



Cairo University
Faculty of Computers and Artificial Intelligence
Department of Computer Sciences



Craftopia

Implemented By

Ali Bedair	20206036
Youssef Abdellah	20215043
Malak Yasser	20216102
Salma Ayman	20216046
Shahd Elsayed	20216053

Supervised By
Dr/ Lamia Abo Zaid
TA/ Marwa Ahmed Darwish

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Chapter 1

Introduction

Chapter 1: Introduction

The handmade products market is a vibrant and growing sector, yet many artists struggle to gain visibility, connect with customers, and effectively manage their businesses. Additionally, customers face challenges in discovering unique, high-quality handmade products and engaging directly with artists for personalized requests. To address these gaps, we propose a comprehensive platform designed to empower artists and enhance the buying experience for customers.

Our platform integrates advanced features such as product customization requests, and direct communication between artists and buyers. By leveraging modern technologies like an escrow payment system, and auction management, we aim to revolutionize how handmade products are discovered, appreciated, and purchased.

This solution not only bridges the gap between artists and buyers but also fosters a community-driven marketplace that celebrates creativity and craftsmanship. Through this platform, we aspire to create a sustainable ecosystem where artists can thrive, and buyers can access unique, personalized products with ease.

1.1 Motivation

Despite the rapid evolution of e-commerce, the handmade products sector remains underserved by digital platforms that truly support the needs of independent artists. In regions like Egypt and beyond, artists often lack the tools, exposure, and infrastructure to reach a broader market, while customers struggle to discover authentic, customizable, and ethically crafted products. Existing platforms are often fragmented, offering limited interactivity, poor customization support, and minimal transparency, which creates barriers for both creators and consumers. These limitations reduce artists' visibility, hinder business growth, and fail to foster meaningful buyer-seller engagement.

Craftopia emerges as a tailored digital marketplace designed to bridge this critical gap. By integrating key technologies such as real-time communication and an escrow-secured payment system, Craftopia empowers artists to professionally showcase their work, offer personalized products, and manage transactions securely. The platform features customization request workflows, auction functionality, and analytics dashboards, all built within a scalable architecture using React.js, Node.js, PostgreSQL, and Firebase. These components ensure not only performance and usability but also adaptability across diverse user needs and devices.

Importantly, Craftopia is not just an online store—it is a community-centric ecosystem that celebrates craftsmanship, fosters transparency, and enables sustainable growth for small creators. As a collaborative and secure platform, Craftopia reimagines the way handmade goods are discovered, customized, and delivered—redefining what it means to buy and sell in the digital age.

1.2 Problem Definition

Handmade products have long been celebrated for their uniqueness and craftsmanship, yet artists often face challenges in reaching a wide audience and growing their businesses. Many small-scale artists struggle to effectively showcase their products to potential customers, limited by their geographic

location, exposure, and lack of a unified platform for managing their sales and product customization. Additionally, customers who appreciate these creative works often face difficulties in discovering new artists, customizing their orders, and engaging with artists directly.

Moreover, the absence of a centralized marketplace makes it difficult for customers to compare products, track order status, and communicate with artists, leading to potential frustrations in the buying process. There is also a growing demand for a seamless and interactive platform that bridges the gap between artists and customers, providing a user-friendly experience for both groups.

1.3 Our Proposed Solution

Craftopia offers a comprehensive solution to these challenges by providing a unified, online platform where artists can list their handmade products with detailed descriptions and high-quality images, offer customization options and engage directly with customers. The platform also allows artists to track their sales, monitor the performance of their products and receive notifications for custom orders.

For customers, Craftopia enables a seamless experience to browse unique handmade products. They can view detailed artist profiles, track orders in real-time, and easily compare products. The platform also offers an auction feature where customers can bid on exclusive handmade items, further enhancing the discovery of unique products.

Additionally, the system incorporates features such as wishlist management, ratings, product customization, and secure payment methods, all tailored to enhance the buying experience. Craftopia is designed to cater to the needs of both artists and customers, creating a vibrant marketplace where creativity is celebrated, and products are accessible to those who appreciate their value.

1.4 Gantt Chart

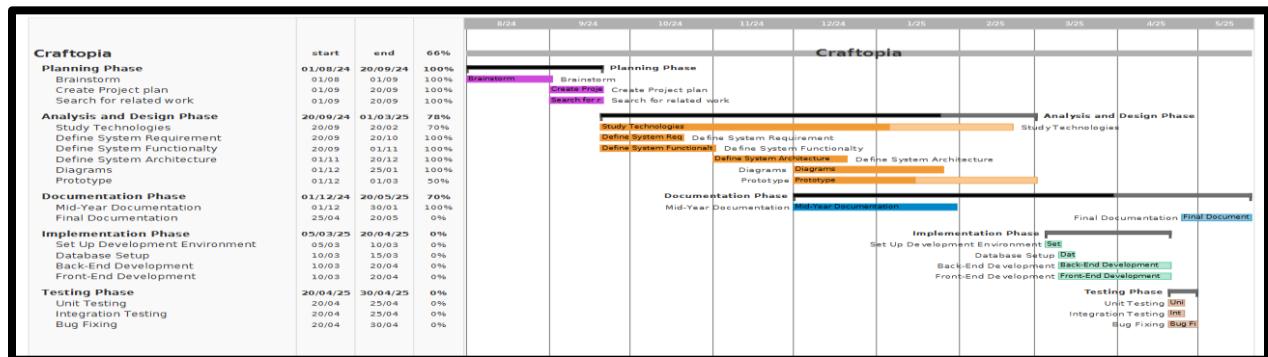


Figure 1: Gantt Chart

1.5 Project development methodology

We decided to use the Waterfall methodology for building Craftopia because it made the most sense for our e-commerce platform project. Since we knew exactly what we wanted to build - a marketplace where artists can sell handmade crafts to customers so we could plan everything upfront. The project has clear, well-defined features like user registration, product listings, shopping carts, payments, and order management that don't change much once decided.

Waterfall worked well because we needed to build things in a specific order. For example, we had to create the user system first before artists could add products, and we needed products before customers could place orders. The payment system with escrow functionality required careful planning and couldn't be changed easily once implemented. We also had a fixed timeline to complete everything, so having clear phases helped us stay organized and meet our deadlines.

The step-by-step approach lets us focus on one thing at a time - first designing the database, then building the backend APIs, then adding features like file uploads and email notifications, and finally testing everything thoroughly. This methodical approach ensured that each part worked properly before moving to the next, which was especially important for complex features like the auction system and payment processing that needed to be reliable and secure.

Waterfall methodology justification

The Waterfall methodology was selected for this graduation project based on:

- 1. clear requirements:** e-commerce platforms have well-defined features
- 2. stakeholder structure:** the project will progress through clearly defined phases, each mapped directly to stakeholder needs and project milestones for maximum transparency and alignment.
- 3. documentation:** comprehensive documentation required for graduation assessment
- 4. predictable timeline:** fixed semester deadlines require structured approach

Waterfall phases breakdown

Phase 1: requirements & planning

activities: market research, functional requirements definition, technology selection

deliverables: srs document, system specifications, project plan

features defined: user auth, artist profiles, product catalog, shopping cart, payments, reviews

Phase 2: system design

activities: database design, api architecture, ui/ux wireframes, security planning

deliverables: erd, system architecture diagrams, api specifications

focus: postgresql schema, rest api design, responsive web interface

Phase 3: implementation

- database setup, user authentication, basic models
- core features (artist profiles, product management, cart system)
- payment integration, order management, email notifications
- admin dashboard, social features (follow/unfollow, reviews), file uploads

Phase 4: testing & deployment

- unit testing, bug fixes
- system testing, performance optimization, security validation

-deployment, documentation finalization, project presentation preparation

1.6 The used tools in the project

Backend Development :

- **Node.js:** JavaScipt runtime environment for server-side development.
- **Express.js:** Fast, unopinionated web framework for node.js.
- **Socket.io:** Real-time bidirectional event-based communication.

Frontend Development :

- **React:** JavaScript library for building user interfaces.
- **Vite:** Fast build tool and development server.
- **Tailwind CSS:** Utility-first CSS framework for rapid UI development.

Database System :

- **PostgreSQL:** Primary relational database for structured data storage
- **Firebase Realtime Database:** NoSQL database for real-time features like: Auction bidding system.
- **Cloud Services and Storage:** Cloudinary cloud-based image and video management .

Development:

- **Insomnia:** API testing and development tool.
- **GitHub:** Version control and collaborative development platform.

Report Organization

The next chapters present **Craftopia** in more detail.

Chapter 2: Related Work

This chapter reviews similar handmade and artist marketplace platforms, comparing their key features.

Chapter 3: System Analysis

This chapter presents the system's requirements and use case modeling.

Chapter 4: System Design

This chapter presents Craftopia's Design through:

- System Component Diagram
- Class Diagram
- Sequence Diagrams
- Activity Diagrams
- ERD Diagram
- System GUI
- Deployment Diagram

Chapter 5: Implementation and Testing

Implementation and Testing of the Application.

Chapter 2

Related work

Chapter 2: Related Work

Existing Similar Platforms like Etsy , Amazon Handmade, Folksy and Muqbis.

Artist Features

Feature	Craftopia	Amazon Handmade	Etsy	Muqbis	Folksy
Escrow Payment	✓	X	X	X	X
Request New Category	✓	X	X	X	X
Submit offers for (Customization Request)	✓	X	X	X	X

Admin Features

Feature	Craftopia	Amazon Handmade	Etsy	Muqbis	Folksy
Auction Creation and scheduling	✓	X	X	X	X

Customer Features

Feature	Craftopia	Amazon Handmade	Etsy	Muqbis	Folksy
Compare Products	✓	X	X	✓	X
Follow artists	✓	X	✓	X	✓
Customization Requests(receive, accept and decline offers from Artists)	✓	X	X	X	X
Participate in Auction	✓	X	X	X	X

Chapter 3

System Analysis

Chapter 3: System Analysis

Project Specifications

Stakeholders

- **Admin:** oversee the operations of the system who accepts or rejects artists requests, manages accounts and orders, schedules auctions and monitors sales and system operations.
- **Artists:** are businesses or individuals who list and sell handmade products on the system who list and manage products and their quantities, manage order fulfillment, set prices and promotions, respond to customers inquiries and contact them if there is a customized product.
- **Customer:** are the primary users of the system who browse, search for and purchase our handmade products, managing their accounts and orders and providing feedback by rating products and artists.
- **Escrow Pay:** as a partner to protect our community from fraud. Buying and selling handmade products over our website in the safest and most secure environment to guarantee successful completion of the transactions.

Functional Requirements

Artist Features:

1. Account Management

- 1.1. Create Profile: Artists should be able to create an account by providing their name, username and password.
- 1.2. Artists must be able to verify their email address by entering an OTP sent to their email before completing the registration process.
- 1.3. Edit Profile: Artists should be able to edit profile details, including name, username, password, and profile image and video.

1.5. Profile Features:

- 1.5.1. Profile Picture: Artists should be able to upload a profile picture.
- 1.5.2. Biography: Artists should be able to write a detailed bio, highlighting their background, skills, and artistic journey.
- 1.5.3. Profile Video: Artists should be able to upload a video showcasing their craft, providing potential buyers with a more dynamic insight into their artistic process, techniques, and unique offerings.

1.5.4. Gallery / Product Listing:

- 1.5.4.1. Add Product: Artists should be able to list new products with detailed descriptions, pricing, dimensions, and high-quality images.
- 1.5.4.2. Edit Product: Artists should be able to modify product details, including descriptions, pricing.

1.5.4.3. Delete Product: Artists should be able to remove products from their listings, with a warning for products with pending orders.

2. Sales Tracking:

Artists should have the ability to monitor their sales performance through detailed analytics combining numeric data for precise details. This feature would allow them to track various aspects of their sales activity, including the total revenue generated, the number of products sold, Best and Least-selling Products.

3. View Visitors Counter:

Artists should be able to view the number of customer visitors to their profile or products.

4. Request New Categories:

Artists should be able to request the addition of new product categories to the platform.

5. Report an Account

Artists can report the account of a customer who accept his offer.

Admin Features:

1. User Accounts Management

- 1.1. Banning accounts: The Admin should be able to ban both customer and artist accounts.
- 1.2. Unbanning accounts: The Admin should be able to unban both customer and artist accounts.
- 1.3 Adding admin accounts: The Admin should be able to add another admin account.

2. Product Management

Delete Products: Admins should be able to delete products listed by artists for quality control and compliance.

3. Category Management

Add category : Admin can add new categories to the platform.

4. Track sales:

- 4.1 Admin can track all sales history of an artist
- 4.2 Admin can track all sales history of all artists.

5. Payment:

Admin can release held payments in an escrow system to send money sales to the artist.

6. Report:

- 1.1 Admin can view submitted reports by both customers and artists.
- 1.2 Admin can view reviewed reports by him or by another admin.
- 1.3 Admin can review a submitted report by a customer or artist.

Customer Features:

1. Register/Login

- 1.1 Customers should be able to create an account by providing their email, mobile number, choosing a username, and setting a password.
- 1.2 Customers must be able to verify their email address by entering an OTP sent to their email before completing the registration process.
- 1.3 Customers should be able to login using their username and password.

2. Profile Management

- 2.1 Customers should be able to update their profile, including name, phone number and username.
- 2.2 The system should allow customers to update their address.

3. Browse Products

Customers should be able to browse our handmade products through the page.

4. Place Orders

- 4.1 Customers should be able to add products to their cart.
- 4.2 Customers should be able to checkout their selected products in the cart.

5. Order History

- 6.1 Customers should be able to view their order history.

6. Rating products and artists

Customers should be able to rate products and artists after buying them.

7. Review products and artists

Customers should be able to review products and artists after buying them.

8. Wish Lists

- 8.1 The system should allow customers to add their favorite products to a wishlist for later viewing.
- 8.2 The system should allow customers to remove their favorite products from their wishlist.

9. Compare Products

Customers should be able to compare product differences, including features, materials, prices, ratings, and reviews, to make informed decisions.

10. View artist profile

- 10.1 Customers should be able to view a gallery of an artist.
- 10.2 Customers should be able to see the sales of a gallery.
- 10.3 Customers should be able to view the visitor counter for a gallery.
- 10.4 Customers should be able to view the rating of the artist.

11. Report an Account

Customers can report the account of an artist.

Customers can report the account of another customer who reviewed a product.

12. Search by artist

Customers should be able to search for products by their artist.

13. Follow artists

Customers should be able to follow specific artists they wish to keep up with.

14. Payment:

Customers should be able to pay using Escrow Payment System.

System Requirements:

1. Order Status Email Notifications

1.1 The customer should be able to receive automatic email updates at key stages of their order

1.2 The system should send email notifications for the following stages:

 1.2.1 Order Placed: Confirmation email with order summary and estimated

 delivery date.

 1.2.2 Order Shipped: Email inform customer for shipping their order and estimated arrival date.

2. User Authentication

2.1. The system should send a One-Time Password (OTP) to a customer's and artist's email during account registration for verification.

2.2 OTPs should expire after a defined period to enhance security.

2.3 Users should be able to request a new OTP if they did not receive the initial email.

Auction Management

Customer Features

1. Viewing Bids:

1.1. Customers can view the highest current bid.

1.2. The Customer shall be able to view the complete bid history for any auctioned product, including all previous bids, bid amounts, timestamps, and the corresponding bidders' usernames.

2. Submitting Bids:

Customers can submit a bid only if it exceeds the current highest bid and is at least 10% higher than the starting price of the auction

4. Bid Count:

Customers can view the total number of bids submitted for an auction.

5. Auction Timer:

Customers can see the time remaining until the auction ends.

Customers can see the time remaining till the auction starts.

Admins Features

1. Guidelines for Participation:

Admins can establish and communicate clear auction rules to all participants.

2. Creating Auctions:

2.1. Admins can set up auctions by:

- 2.1.1. Selecting items for bidding.
- 2.1.2. Defining starting bids, bid increments, and reserve prices.
- 2.1.3. Specifying auction duration.

3. Managing Auction Listings:

3.1. Admins can ensure auction items are accurately described with:

- 3.1.1. Detailed descriptions.
- 3.1.2. High-quality images.
- 3.1.3. Relevant item details.

4. Scheduling Auctions:

Admins can schedule start and end times for auctions to ensure smooth operation and user engagement.

Artist Features:

1.Requesting an Auction:

1.1 Artists should be able to request an auction for their products, including: Specifying item details (e.g., description, images, and starting bid).

Bidding Feature

Customer Features

1. Customization Requests

1.1. Create a Request: Customers should be able to submit detailed requests for customised products, including specifications, preferred materials, and budget considerations.

1.2. View Artist Responses: Customers should be able to receive and view responses from artists interested in fulfilling their requests.

2. Engage with Artists:

2.1 View Artist Responses: Customers should be able to view offers from artists who have responded to their requests, including price and estimated completion details.

2.2 Accept or Decline Offers: Customers should be able to accept or decline offers from artists based on the customization details and pricing.

2.3 Communicate Directly: Customers should be able to communicate by real time chat with artists to clarify any details or negotiate adjustments before finalizing their order.

Artist Features:

1. Browse Custom Requests:

1.1 Browse Requests: Artists should be able to browse a list of customization requests from customers, with the ability.

1.2 Select Interesting Requests: Artists should be able to select and view detailed descriptions of customer requests that match their expertise.

2. Submit Custom Price Offers:

2.1 Submit Offer: Artists should be able to submit personalized price offers to customers for specific customization requests, considering the details provided by the customer.

3. Shipping Orders:

3.1 Receive Acceptance: Artists should be notified when a customer accepts their offer, allowing them to proceed with order fulfilment.

3.2 Clarify and Finalize Details: Artists should be able to communicate by real time chat with customers to clarify any remaining details or adjust terms before proceeding with the customization.

3.3 Ship Order:

Artists should be able to ship their orders after payment is done successfully by the customer.

Non-functional Requirements

1- Availability

The system must operate 24/7 always ensuring uninterrupted access and functionality at all times by using multiple servers or instances to prevent single point of failure.

2- Security

User inputs must be validated to prevent SQL Injection, and any attacking attempt by using express validator for input validation.

3- Performance

End-to-end latency should not exceed 300 milliseconds for real-time interactions (e.g., auction updates or live notifications).

4- Portability

Support responsive design for user interfaces adapting to various screen sizes making it portable across different devices and platforms.

5- Usability

Users should be able to find products or services within 3 clicks.

6- Maintainability

The system should have modular code to facilitate updates and bug fixes.

Use Case Diagram

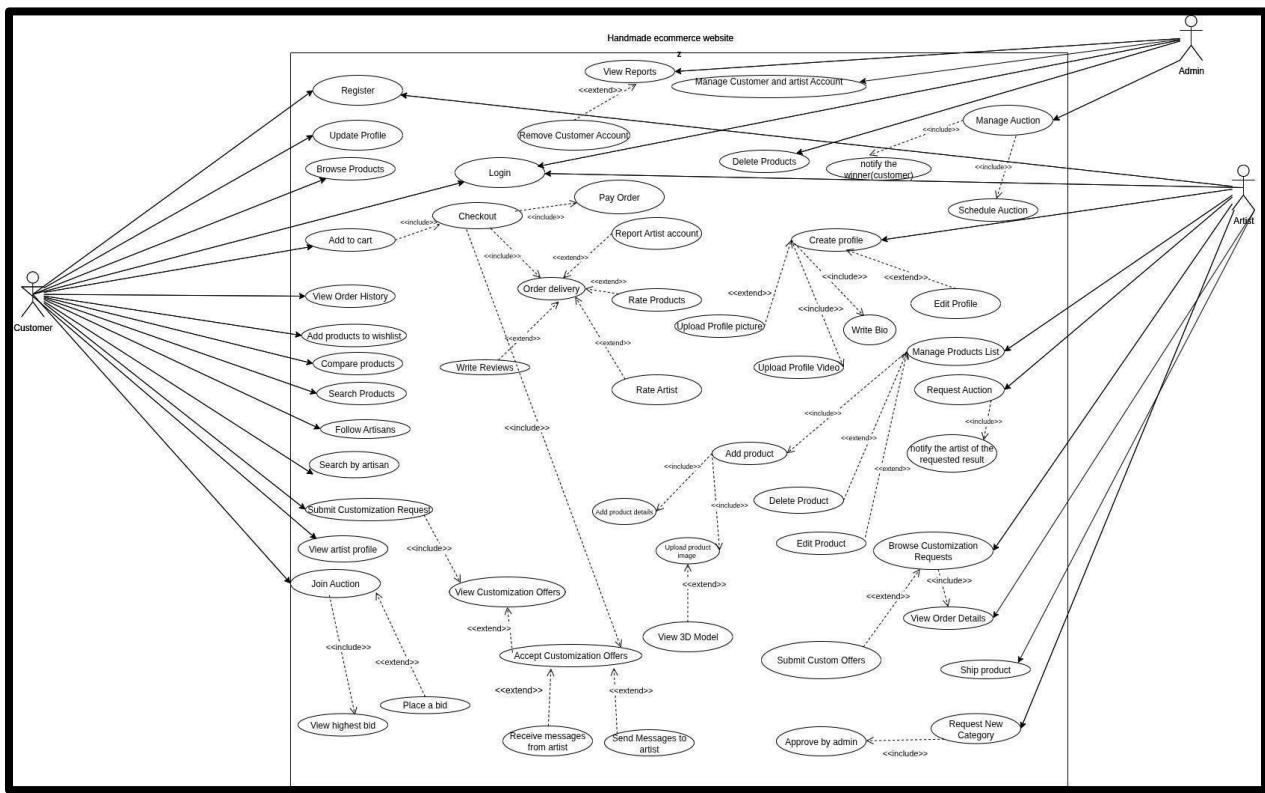


Figure 4: Use Case diagram

Chapter 4

System Design

Chapter 4: System Design

System Component Diagram

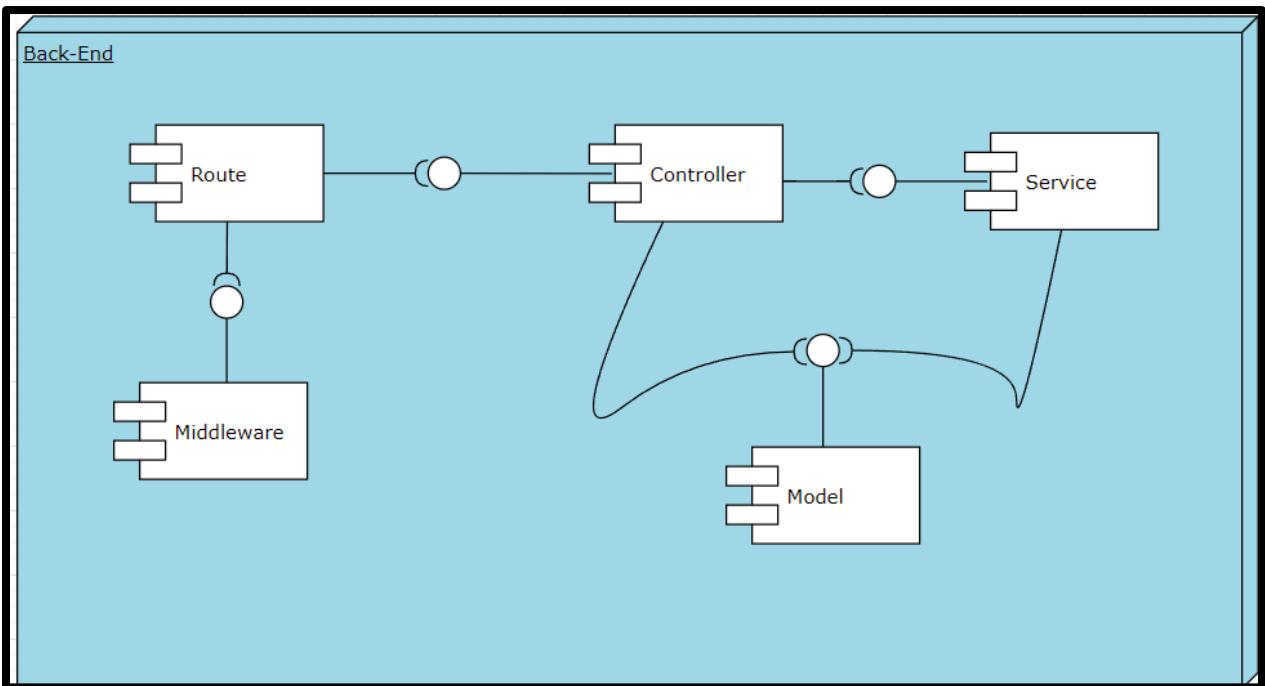


Figure 5: Component diagram

Class diagram

User Management package

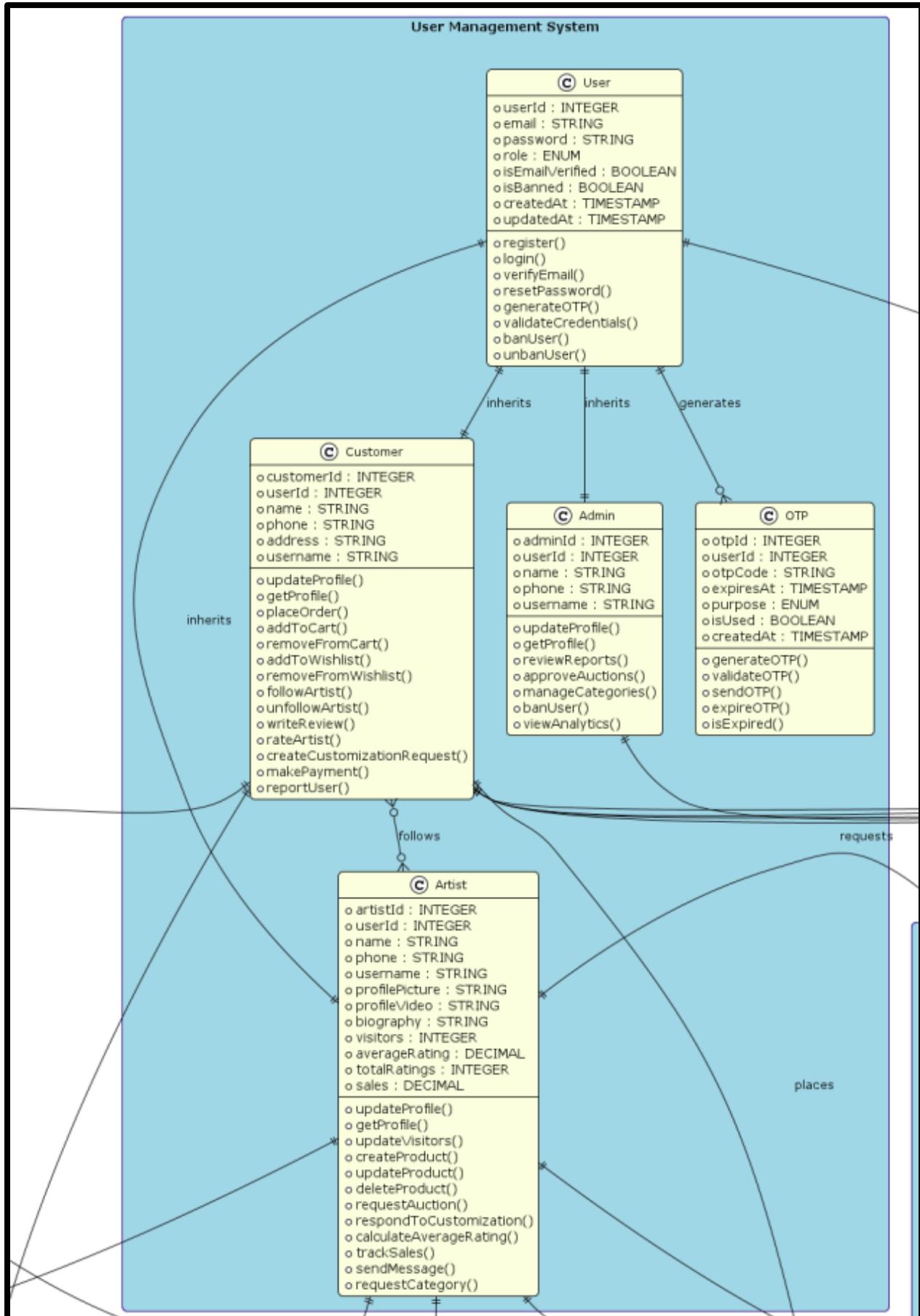


Figure 6: Class diagram

Custom Art, Payment , Order management and Auction packages

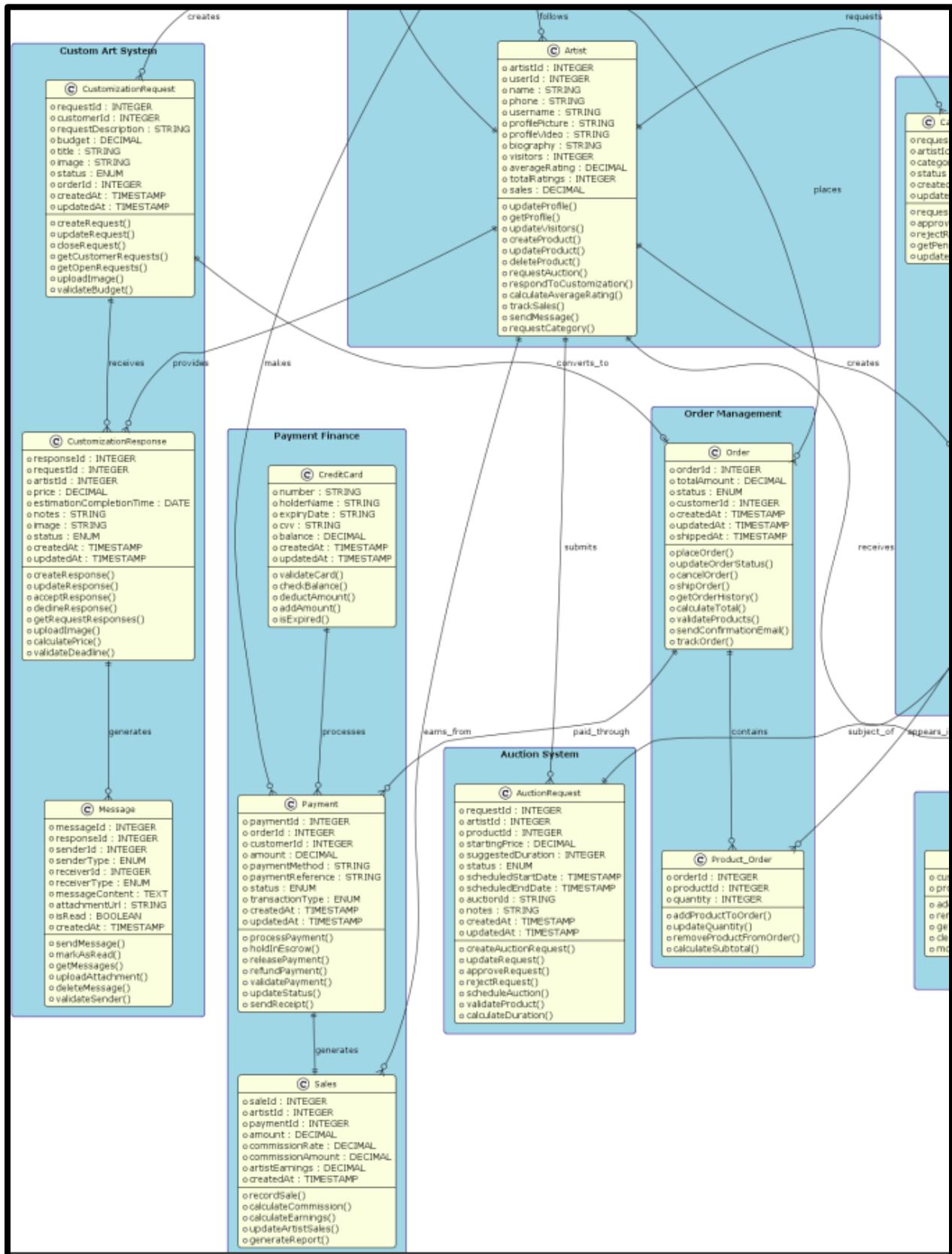


Figure 7: Class diagram

Product management, Social features , Shopping experience,Review and Rating packages

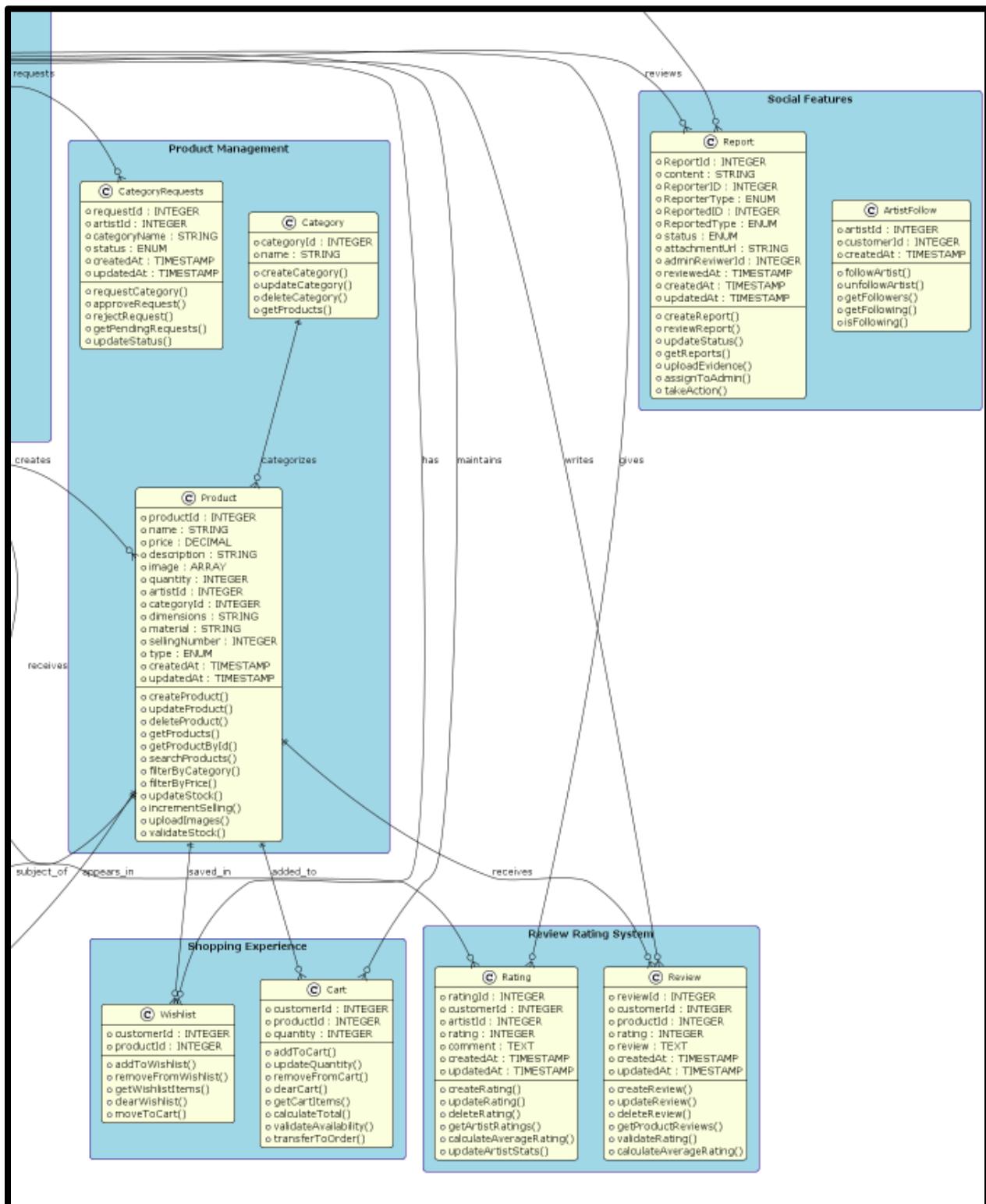


Figure 8: Class diagram

Sequence Diagrams

1. Submit offers for Customization Requests

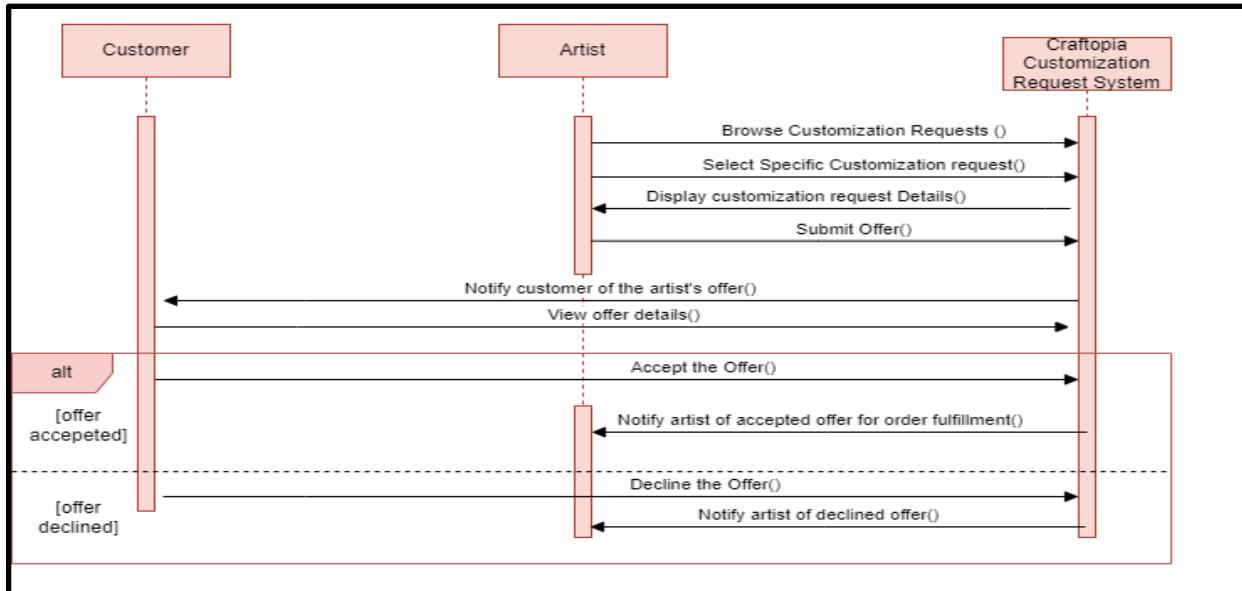


Figure 9: Sequence 1 (Submit offers for Customization Requests)

2. Order Placement

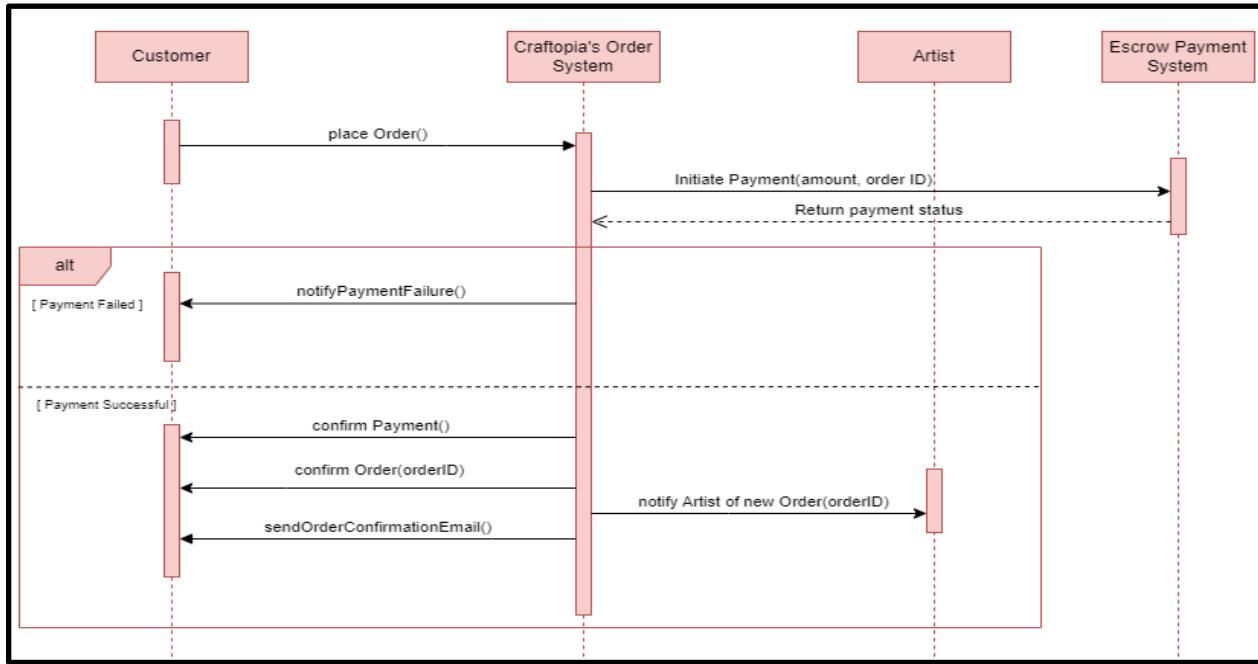


Figure 10: Sequence 2 (Order Placement)

3. Auction Initiation

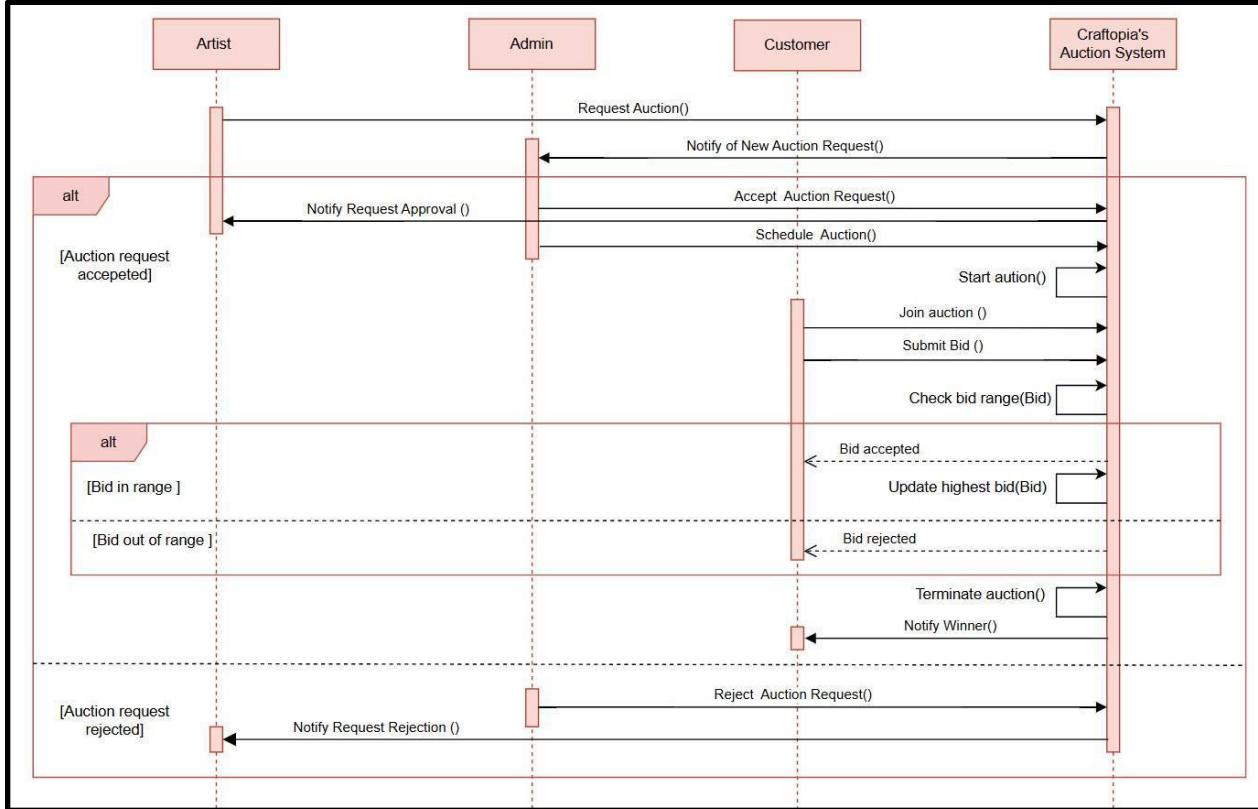


Figure 11: Sequence 3 (Auction Initiation)

ERD Diagram

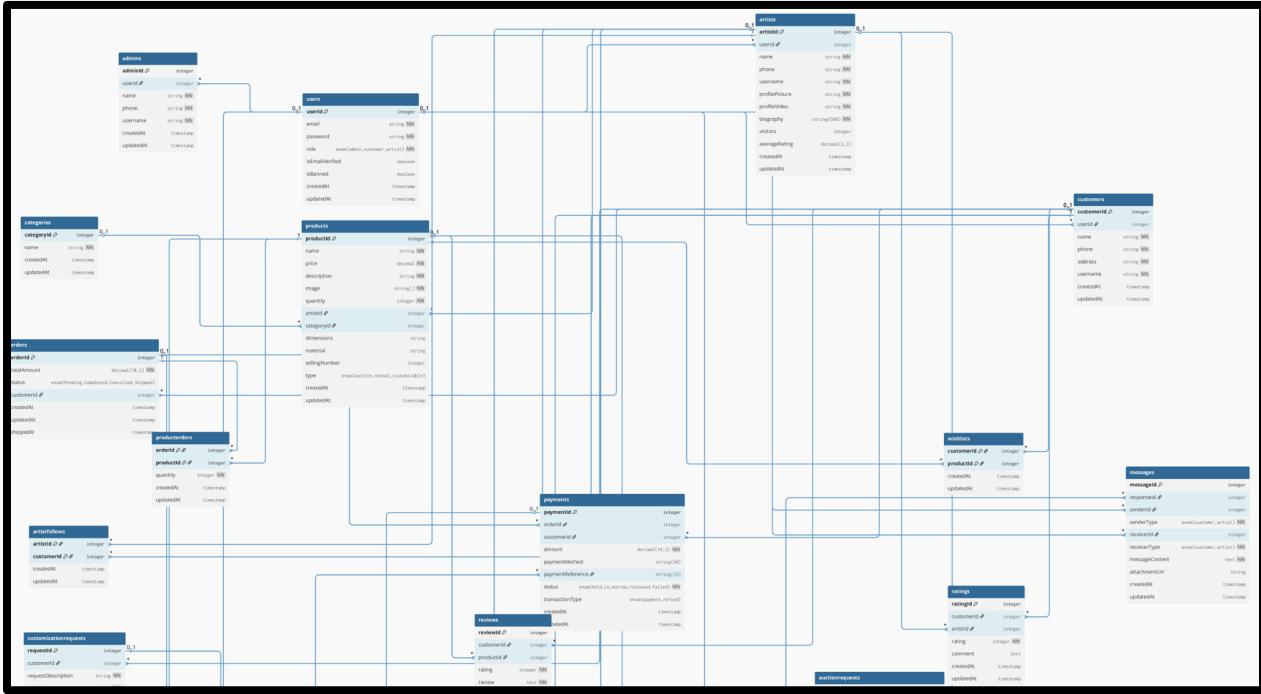


Figure 12: ERD diagram

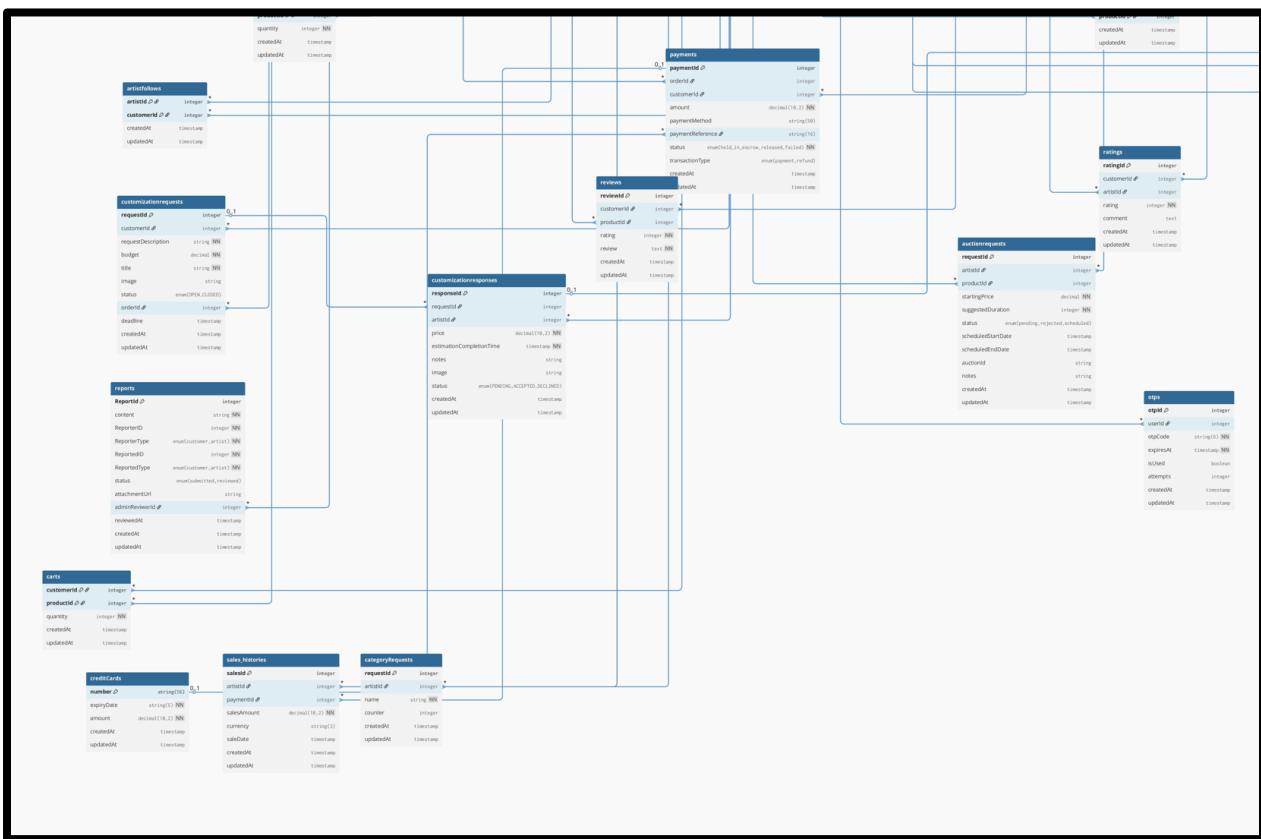


Figure 13: ERD diagram

Firebase real time database

Tables:

Auction:

Key: AuctionID

Fields:

- productID : integer
- artistID : integer
- startPrice : decimal
- currentBid : Bid
- startTime : date
- endTime : date

Status: string

Bids:

Key: BidID

Fields:

auctionID: integer

customerID: integer

BidAmount : integer

Deployment Diagram:

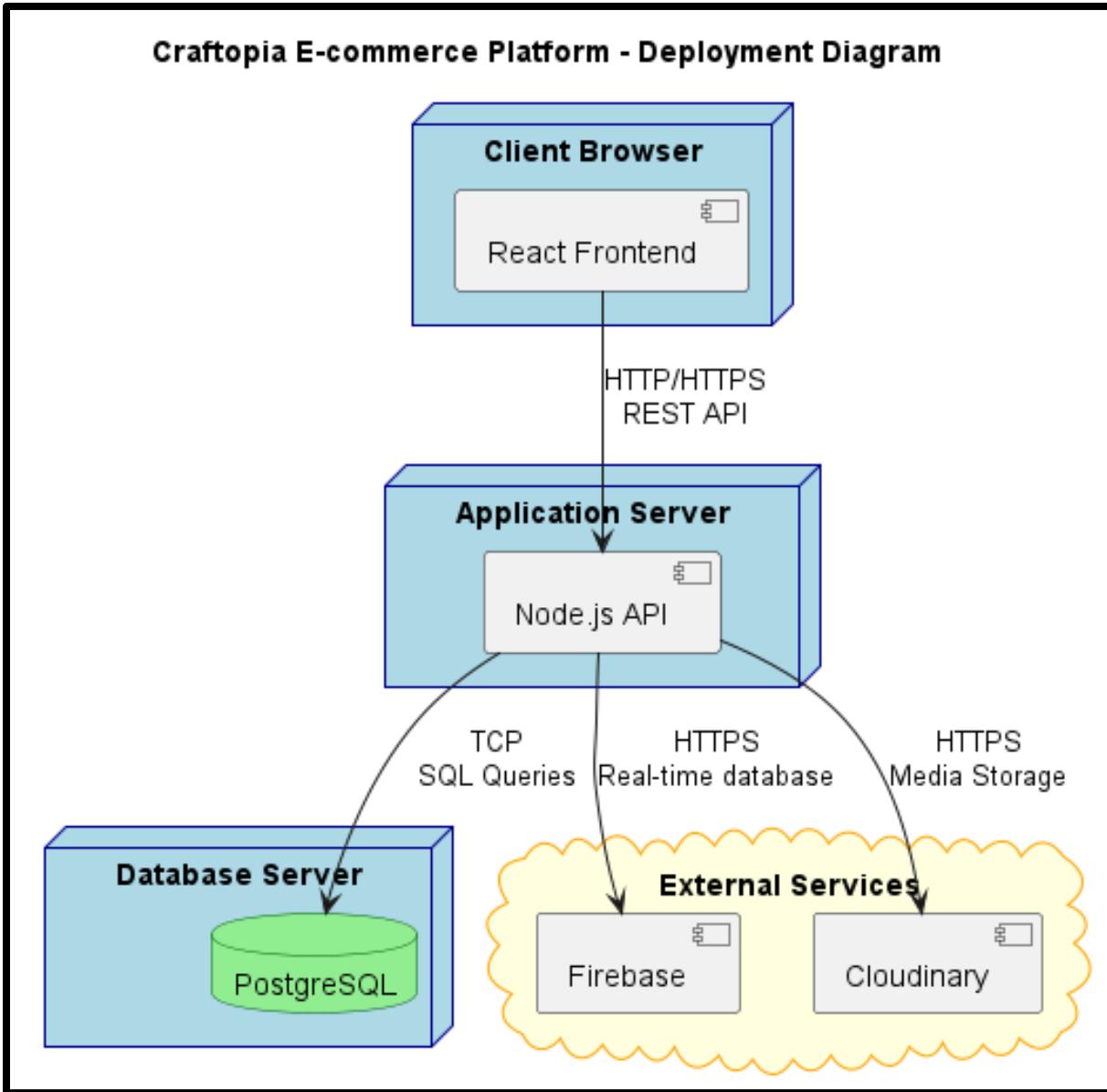
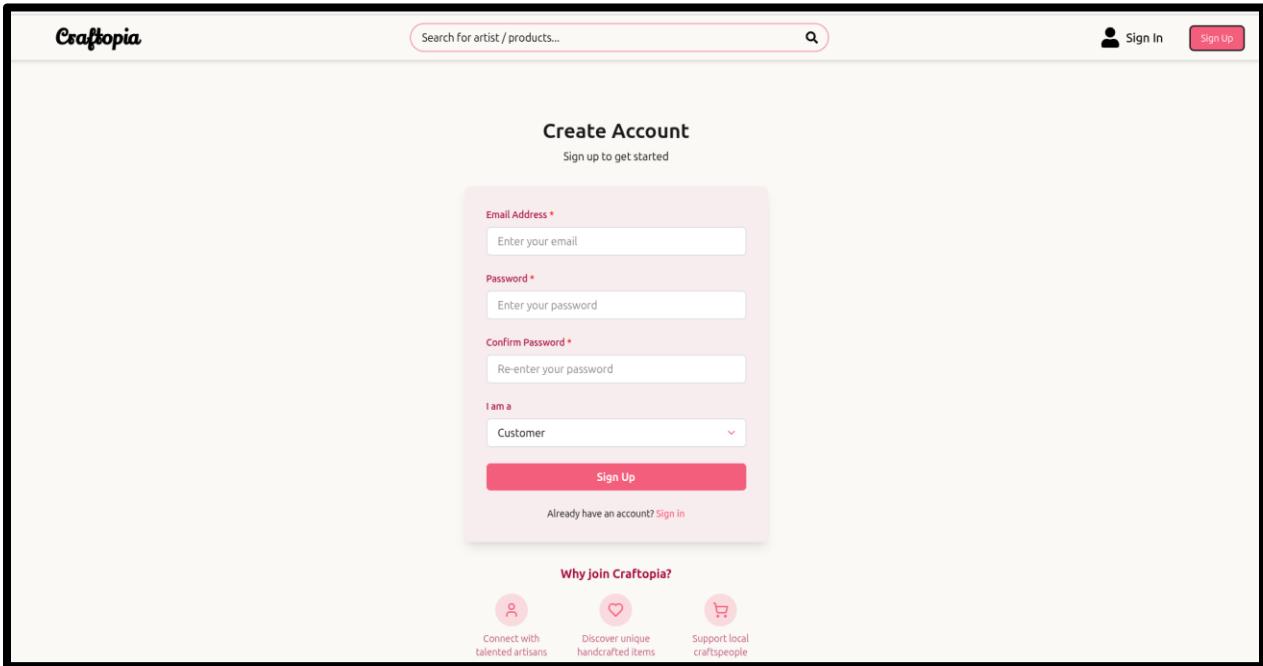


Figure 12: Deployment diagram

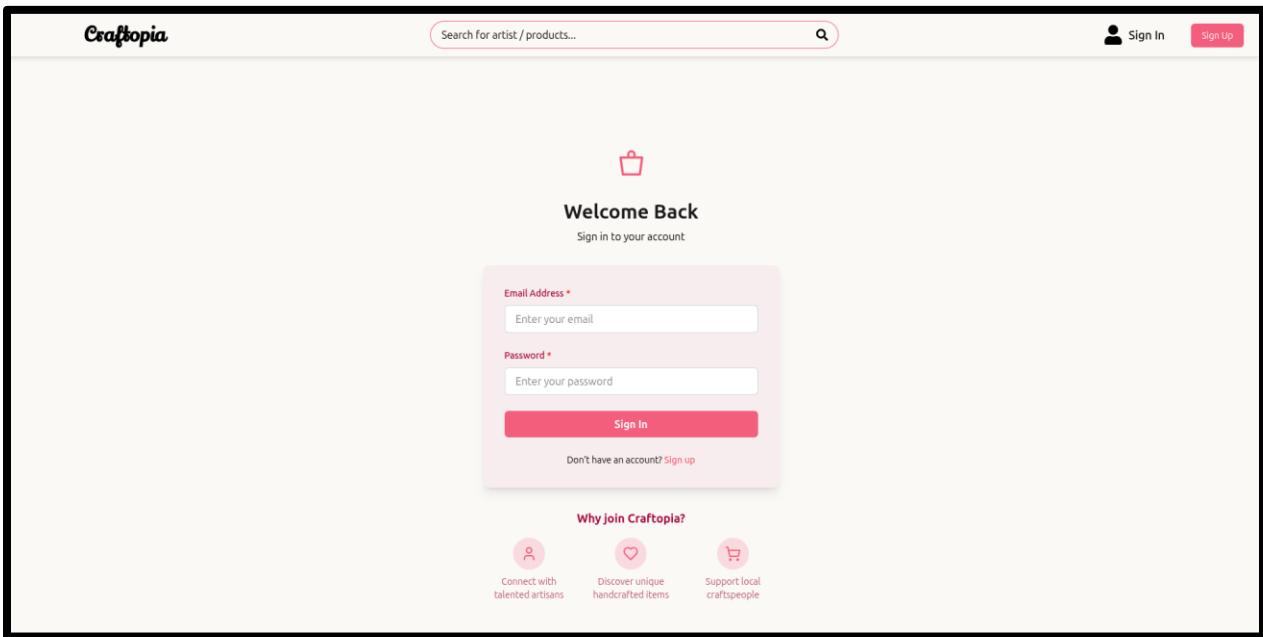
System GUI Design

Sign Up Page



The screenshot shows the 'Create Account' form on the Craftopia website. The form is titled 'Create Account' and includes a sub-instruction 'Sign up to get started'. It contains fields for 'Email Address *' (placeholder: Enter your email), 'Password *' (placeholder: Enter your password), and 'Confirm Password *' (placeholder: Re-enter your password). A dropdown menu for 'I am a' is set to 'Customer'. A large red 'Sign Up' button is at the bottom. Below the form, a link says 'Already have an account? [Sign in](#)'. At the bottom of the page, there's a section titled 'Why join Craftopia?' with three icons: a person icon for 'Connect with talented artisans', a heart icon for 'Discover unique handcrafted items', and a shopping cart icon for 'Support local craftspeople'.

Sign In Page



The screenshot shows the 'Welcome Back' sign-in form on the Craftopia website. The form is titled 'Welcome Back' and includes a sub-instruction 'Sign in to your account'. It contains fields for 'Email Address *' (placeholder: Enter your email) and 'Password *' (placeholder: Enter your password). A large red 'Sign In' button is at the bottom. Below the form, a link says 'Don't have an account? [Sign up](#)'. At the bottom of the page, there's a section titled 'Why join Craftopia?' with three icons: a person icon for 'Connect with talented artisans', a heart icon for 'Discover unique handcrafted items', and a shopping cart icon for 'Support local craftspeople'.

Artist Profile

The screenshot shows the Craftopia artist profile for a user named Yasser. The profile includes a circular profile picture, a rating of 4.00 (2 reviews), 2 ratings, and 1,750 LE. It also shows 1 visitor during this week. A bio states: "I'm Yasser — a digital artist who loves turning emotion and imagination into visual stories. I hope my work brings you inspiration, meaning". To the right is a video thumbnail of a necklace. Below the profile are three product categories: Gallery Products, Auction Products, and Customized Products, each with a representative image.

Artist Profile Settings

The screenshot shows the Craftopia artist profile settings page. It features a sidebar with options like My Profile, Update, Add Product, View Requests, Auction Request, Request Category, and Logout. The main area contains fields for updating personal information: Name (Yasser), Username (y-asser), Phone (01284876844), and Biography (a bio about being a digital artist). There is also a section for Profile Video with a placeholder video thumbnail and a "Save Changes" button.

Add Product

The screenshot shows the Craftopia "Add New Product" page. The sidebar includes options for My Profile, Update, Add Product, View Requests, Auction Request, Request Category, and Logout. The main form has sections for Product Name, Category, Description, Quantity, Material, Price, Dimensions, and an "Upload Product Images" field with a placeholder "Click or drag to upload images Up to 5 images". A "My Products" button is located at the top right of the form area.

Sales History of Artist

The screenshot shows the 'Sales History' section of the Craftopia website. On the left, a sidebar menu includes 'My Profile', 'Update', 'Add Product', 'View Requests', 'Auction Request', 'Request Category', 'Sales History' (which is selected and highlighted in grey), and 'Logout'. The main area displays four sales entries:

- Sale #1: 500.00 LE, July 3, 2025 • 2:17 AM
- Sale #2: 500.00 LE, July 3, 2025 • 2:17 AM
- Sale #3: 200.00 LE, July 3, 2025 • 2:17 AM
- Sale #4: 550.00 LE, July 3, 2025 • 2:17 AM

Below the sales list is a chart titled 'Revenue by Month' showing total revenue for each month from January 2025 to December 2025. A single red bar represents the total revenue for June 2025, reaching approximately 2100 LE.

Customer Profile

The screenshot shows the 'Complete Your Profile' page. The sidebar menu on the left includes 'My Profile' (selected and highlighted in grey), 'Wishlist', 'My Orders', 'Compare Products', 'Custom products', and 'Logout'. The main area features a large placeholder image of a person in a suit. To the left of the image is a form with fields for 'Full Name *' (Malak Yasser), 'Username *' (malak), 'Phone *' (01284876844), and 'Address *' (ملاك). A 'Save' button is located at the bottom right of the form.

Customer Explore All artists

The screenshot shows the 'Discover talented artisans and their unique creations' section. The sidebar menu on the left includes 'My Profile' (selected and highlighted in grey), 'Wishlist', 'My Orders', 'Compare Products', 'Custom products', and 'Logout'. The main area displays profiles for three artisans:

- Yasser**: Rating 4 (2), 3 products, specialties pottery, Jewelry & Accessories, Soaps & Bath Products. Buttons: Follow, View Gallery.
- Sarah**: Rating 0, 1 product, specialties pottery. Buttons: Follow, View Gallery.
- Mohamed**: Rating 0, 1 product, specialties Bags & Leatherwork. Buttons: Follow, View Gallery.

At the top of the main area, there are filters for 'Category' (All Categories) and 'Sort By' (Highest Rated). A message indicates '3 artists found'.

Customer View Artist Profile

The screenshot shows the Craftopia artist profile for 'Yasser'. At the top, there's a search bar and a navigation menu with 'My Account' and 'Logout'. Below the header is a profile card for 'Yasser' (Joined July 2025), featuring a photo of a person with glasses, a 4.0 rating (2 reviews), 0 followers, and 1 profile view. Below the profile card are four summary boxes: 'Products' (3), 'Total Sales' (0), 'Rating' (4.0), and 'Followers' (0). A navigation bar below these includes 'Products', 'Gallery', 'Auction Products', 'About', and 'Reviews'. Under the 'Products' tab, there's a section titled 'Products (3)' showing three items: a brown woven bag, a basket of soaps and bath products, and a collection of dreamcatchers.

Compare Products

The screenshot shows the Craftopia product comparison feature. It displays three items from different artists: 'Noven Bag' by Sarah (Category: LEATHERWORK, Price: \$350, Rating: 0.0), 'Home Gallery Leaf Wall' by Mohamed (Category: HOME DECOR, Price: \$600, Rating: 3.0), and 'Azeem Macrame Feather W...' by Yasser (Category: HOME DECOR, Price: \$500, Rating: 4.0). Below these cards is a 'Product Comparison' section with three items: 'Seagrass Wall Hanging', 'Azeem Macrame Feather Wall Hanging', and 'Home Gallery Leaf Wall'. The comparison table lists various attributes for each item, such as Category (Home Decor), Material (Seagrass, Macrame Feather, Feather), Dimensions (5 x 5 x 5 x), Artist (Sarah, Mohamed, Yasser), Rating (0, 1, 1), and Price (\$500, \$600, \$350).

Cart Page

The screenshot shows the Craftopia cart page. On the left, there's a 'Cart Items' section listing four items: 'Azeem Macrame Feather Wall Hanging' (\$600.00), 'Soaps & Bath' (\$200.00), 'Hand Woven Bag' (\$400.00), and 'Pottery' (\$400.00). Each item has a quantity selector (- 1 +) and a delete icon. To the right is an 'Order Summary' section showing a Subtotal of \$1600.00, Free Shipping, and \$0.00 for Escrow Service. The total amount is \$1600.00. Below this are two buttons: 'Proceed to Checkout' and 'Continue Shopping'.

Payment Page

The screenshot shows the Craftopia payment page. On the left, the "Order Summary" section displays the total amount as EGP 1,600.00. Below it, the "Your Items" section lists four products: Soaps & Bath (EGP 200.00), Hand Woven Bag (EGP 400.00), Pottery (EGP 400.00), and Azeem Macrame Feather Wall Hanging (EGP 600.00). On the right, the "Payment Details" section shows a credit card form with the card number 5425 2334 3010 9903 and an expiry date of 08/27. A large red "Pay EGP 1,600.00" button is prominently displayed.

Product Details Page

The screenshot shows the Craftopia product details page for a "Home Gallery Leaf Wall". The product image features a wall hanging made of numerous small, colorful leaf-shaped macramé pieces. The product title is "Home Gallery Leaf Wall" by Yasser, with a rating of 3.0 (1 review). The price is listed as 350 LE and it is in stock. The "Description" section includes a link to "Home Gallery Leaf Wall Decoration Feather". Below the description are sections for "Dimensions" (5 x 5 x 5 cm) and "Material" (Feather). A pink "Add to Cart" button is visible. At the bottom, a user review from malak dated 03 Jul 2025 is shown, stating: "Stunning piece of wall art! The leaf design brings a natural, calming vibe to my space".

Admin Dashboard

The screenshot shows the Craftopia Admin Dashboard. The left sidebar includes links for Home, Requests, Add Category, Reports, Payments, and User Management. The main dashboard features a "Dashboard" section with an "Overview" card showing customer, artist, and product counts (2 customers, 3 artists, 9 products). Below it is a "Summary Sales" chart showing revenue over time, with a significant spike in 2025. To the right is a "Best Selling Products" section featuring an image of pottery and the name Sarah with a price of \$400.00.

Auction Pages

Auction Details Page



LIVE

Apparel & Wearables 0 bids

Current Bid £ 500 Starting Price £ 500

Time left 6 : 23 : 55 : 19

Min 550.00 Place Bid

Minimum bid: £ 550

View Bid History

Artist
★ 0.00 (0 reviews)
Lorem ipsum dolor sit amet consectetur adipisicing elit. Cumque veritatis natus maiores inventore vel incidunt porro dolor aliquam optio et possimus, saepe nam? Provident eos quaerat error, eaque reiciendis nesciunt.

Follow Artist View Profile

Artwork Details
Description
Lorem ipsum dolor sit amet consectetur adipisicing elit. Non, voluptates est quam id quidem vel quo, iure cumque pariatur nam excepturi exercitationem? Laudantium porro error ullam? Exercitationem laboriosam illum voluptates? Lorem ipsum dolor sit amet con

Material wool	Dimensions 10 x 10 x 10
Started On 7/3/2025	Ends On 7/10/2025

Auction Request Page

My Profile

Update

+ Add Product

View Requests

Request Auction

Request Category

Sales History

Logout

Auction Requests

Request Auction

Your Auction Requests

Wool Shirt

Starting Bid: 500 EGP Apparel & Wearables Submitted on 7/3/2025

Start: 7/3/2025, 2:48:00 AM End: 7/6/2025, 2:48:00 AM

No notes provided.

No bids were submitted. Product cannot be shipped.

unique piece

Starting Bid: 50 EGP Kitchen & Dining Submitted on 7/2/2025

Start: 7/2/2025, 10:33:00 PM End: 7/9/2025, 10:33:00 PM

No notes provided.

ShipTest

Starting Bid: 500 EGP Toys & Games Submitted on 7/2/2025

Start: 7/2/2025, 10:35:00 PM End: 7/5/2025, 10:35:00 PM

Auction Management Page

Craftopia Admin

Auction Management

Manage auction requests and active auctions

Pending Requests: 1

Active Auctions: 5

Total Bids Today: 4

[Auction Requests](#) [Active Auctions](#) [Scheduled Auctions](#) [Ended Auctions](#)

Wool Shirt
by Artist

Starting bid: £ 500 • Duration: 7 days

Start Date & Time: mm/dd/yyyy - - : -- : --

Duration (days): 7

Admin Notes: Notes for the artist...

Materials: wool
Dimensions: 10 x 10 x 10
Previous Sales: 0
Artist Rating: 0.00/5
Description: Lorem ipsum dolor sit amet consectetur adipisicing elit. Non, voluptates est quam id quidem vel quo, iure cumque pariatur nam excepturi exercitationem? Laudantium porro error ullam?
Exercitationem laboriosam illum voluptates?Lorem ipsum dolor sit amet con

Approve Decline

Chapter 5

Implementation and Testing

Chapter 5: Implementation and Testing

Implementation and architecture

Our system follows a Monolithic architecture where all components are built as a single application. Everything from user authentication, product management, payment processing, and order handling runs within one Node.js server. This approach simplified development since we didn't need to manage multiple services or complex communication between different parts. All the code, database connections, and business logic are contained in one codebase, making it easier to develop, test, and deploy as a single unit. The monolithic design also reduced complexity for our team size and project timeline.

Frontend

- [React.js](#)

Our main technology for the front-end of our web application is React.js. We chose React because it offers the following benefits:

- React provides a component-based architecture, which helps in building reusable and maintainable UI elements.
- It enables fast rendering and performance through the use of a virtual DOM.
- React is widely supported, well-documented, and backed by a strong community, making development more efficient.

- [Tailwind CSS](#)

Tailwind CSS was used for styling the user interface. We chose Tailwind because:

- It provides utility-first classes that make it easy to build responsive and modern UI components quickly.
- Tailwind allows for rapid design changes directly within markup, reducing the need for custom CSS.
- It ensures consistency across the design system while keeping the styles maintainable and scalable.

Backend

- [Node.js](#)

The main technology for our backend is Node.js. We chose Node.js because of its following advantages:

- Node.js is event-driven and non-blocking, making it highly suitable for real-time applications like auctions.
- It allows us to use JavaScript on both the front-end and back-end, enabling a unified development stack.
- Node.js has a vast ecosystem of libraries and modules, which speeds up development.

Database

• PostgreSQL + Real-time Database

For data storage and real-time updates, we used a combination of PostgreSQL and a real-time database:

- PostgreSQL was used to store structured application data securely and efficiently, offering support for complex queries and data integrity.
- A real-time database (such as Firebase) was used to manage live auction updates and ensure instant communication between users.

Testing

Functionality	Test Case	Input	Expected Output
<i>Sign Up</i>	1-All fields are empty	No input	Show : "Please fill out all required fields."
	2-Password less than 8 characters	"EmailAddress: user1@gmail.com password:12345, confirmPassword: 12345 I am a Customer	Show error: "Password must be at least 8 characters."
	3-Passwords do not match	"EmailAddress: user2@gmail.com password:12345678,confirmPassword:12345687 I am a Customer	Show error: "Passwords don't match."

	4-Email already exists	"EmailAddress: user2@gmail.com password:12345678,conf irmPassword:12345678 I am a Customer	Show error: "Email is already in use."
	5-Successful registration	"EmailAddress: artist@gmail.com password:12345678,conf irmPassword:12345687 I am a Artist	Show success message: "Registration successful! You can now log in." and redirect to /login
<i>Login</i>	6-All fields are empty	No input	Show : "Please fill out all required fields.
	7-Valid email, incorrect password	EmailAddress: artist@gmail.com password:12345666	Show error: "Invalid Credentials"
	8-Not Signed up Credentials	EmailAddress: malak@gmail.com password:12345666	Show error: "User not found"
	9-Valid email and password, role = admin	email: admin@gmail.com, correct password	Redirect to /admin
	10-Valid email and password, role = customer	email: customer@gmail.com, correct password	Redirect to /

	11-Valid email and password, role = artist	email: artist@gmail.com, correct password	Redirect to /artist-profile
<i>Create Profile</i>	12-Submit with empty fields	Empty form	Show : "Please fill out all required fields.
	13-Submit with existing username	Valid input but duplicate username	Shows "Username already exists Please choose a different one."
	14-Submit without profile video	Leave video empty (no file and no preview) and click "Save Changes"	Show message: "Please upload a profile video showing your handmade items."
	15-Submit valid profile with media	Fill all fields + upload valid picture/video → Click Save	Shows "Profile updated successfully.", and data is posted to server
<i>Order Payment</i>	16-Invalid card number (empty)	Leave card number blank → click "Pay"	Error message: "Credit Card number is required."
	17-Invalid card number (less than 16 digits)	Enter 542523343010990 and click "Pay"	Error: "Please enter a valid 16-digit card number."

	18-Invalid expiry date	Enter wrong format like 9/25 or 1327 → click "Pay"	Error: "Please enter a valid expiry date in MM/YY format."
	19-Product out of stock	Ordered quantity > stock	400 – "Insufficient funds in credit card, payment failed"
	20-Valid payment	Enter valid 16-digit number and MM/YY expiry → click "Pay"	Shows success screen and redirects to /orders
<i>Request Category</i>	21. Submit empty category name	Category name : “ ”	"Please provide a category name" error message
	22. Artist who didn't complete his profile	Authenticated Artist who didn't complete his profile	"Please complete your artist profile first." error message
	23. Add Category exists	Submit category that already exists	"This Category already exists." error message
	24. Request same category	Artist has already requested same category	"You already requested this category: "Category Name"" error message
	25.Another artist requested same category	Another artist already requested same category	"This category has been requested by another artist. Your request has been added." success message

	26.Valid category request	"Category Name: Jewelry"	"Category request for "Category Name" received" success message
<i>Create Product</i>	27.One or more required fields (product name, category, description, quantity, price, material, dimensions) blank	."Product name": "Clay Pot", "Description": "Traditional handmade clay pot", "price": 20, "categoryName": "Clay & Ceramics", "quantity": 10, "dimension": "10x10x10", "material": " " Attach 2 images.	Form blocks submission, shows "Please fill out this field."
	28.Add with no images uploaded	"Product name": "Clay Pot", "Description": "Traditional handmade clay pot", "price": 20, "categoryName": "Clay & Ceramics", "quantity": 10, "dimension": "10x10x10", "material": " " No images attached.	Form does not submit, "Please upload at least one image." message
	29.Upload 6 or more images	"Product name": "Clay Pot", "Description": "Traditional handmade clay pot", "price": 20, "categoryName": "Clay & Ceramics", "quantity": 10, "dimension": "10x10x10", "material": " " Attach 6 images.	Form does not submit, "You can only upload up to 5 images."
	30.All required fields and 1–5 images.	"Product name": "Clay Pot", "Description": "Traditional handmade clay pot", "price": 20, "categoryName": "Clay & Ceramics", "quantity": 10, "dimension": "10x10x10", "material": "Clay " Attach 2 images.	Newly created product, "Product created successfully!" success message and clears form
<i>customization</i>	31.All fields are empty	Empty Input	please provide all required fields

<i>request</i>			[description, budget,
	32.missing only one	title, budget, deadline, but no description	please provide all required fields
	33. expired deadline	put past date in deadline	invalid deadline error, deadline must be today or in the future
	34. No image	put all required fields with no image	customization request create
	35.All fields are submitted	put all required fields with image	customization request create
<i>review and rating the product</i>	36. Rate and review purchased product	try to give or review rate product	the rate and review successfully
	37.Update a review	try to update the review only of the product	you can not update the review
<i>review and rating the artist</i>	38.Rate and review an artist of purchased product	try to give review or rate artist	the rate and review successfully
	39.Update rating or review of an artist of purchased product	try to update the rating or review	the rating or review updated successfully
<i>place a bid in auction</i>	40.Bid Amount is empty	Place Bid (Empty Field) Bid Amount: (empty)	Error: "Bid amount is required"
	41.put Bid amount with negative value	Place Bid (Negative Value) Bid Amount: -50	Error: "Bid amount must be greater than current price"
	42.Place Bid Lower than Current Price	Current Price: 200 Bid Amount: 150	Error: "Bid must be greater than current price"
	43.Place Valid Bid	Current Price: 200 Bid Amount: 220	Bid placed successfully
	44.Bid Equal to Current Price	Current Price: 550 Bid: 550	Error: "Your bid must be higher than the current bid"
	45.Update Bid with Lower Value	Previous bid: 700 New bid: 650	Your new bid must be higher than current price (700)
	46.Update Bid with New	Value Previous bid: 600	Bid placed successfully New bid added

	Higher	New bid: 700	Highest bid updated to 700
	47.Update your Bid but you are the highest bidder	Update your Bid with a valid Bid but you are the highest bidder	Error "You cannot update your bid because you are already the highest bidder"
	48.Add bid with non logged-in Customer	Bid with Logged-in Non-Customer (e.g., Admin/Artist)	Bid input will not be displayed
	49.Bidding without auction started	Try to bid when the auction is not started yet	The Bid input will be hidden and the view bid history button disabled
<i>Request Auction</i>	50.Empty	Submit form without entering any fields	Error: "Item title is required.\nCategory is required... \nPlease upload between 1 and 5 images.
	51.Upload More Than 5 Images	Upload More Than 5 Images	Error: "You can only upload a maximum of 5 images."
	52.Invalid Starting Bid	Invalid Starting Bid (e.g. 0, -5) Starting bid is not a valid number or ≤ 0	Error: "Valid starting bid is required."
	53.Empty Category	Category field left blank	Error: "Category is required."
	54.Missing Fields	Submit form without filling materials or dimensions	Error: "Materials are required." / "Dimensions are required."
	55.Success Auction Request	Submit Valid Auction Request All required fields filled correctly, 1–5 images uploaded	Success message: "Auction request submitted successfully!"
<i>show previous Auction Requests (for Artist)</i>	56.Previous Auction Request	Show Previous Auction Requests	Requests are listed with product name, status badges, and metadata.
	57. No Bids in auction until it ended	Auction Ended without Bids	"No bids were submitted. Product cannot be shipped."
	58.Auction Ended with Bids	Auction Ended with Bids	Ship Product" button appears
	59.Scheduled Auctions	Click on Scheduled Auction	Navigate to the auction details page
	60.Clicking on Disabled Request	Click on Disabled Request eg.Click on a Pending Request	Nothing happens

<i>Admin Auction Management</i>	61.Auction Requests	Click "Auction Requests" Tab	List of pending auction requests is shown
	62.Active Auctions	Click "Active Auctions" Tab	Only active auctions are displayed in cards, with start and end dates and the total number of bids
	63.Scheduled	Click "scheduled" tab	Only scheduled auctions displayed with countdown
	64.Ended Auctions	Click "Ended Auctions" Tab	Ended auctions shown with final status and time
	65.Clicking on Review	Click "Review" button on request card	Request expands, showing details, inputs for start date, duration, notes , accept and decline buttons for the request
	66.Clicking on Review again	Click "Review" again on same card	Details section collapses
	67.Approve Auction without Date	Click "Approve" without choosing a start date	Error: Please select a start date for the auction.
	68.Approve Auction With Valid Data	Set date, duration, notes → Click "Approve"	Feedback: "Auction request approved and scheduled." Request removed, tab updates
	69.Decline Auction Request	Decline Auction Request	Feedback: "Auction request rejected." Request removed, tab updates
	70.Zoom Auction Image	Click image in expanded request	Fullscreen modal displays image; click outside to close
<i>Real chat</i>	71. share personal information in chat	Enter username of instagram in chat	"message": "Message content not allowed"
	72. send empty message	Empty	message": "Validation failed", "msg": "Message content is required"
	73. send valid message	Enter hello	"message": "Message sent successfully"
<i>Report accounts</i>	74. report yourself	click on report on your account	"message": "Cannot report yourself"

	75. report with empty content	Empty report content	"msg": "Report content is required"
	76. report account	Enter say bad words to me	"message": "Report created successfully"
<i>Place Order</i>	77. place order with valid quantity	Enter valid quantity for an product	"message": "Order placed successfully"
	78. ship order before customer buying it	Click on ship button of order for an custom product	"message": "Customer should pay first,before shipping the order"
	79. ship order shipped before	Click on ship button of order for an custom product	"message": "Order is already shipped"
	80. ship order after customer buying it	Click on ship button of order for an custom product	"message": "Order is shipped successfully"
	81. Cancel order	Click on cancel button	"message": "Order cancelled successfully"

Applying Test cases

1- Sign UP

● Empty Submit

The screenshot shows the Craftopia 'Create Account' page. At the top, there is a search bar and a sign-in/sign-up button. The main form is titled 'Create Account' with a sub-instruction 'Sign up to get started'. It contains fields for 'Email Address *' (with a placeholder 'Enter your email'), 'Password *' (with a placeholder 'Enter your password' and an error message 'Please fill out this field.'), 'Confirm Password *' (with a placeholder 'Re-enter your password'), and 'I am a' (with a dropdown menu set to 'Customer'). A large pink 'Sign Up' button is at the bottom. Below the form, there is a section titled 'Why join Craftopia?' with three icons: a person icon for 'Connect with talented artisans', a heart icon for 'Discover unique handcrafted items', and a shopping cart icon for 'Support local craftspeople'. There is also a link 'Already have an account? [Sign in](#)'.

● Invalid email format

The screenshot shows the Craftopia 'Create Account' page. The 'Email Address *' field contains the invalid value 'user@yahoo.com'. An error message 'Please enter a valid Gmail address.' is displayed above the input field. The rest of the form fields ('Password *', 'Confirm Password *', 'I am a' dropdown set to 'Customer') and the 'Sign Up' button are visible. The 'Why join Craftopia?' section and sign-in link are also present.

● Password less than 8 characters

The screenshot shows the Craftopia 'Create Account' page. The 'Password *' field contains a password consisting of fewer than 8 characters. An error message 'Password must be at least 8 characters.' is displayed above the input field. The other form fields ('Email Address *', 'Confirm Password *', 'I am a' dropdown set to 'Customer') and the 'Sign Up' button are visible. The 'Why join Craftopia?' section and sign-in link are also present.

- **Passwords do not match**

The screenshot shows the Craftopia 'Create Account' page. At the top, there's a search bar and a sign-in/sign-up link. The main form area has a pink background where an error message 'Passwords don't match.' is displayed above the password fields. The 'Email Address *' field contains 'user2@gmail.com'. The 'Password *' and 'Confirm Password *' fields both contain '*****'. Below the password fields is a dropdown menu 'I am a' set to 'Customer'. A large red 'Sign Up' button is at the bottom. A small note 'Already have an account? [Sign in](#)' is at the very bottom.

- **Email already exists**

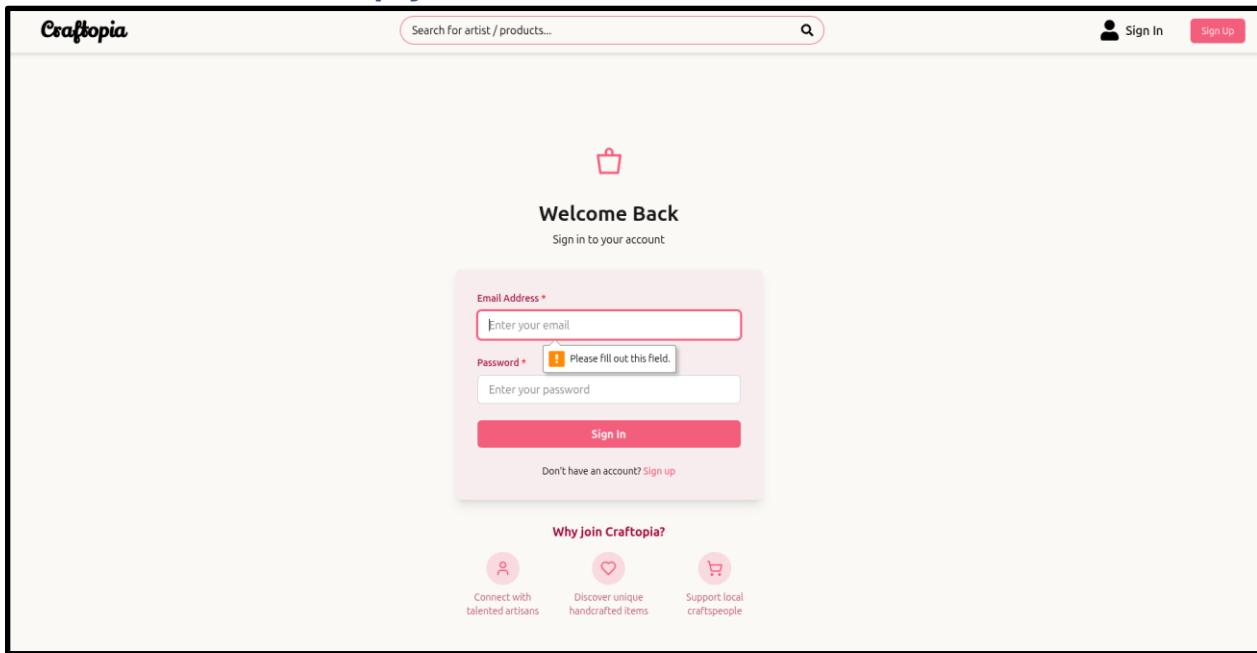
This screenshot is identical to the previous one, showing the 'Create Account' page with a pink background. The error message 'Email is already in use.' is displayed above the 'Email Address *' field, which now contains 'malakyasser541@gmail.com'. The other fields and layout are the same as the first screenshot.

- **Successful registration (Go to login Page)**

The screenshot shows the 'Welcome Back' page after a successful registration. It features a pink header with the Craftopia logo, a search bar, and a sign-in/sign-up link. The main area has a pink background with a large shopping cart icon at the top. The text 'Welcome Back' and 'Sign in to your account' is centered. Below this is a form for logging in, with fields for 'Email Address *' (containing 'Enter your email') and 'Password *' (containing 'Enter your password'). A red 'Sign In' button is at the bottom. A note 'Don't have an account? [Sign up](#)' is at the very bottom. Like the other screenshots, it includes a 'Why join Craftopia?' section with three icons: a person, a heart, and a shopping cart.

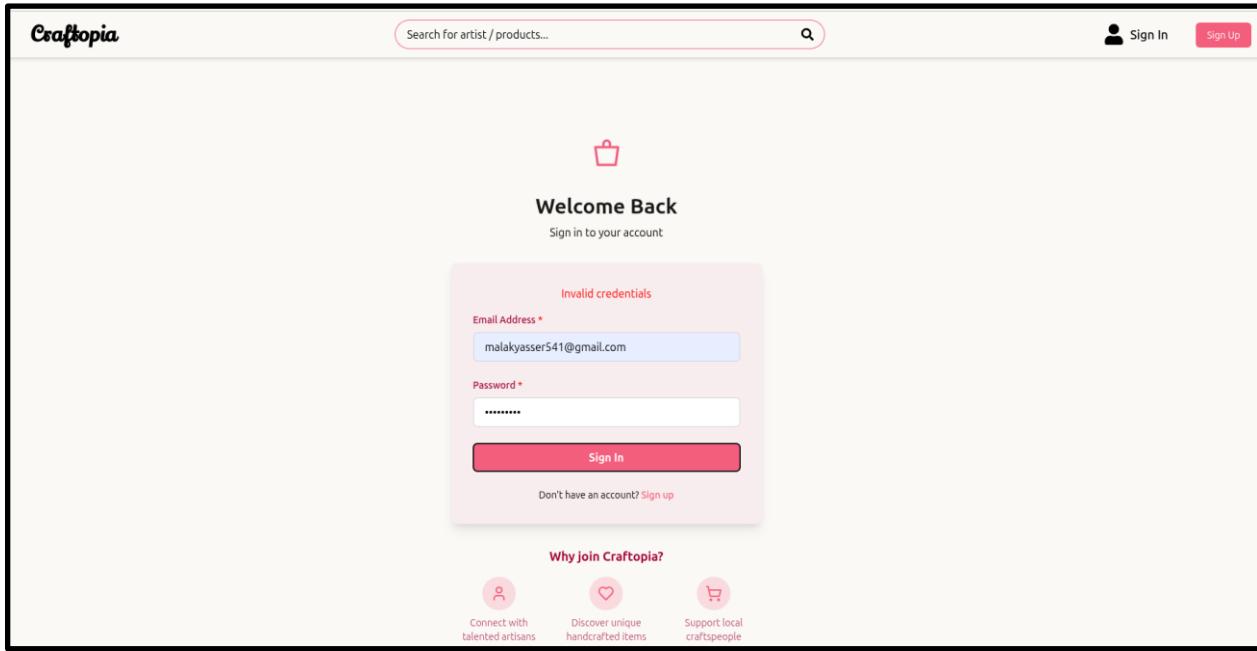
2-Login

● All fields are empty



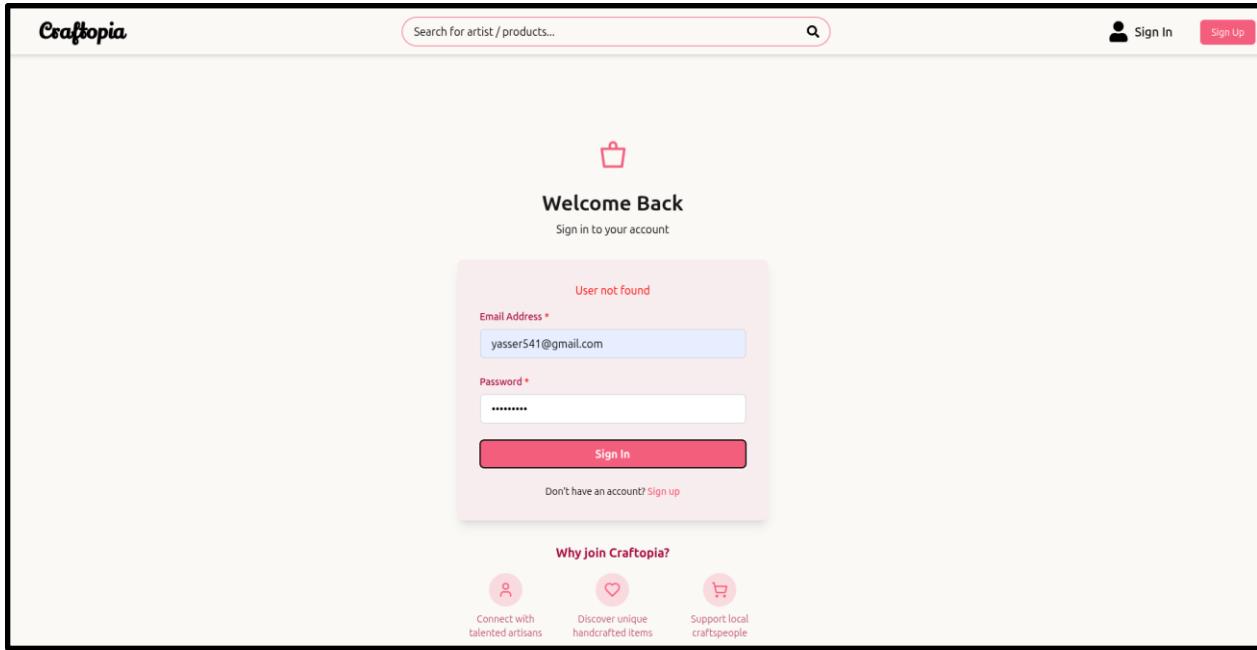
The screenshot shows the Craftopia login page. At the top, there is a search bar with placeholder text "Search for artist / products..." and a magnifying glass icon. To the right of the search bar are "Sign In" and "Sign Up" buttons. Below the search bar is a large pink rectangular area containing the login form. The form has two input fields: "Email Address *" and "Password *". Both fields have a red border and a small error message "Please fill out this field." above them. Below the password field is a placeholder "Enter your password". A pink "Sign In" button is at the bottom of the form. Below the form, a link "Don't have an account? Sign up" is visible. At the bottom of the page, there is a section titled "Why join Craftopia?" with three circular icons: a person icon labeled "Connect with talented artisans", a heart icon labeled "Discover unique handcrafted items", and a shopping cart icon labeled "Support local craftspeople".

● Valid email, incorrect password



The screenshot shows the Craftopia login page. The layout is identical to the previous one, with a search bar, "Sign In" and "Sign Up" buttons, and a pink login form. In this version, the "Email Address *" field contains a valid email address: "malakyasser541@gmail.com". The "Password *" field contains a series of dots representing a password. The "Sign In" button is pink. Below the form, a link "Don't have an account? Sign up" is present. The "Why join Craftopia?" section at the bottom is identical to the first screenshot.

● Not Signed up Credentials



The screenshot shows the Craftopia login page. The layout is identical to the previous ones. In this version, the "Email Address *" field contains a non-existent email address: "yasser541@gmail.com". The "Password *" field contains a series of dots. The "Sign In" button is pink. Below the form, a link "Don't have an account? Sign up" is present. The "Why join Craftopia?" section at the bottom is identical to the first screenshot.

● Valid email and password, role = admin (go to admin page)

The screenshot shows the Craftopia Admin dashboard. On the left, a sidebar menu includes Home, Requests, Add Category, Reports, Payments, and User Management. The main area features an 'Overview' section with icons for Customers (2), Artists (3), and Products (9). Below it is a 'Summary Sales' chart showing a sharp increase in sales from 2024 to 2025. To the right, a 'Best Selling Products' section highlights 'Pottery' by Sarah at \$400.00.

● Valid email and password, role = customer(go to Customer Home page)

The screenshot shows the Craftopia Customer Home page. It features a 'Discover Handmade Treasures' section with images of artisans working and their products. Below this, there are four categories: Pottery, Soap, Furniture, and Textiles. A search bar at the top allows users to find specific artists or products.

3-Create Profile

● Submit with empty fields

The screenshot shows the 'My Profile' section of the Craftopia account settings. The 'Update' button is selected. The profile form includes fields for Name (with a validation error message: 'User [!] Please fill out this field.'), Phone, Biography, and Profile Video (with a note: 'Please upload a short video showing handmade items you've created.' and a 'Add Video' button). A 'Save Changes' button is at the bottom.

● Submit with existing username

Craftopia

Search for artist / products... 

My Account 

My Profile

Update

+ Add Product
View Requests
Auction Request
Request Category
Sales History
Logout

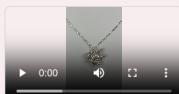


Name *

Username *

Phone *
01284876844

Biography *
he is yasser
12/400 characters

Profile Video *
Please upload a short video showing **handmade items** you've created.

Update Video

Username already exists. Please choose a different one.

Save Changes

● Submit without profile video

Craftopia

Search for artist / products... 

My Account 

My Profile

Update

+ Add Product
View Requests
Auction Request
Request Category
Sales History
Logout

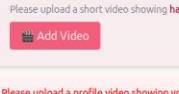


Name *

Username *

Phone *
01284876844

Biography *
nostalgic still-life paintings—vivid depictions of sweets, flowers, toys—in oil on canvas, bursting with color and joy
119/400 characters

Profile Video *
Please upload a short video showing **handmade items** you've created.

Add Video

Please upload a profile video showing your handmade items.

Save Changes

● Submit valid profile with media

Craftopia

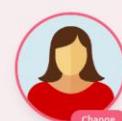
Search for artist / products... 

My Account 

My Profile

Update

+ Add Product
View Requests
Auction Request
Request Category
Sales History
Logout

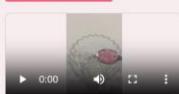


Name *

Username *

Phone *
01284876844

Biography *
Sarah Graham is a British contemporary artist celebrated for her vivid, hyper-realistic oil paintings that often feature nostalgic subjects such as sweets, toys, and childhood memorabilia
187/400 characters

Profile Video *
Please upload a short video showing **handmade items** you've created.

Update Video

Profile updated successfully.

Save Changes

4- order payment

● card number (empty)

Order Summary

Date: July 4, 2025

Total Amount **EGP 399.90**

Your Items

 1 princess ring	Unit Price: 399.90 LE	EGP 399.90
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Payment Details

* Credit Card number is required.

Credit Card

Card Number ...

Expires 12/25

Card Number 0000 0000 0000 0000

Expiry Date 12/25

Pay EGP 399.90

● Invalid card number (less than 16 digits)

Craftopia

Search for artists or products...

Order Summary

Date: July 4, 2025

Total Amount **EGP 399.90**

Your Items

 1 princess ring	Unit Price: 399.90 LE	EGP 399.90
---	-----------------------	------------

Payment Details

* Please enter a valid 16-digit card number.

Credit Card

Card Number **1234 5678 9**

Expires 12/25

Card Number 1234 5678 9

Expiry Date 12/25

Pay EGP 399.90

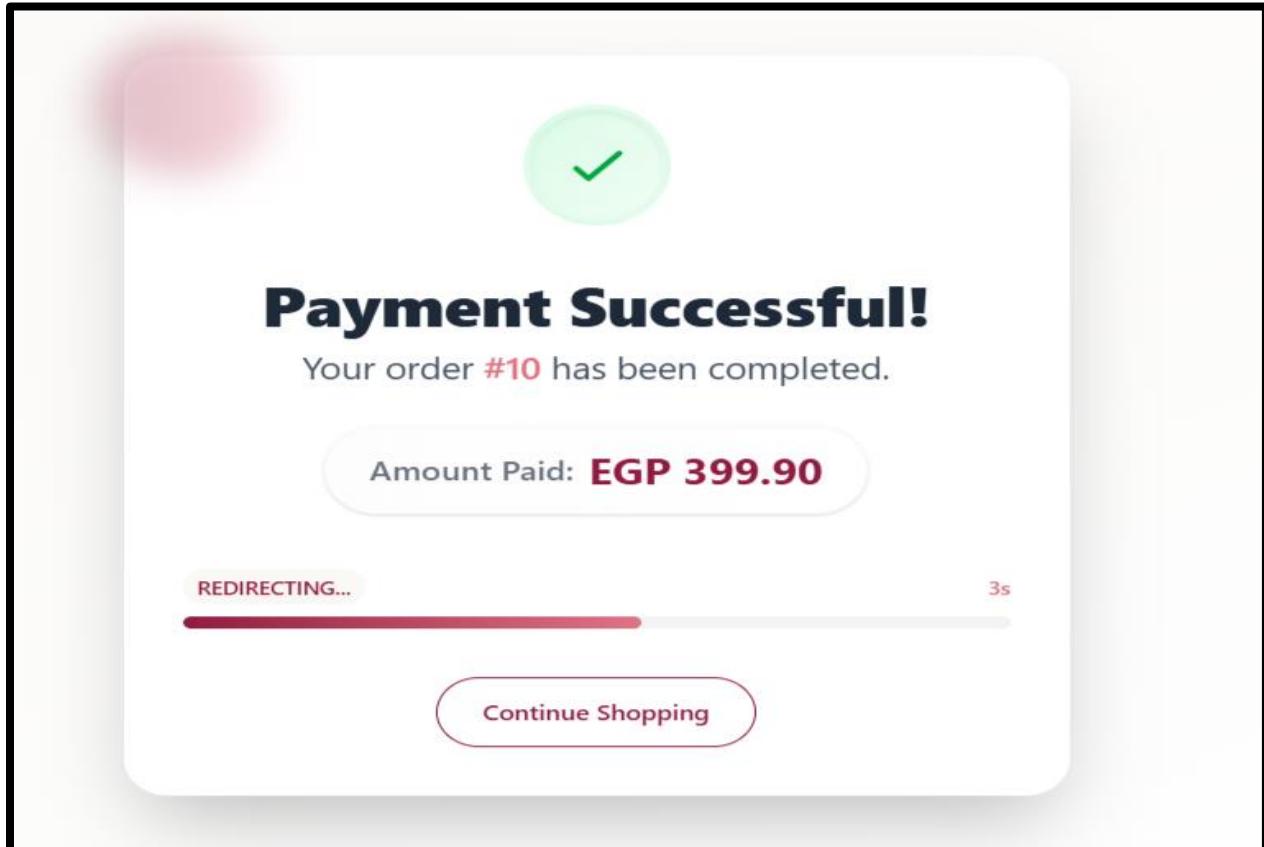
● Invalid expiry date

The screenshot shows the Craftopia website's payment page. On the left, the 'Order Summary' section displays a total amount of EGP 399.90 for one item: a 'princess ring' at EGP 399.90. On the right, the 'Payment Details' section shows a credit card with the number 4916 7383 9485 7643 and an expiration date of 12/22. A red error message at the top states: 'Credit card is invalid, payment failed'. A large red button at the bottom right says 'Pay EGP 399.90'.

● Product out of stock

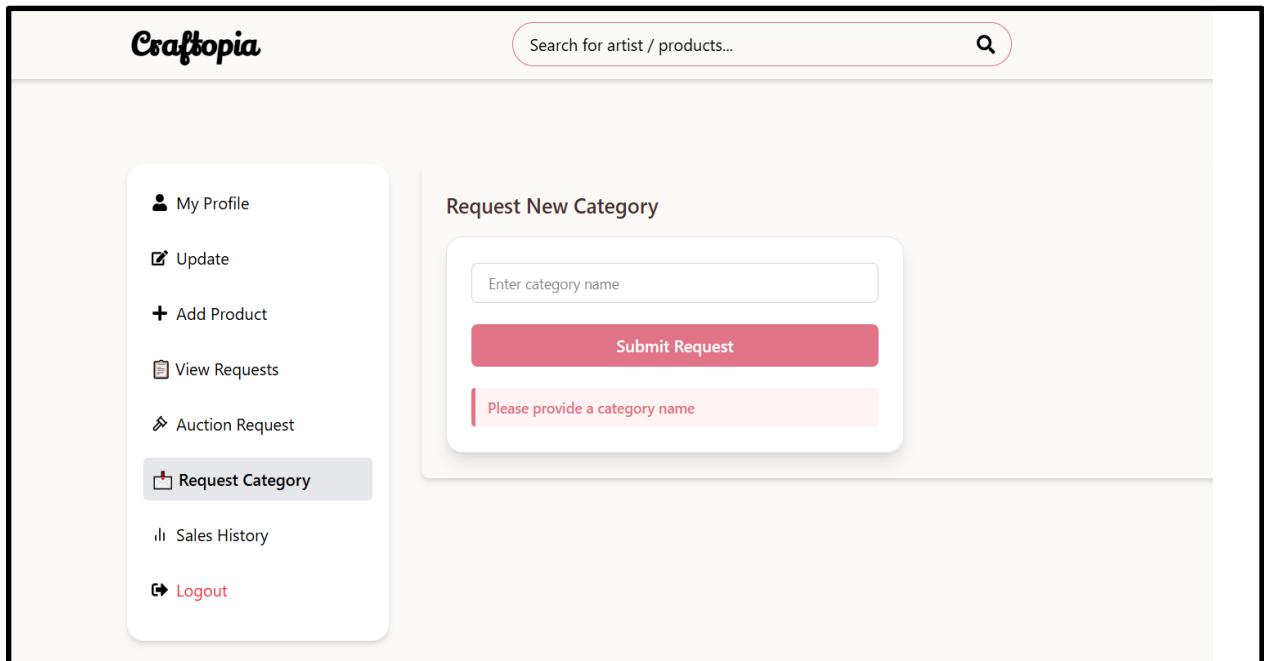
The screenshot shows the Craftopia website's payment page. On the left, the 'Order Summary' section displays a total amount of EGP 2,099.70 for three items: three 'princess necklaces' at EGP 699.90 each. On the right, the 'Payment Details' section shows a credit card with the number 5425 2334 3010 9903 and an expiration date of 08/27. A red error message at the top states: 'Insufficient stock for product princess necklace, you can try again later when the stock is updated'. A large red button at the bottom right says 'Pay EGP 2,099.70'.

● Valid payment



5- Request Category

● Empty Submit



● Submit already existing category

The screenshot shows the Craftopia user interface. On the left, a sidebar menu includes options like 'My Profile', 'Update', 'Add Product', 'View Requests', 'Auction Request', and 'Request Category'. The 'Request Category' option is highlighted with a grey background. On the right, a 'Request New Category' form is displayed. It has a text input field containing 'Clay & Ceramics' and a red 'Submit Request' button below it. A pink message box at the bottom states 'This category already exists.'

● Artist already submitted this category

This screenshot is similar to the previous one but shows a different result. The 'Request New Category' form has a text input field containing 'Jewelry' and a red 'Submit Request' button. A pink message box at the bottom states 'You already requested this category: "Jewelry"'.

● Another artist already requested same category

The screenshot shows the Craftopia website interface. On the left, a sidebar menu includes options like 'My Profile', 'Update', 'Add Product', 'View Requests', 'Auction Request', 'Request Category' (which is highlighted in grey), 'Sales History', and 'Logout'. The main content area is titled 'Request New Category' and contains a form with a text input field labeled 'Enter category name' and a red 'Submit Request' button. Below the form, a green message box displays the text: 'This category has been requested by another artist. Your request has been added.'

● Valid category request that hasn't been requested before.

This screenshot shows the same Craftopia interface as the previous one. The sidebar and 'Request New Category' form are identical. However, the message box below the form now displays a green success message: 'Category request for "Woodcraft" received'.

6- Create Product

● Missing required fields

The screenshot shows the 'Add New Product' page. On the left sidebar, there are links for 'Update', '+ Add Product' (which is highlighted in grey), 'View Requests', 'Auction Request', 'Request Category', 'Sales History', and 'Logout'. At the top right is a 'My Products' button. The main form has fields for 'Product Name *' (filled with 'Gold Bracelet with Moon and Star Charms'), 'Category *' (filled with 'Jewelry'), 'Description *' (filled with a product description), 'Quantity *' (empty), 'Material *' (empty, with a red validation message 'Please fill out this field.'), 'Price *' (filled with '250'), 'Dimensions *' (filled with '18'), and an 'Upload Product Images *' section (empty). A red dashed line highlights the 'Material *' field.

● Add with no images uploaded

The screenshot shows the 'Add New Product' page on the Craftopia platform. The sidebar and top navigation are identical to the previous screenshot. The main form has the same fields as before, but the 'Upload Product Images *' section is empty. A red dashed box highlights this empty area, and a red error message 'Please upload at least one image.' is displayed above it. The 'Add Product' button at the bottom is visible.

● Upload more than 5 images

The screenshot shows the Craftopia website's 'Add New Product' page. On the left, a sidebar menu includes 'My Profile', 'Update', '+ Add Product' (which is highlighted in grey), 'View Requests', 'Auction Request', 'Request Category', 'Sales History', and 'Logout'. The main area has a title 'Add New Product' and a 'My Products' button. The product details section contains fields for 'Product Name *' (filled with 'Gold Bracelet with Moon and Star Charms'), 'Category *' (filled with 'Jewelry'), 'Description *' (filled with a descriptive paragraph about the bracelet), 'Quantity *' (filled with '10'), 'Material *' (filled with 'gold'), 'Price *' (filled with '250'), and 'Dimensions *' (filled with '18'). Below these fields is a large dashed red box containing an 'Upload Product Images *' section with a placeholder 'Click or drag to upload images Up to 5 images' and a note 'You can upload a maximum of 5 images.' A red 'Add Product' button is at the bottom.

● All required fields and 1–5 images.

The screenshot shows the Craftopia website's 'Add New Product' page after filling out all required fields. The sidebar and main layout are identical to the previous screenshot. The product details section now shows 'Enter product name' in the 'Product Name *' field, 'Select a category' in the 'Category *' field, 'Enter product description' in the 'Description *' field, 'Enter quantity' in the 'Quantity *' field, 'Enter material' in the 'Material *' field, and 'Enter product price' in the 'Price *' field. Above the 'Dimensions *' field, a green success message 'Product created successfully!' is displayed. The 'Upload Product Images *' section remains the same with its placeholder text. A red 'Add Product' button is at the bottom.

7. Customization Request:

● Empty Inputs

The screenshot shows the Craftopia website's customization request page. The left sidebar includes links for 'My Orders', 'Compare Products', 'Custom products' (which is selected), and 'Logout'. The main form area has fields for 'Title' (containing 'Enter title'), 'Description' (containing 'Enter description'), 'Budget (LE)' (containing 'Enter your budget'), and 'Deadline' (containing 'dd/mm/yyyy'). A red dashed box highlights the 'Upload Your Design' field, which contains the placeholder 'Click or drag to upload your design'. An error message 'Please fill out this field.' is displayed above the 'Title' and 'Description' fields.

● with no description

This screenshot shows the same customization request page as the previous one, but with different input values. The 'Title' field now contains 'gold ring'. The 'Budget (LE)' field contains '8000'. The 'Deadline' field contains '19/07/2025'. The 'Description' field is still empty ('Enter description'). The 'Upload Your Design' field remains empty with its placeholder text. The error message 'Please fill out this field.' is still present above the 'Title' and 'Description' fields.

● with past deadline

In this final screenshot, the 'Title' field contains 'gold ring', the 'Budget (LE)' field contains '8000', and the 'Deadline' field contains '01/01/2024'. The 'Description' field is filled with 'i want it to be great'. The 'Upload Your Design' field is empty. A validation error message 'Value must be 03/07/2025 or later.' is shown below the 'Deadline' field. The error message 'Please fill out this field.' is still visible above the 'Title' and 'Description' fields.

● with no image

The screenshot shows the Craftopia website's request submission interface. On the left sidebar, there are links for 'My Orders', 'Compare Products', 'Custom products' (which is highlighted in grey), and 'Logout'. The main area displays a success message: 'Request submitted successfully!'. Below this, there are four input fields: 'Title *' (placeholder 'Enter title'), 'Description *' (placeholder 'Enter description'), 'Budget (LE) *' (placeholder 'Enter your budget'), and 'Deadline *' (set to '31/07/2025'). To the right of these fields is a dashed red box containing the text 'Upload Your Design *' and 'Click or drag to upload your design'. At the bottom is a pink 'Submit Request' button.

● with all fields and image

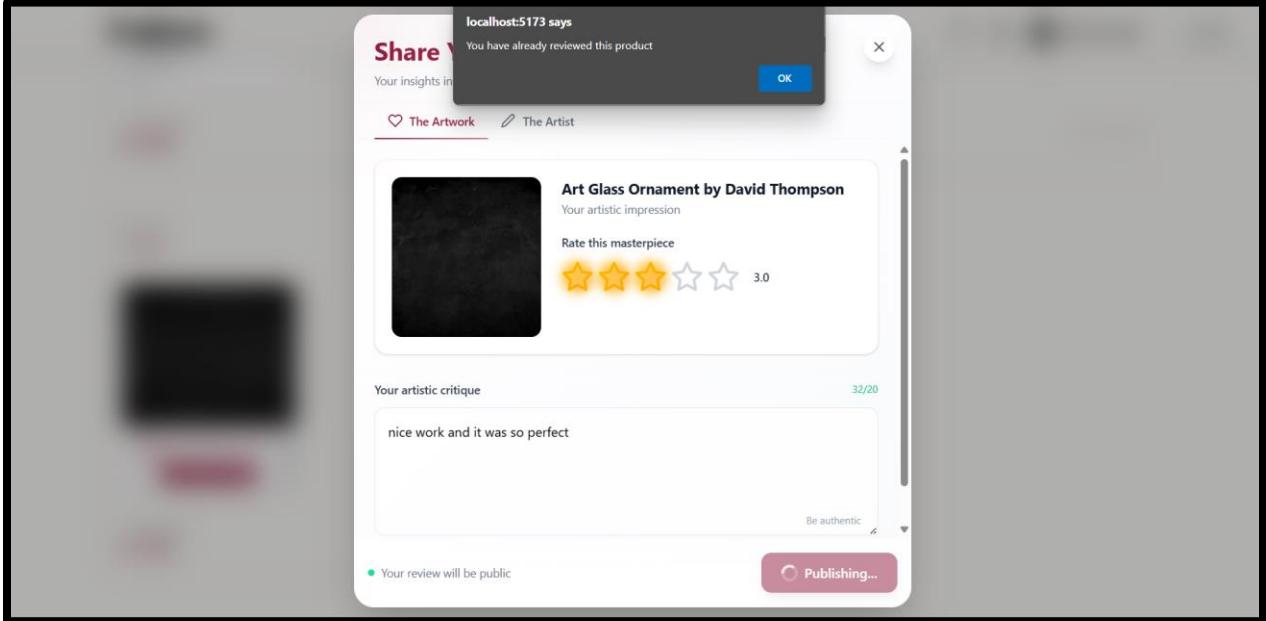
This screenshot shows the same request submission interface as the previous one, but with more detailed input. The 'Title *' field contains 'gold ring', the 'Description *' field contains 'i want it to be so gold', the 'Budget (LE) *' field contains '8000', and the 'Deadline *' field remains '31/07/2025'. The 'Upload Your Design *' section now includes a thumbnail image of a gold ring with green stones. The rest of the interface is identical to the first screenshot.

8. Review and Rating the product:

● review and rate the product

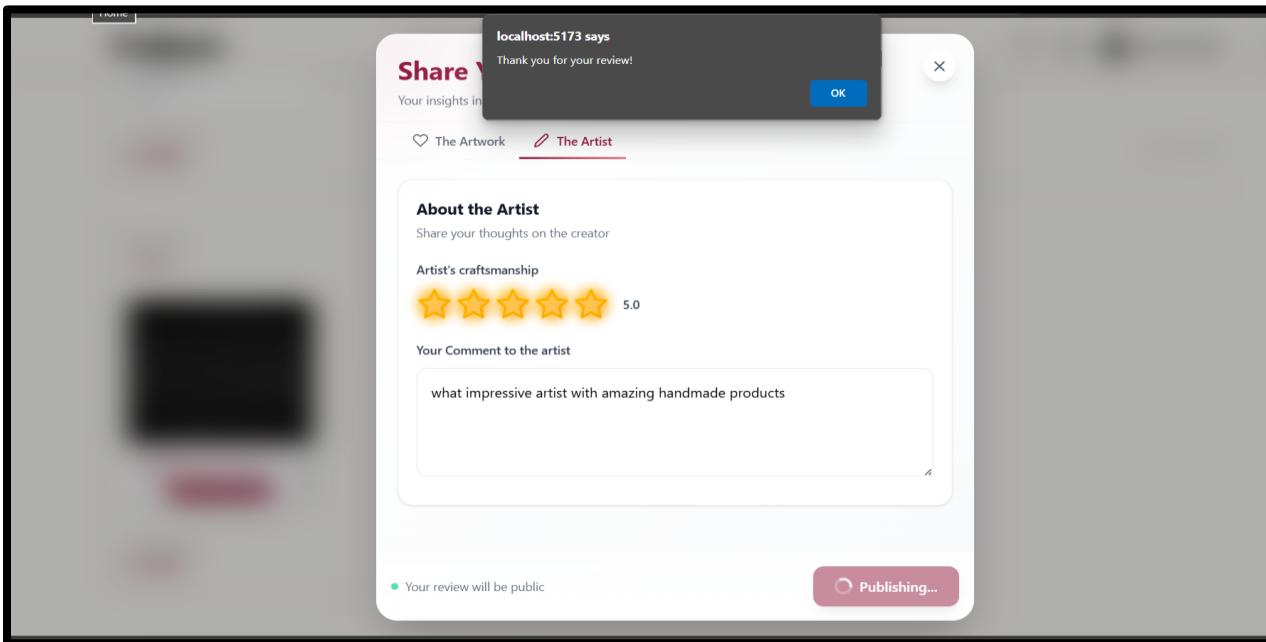
A modal window titled 'Share' is displayed over a blurred background. The window says 'localhost:5173 says Thank you for your review!' and has an 'OK' button. Below this, there are two tabs: 'The Artwork' (selected) and 'The Artist'. The main content area shows a dark image placeholder for the artwork, the title 'Art Glass Ornament by David Thompson', and the subtitle 'Your artistic impression'. It features a 5-star rating system with 5 stars highlighted and a score of '5.0'. Below the rating is a text area for 'Your artistic critique' containing the text 'nice work it was so perfect' and a character count of '27/20'. At the bottom, there is a note 'Be authentic' and a 'Publishing...' button.

- try to rate or review the product again

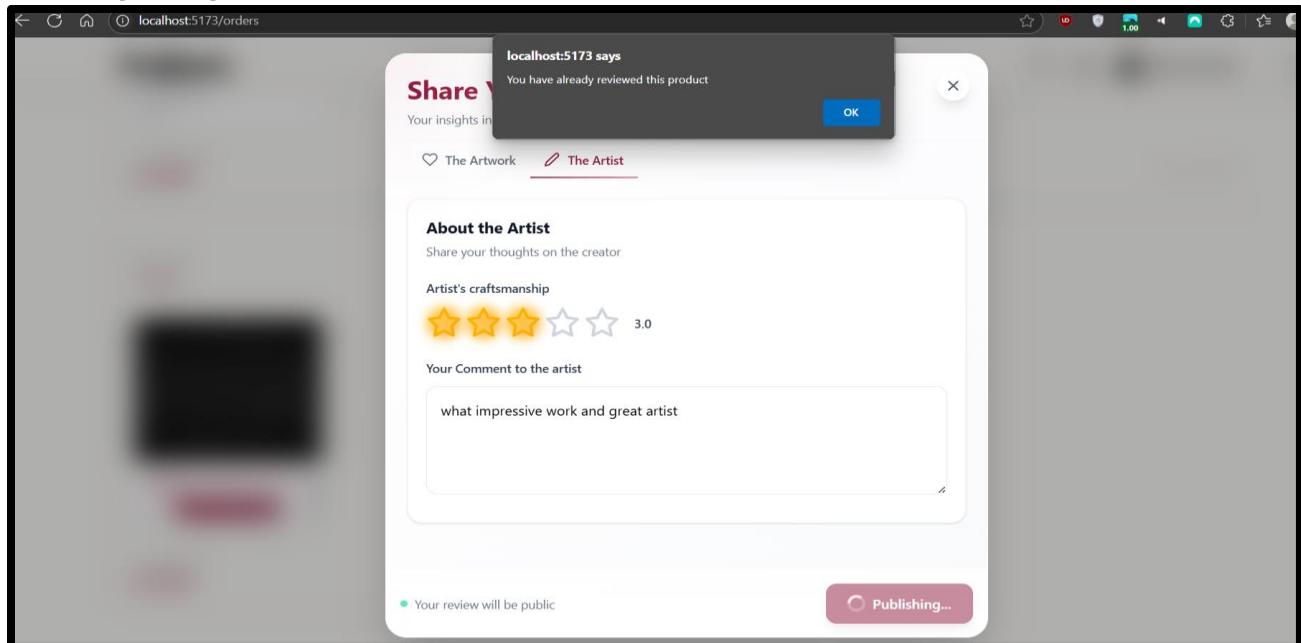


9. Review and Rating the artist:

- rate and review the artist



- try to update the rate or review for artist



10. place a bid in auction

● Place Valid Bid Current Price: 319 Bid Amount: 348

LIVE

Toys & Games 2 bids

Current Bid £ 348 Starting Price £ 290

Time left 2 21 : 15 : 07 DAYS HRS MIN SEC

You have already placed a bid of £348.

Bid submitted successfully!

Min 377.00 You're Highest Bidder

Minimum bid: £ 377

View Bid History

1 / 1

● Place Bid (Negative Value)

Bid Amount: -50

LIVE

Toys & Games 1 bids

Current Bid £ 319 Starting Price £ 290

Time left 2 21 : 16 : 27 DAYS HRS MIN SEC

Bid must be greater than the current bid.

-50 Place Bid

Minimum bid: £ 348

View Bid History

1 / 1

● Update your Bid with a valid Bid but you are the highest bidder



LIVE

Toys & Games 2 bids

Current Bid £ 348 Starting Price £ 290

Time left 2 21 : 13 : 23 DAYS HRS MIN SEC

You have already placed a bid of £348.

✗ You cannot update your bid because you are already the highest bidder

377 You're Highest Bidder

Minimum bid: £ 377

[View Bid History](#)

● Try to bid when the auction is not started yet



COMING SOON

Apparel & Wearables 0 bids

Current Bid £ 500 Starting Price £ 500

Starting in 00 : 00 : 03 HRS MIN SEC

Minimum bid: £ 550

[View Bid History](#)

Bid history will be available once the auction starts.

 No Image

Artist

★ 0.00 (0 reviews)

Lorem ipsum dolor sit amet consectetur adipisicing elit. Cumque veritatis natus maiores inventore vel incident porro dolor aliquam optio et possimus, saepe nam? Provident eos quaerat error, eaque reiciendis nesciunt.

Artwork Details

Description

Lorem ipsum dolor sit amet consectetur adipisicing elit. Non, voluptates est quam id quidem vel quo, iure cumque pariatur nam excepturi exercitationem? Laudantium porro error ullam? Exercitationem laboriosam illum voluptates? Lorem ipsum dolor sit amet con

11. Admin Auction Management

- **Approve Auction Without Date (Click "Approve" without choosing a start date)**

Auction Requests Active Auctions Scheduled Auctions Ended Auctions

Error: Please select a start date for the auction.

Wool Shirt
by Artist

Starting bid: £ 500 Duration: 7 days



Materials: wool
Dimensions: 10 x 10 x 10
Previous Sales: 0
Artist Rating: 0.00/5
Description: Lorem ipsum dolor sit amet consectetur adipisicing elit. Non, voluptates est quam id quidem vel quo, iure cumque paratur nam excepturi exercitationem? Laudantium porro error ullam? Exercitationem laboriosam illum voluptates?Lorem ipsum dolor sit amet con

Start Date & Time
mm/dd/yyyy --:-- --

Duration (days)
7

Admin Notes
Notes for the artist...

✓ Approve ✗ Decline

12. Request Auction

- **Invalid Starting Bid (e.g. 0, -5)**

Auction Requests Request Auction

Error! Valid starting bid is required.

Request New Auction

Item Title * Category *

Wool Shirt Apparel & Wearables

Description *
good quality

Starting Bid (L.E) * Auction Duration * Notes

-6 7 days plz approve

Materials * Dimensions *

wool 10 x 10 x 10

● Category field left blank

Auction Requests

Error! Category is required.

Request New Auction

Item Title *	Category *	
Wool Shirt	Select category	
Description *		
good quality	•	
Starting Bid (L.E) *	Auction Duration *	Notes
21	7 days	plz approve
Materials *	Dimensions *	

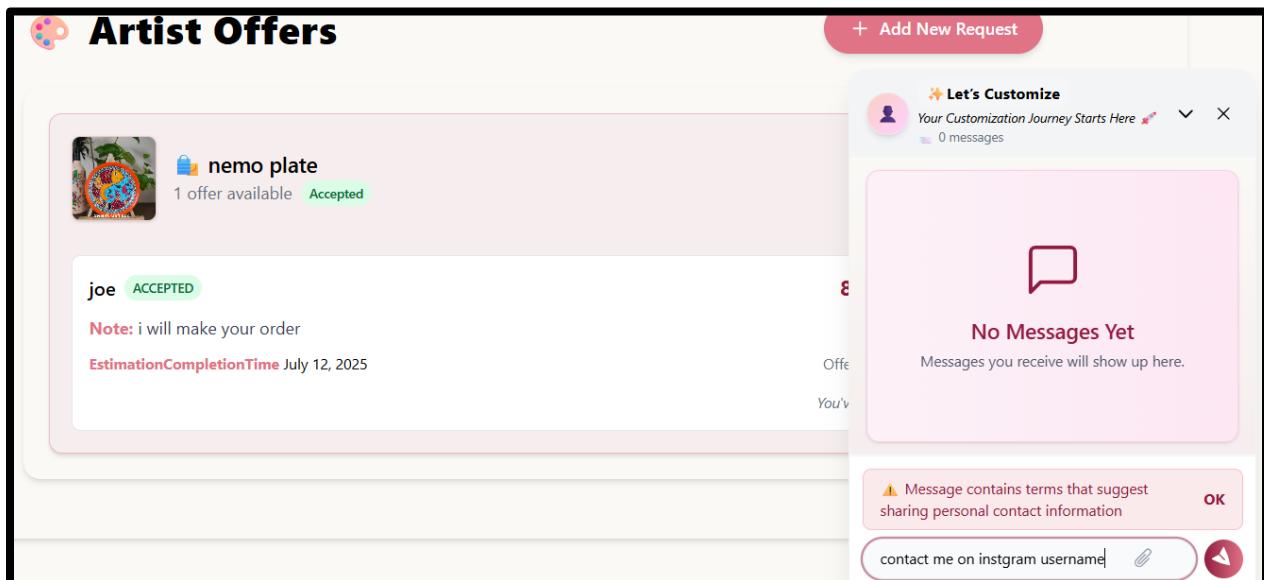
13. show previous Auction Requests (for Artist)

● Auction Ended with Bids

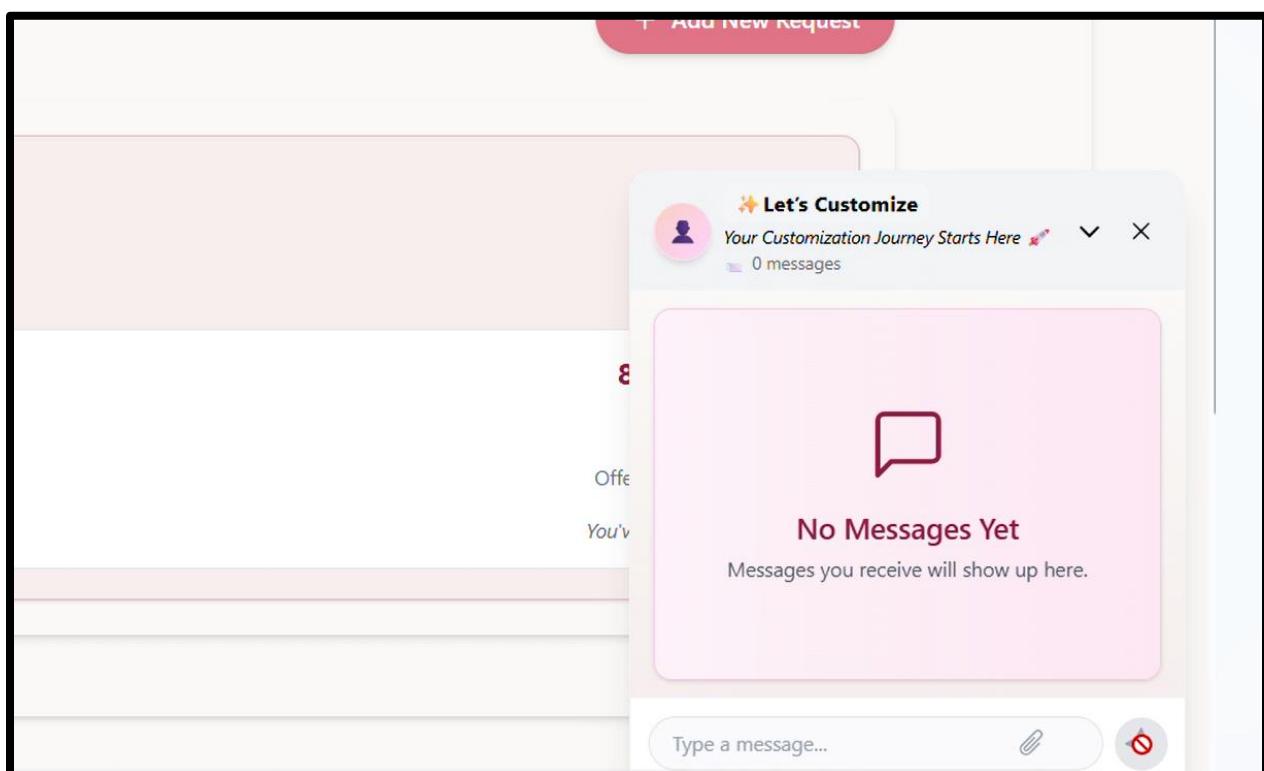
Auction Ended without Bids

ShipTest	Scheduled
£ Starting Bid: 500 EGP 🎁 Toys & Games	Auction: Ended
Submitted on 7/2/2025	
⌚ Start: 7/2/2025, 10:35:00 PM	
⌚ End: 7/5/2025, 10:35:00 PM	
⌚ No notes provided.	
No bids were submitted. Product cannot be shipped.	
pots	Scheduled
£ Starting Bid: 500 EGP 🎁 Kitchen & Dining	Auction: Shipped
Submitted on 7/2/2025	
⌚ Start: 7/2/2025, 5:04:00 AM	
⌚ End: 7/2/2025, 6:04:00 AM	
⌚ Extended duration for special piece	
Kitchen Accessories	Scheduled
£ Starting Bid: 7000 EGP 🎁 Toys & Games	Auction: Ended
Submitted on 7/2/2025	
⌚ Start: 7/2/2025, 2:56:00 AM	
⌚ End: 7/3/2025, 2:56:00 AM	
⌚ goood	
Ship Product	

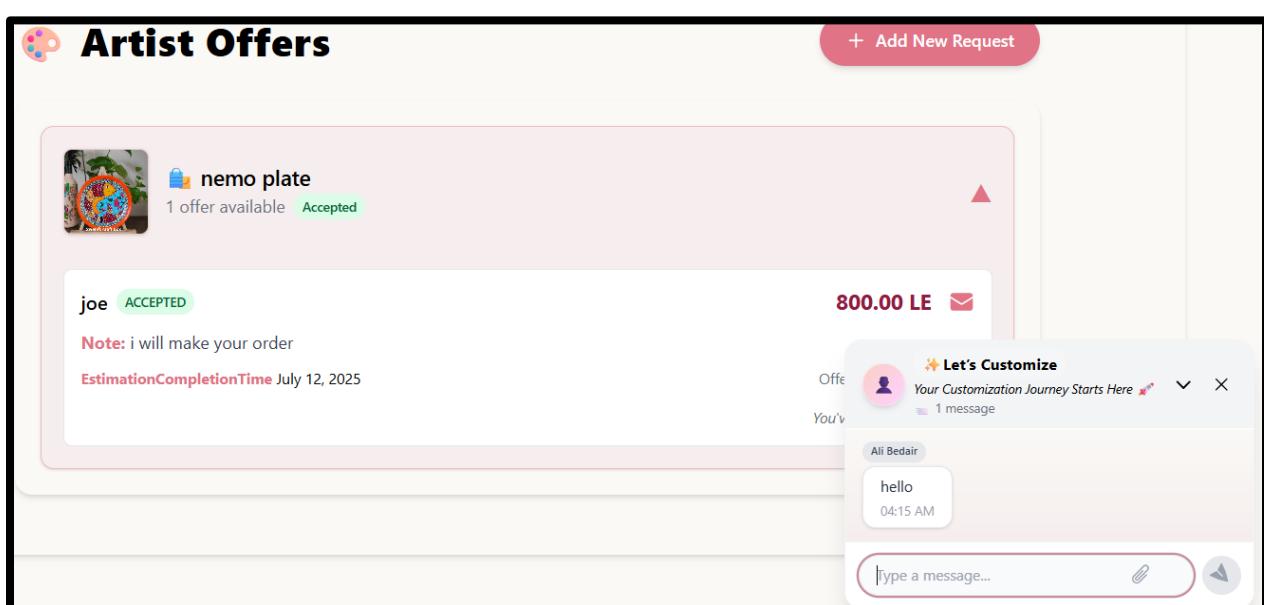
● share information data in chat



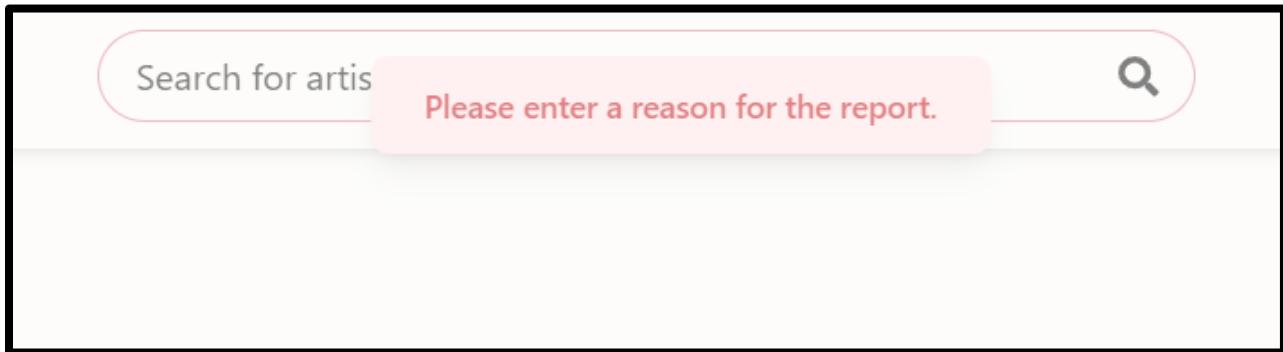
● send empty message



● Send valid message



● send report with empty content



● report account

My Customization Offers

Report Submitted!

Thank you for helping us keep the community safe.

Request by: @ali	Your Price	Estimated Completion	Customer Budget
	800.00 LE	7/12/2025	600 LE

● place order with valid quantity of products

Order #7

2 Items

July 3, 2025

Pending

golden plate	magic bag
Price: 449.99 LE	Price: 300 LE
Qty: 9	Qty: 1

Total Amount
LE 4,349.91

\$ Pay Now Cancel

- ship order before customer buying it

Customer should pay first,before shipping the order

- ship order shipped before

Order is already shipped

- ship order after customer buying it

Order shipped successfully!

- cancel order

Order #3
1 Item

July 2, 2025
Cancelled



princess necklace
Price: 699.9 LE
Qty: 3

Total Amount
LE 2,099.7

Not actionable

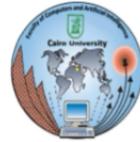
Poster



Cairo University

Craftopia

Supervisor: Dr/ Lamia Abu Zaid
TA/ Marwa Ahmed



Team members:

Youssef Abdallah Ali Bedair Malak Yasser Salma Ayman Shahd Elsayed

VISION / OBJECTIVES

- Empower artisans to showcase and sell handmade products and build sustainable marketplace.
- Enable real-time communication and custom order requests.
- Support auction-style bidding for unique items.
- Integrate secure Escrow-based payment system for buyer protection.

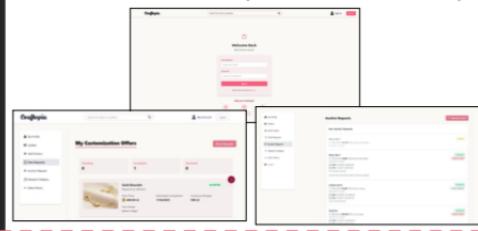


METHODOLOGY

Craftopia is a web app where users register as either artists or customers. Artists complete their profiles with personal details, a bio, profile picture, and a showcase video before adding handmade products with descriptions, images, and prices.

Customers can browse and search products, place orders or submit custom requests, message artists and bid in auctions.

Artists view and manage custom requests, and request auctions. Payments are securely held in Escrow and released upon confirmed delivery.



BENEFICIARIES

Artisans can manage their handmade products, handle customization requests, track performance, and request auctions.

Customers can explore products, request customizations, chat with artisans, bid in auctions, save favorites, and compare products.

Admins oversee users, and categories, handle reports, and schedule auctions.

DELIVERABLES / OUTPUT

Admin dashboard for app analytics :



Auction product page where customers place their bids:



Artist profile where customers follow artist, view gallery, sales, and ratings:



USED TECHNOLOGIES



ex



PostgreSQL



Firebase

Cloudinary

Future functional requirement

- 1- The system shall allow customers to request a refund based on the specific refund policy associated with the purchased product.
- 2- The system shall provide customers with real-time order tracking, including live location updates for deliveries in progress.
- 3- The system shall enable artists to upload 3D images of their products for display within the product listing.
- 4- The system shall automatically calculate the Craftopia commission to the order fee at checkout.

Conclusion

Craftopia is a comprehensive e-commerce marketplace that successfully connects talented artists with customers seeking unique handmade crafts. The platform implements a robust monolithic architecture using Node.js, Express, and PostgreSQL, providing essential features like user management, product catalogs, secure payment processing with escrow functionality, and social interactions through reviews and artist following systems.

The application leverages modern technologies including Cloudinary for media management, Firebase for real-time auction features, and JWT authentication to ensure secure user sessions. Key functionalities include customization requests where customers can request personalized items from artists, an auction system for unique pieces, comprehensive order management, and detailed tracking systems for sales analytics.

References

Etsy website : www.etsy.com

Folksy website :www.folksy.com

Amazon Handmade website : www.amazon.ae/handmade

Muqbis website : www.muqbis.com

Escrow Pay: www.escrow.com/pay