American International University-Bangladesh (AIUB)

Department of Computer Science
Faculty of Science & Technology (FST)

Art Gallery Management System

A Software Requirement Engineering Project Submitted
By

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The project will be Evaluated for the following Course Outcomes

Evaluation Criteria	Total Marks (50)	
Introduction, Format, Submission, Defense	[10 Marks]	
System Overall Description & Functional Requirements	[10 Marks]	
System Quality Attributes and Project Requirements	[10 Marks]	
UML and E-R Diagram with Data Dictionary	[10 Marks]	
UI/UX Prototyping	[10 Marks]	

Software Requirements Specification

for

Art Gallery Management System

Version 2.0 approved.

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Revision History

Name	Date	Reason for Changes	Version

1. Introduction

1.1 Purpose

The product that the software requirements are specified for in this document is the Art Gallery website, which aims to connect artists and Customers together in one platform. The purpose of this website is to provide a solution to the problems faced by artists and customers when it comes to buying and selling art. The website allows artists to sell any type of art and gives them full control over the selling process, including choosing the selling price and the customer. It also provides a communication channel between artists and customers to negotiate the sale of art through the website's chat option. The website's goal is to create a safe and reliable platform for buying and selling art, and to promote art by hosting art competitions in different categories. The winning art will be sold by an auction hosted by the website, increasing the interest in buying, selling, or creating art. This document covers the software requirements for the entire Art Gallery website, which includes multiple subsystems such as the artist profile page, the customer profile page, the chat option, and the art competition page etc. This SRS aims to specify the software requirements for the entire system.

1.2 Document Conventions

This SRS follows standard typographical conventions such as using headings, subheadings, and bullet points to organize and present information. The requirements are presented in a hierarchical structure where the higher-level requirements are assumed to be inherited by detailed requirements. Priority levels have been assigned to each requirement statement to help prioritize development efforts. Bold and italicized text is used for emphasis and to distinguish important information. Standard fonts and font sizes have been used for consistency and readability.

1.3 Intended Audience and Reading Suggestions

- o The intended audience for this SRS includes developers, project managers, marketing staff, and other stakeholders involved in the development of the Art Gallery website. Users and

potential customers may also find this document useful to understand the functionality of the website.

o This SRS is organized into different sections, each covering a different aspect of the proposed software solution. The overview section provides a brief introduction to the project and its goals, while the functional requirements section details the specific features and functionality of the website. The non-functional requirements section covers performance, security, and other quality attributes of the software. The system models section includes use case diagrams and activity diagrams to help stakeholders understand how the system will function. Finally, the appendix includes additional information such as glossary terms and references.

o To get a comprehensive understanding of the project, it is recommended that all readers start with the overview section and then proceed to the functional requirements section to understand the specific features and functionality of the website. Developers may also want to refer to the system models section to understand how the system will be designed and implemented. Marketing staff and potential customers may be more interested in the non-functional requirements section to understand the performance and security of the website.

1.4 References

o https://www.elizabethmossgalleries.com/exhibitions/?gclid=Cj0KCQjwgLOiBhC7ARIsAIe etVDnneJJFQUObHzXewNTdMkXMkcLSW5rmVZv_8kAxCG2awheW2abvZQaAizyEA Lw_wcB

This is the art exhibition site. But in your project, we refer it as a Art competition. Competition winner will be selected by customers vote. The winner will be awarded from our site.

o https://artlogic.net/websites/galleries/#

By following this site, we will try to decorate our art gallery web pages.

o https://www.daraz.com.bd/?_mkt_src=gg&isdl=y&aff_short_key=_7agwc&_mkt_tracker=g &_mkt_campaign=11322136206&_mkt_adgroup=113762568369&_mkt_creative=6212787 77734&_mkt_src=gg&isdl=y&aff_short_key=_7agwc&gclid=Cj0KCQjwgLOiBhC7ARIsA IeetVAxvzTF3HHcytTT5KIISbPO9ch4Y4CPBj5N5VXu133CndNn50rlcuwaAjNLEALw_ wcB#

From this site we get some ideas about the interface and also get some ideas about the **Contact** page.

o https://unit-space.com/blog/how-to-create-software-requirements-specification-srs-for-your-project

We get the proper information about SRC from this site.

2. Overall Description

2.1 Product Perspective

In Software Requirement engineering, Business requirements **define a project's needs and requirements for success while keeping in mind the target audience.** It describes the reasons for creating a particular project, who will use it, what benefits the users will receive, and what methods will evaluate the project's success.

In terms of our project, the business requirement can be divided into few parts, Such as,

1. **Reasons for creating the project:** In this digital world, Artist who find it difficult to sell their arts at a fair due to remote location and many other factors their problem can be solved. Also, customers who are passionate about the arts and have good financial capabilities to buy great arts at a handsome price but can't find any trustable process, our website is here to bridge this gap between customer and artist. If most things go the right way, we will be able to make an excellent profit margin from this implementation.

2. **The Intended user:** The primary users of this project are customers/ visitors to the website. They are typically men/ woman who love arts and crafts, aged between 18 to 50. Artist of any age, gender and race.

3. **Who will use it**: As mentioned before, people who are aged between 18-50 are likely to be the customers of this project and artists from any race and age are going to be the user of the project as well. Also, the website owner.

4. **Benefits for the users:** In terms of customers, people who have good fortune are more likely to get one of the best arts that an artist will offer. However, there will be options of affordable   arts   and   crafts   for   customers   too.

   Similarly, an artist will be able to set their desired price level of the arts and crafts depending on the evaluation metrics of the website. In this way, artists will also benefit. Lastly, the website owner is going to benefit as there will be monetary transaction between customers   and   an   artist   through   the   website.

5. **The project's success metrics/methods:**
   The projects' success can be evaluated by some metrics such as,
       1. Usability
       2. Reliability
        3. Security
        4. Fault Tolerance/Defect prevention

Our project is self-contained, meaning it does not rely on other software applications or systems to deliver its performance to the intended users.

In the context of software requirement engineering, a self-contained product refers to a software application that is designed to function independently, without relying on other software applications or external dependencies.

2.2 Product Functions

Major Functions of our website are:

o Customer Registration

o Login (Both of Customer and Artist)

o Buying and selling arts from customers and artists.

o Profit gain from the transaction of buying and selling arts

o Review/ Feedback on Arts

2.3 User Classes and Characteristics

Based on the requirement, the potential user classes for our project are:

o **Customers:** These are users who visit the website with the intention of purchasing arts and crafts. They may be differentiated based on their frequency of use and experience with e-commerce websites. For example, some customers may be frequent online shoppers, while others may be less experienced and may require more guidance in the purchasing process.

o **Artists:** These are users who use the website to sell their art. They may require a higher level of technical expertise in order to upload and manage their artwork on the website. They may also have different security or privilege levels compared to regular customers, as they may require additional access to features like sales reports or inventory management.

o **Administrators:** These are users who manage the website, including adding and removing products, managing user accounts, and monitoring website traffic. They require a high level of technical expertise and may have access to sensitive information, such as user data and payment details.

o **Visitors:** These are users who visit the website but do not make a purchase. They may be interested in browsing artwork, reading artist profiles, or learning more about the website and its mission. They may require a different user experience compared to customers and artists.

o **Technical support staff:** These are users who provide technical support to customers and artists, helping to troubleshoot issues and answer questions about the website. They require a high level of technical expertise and may have access to sensitive information, such as user data and payment details.

2.4 Operating Environment

System Requirements:

o **Functional requirements:** The system should be able to display various types of artworks, including paintings, sculptures, photographs, and digital art. It should also have features such as search and filter functionality, artist profiles, and user registration.

o **Non-functional requirements:** The system should have a user-friendly interface that is easy to navigate. It should also be secure, with proper user authentication and authorization controls in place. Additionally, it should be able to handle high volumes of traffic and be scalable to meet future needs.

o **Performance requirements:** The system should be able to display artwork and other content quickly and efficiently, with minimal load times or delays. It should also be able to handle high levels of concurrent user traffic without impacting performance.

o **Usability requirements:** The system should be intuitive and easy to use, with clear navigation and layout. It should also be accessible to users with disabilities, with features such as screen readers and keyboard navigation.

Environment Factors (Hardware, Software, Operating system):

o The hardware platform should be a web server capable of handling high traffic volumes.

o The operating system should support the web server and be able to run popular web servers' software like Apache or Nginx.

o The website should be compatible with popular web browsers, including Google Chrome, Mozilla Firefox, Safari, and Microsoft Edge.

o The website should be able to coexist with any third-party software components or applications used for web analytics, payment processing, or security measures.

2.5 Design and Implementation Constraints

Here are some of the important design and implementation design constraint given below:

o **Hardware limitation:** The software may need to run on specific hardware configurations or meet certain timing or memory requirements. For example, the software might need to be optimized to run on mobile devices or have a specific minimum amount of RAM of processing power.

o **Interfaces to other applications:** The software may need to interact with other applications or systems, and as such, must be designed to meet specific communication protocols or data

formats. For example, if the Art Gallery software needs to interact with a third-party e-commerce platform, it must be designed to conform to that platform's APIs and data formats.

o **Security considerations:** Security is a crucial concern for any software project. The software must be designed to meet specific security protocols and standards to protect against data breaches, unauthorized access, or other security risks.

o **Design conventions or programming standards:** The software must adhere to specific design conventions and programming standards set by the customer or the development team. For example, if the customer's organization is responsible for maintaining the software, the software must be designed to conform to the customer's development standards.

o **Language requirements:** The software must be developed in a specific programming language or set of programming languages. For example, the customer may prefer a particular language or set of languages that the software must be developed in.

o **Technologies, tools, and databases to be used:** The software must be developed using specific technologies, tools, and databases. For example, the customer may require the software to be developed using a specific database management system or development framework.

o **Corporate or regulatory policies**: The software must be designed to conform to specific corporate or regulatory policies. For example, if the Art Gallery software will be handling sensitive financial data, it must be designed to meet specific financial regulations or policies.

2.6 User Documentation

o **User manuals:** A comprehensive user manual that provides an overview of the software, its features, and how to use it. The user manual should be written in clear, concise language and cover all aspects of the software, from installation to daily use.

o **Online help:** Online help provides users with context-sensitive assistance while they are using the website. This can include information on specific features, troubleshooting tips, and other helpful information. Online help can be delivered through a built-in help system or a web-based help system.

o **Quick start guides:** A quick start guide provides users with a brief overview of the website and its most used features. This is typically a condensed version of the user manual and can be delivered as a printed document or PDF.

o **Tutorials:** Tutorials provide step-by-step instructions on how to perform specific tasks within the website. Tutorials can be delivered in video format or as a series of screenshots with accompanying text.

3. System Requirements

3.1 System Features

3.1.1 Browse the Website of Art Gallery.

Functional Requirements (FRs)

3.1.1.1 Anyone can browse the Art Gallery website without needing to create an account.

3.1.1.2 When a visitor enters the website they can browse through different sections of the website.

3.1.1.3 They can see the top arts of the week, any art details, what arts are on sale, what arts are submitted for competition etc.

3.1.1.4 But if they want any kind of interaction, they need to login first.

Priority Level: High
Precondition: Enter the correct web address to visit the Art Gallery site.
Cross-references: N/A

3.1.2 Registration and Creation of User Profile.

Functional Requirements (FRs)

3.1.2.1 Visitors can see a 'Registration Button' at the top of the navigation bar. When anyone clicks on that button a new webpage will open.

3.1.2.2 In this page (a form), visitors will be asked to give their Full Name, Gender, Date of Birth, Email, Phone Number, Password, NID Number, Pictures of both sides of NID, a picture of them and their addresses.

3.1.2.3 Then they need to specify what type of account they want to create (a seller/artist account or a customer account).

3.1.2.4 Before submitting the form they will need to agree with our terms and conditions, refund policies etc.

3.1.2.5 After submitting the form, the user given Email, Phone Number, NID Number will be checked with previous database records. If any of these matches with previous records then the account will not be created else the account will be created.

3.1.2.6 After creating the account a user will be brought to his/her by profile.

Priority Level: High
Precondition: user have unique phone number and password must have minimum 8 characters containing a letter, a symbol and a special character.

Cross-references: 3.1.3

3.1.3 Log in to the website.

Functional Requirements (FRs)

3.1.3.1 The website will allow users to login with their email and password.

3.1.3.2 The login credentials will be verified with database records.

3.1.3.3 If the login is successful then users can browse their profiles.

3.1.3.4 If the username and/or password has been inserted wrong, the random verification code will be generated and sent to the user's email address by the system to retry login.

Priority Level: High
Precondition: User must have valid phone number and password.
Cross-references: 3.1.5, 3.1.6, 3.1.7, 3.1.8, 3.1.9

3.1.4 Search Arts/Products.

Functional Requirements (FRs)

3.1.4.1 In the navigation bar there will be a search box for inputs and a button for search.

3.1.4.2 If any user clicks on the search button without giving any keywords/inputs a popup will show with the message 'Enter some keyword first'.

3.1.4.3 After entering any keywords all the arts will show in a grid system on a new web page.

3.1.4.4 Each art will have a picture, title, artist name, price etc.

3.1.4.5 Users will be able to sort the arts according to Price (High to Low and Low to High), Number of votes, Alphabets (A-Z and Z-A).

3.1.4.6 Users will also be able to filter arts according to Categories, Price Range, Votes etc.

3.1.4.7 If users click on any of the arts a new page will open with all the details about the Art.

Priority Level: Low
Precondition: N/A.
Cross-references: N/A

3.1.5 Communicate with Artists/Sellers.

3.1.5.1 A customer can communicate with the artist on the website.

3.1.5.2 On the product page There will be a button to message artists.

3.1.5.3 After clicking on that button a chat box will open on the right side of the web page.

3.1.5.4 In the chat users will be able to send messages and pictures etc.

3.1.5.5 A user can see all their chats from their profile.

Priority Level: Medium.
Precondition: User can communicate with artist by typing valid artist name or id.
Cross-references: 3.1.7

3.1.6 Buy Arts/Products.

Functional Requirements (FRs)

3.1.6.1 On the products page, there will be a button that says, 'Buy Art Now'.

3.1.6.2 When users click on that button users will be asked to give delivery details and make payment.

3.1.6.3 After a successful payment, the order will be placed and then the website team will deliver the arts.

Priority Level: Medium
Precondition: user must select art from the webpage.
Cross-references: 3.1.5, 3.1.7, 3.1.9.

3.1.7 Make A Payment

Functional Requirements (FRs)

3.1.7.1 For payments, there will be two options - Cards and Mobile Banking.

3.1.7.2 For cards, the users can make a payment either with credit cards or debit cards.

3.1.7.3 When making a payment through cards, the user will be asked to enter the card number, date of expiry, CVC/CVV and card holder name.

3.1.7.4 For mobile banking, users will find many options including bKash, Rocket, Nagad, Upay etc.

Priority Level: Medium
Precondition: User must select Buy Arts.
Cross-references: 3.1.5, 3.1.6.

3.1.8 Upload/Submit Arts (Only for artists).

Functional Requirements (FRs)

3.1.8.1 Artists will find a button on their profile to upload/submit art.

3.1.8.2 When artists click on that button a Modal (popup screen) will open.

3.1.8.3 There, artists will be asked to give information about the art like Title, Category, Price, Picture, Keywords etc.

3.1.8.4 After submitting, the arts will be in pending status.

3.1.8.5 When an admin reviews these arts and approves then customers will be able to see these arts.

Priority Level: High
Precondition: User account must have an artist account.
Cross-references: N/A

3.1.9 Vote on Arts.

Functional Requirements (FRs)

3.1.9.1 After creating an account any user can vote on arts.

3.1.9.2 To vote for their favorite art, first they must go to the specific page for it.

3.1.9.3 On that page users will find a button to vote for the art.

3.1.9.4 A user can only vote once for a single art.

Priority Level: Medium
Precondition: User account must have customer account.
Cross-references: N/A

3.1.10 Comments on Arts.

Functional Requirements (FRs)

3.1.9.1 user can comment on their favorite arts.

3.1.9.2 To comment on their favorite art, they must go to the specific page for it.

3.1.9.3 On that page users will find a textbox to write something for the art.

3.1.9.4 Selecting the comment button user can comment on arts.

Priority Level: Low
Precondition: user must select the arts picture.
Cross-references: N/A

3.2 Non-Functional/Quality Requirements

3.2.1 Performance:

3.2.1.1 The website's homepage should load in less than 4 seconds in all browsers and devices.

Priority Level: Medium
Precondition: N/A
Cross-references: 3.2.2, 3.2.4

3.2.2 Maintainability:

3.2.2.1 The website shall remove all types of complexities to make changes to the system in the future.

Priority Level: Medium
Precondition: It is needed when the performance lacks, security issue and make the website user friendly.

Cross-references: 3.2.1, 3.2.1, 3.2.4

3.2.3 Privacy and Security:

3.2.3.1 Using SSL Certificate data privacy policy will create trust among the users.

3.2.3.2 Only the admins can assign roles, approve arts, verify arts.

3.2.3.3 The website must not be vulnerable to any kind of attacks including DDoS and XSS Attacks.

Priority Level: High
Precondition: N/A
Cross-references: 3.2.4

3.2.4 Usability:

3.2.4.1 Customers should find the right art for them and contact artists easily.

3.2.4.2 Customers should easily vote on arts, bid on arts, and make a purchase.

Priority Level: Medium
Precondition: N/A
Cross-references: 3.2.1, 3.2 2.

3.3 Project Requirements

o **Tools:** To complete this project we have to use Microsoft word, Oracle SQL, Visual Studio, draw.io website etc.

4. Design and Interface Requirements

4.1 UML Diagrams

Use Case diagram:
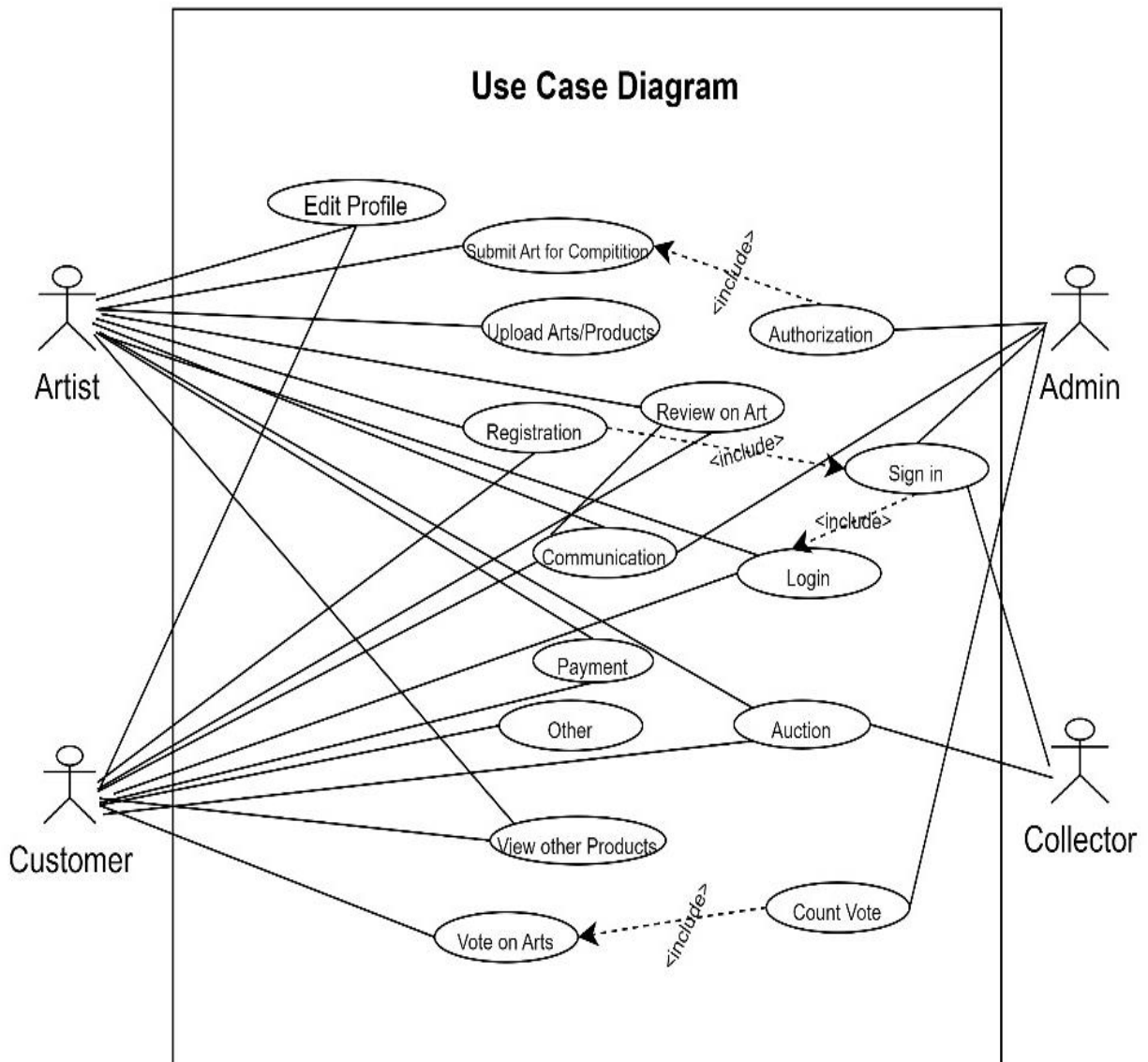
Figure: Use case diagram for Art Gallery Management System.

Class Diagram:
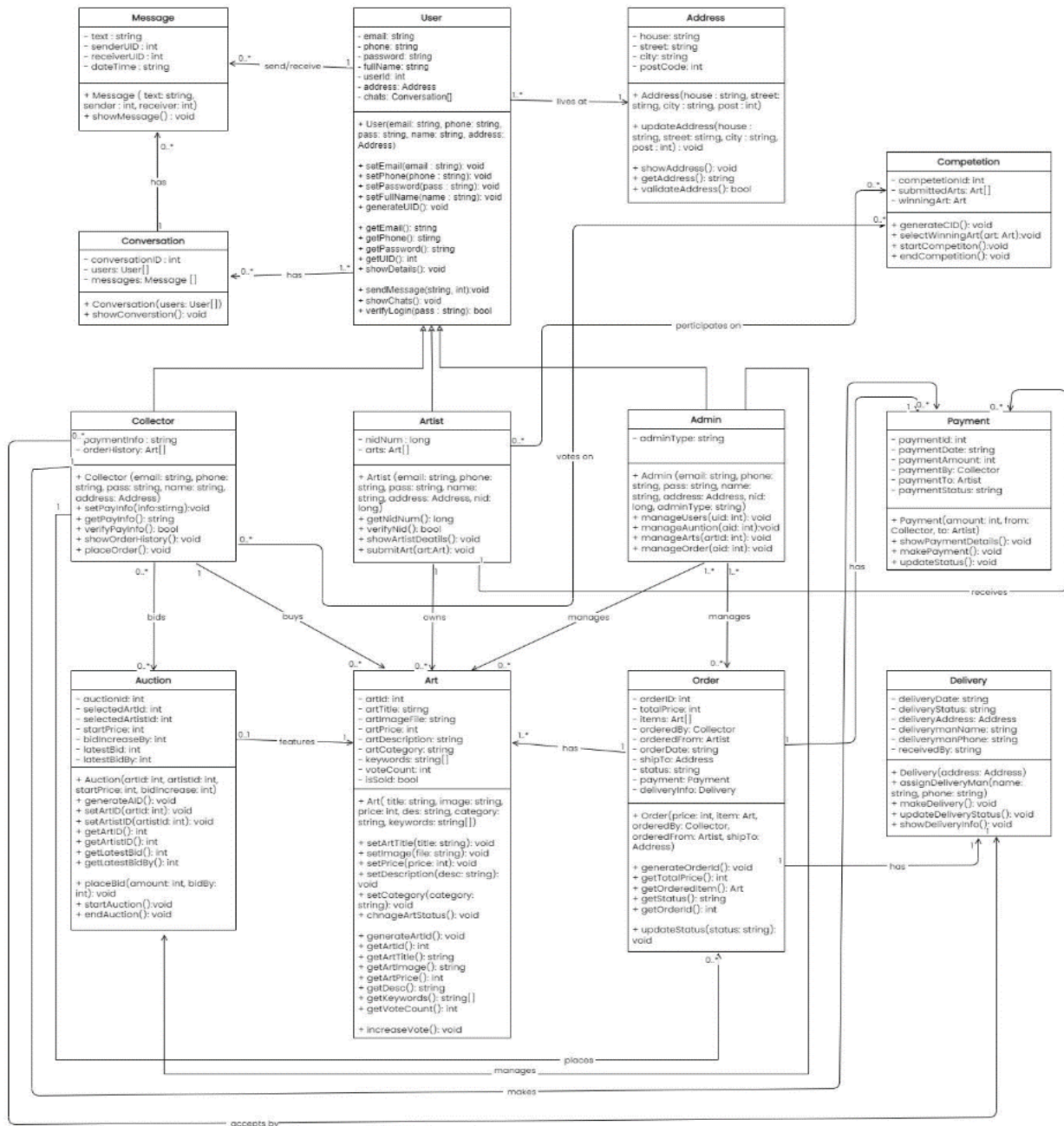
Figure: Claas diagram for Art Gallery Management System

Activity diagram:
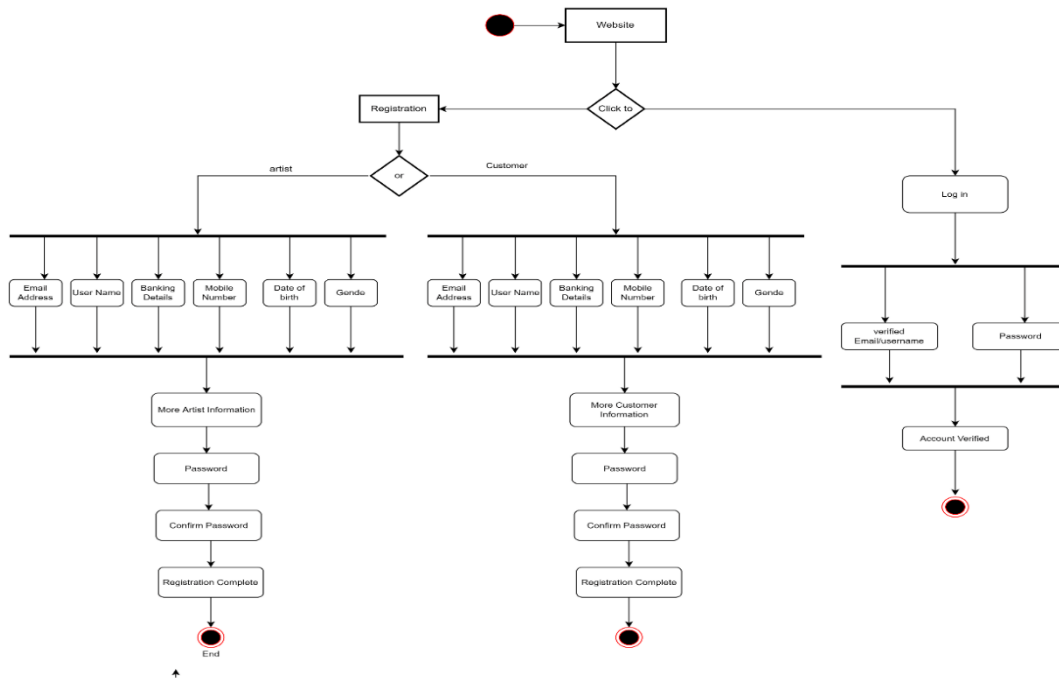
Figure: Activity diagram for Login and registration.
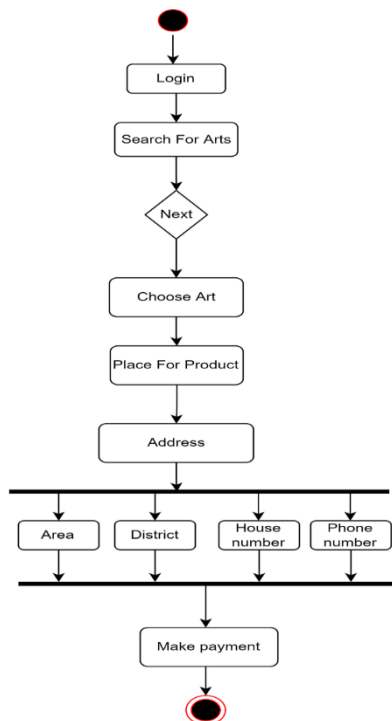
Figure: Activity diagram for searching art.
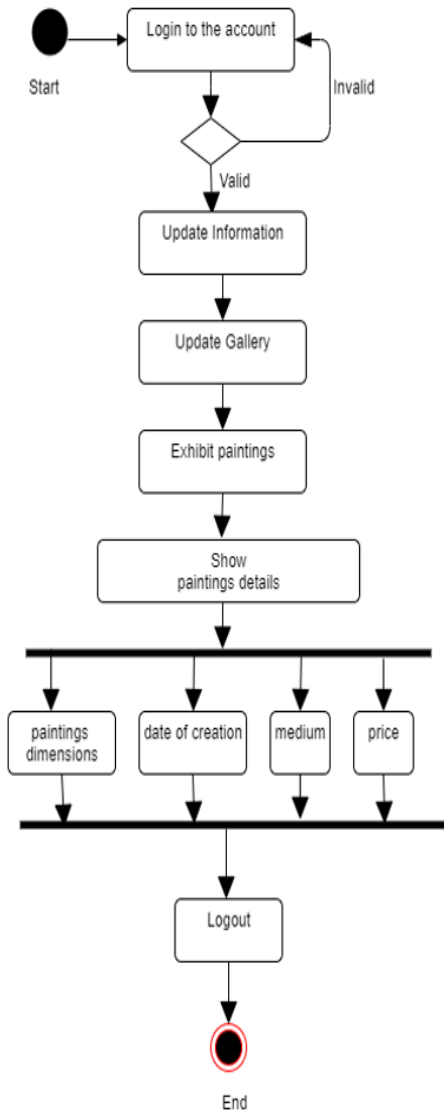
Figure: Activity diagram for Update product.
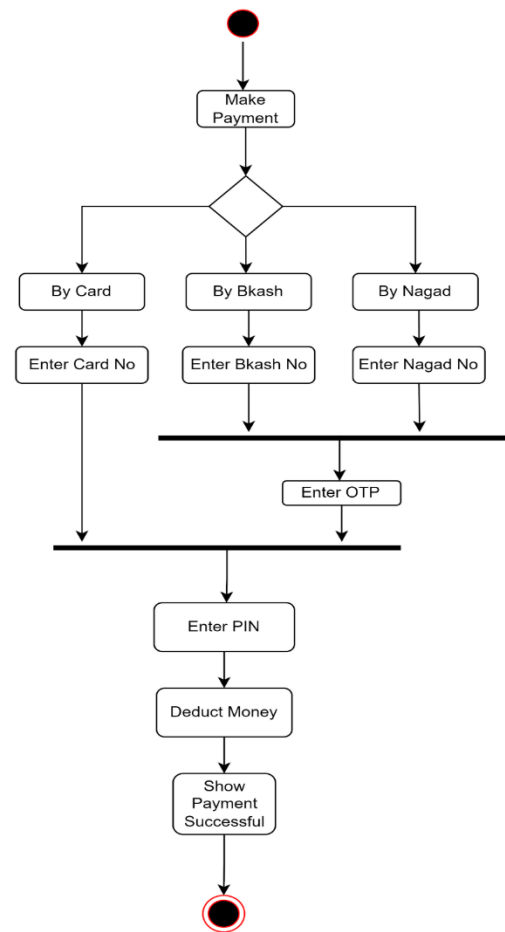
Figure: Activity diagram for Payment.

ER diagram:

Art Gallery Management System
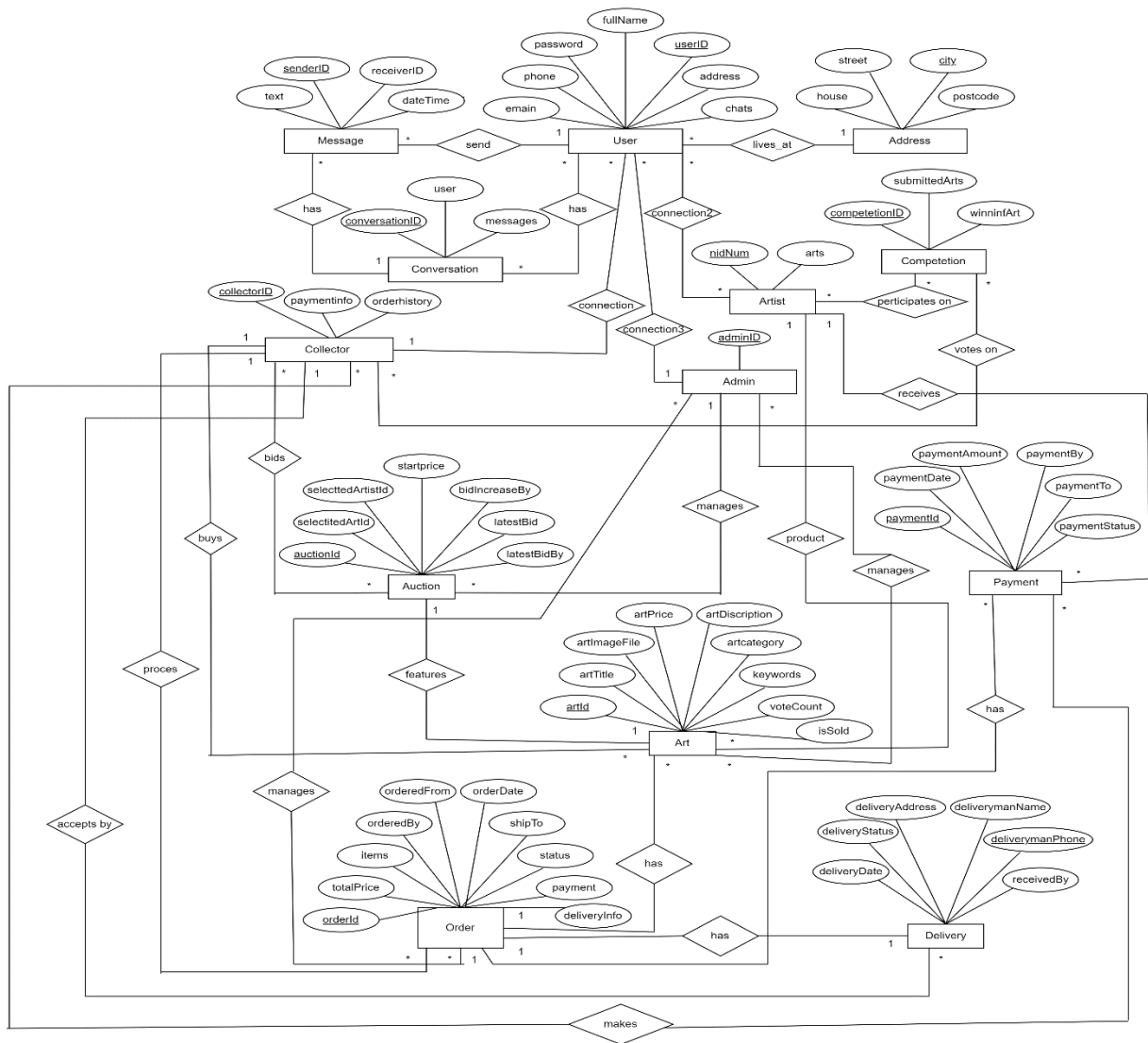
Figure: ER diagram for Art Gallery Management System.

4.2 Data Dictionary

Entity	Attribute	Type/Size	Validation	Key
Message	SenderID	Number(8)	10000000-99999999	Primary
Message	Text	varchar2(40)	required	
Message	ReceiverID	Number(7)	1000000-9999999	
Message	DateTime	Date(10)	valid date	
User	UserID	Number(5)	10000-99999	Primary
User	Email	varchar2(30)	required	
User	Phone	Number(15)	100000000000-99999999999	
User	Password	varchar2(32)	required	
User	Fullname	varchar2(40)		
User	Address	varchar2(50)	required	
User	Chats	varchar2(120)		
Address	Postcode	Number(5)	10000-99999	Primary
Address	House	varchar2(20)	requied	
Address	Street	varchar2(10)	required	
Address	City	varchar2(20)	required	
Conversation	ConversationID	Number(5)	10000-99999	Primary
Conversation	UserID	Number(6)	100000-999999	
Conversation	Message	varchar2(180)		
Artist	NidNUM	Number(10)	1000000000-9999999999	Primary
Artist	Arts	varchar2(30)	required	
Competetion	CompetetionID	Number(6)	100000-999999	Primary
Competetion	SubmittedArts	varchar2(3)		
Competetion	WinningArt	Number(3)	100-999	
Collector	CollectorID	Number(7)	required	Primary
Collector	Paymentinfo	varchar2(3)	required	
Collector	Orderhistory	varchar2(6)		
Admin	AdminID	Number(2)	required	Primary
Auction	AuctionID	Number(8)	required	Primary
Auction	SelectedArtID	Number(5)	required	
Auction	SelectedArtistID	Number(5)	required	
Auction	Startprice	Decimal(4)	required	
Auction	BidIncreaseBy	Number(5)		
Auction	LatestBid	Number(3)	100-999	
Auction	LatestBidBy	varchar2(8)		

Payment	PaymentID	Number(9)	100000000-999999999	Primary
Payment	PaymentDate	Date(10)	valid date	
Payment	PaymentAmount		required	
Payment	PaymentBy	varchar2(20)	required	
Payment	PaymentTo	varchar2(6)	required	
Payment	PaymentStatus	varchar2(7)		
Art	ArtID	Number(5)	10000-99999	Primary
Art	ArtTitle	varchar2(20)	required	
Art	ArtImageFile	varchar2(30)	required	
Art	ArtPrice	Decimal(5)	10000-99999	
Art	ArtDescription	varchar2(60)		
Art	Artcategory	varchar2(15)	required	
Art	KeyWords	varchar2(20)		
Art	VoteCount	Number(6)	100000-999999	
Art	IsSold	varchar2(3)	required	
Order	OrderID	Number(7)	1000000-9999999	Primary
Order	TotalPrice	Decimal(5)	10000-99999	
Order	Items	varchar2(8)	required	
Order	OrderedBy	varchar2(25)	required	
Order	OrderedFrom	varchar2(32)		
Order	OrderDate	Date(10)	valid date	
Order	ShipTo	varchar2(20)	required	
Order	Status	varchar2(25)		
Order	Payment	Decimal(5)	10000-99999	
Order	DeliveryInfo	varchar2(55)	required	
Delivery	DeliverymanPhone	Number(15)	1000000000-9999999999	Primary
Delivery	DeliveryDate	Date(10)	valid date	
Delivery	DeliveryStatus	varchar2(10)	required	
Delivery	DeliveryAddress	varchar2(40)	requied	
Delivery	deliverymanName	varchar2(30)	requied	
Delivery	ReceivedBy	varchar2(30)	requied	

4.3 UI/UX Design Specification
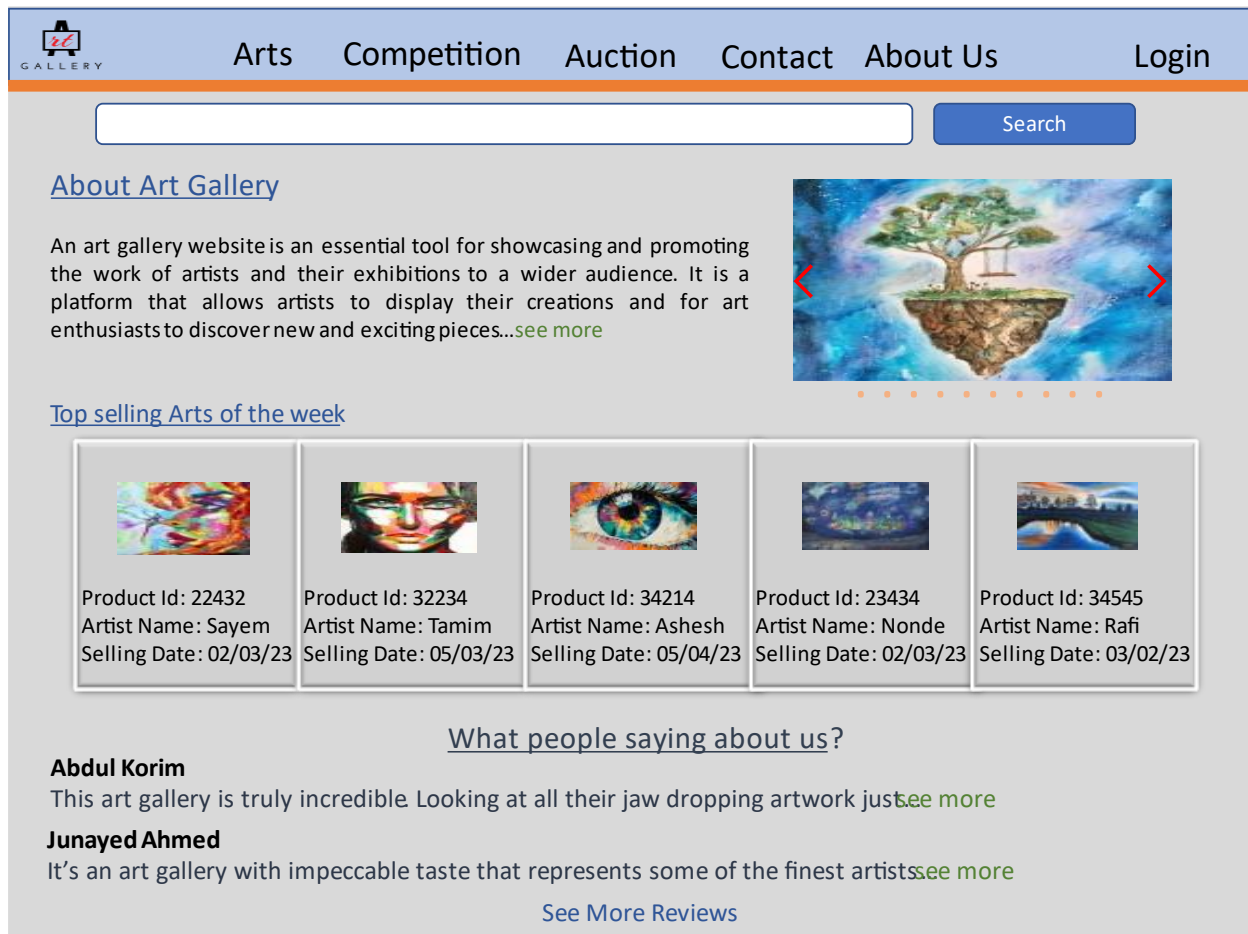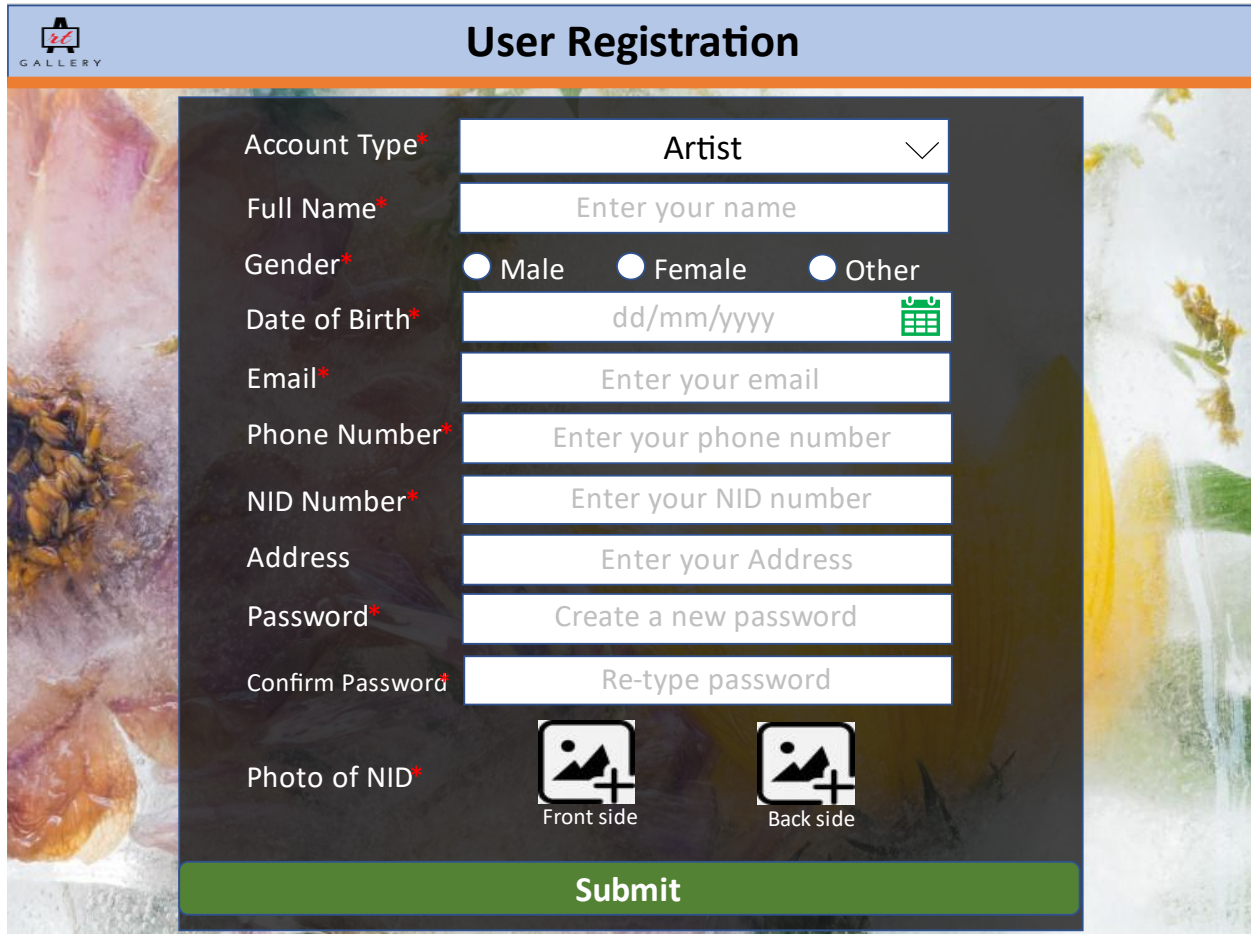
Figure: Art Gallery website home page.

First the user should input the correct weblink to the browser then the home page will appear. Here users can see some information about Art Gallery, Top selling of the week and people's comment about the Art Gallery Web site. The Art Gallery logo connects to the home page. If user comes back to the home page from another page, they can easily come back by clicking the logo.

Figure: User registration page.

In this Page given information are taken from user for creating a new account. All parts are mandatory except Address. After putting All information properly user need to click Submit button. Name, birthday and gender should be according to their NID. Only account holders can buy Arts from our website.

Figure: Login page.

After creating an account, the user can login to our website. In this user needs to input valid Email and password then they can log in to their account. Email and Password will validate from database.
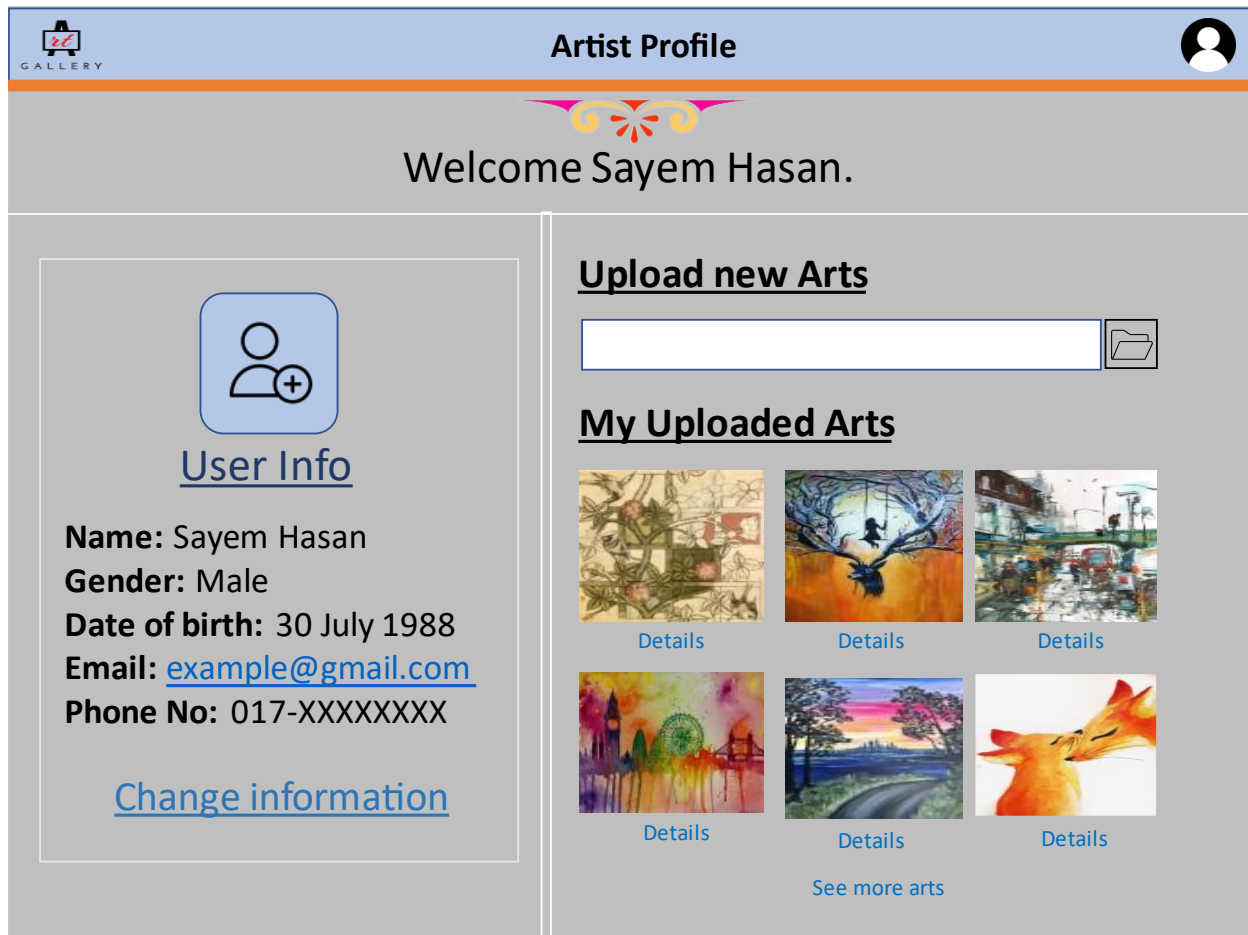
Figure: Artist Profile Page.

In the artist profile page, the artist can see his/her information. Here will be a link to change their information. By clicking Change information, users can use his/her information which isn't included or validated by their NID. In this page artist can upload his/her arts and see the previously updated arts.
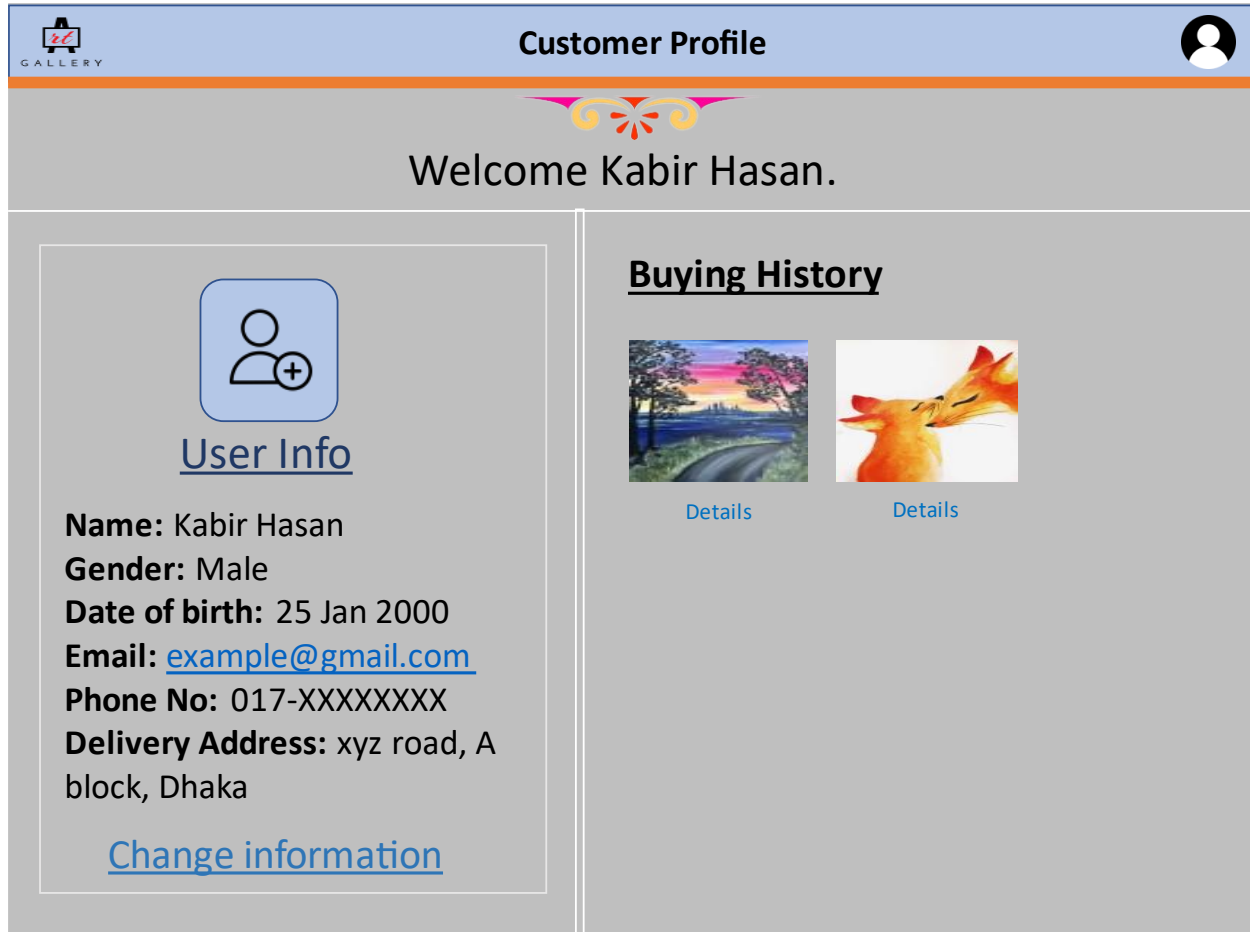
Figure: Customer Profile Page

In this page Customer can see his/her information and they can update it by clicking on Change information. Here the customer can also see the buying history which was previously bought by them.
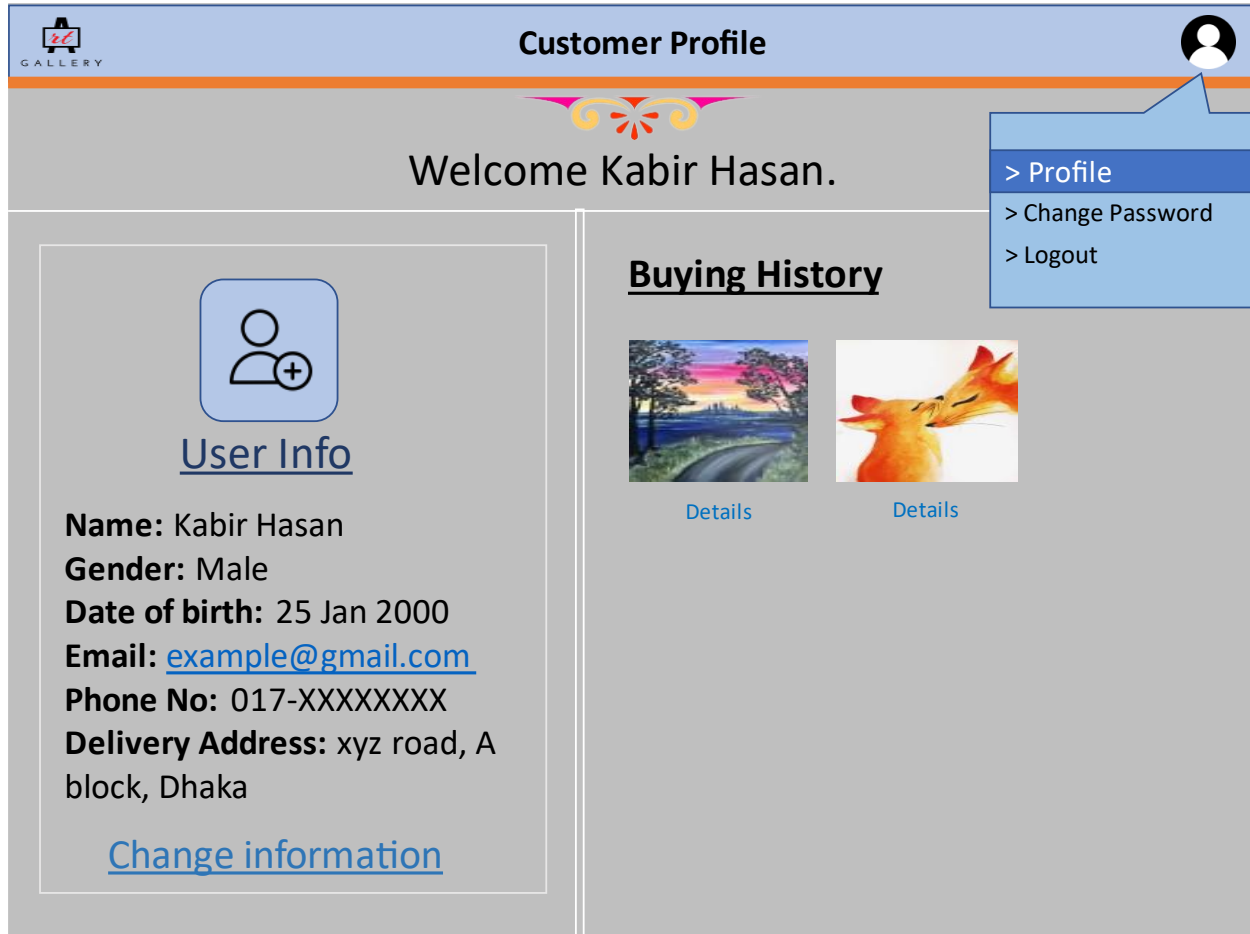
Figure: User icon functionality

By clicking the user icon, the user can see three options. By clicking Profile, they can see their information. By clicking change password they can change their current password and by clicking logout they can exit from their account.
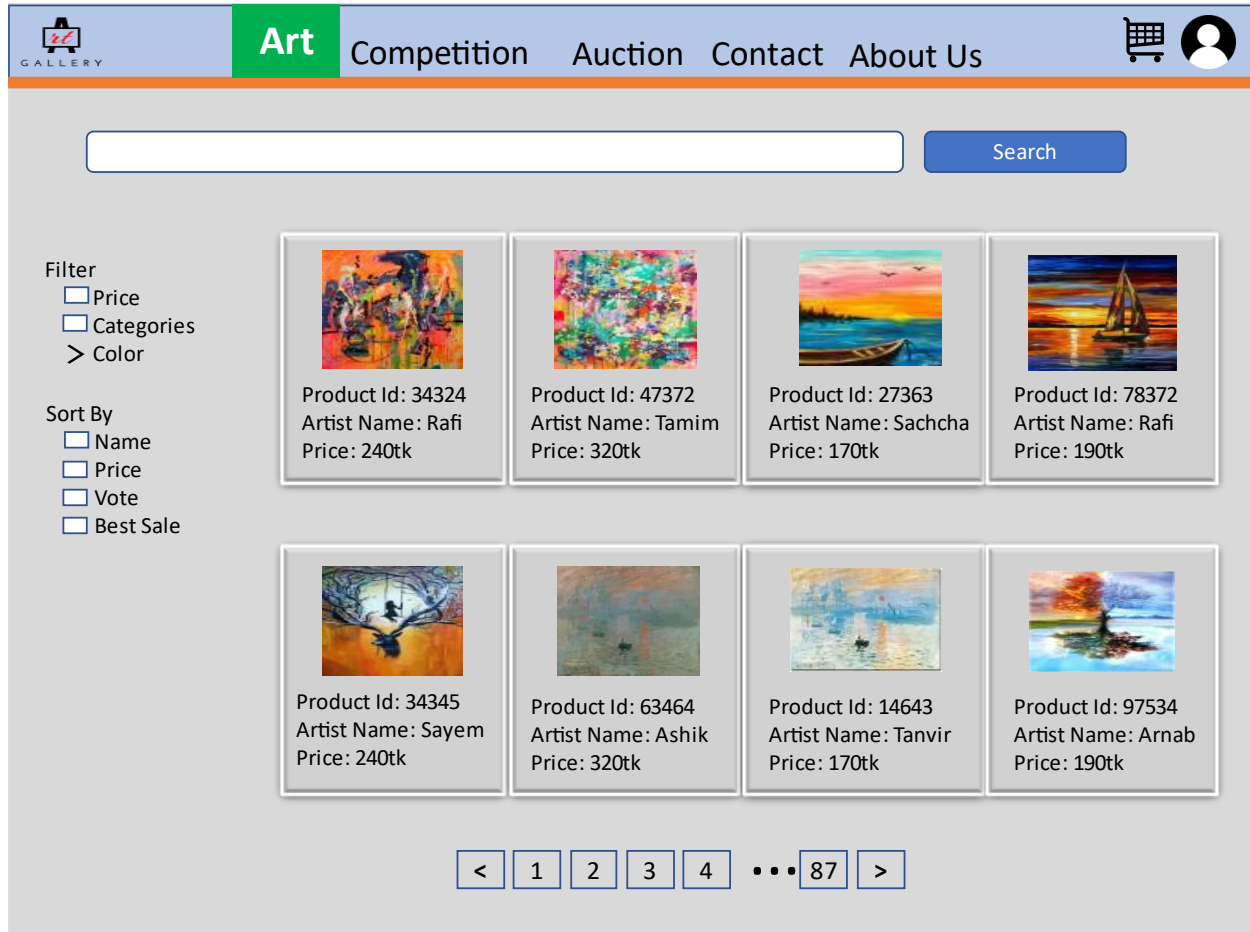
Figure: Art Page.

By selecting Art from the navigation bar this page will appear. Here user can search product according to the product ID, Product name or artist name. Users can use filter (Price, categories, color) or Sort by (Name, Price, Vote, Best sale) or both according to their need.

Figure: Details of the selected art.

After clicking a specific art from the art page this page will appear. On this page a voting option will pop up. In this page user can see the details of the specific art and they can use buy or add to cart button according to their choice. In this page user can also comment on the art and see some related art of the same artist.

Figure: Competition Page.

By clicking the Competition button from the navigation bar this page will appear. In this page user can see the top seller's art which are listed by highest vote counting. In this page user can use sort by option for viewing the competition result. Competition countdown time will be shown at the top of the page.

Figure: Auction Page

In this page user can participate in the auction. Base price will be fixed by the Collector. Here user can see Current Bid, Previous bid, Bids history and a button to confirm bid. Here users also can see the previous bidding products which are sold by auction.
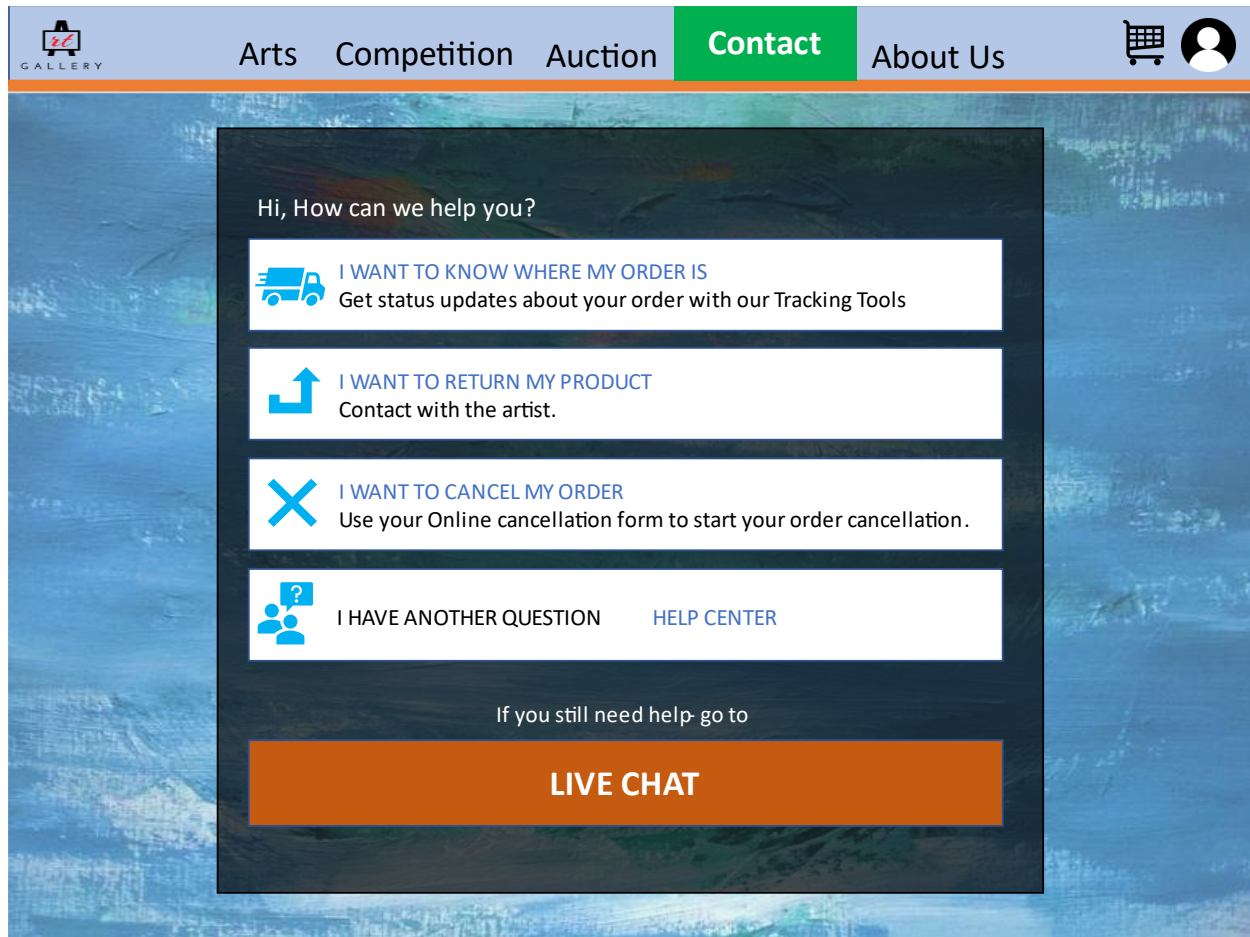
Figure: Contact Page interface

By clicking contact users can communicate with our helpline. Here are some questions and will appear to the user. If they need to contact our helpline, they can communicate directly by clicking the LIVE CHAT button.
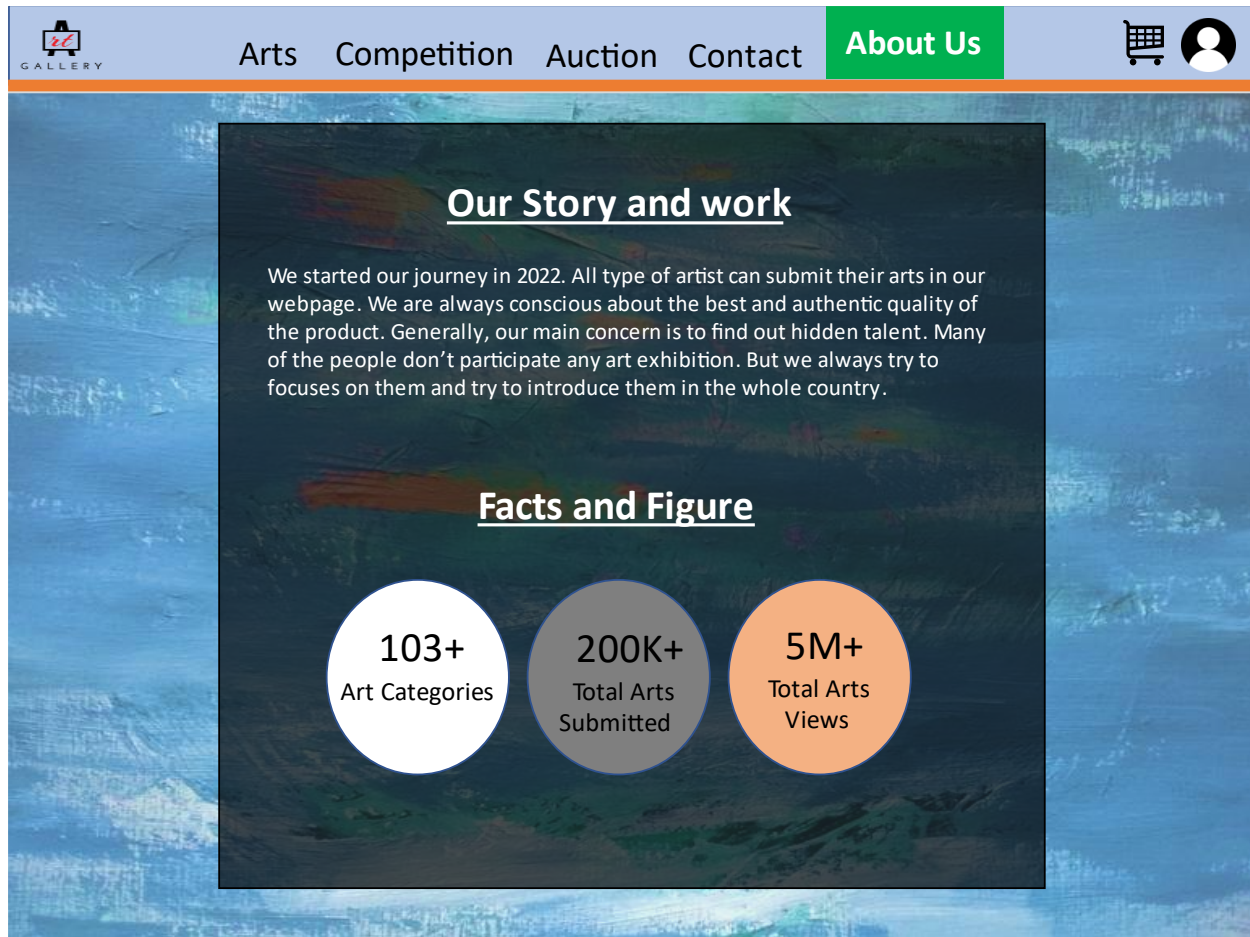
Figure: About Us Page Interface

In this page user can see some information about our website and our work. Here user can also see amount of Art categories, Total Art Submitted and total art are view by the user.