



Mystical Art Gallery

Heshandri A/P S Sujendran¹, Hannani Aman^{1*}

¹Faculty of Computer Science and Information Technology,
Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, 86400, MALAYSIA

DOI: <https://doi.org/10.30880/aitcs.2022.03.02.069>

Received 13 August 2022; Accepted 25 October 2022; Available online 30 November 2022

Abstract: Mystical Art Gallery is a platform that lets multiple artists and potential buyers communicate regarding the art that has been showcased. The objectives of this system are to design an art gallery website system using PHP, MySQL and html, to develop art gallery website system using VisualStudioCode, Xampp and Brackets, validate the developed system with functional testing. The case study location for this system is internationally to build this system and the system would be accessible worldwide. The artist will update the listings, art prices, achievement articles, availability of art pieces, biography and manage messages from buyers to get in touch. The system may be made more effective in several different ways. The database for this system is designed with buyers, artist, login, payment, administration, listing and order segments. The system can be developed into a mobile application and the objectives of Mystical Art Gallery has been achieved.

Keywords: E-Commerce, Waterfall Model, Art Gallery

1. Introduction

In this case, buyers will not know if they have made any wrong move by paying the artist before knowing the art is available, thus causes the artist to refund the money back to the buyer leaving a bad impression. Most artists have an art website that holds basic features of a showcasing website. Usually, an art website partially displays artworks with its name, canvas size, price and 'add to cart' option in the main page. Mystical Art Gallery is a platform that lets multiple artists and potential buyers communicate regarding the art that has been showcased. This makes it unfair to the frequent art curators who are always interested in looking up for an art piece from time to time.

The objectives of this system are to design an art gallery website system using PHP, MySQL and html, to develop art gallery website system using VisualStudioCode, Xampp and Brackets, validate the developed system with functional testing.

The artist will update the listings, art prices, achievement articles, availability of art pieces, biography and manage messages from buyers to get in touch. The case study location for this system is internationally to build this system and the system would be accessible worldwide.

Upon the completion of this system, the engagement with the buyers would be much significant. Membership sign-ups will deliver professionalism towards the buyers. More buyers would be created. The artwork and membership management would get easier with database.

When an artist makes the choice to promote their artwork, they may be making the choice to begin a commercial enterprise and maximum organizations want an amazing internet site to be taken seriously. Having a professional website to showcase artwork can be a great way and important for artists to build their portfolio and create a place where people can see their work, what galleries the artists are in, and what exhibitions an artist has or are organizing. The website gives a unique opportunity not only to showcase arts but also to allow people to contact artists with any questions or to buy their work.

2. Related Work

2.1 Domain Background of the Study: E-Commerce

In this time of the century, a massive change is going through in the art world because the online art market is taking over a major part of the sales compared to the traditional offline market. The art world is one of the few artsy industries to embrace the digital technology overtaking the world, but with more consumers buying art online without seeing it in person, things are eventually changing. Though it is convenient to showcase one's art to the world, online art platforms have slow success rates. Since the requirements of an art platform would be to upload pictures of one's art and not just a description on it, it can easily catch the eyes of the audience and put-up sales. In the case of Mystical Art Gallery, it would be the art piece data management [1]. Quite several e-Commerce art websites include text and graphic advertisements in their artwork listings where customers frequently misinterpret as page headers or search filters. These traffics can be big if there are buyers who are always on the look for, yet another magnificent art pieces. Etsy, a well-known online e-commerce website which is used to sell arts and crafts, has a two-sided marketplace for the business model. [5]

There are few criteria for a good e-Commerce art website. In a nutshell, online art galleries provide a simple method to get an artist's work into a gallery without having to worry about discretion or barriers. [5] According to BBC news, 2013 was the year that arts were sold more online than in the art galleries. Finally, if artists provide low rates for their arts, to stay competitive, it will be more difficult to charge at a greater price for the art in other venues. This is important because some art pieces could be of a big worth if artists do not just lower it for the sales. It might simply be that the artist isn't receiving enough publicity or that the competition is too fierce or that the price isn't competitive enough or it is just that the artists are attempting to sell their art in the wrong market. Thus, those who are just beginning to come up in the art line will certainly have lower sales in a year. The first one is the sales where the online marketplace, the third-party e-Retailer and direct sales and affiliates are fixed. [9]

2.2 Technology Used: Web- Based System

Web-based systems are cost effective, speedy, and easy since there would be no necessity to install a new program while switching from desktop to web-based system. Next, web-based system also are low investments in money for developing a software hence there is no need to hire a software developer to create more than one version other operating systems. Finally, web-based systems are easy to maintain and update from time to time thus there is no need to install programs on client machines.

2.3 Study of Existing System

Table 1: Comparison Between Existing Systems and Proposed Systems

Module	Etsy	Saatchi Art	Artfinder	Mystical Art Gallery
System type	Web-based, IOS, Android	Web-based, IOS	Web-based	Web-Based
Login module	Available	Available	Available	Available
Registration module	Available	Available	Available	Available
Product management module	Available	Available	Available	Available
Order module	Available	Available	Available	Available
Membership module	Not Available	Not Available	Not Available	Available
Programming Language	PHP	PHP	PHP, Python	PHP, HTML
Framework	JavaScript	JavaScript	JavaScript	Brackets
Payment	Mastercard, Visa, American Express, PayPal	Visa, Mastercard, Discover, American Express, JCB, PayPal, Diners Club	Visa, Mastercard, American Express, PayPal	PayPal

By comparing the systems, Etsy provides system types to all three operating systems which is web, IOS and Android. Based on the comparisons done, all three systems are almost the same if we are looking at the module wise because they are the basic requirements in an art platform. Saatchi Art on the other hand provides to IOS and web operating system.

3. Methodology

Waterfall model is chosen for this system because the requirements are crystal clear and fixed, and it is a short project. It is similarly known as a linear-sequential life cycle model. In a waterfall model, every phase ought to be finished earlier before the subsequent phase can start and there is no overlapping within the phases.

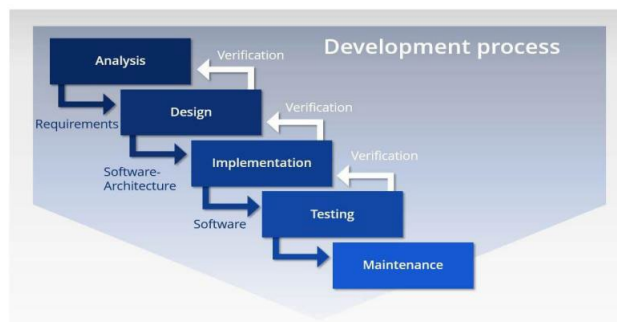


Figure 1: Waterfall Model Development Process (IONOS Digital Guide, 2019)

3.1 Planning Phase

In planning phase, I find the project requirements with a little research on Etsy so that there will not be any wrong information included in the project. Josh Silverman, the Chief Executive Officer of Etsy Inc has been interviewed to clear up doubts on the requirements. The project started on 2nd August 2021 and ends on the 28th of April 2022 which is around 194 days. The development process for this project consists of five phases which is the analysis, design, implementation, testing and maintenance phase. [5]

3.2 Analysis Phase

Next is the analysis phase. In this phase, the requirement for the project is fully analysed. Such as the capacity of data storage per artist, the user experience, the discounting rates, and more. The financial analysis also has been done in this phase. The functional requirements, non-functional requirements, class diagram, UML and sequence diagram is created here.

Table 2: Functional requirements of Mystical Art Gallery

Modules	Function	User
Login Module	<ul style="list-style-type: none"> • The system should enable users to login into the system using email and password. • The system should allow a user who has the valid email and password to only login to their respective accounts. • The system should allow members to enter their membership code before login. • The system should authenticate/validate the user who enters the system. 	Artist Buyers
Registration Module	<ul style="list-style-type: none"> • The system should record the membership registration of new web users of the system that is done with providing email, password, and membership fee. • The system should store the registration request for further use of discounting. • The system should direct the confirmed membership registration to payment page. 	Artist Buyers
Product Management	<ul style="list-style-type: none"> • The system should have the product catalog • The system should have product database management (add, update, delete information) • The system should have product price tags 	Artist

Table 2: Functional requirements of Mystical Art Gallery(cont.)

Order Module	<ul style="list-style-type: none"> • The system should allow the web users to insert new order • The system should allow the administrator to delete order • The system should allow the web users to edit orders that's inserted previously. • The system should consist of the option for the web users to pay with their chosen methods. • The system should allow the administrator to initiate auto generated chat box • The system should allow the administrator to reply to commentary and feedback from buyers • The system should allow web users to share their reviews in chat box or in feedback section • The system should allow administrator to review the delivery report for each order including its delivery detail and status. 	Artist Buyers
Membership Module	<ul style="list-style-type: none"> • The system should allow administrator to manage discounts for their members • The system should allow administrator to insert, delete and edit new membership for Web Users. • The system should allow administrator to manage the renewal of membership every year for each member. • The system should allow buyers to manage their membership package 	Artist Buyers

3.3 Design Phase

In this phase, the user interfaces for both artist and admin are designed appropriately with the user requirements such as the designs of the art listings and its procedure is designed for the entire system architecture. The Gantt Chart, flowchart, data dictionaries and database design are developed in this phase.

3.4 Implementation Phase

After that comes the implementation phase. In this phase, the coding for the system is created using PHP language on Brackets framework. A database is created to store the listings that will be added by the platform artist. A prototype and report are finalized. The implementation is further explained in section 4.1 System Implementation from figure 6 to figure 23

3.5 Testing Phase

Then we have the testing stage. In this stage, the prototype and report are tested. The functions and features will be checked and tested by the artist. Commentary will be given by the artist to improve the project from any angle and the bugs will be fixed until the artists and users are satisfied with the entire system. Then the system will be finalized using website and test cases.

3.6 Maintenance Phase

Finally, we have the maintenance phase. If there are some problems which arise within side the artist and user’s environment, the bugs would be fixed. If the system is outdated with the technology used over the years, updates and new features will be brought in to stay in trend within the next few decades.

4. Results and Discussion

This part shows the system analysis of the project. This part presents the Use Case Diagram, System Architecture, Flowchart and Class Diagram.

Figure 2 shows the Use Case Diagram of Mystical Art Gallery

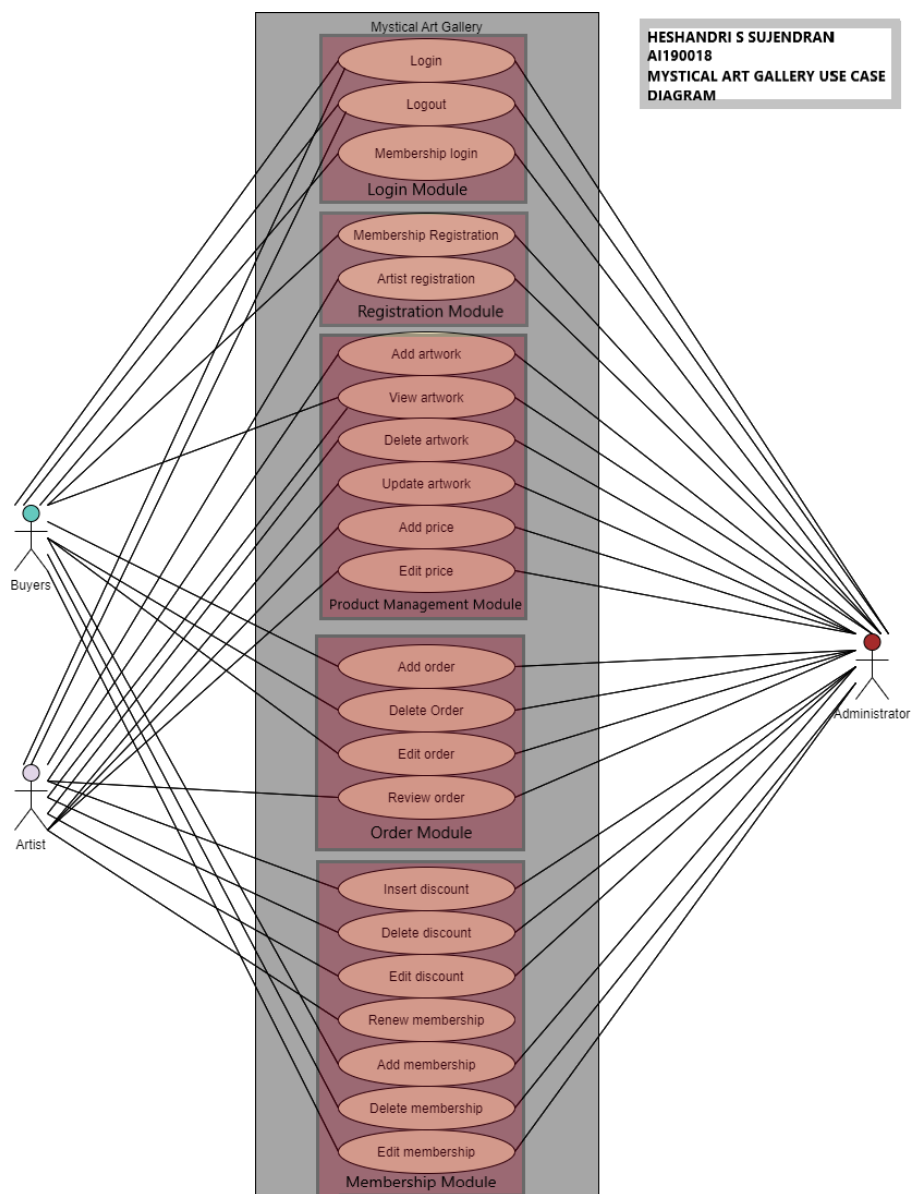


Figure 2: Mystical Art Gallery Use Case Diagram

Figure 3 shows the system architecture of Mystical Art Gallery

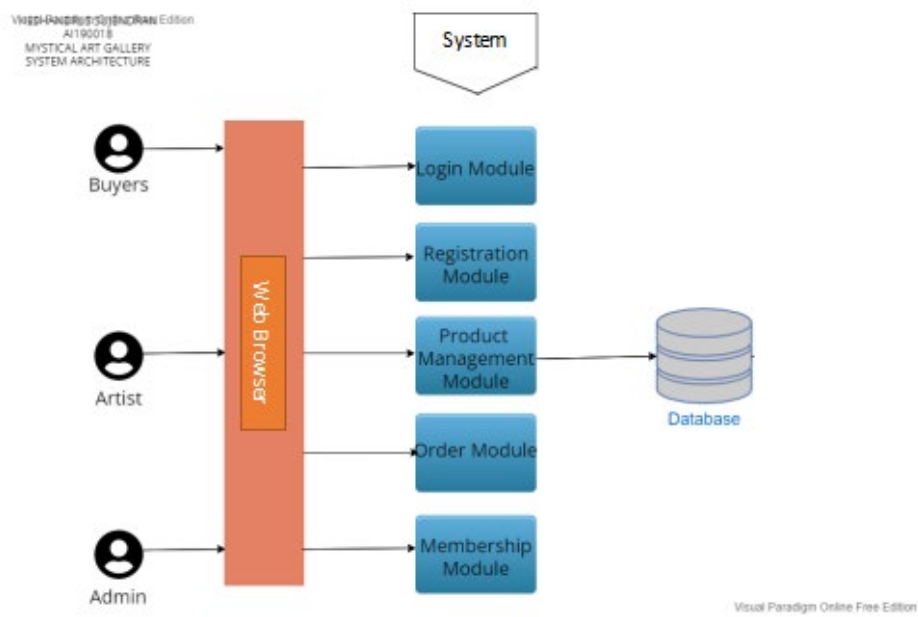


Figure 3: System Architecture

Figure 4 shows the flowchart of Mystical Art Gallery.

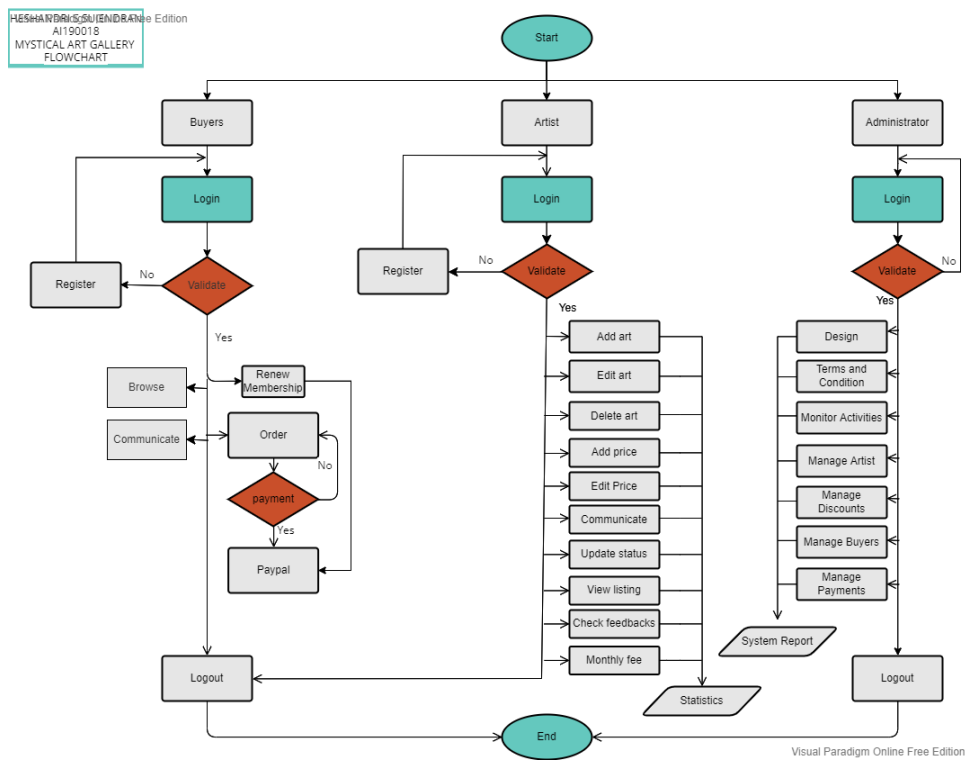


Figure 4: Flowchart of Mystical Art Gallery

Figure 5 shows the class diagram of Mystical Art Gallery

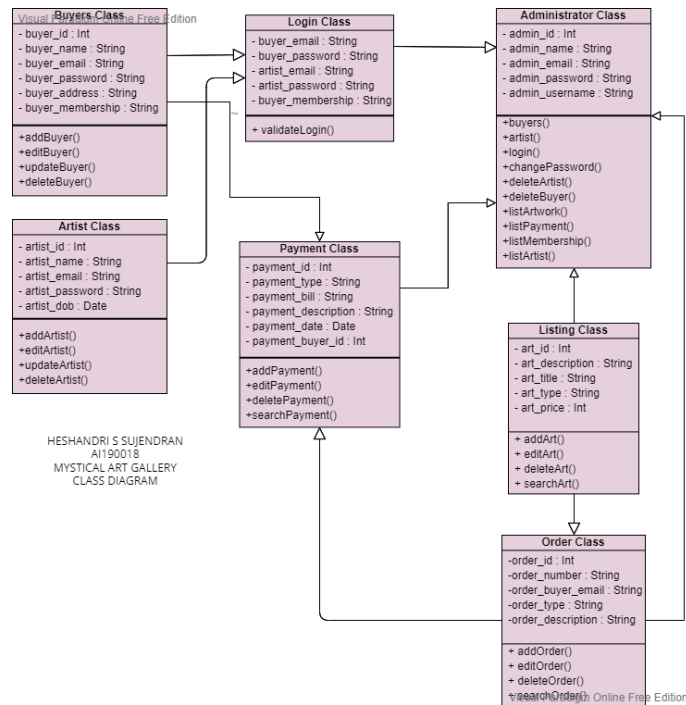


Figure 5: Class Diagram

4.1 System Implementation

Mystical Art Gallery is created to work as a multi-vendor e-commerce website for artists to sell their artworks. This web-based system is created mainly using PHP, html, and CSS on Brackets. Figure 6 to Figure 23 shows the interfaces of Mystical Art Gallery.

4.1.1 Login Module

```

function topFunction() {
    document.body.scrollTop = 0;
    document.documentElement.scrollTop = 0;
}
</script>
<nav class="navbar navbar-inverse navbar-fixed-top
navigation-clean-search" role="navigation">
<div class="container">
<div class="navbar-header">
<button types="button" class="navbar-toggle
collapsed" data-toggle="collapse" data-
target="#myNavbar">
<span class="sr-only">Toggle navigation</span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
<span class="icon-bar"></span>
</button>
<a class="navbar-brand" href="index.php">MAG</a>
</div>
<div class="collapse navbar-collapse "
id="myNavbar">
<ul class="nav navbar-nav">
<li ><a href="index.php">Home</a></li>
<li><a href="aboutus.php">About</a></li>
<li><a href="contactus.php">Contact Us</a></li>
</ul>
<ul class="nav navbar-nav navbar-right">
<li><a href="#" class="dropdown-toggle active"
data-toggle="dropdown" role="button" aria-
haspopup="true" aria-expanded="false"><span
class="glyphicon glyphicon-user"></span> Sign Up
<span class="caret"></span> </a>
<ul class="dropdown-menu">
<li><a href="customersignup.php"> User Sign-
up</a></li>
<li><a href="artistsignup.php"> Artist Sign-
up</a></li>
</ul>
</li>
</ul>
</div>

```

Figure 6: Customer Login source code

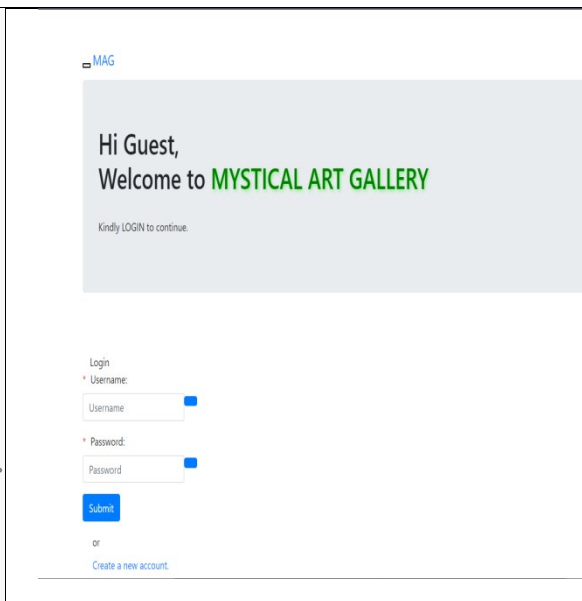


Figure 7: Customer Login

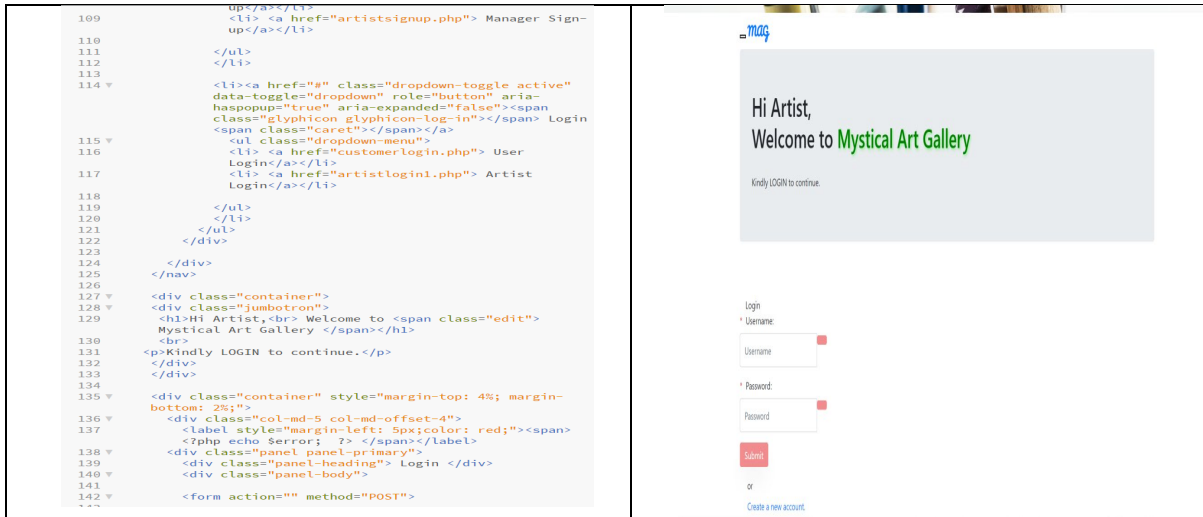


Figure 8: Artist Login source code

Figure 9: Artist Login



Figure 10: Admin Login source code

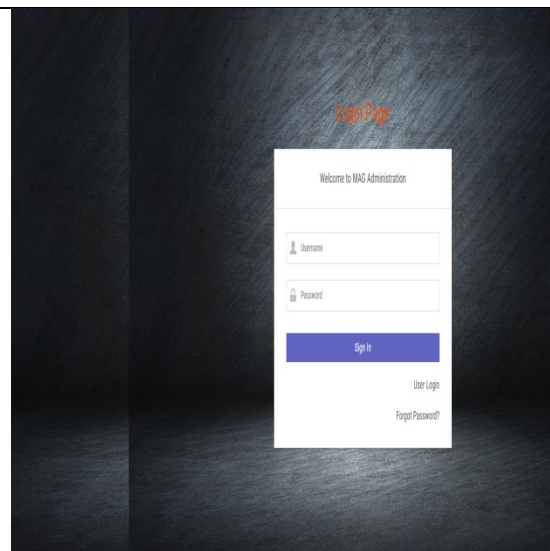


Figure 11: Admin Login

4.1.2 Registration Module



Figure 12: Customer Registration code

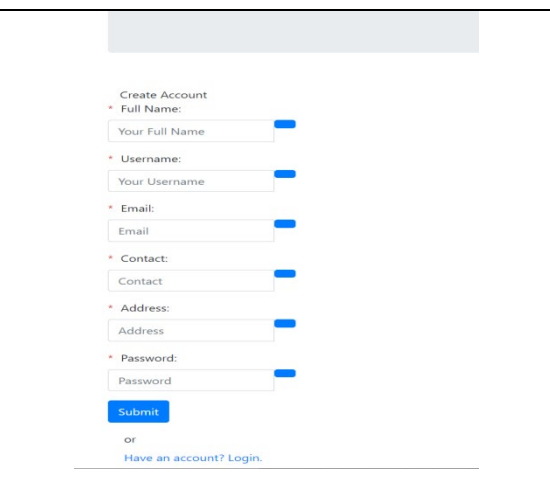


Figure 13: Customer Registration

```

119 <div class="jumbotron">
120 <h1>Hi Artist, <br> Welcome to <span class="edit">
121 Mystical Art Gallery </span></h1>
122 <br>
123 <p>Get started by creating your account</p>
124 </div>
125
126
127
128 <div class="container" style="margin-top: 4%; margin-
129 bottom: 2%;">
130 <div class="col-md-5 col-md-offset-4">
131 <div class="panel panel-primary">
132 <div class="panel-heading"> Create Account </div>
133 <div class="panel-body">
134 <form role="form"
135 action="artistregisteredsuccess.php" method="POST">
136 <div class="row">
137 <div class="form-group col-xs-12">
138 <label for="fullname"><span class="text-danger"
139 style="margin-right: 5px;"></span> Full Name:
140 </label>
141 <div class="input-group">
142 <input class="form-control" id="fullname"
143 type="text" name="fullname" placeholder="Your
144 Full Name" required="" autofocus="">
145 <span class="input-group-btn">
146 <label class="btn btn-primary"><span
147 class="glyphicon glyphicon-user" aria-
148 hidden="true"></label>
149 </span>
150 </div>
151 </div>
152 </div>
153 </div>
154 <div class="row">
155 <div class="form-group col-xs-12">
156 <label for="username"><span class="text-danger"
157 style="margin-right: 5px;"></span> Username:
158 </label>
159 <div class="input-group">

```

Figure 14: Artist Registration source code

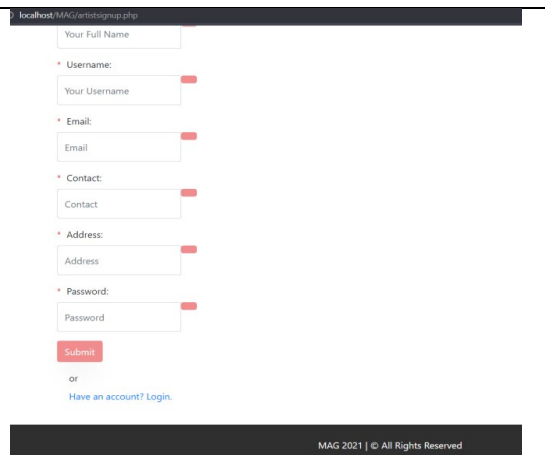


Figure 15: Artist Registration

4.1.3 Product Management Module

```

135 <div class="list-group">
136 <a href="myaccount.php" class="list-group-item
137 active">My Account</a>
138 <a href="viewartwork.php" class="list-group-item"
139 >View Artworks</a>
140 <a href="addartwork.php" class="list-group-item"
141 >Add Artwork</a>
142 <a href="editartwork.php" class="list-group-item"
143 >Edit Artworks</a>
144 <a href="deleteartwork.php" class="list-group-
145 item">Delete Artworks</a>
146 </div>
147
148 <div class="col-xs-9">
149 <div class="form-area" style="padding: 9px 100px 100px
150 100px;">
151 <form action="myaccount1.php" method="POST">
152 <div style="clear: both">
153 <h3 style="margin-bottom: 25px; text-align:
154 center; font-size: 30px;">MY ACCOUNT</h3>
155 <div class="form-group">
156 <input type="text" class="form-control"
157 id="name" name="name" placeholder="Artist's
158 Name" required="">
159 </div>
160 <div class="form-group">
161 <input type="text" class="form-control"
162 id="contact" name="contact"
163 placeholder="Artist's Contact Number"
164 required="">
165 </div>

```

Figure 16: Product Management code

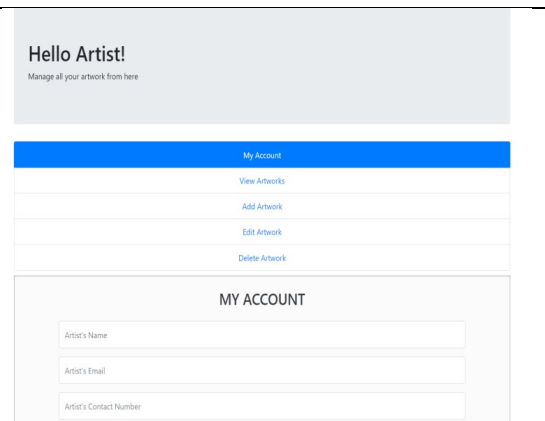


Figure 17: Product Management

4.1.4 Order Module

```

79 <span class="glyphicon glyphicon-log-out"></span> Log
80 Out </a></li>
81 </ul>
82 <?php
83 <?php
84 <?php
85 <?php
86 <?php
87 <?php
88 <?php
89 <?php
90 <?php
91 <?php
92 <?php
93 <?php
94 <?php
95 <?php
96 <?php
97 <?php
98 <?php
99 <?php
100 <?php
101 <?php
102 <?php
103 <?php
104 <?php
105 <?php
106 <?php
107 <?php
108 <?php
109 <?php

```

Figure 18: Add to Cart source code

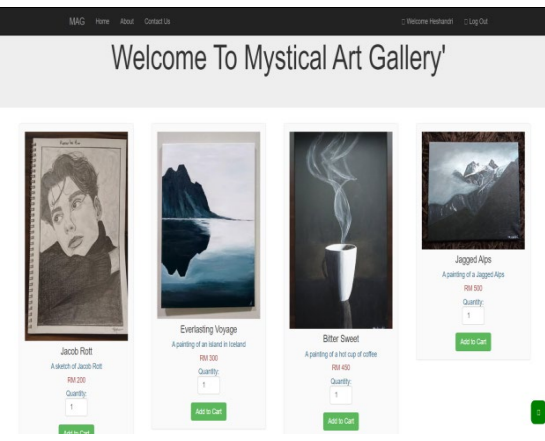


Figure 19: Add to cart

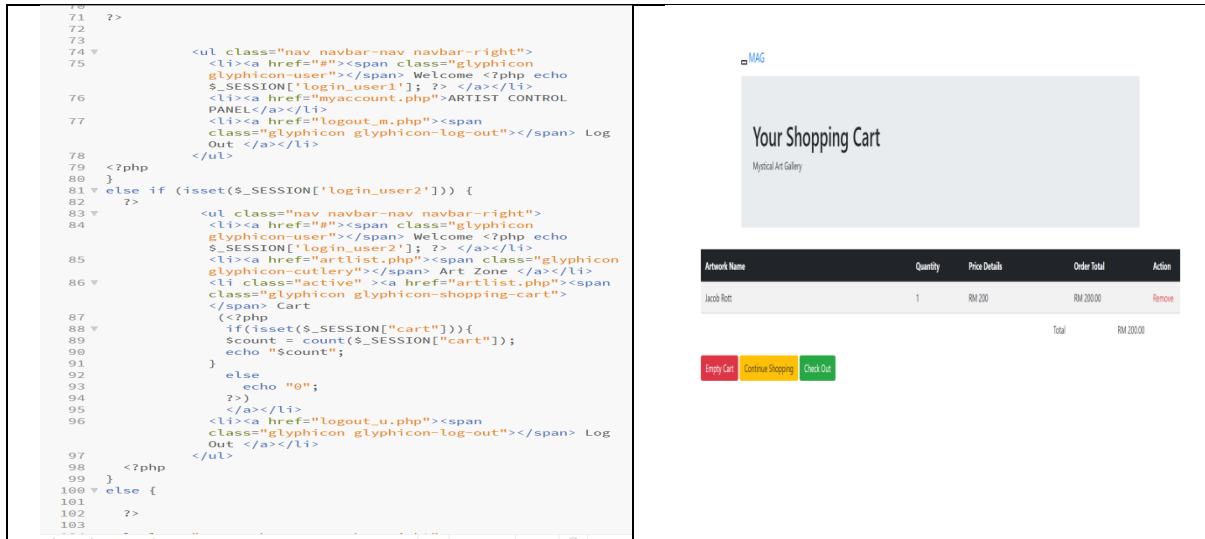


Figure 20: Shopping Cart source code

Figure 21: Shopping cart

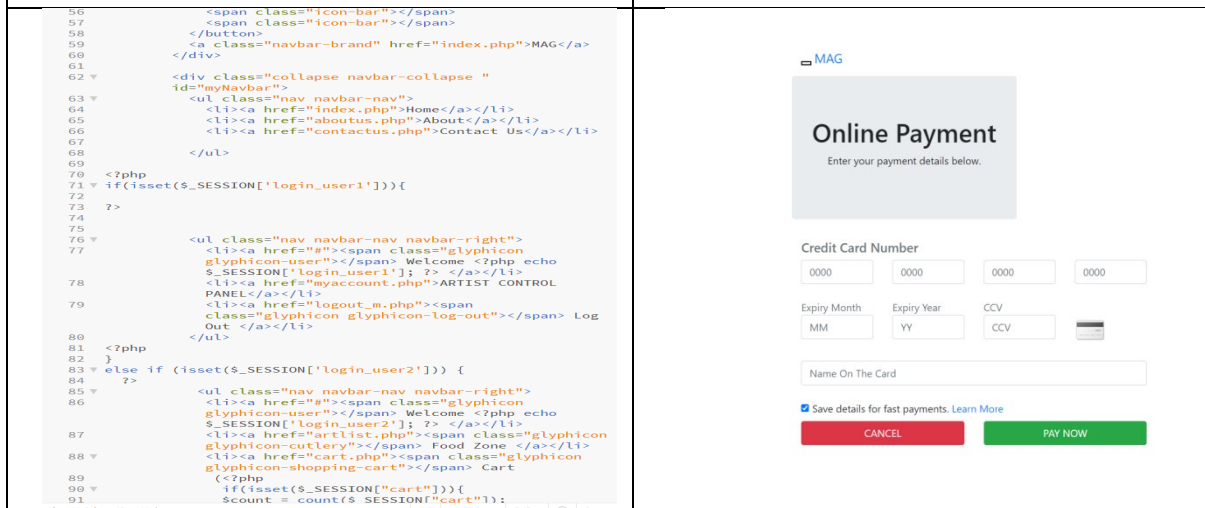


Figure 22: Payment source code

Figure 23: Payment Gateway

4.2 Testing

In this section, a test will be carried out to assess the functionality of each module. A User Acceptance Test (UAT) method is utilized to perform testing.

5.3.1 Account Login Module

Table 3, table 4 and table 5 shows the test case for Login module. The purpose of this test is to verify whether the buyers can login into the system, and whether the system will restrict login if an incorrect credentials is entered.

Table 3: Test Case for Customer Account Login Module

Module: Customer Account Login				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M1-1	To check whether customer can login into the system	The customer should be able to login into the system	The customer has successfully logged into the system	Pass
M1-2	To check whether the system will restrict login whenever a wrong credential is entered	The system should restrict login when an incorrect credentials has been entered	The system restricted the login when an incorrect or no credentials has been entered	Pass

Table 4: Test Case for Artist Account Login Module

Module: Artist Account Login				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M1-1	To check whether artist can login into the system	The artist should be able to login into the system	The artist has successfully logged into the system	Pass
M1-2	To check whether the system will restrict login whenever a wrong credential is entered	The system should restrict login when an incorrect credentials has been entered	The system restricted the login when an incorrect or no credentials has been entered	Pass

Table 5: Test Case for Admin Account Login Module

Module: Admin Account Login				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M1-1	To check whether admin can login into the system	The admin should be able to login into the system	The admin has successfully logged into the system	Pass
M1-2	To check whether the system will restrict login whenever a wrong credential is entered	The system should restrict login when an incorrect credentials has been entered	The system restricted the login when an incorrect or no credentials has been entered	Pass

5.3.2 Registration Module

Table 6 and Table 7 shows the test case for registration module to verify registration processes.

Table 6: Test Case for Customer Registration Module

Module: Customer Account Registration				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M2-1	To check whether customer can register for an account	The customer should be able to create for an account	The customer has successfully created for an account	Pass

Table 7: Test Case for Artist Account Login Module

Module: Artist Account Registration				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M2-1	To check whether artist can register for an account	The artist should be able to create for an account	The artist has successfully created for an account	Pass

5.3.3 Product Management module

Table 8 shows the test case for product management module to verify all process of product management.

Table 8: Test Case for Product Management Module

Module: Product Management				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M3-1	To check whether artist can create an account	The artist should be able to create for an account	The artist has successfully created for an account	Pass
M3-2	To check whether artist can add artwork into the system	The artist should be able to add artwork into the system	The artist has successfully added artwork into the system	Pass
M3-3	To check whether artist can view artwork in the system	The artist should be able to view added artwork	The artist has successfully viewed artwork that has been added	Pass
M3-4	To check whether artist can edit artwork in the system	The artist should be able to edit artwork in the system	The artist has successfully edited artwork that has been added	Pass
M3-5	To check whether artist can delete artwork in the system	The artist should be able to delete artwork in the system	The artist has successfully deleted artwork that has been added	Pass

5.3.4 Order module

Table 9 shows the test cases for order module to verify all the process while ordering artwork from the system.

Table 9: Test Case for Order Module

Module: Order				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M4-1	To check whether customer can create an account	The customer should be able to create for an account	The customer has successfully created for an account	Pass
M4-2	To check whether customer can add artwork into the cart	The customer should be able to add artwork into the cart	The customer has successfully added artwork into the cart	Pass
M4-3	To check whether customer can add more items into the cart	The customer should be able to add more items into the cart	The customer has successfully added more items into the cart	Pass
M4-4	To check whether customer can view the shopping cart	The customer should be able to view the shopping cart	The customer has successfully viewed the shopping cart	Pass
M4-5	To check whether customer can proceed to payment page from cart	The customer should be able to proceed to payment page from cart	The customer has successfully proceeded to payment page from cart	Pass

5.3.5 Membership module

Table 10 shows the test case of membership module to verify membership process.

Table 10: Test Case for Membership Module

Module: Membership				
Test Case ID	Description	Expected Result	Actual	Pass/Fail
M5-1	To check whether customer can create a membership account	The customer should be able to create a membership account	The customer has successfully created a membership account	Pass
M5-2	To check whether customer pay for registered membership and get discounts	The customer should be able to pay for membership and get discounts	The customer could not pay and get discounts for memberships	Fail

5. Conclusion

In conclusion, the involvement with the buyers would be considerably greater after this system was completed. Signing up for a membership will give online buyers a sense of professionalism. There would be more buyers. The database would make it easier to manage the artwork and membership.

Advantages of Mystical Art Gallery system is very much affordable. The artworks on display at Mystical art gallery system are less priced, and they are delivered right to a person's home. If a person goes to a physical art gallery, one may find that many of the paintings are out of the price range or beyond one's budget.

By using Mystical Art Gallery System most of the time, we buy artworks directly from the artists. As a result, there isn't much of a middleman between the consumer and the painters. The Mystical Art Gallery System strive to promote emerging artists' skills. Customers may readily learn about their distinct notions and ideas, as well as their treatment, style, and approach to art and creativity.

In Mystical Art Gallery System customer can contact admin through email. So, if customer has some problem during payment while ordering their favorite paintings as well, later they will be notified through email too.

In this Mystical Art Gallery system there are several limitations. This system doesn't support through android and iOS smart phones. This system only supported in windows and also in Mac software. This system couldn't provide real time delivery.

There are various areas where the system can be improved to make it more efficient. The recommendation to improve the Mystical Art Gallery system are the system should have mobile application to support the artist to upload their artwork and also customer to purchase their paintings easily. This system also could provide live chat box feature for communication. So, customer and artist could easily communicate and instantly. Next, in this system should upgrade the real time delivery.

Acknowledgment

The authors would like to thank the Faculty of Computer Science and Information Technology, Universiti Tun Hussein Onn Malaysia for its support.

References

- [1] Laudon, K. C. (2019). E-commerce : business, technology, society. Boston ; Columbus ; Indianapolis ; Munich Pearson
- [2] Schwerkpunktausgabe „E-Commerce/M-Commerce/T-Commerce“. (2003). Der Markt, 42(2), 103–103. <https://doi.org/10.1007/bf03032240>
- [3] Ward, C., & Legorreta, L. (2009). Beyond Waterfall and Agile Methods: Towards a New Contingency Model for IT Project Management. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.1400254>
- [4] Kendall, K. E., & Kendall, J. E. (2020). Systems analysis and design. Harlow Pearson.
- [5] Etsy. (2019). Etsy - Shop for handmade, vintage, custom, and Unique Gifts for Everyone. Etsy. <https://www.etsy.com/>
- [6] Artfinder - Photorealistic paintings. (n.d.). Artfinder. Retrieved July 23, 2022, from https://www.artfinder.com/art/sort-best_match/paginate60/multiple_product_boost-1593276/product_category-painting/stylephotorealistic/availability-true/
- [7] saatchiart.com. (2019). Saatchi Art. <https://www.saatchiart.com/>
- [8] Bhasin, H. (2019, April 24). 16 Disadvantages Of E-commerce - Problems with Ecommerce. Marketing91. <https://www.marketing91.com/disadvantages-of-ecommerce/>
- [9] Periasamy, K., Ho, W., Loong, Wei, P., Chuan, B., Pelly, Loong, W., Ming, W., & Wei, C. (2002). Association for Information Systems AIS Electronic Library (AISeL) Organizational Structure for Electronic Commerce: A Qualitative Investigation Recommended Citation ORGANIZATIONAL STRUCTURE 81 FOR ELECTRONIC COMMERCE: A QUALITATIVE INVESTIGATION. <https://aisel.aisnet.org/cgi/viewcontent.cgi?article=1080&context=ecis2002>
- [10] Rosenblatt, H. J. (2014). Systems analysis and design. Course Technology Cengage Learning
- [11] Eberts, R. E. (1994). User interface design. Prentice-Hall