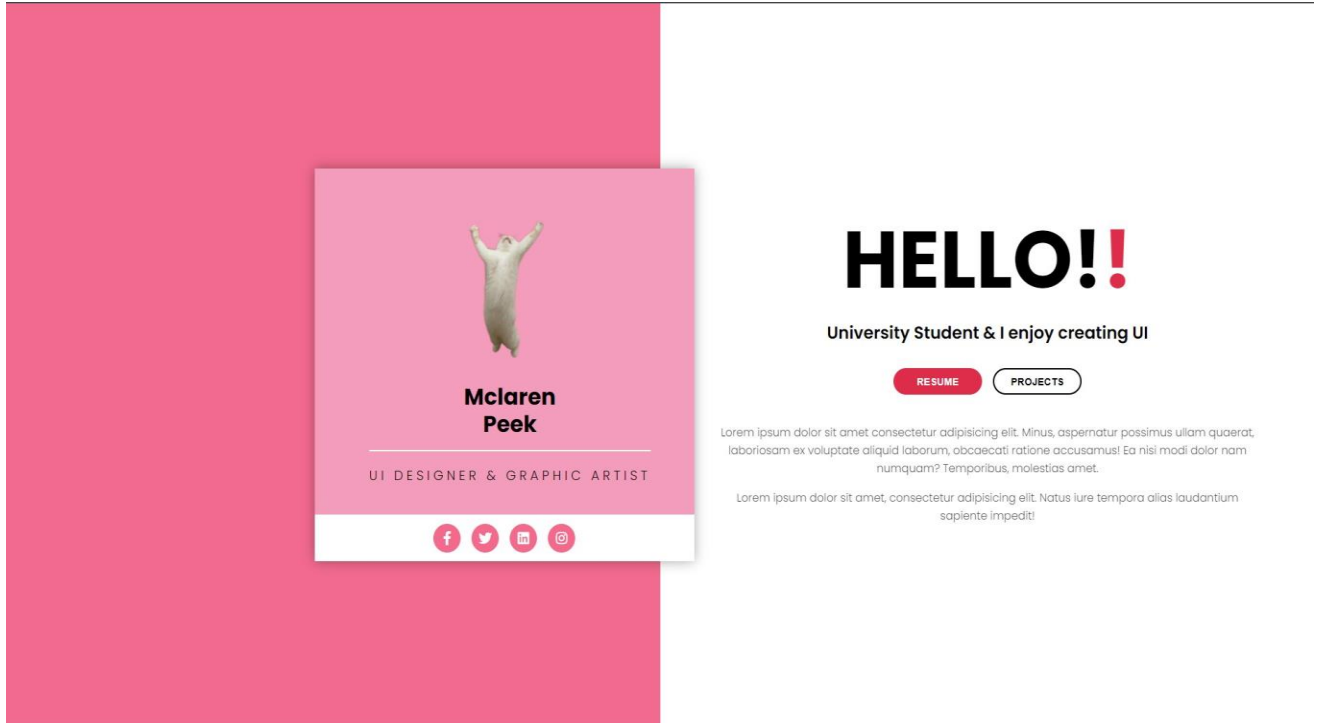


Entity Relationship Diagram



User Interface Prototypes

Updated About Me page & Original payment page:



User Interface Prototypes cont.

The image shows a user interface prototype for a payment form. At the top, a Visa credit card is displayed as a floating image. The card has a pink-to-purple gradient background. It features a hologram in the top left, the Visa logo in the top right, a masked card number (1111111111111111), the cardholder's name (CARD HOLDER JOHN DOE), and the expiration date (EXPIRES 12 2023).

Below the card, the form consists of the following elements:

- CARD NUMBER:** A text input field containing the masked number 1111111111111111.
- CARD HOLDER:** A text input field containing the name JOHN DOE.
- EXPIRATION MM:** A dropdown menu with the value 12 selected.
- EXPIRATION YY:** A dropdown menu with the value 2023 selected.
- CVV:** A text input field containing the value 111.
- SUBMIT:** A large, rounded rectangular button with a pink-to-purple gradient, containing the text SUBMIT.

Usability Test Report

About Me Page

There were a couple of things that could have been improved under the user interface section. We believe for the first about me page, there lacked visual appeal. I knew that there could be major improvements in terms of making the page more efficient and more appealing. Some of the changes made were:

- Clean and soft to the eyes colors, rather than multiple mixtures of colors.
- Better creator panel which allows creators to display their social media rather than just a long description.

Payment page

The payment page I felt like had a really clean look to it and the color is on point and that it has a really clean look to the eye. What I wanted to create was something that is easy to use, easy to understand, and something that is visually appealing.

Executive Summary

Currently, I've finished recreating "About Me" and I think that upgrading the appearance allows the artist to be able to express themselves a bit more, giving them the option to drop their different social media for further contact. It also allows the artist themselves to implement not only a resume but also projects that they have completed.

There are still many things that can be improved, by creating home pages, and other parts of the website to create something more advanced and professional rather than giving it a plain and simple effect.

Work Plan/Gantt Chart

		1/27/2022	1/28/2022	1/29/2022	1/30/2022
Team Charter					
Discuss the assignment	Everyone	1			
Fill in all information into document	Everyone		1	1	
Fill in team member overview	Everyone		←	1	
Develop mission statement	Sage		1	→	
Develop core values	Everyone		←	1	
Develop communication norms	Everyone		1	→	
List accessibility and on-call	Everyone		1	→	
Develop norms and conflict resolution processes	Everyone		←	1	
Develop produres for resolving conflict norms	Everyone		←	1	
Develop a commitment to continous improvement	Everyone		1	→	
Business Case					
		2/3/2022	2/4/2022	2/5/2022	2/6/2022
Discuss the assignment	Everyone	1	1		
Assign tasks to group members	Everyone	1	1		
Complete cost benefit analysis	Sage		1	1	
Complete economic feasibility analysis	Sage			1	1
Complete organizational feasibility analysis	Michael O.			1	1
Complete document with appropriate information	Everyone				1
List special issues and constraints	Michael C.	←	1	1	
Complete technical feasiblity analysis	Michael C.			1	1
Complete statement of purpose or business need	Sage	1	→		
Complete scope statement	Sage	1	→		

Work Plan/Gantt Chart cont.

Requirements Definition and Work Plan		2/8/2022	2/9/2022	2/10/2022	2/11/2022	2/12/2022	
Discuss the assignment	Everyone	1	1				
Assign tasks to group members	Everyone	1	1				
Complete document with appropriate information	Everyone			1	1	1	
Create list of functional requirements	Michael C.				1	1	
Create list of non-functional requirements	Michael O.			1	1		
Use Cases for Proposed Information System		2/15/2022	2/16/2022	2/17/2022	2/17/2022	2/18/2022	2/19/2022
Discuss assignment	Everyone	1					
Assign tasks to group members	Everyone	1					
Complete document with appropriate information	Everyone		1	1	1	1	1
Fully dressed case (track sales)	Sage		1	1	1		
Fully dressed case (shipment tracking)	Michael C.				1	1	1
2 Regular case studies (virtual gallery, sales transact.)	Michael O.			1	1	1	
1 Regular case study (optimize transactions)	Michael C.			1	1	1	

Data Flow Diagrams for Virtual Gallery System		2/22/2022	2/23/2022	2/24/2022	2/25/2022	2/26/2022	
Discuss assignment	Everyone	1					
Assign tasks to group members	Everyone	1					
Complete document with appropriate information	Everyone		1	1	1	1	
Context Diagram	Michael O.		1	1			
Managing Purchases and Sales Transactions Data Flow	Michael O.			1	1		
Tracking Sales Data Flow	Michael C.			1	1		
View Virtual Gallery Data Flow	Michael C.				1	1	
Level 0 Diagram	Sage				1	1	
Jasmine's User Interface Design		3/29/2022	3/30/2022	3/31/2022	4/1/2022	4/2/2022	
Discuss assignment	Everyone	1					
Assign tasks to group members	Everyone	1					
Complete document with appropriate information	Everyone		1	1	1	1	
Create webpages	Everyone		1	1			
Conduct user feedback	Sage				1	1	
Homepage	Michael O.		1				
Contact Us	Michael O.			1			
About Us	Sage		1				
Exhibit Booking	Sage			1			
Artist Information	Michael C.		1				
Payment Portal	Michael C.			1			

Work Plan/Gantt Chart cont.

		4/5/2022	4/6/2022	4/7/2022	4/8/2022	4/9/2022
Jasmine's Data Model						
Discuss assignment	Everyone	1				
Assign tasks to group members	" "	1				
Create data model	" "		1	1	1	
Identify entities	Sage		1			
Identify attributes	Michael C.		1			
Identify primary keys	Michael O.			1		
Identify relationships	Everyone			1		
System Proposal		4/19/2022	4/20/2022	4/21/2022	4/22/2022	4/23/2022
Discuss assignment	Everyone	1				
Assign tasks to group members	" "	1				
Update documents to form system proposal	" "		1	1	1	1
Cover Page	Sage		1			
Table of contents	Sage		1			
Overview	Sage			1		
Systems request	Sage				1	
Business case	Michael C.			1		
Work Plan	Sage					1
Requirements definition	Michael O.		1			
Use cases	Michael O.			1		
Data flow diagrams	Michael O.				1	
Entity relationship diagram	Michael O.			1		
User interface prototypes	Michael C.		1			
Usability test report	Michael C.			1		
Executive Summary	Michael C.				1	