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ARTISTIC EXCHANGE

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Abstract

Artistic Exchange is a web development project aimed at creating a platform for artists to buy and sell their products. The platform facilitates the exchange of various art forms, including paintings, sculptures, digital art, and crafts, among others. Implemented using HTML, CSS, JavaScript, PHP, and MySQL technologies, the project offers a user-friendly interface for both artists and buyers.

The primary objective of "Artistic Exchange" is to provide a centralized marketplace where artists can showcase their work and connect with potential buyers worldwide. Through features such as user authentication, product listing, search functionality, secure payment processing, and messaging, the platform fosters a seamless and secure transaction experience.

1 Introduction

Artistic Exchange is a dynamic web development project aimed at creating an online marketplace where artists can showcase and sell their creations. With the proliferation of e-commerce platforms, there's a growing need for specialized spaces catering to the unique needs of the artistic community. This project seeks to bridge that gap by providing a user- friendly platform that connects artists directly with potential buyers. Through the integration of HTML, CSS, JavaScript, PHP, and MySQL technologies, we have developed a robust solution tailored to facilitate seamless transactions and promote artistic expression. In this report, we present an overview of the project's objectives, methodology, and key features, highlighting its potential to revolutionize the way art is bought and sold in the digital age.

1.1 Scope

The scope of the "Artistic Exchange" project encompasses the development of a comprehensive online platform tailored to the specific needs of artists and buyers within the art market. It encompasses the creation of a user-friendly interface for artists to showcase their diverse range of artworks, including paintings, sculptures, digital art, and crafts. Moreover, it extends to providing robust features for buyers to browse, purchase,and engage with artists directly.

This project delves into the intricacies of user authentication, product listing, search functionality, secure payment processing, and messaging systems to ensure a seamless and secure transaction experience for all stakeholders involved. Furthermore, it encompasses the implementation of dynamic content generation, user account management, and secure data storage through the integration of PHP and MySQL technologies.

1.2 Background

The aim of this project is to design and implement an application that will be used for taking payments for buying products. This will necessitate connection of database to GUI to improve the data input and output methods graphically.

This application will be however design to compatible with Ms Access for an easy runningon local computer but the record can be converted presumably into high level database program like SQL or oracle at the cooperative level for server based.

1.3 Roadmap of report

Chapter 1 briefly describe the project objectives, scope and background.Chapter 2 is focused on detailed research on technologies behind booking system and tools available for designing any booking system.

Chapter 3 provides brief review of the chapter one (literature review) and specificationrequirements.

Chapter 4 entails how the requirements were derived, tools to be used and graphicalprototype

of the interfaces and database schema.
Chapter 5 describes the practical implementation of the design stage, the interfaces, andsoftware choices to accomplish the system functional requirements.
Chapter 6 is focused on checking if the main design at the implementation stage is doing what is designed for.
Appendix shows the Screenshot of testing that can not be inserted into the Test Result table for the avoidance of disarray in the table.

2 Literature Review

2.1 Introduction

This chapter will be centred on the investigation to pave the way for the different approaches available and technology behind the development of any buying system. The research will help in understanding how the buying system works and implements the idea in designing different buying system application.
Before the existence of object oriented programming, applications like buying system, sales-related applications are less user-friendly and also laborious to design as many programming languages then are monolithically developed, which are less powerful in accomplishing useful and powerful tasks. Bringing object oriented languages into lime light with GUI supportability makes the commercial applications worthwhile and also rapid interest of companies to switch to the GUI-based applications for their businesses.

2.2 Buying system

Users can explore a diverse range of artworks through intuitive browsing interfaces and powerful search functionalities. They can filter artworks based on various criteria such as artist, medium, style, price range, and more.Each artwork listing provides detailed information and descriptions, including artist details, dimensions, materials used, and pricing. High-resolution images allow users to examine the artwork closely before makinga purchase decision.
Users can add desired artworks to their shopping cart for easy management and checkout. The shopping cart provides a summary of selected items, including quantities and total prices, allowing users to review and modify their selections before proceeding to checkout.
The checkout process is streamlined and secure, ensuring the confidentiality of user information and payment details. Users can choose from multiple payment options, including credit/debit cards, PayPal, and other secure payment gateways.

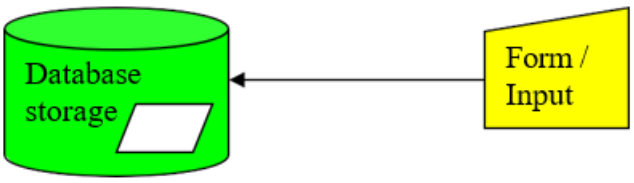

Figure 1 Database connection

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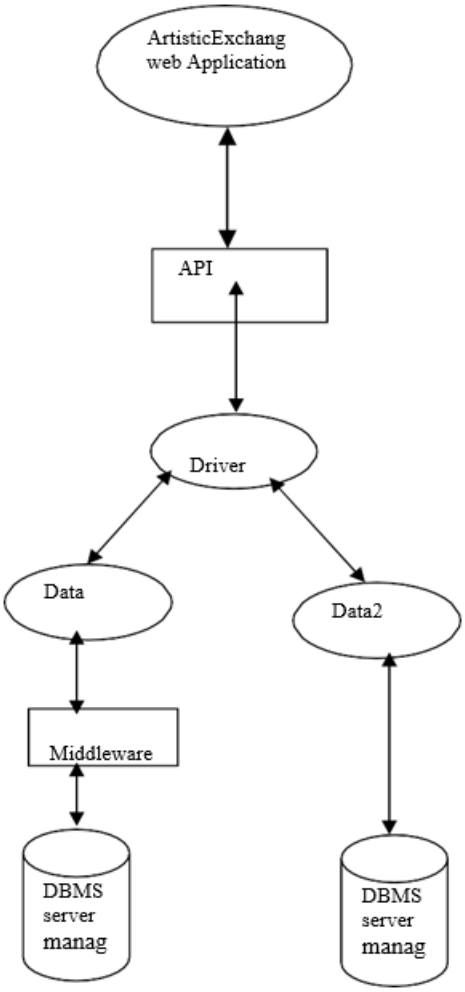

Figure 2 the Pure DataBase Connection Platform

2.3 Different types of database connectivity

The research has shed light on available connections investigate for suitability and compatibility for the project and tools available in designing useful application.

"Database connectivity provides best-in-class data access solutions that leverage the full power of SQL Server, and enables development of scalable, high- performance applications in widely adopted frameworks"

(http://msdn.microsoft.com/en-us/sqlserver/connectivity.aspx#SNAC).

Database connectivity can be described as a heart of the application that implements connection between the database record storage and GUI. There are different types for connections available for different programming languages for easier interoperation. The following are the brief examples of connections available for use by the programmers

2.4 Overview of DBC

In the Artistic Exchange system project made using HTML, CSS, JS, PHP, and MySQL Database, the database connection is established using PHP technology. The PHP framework provides the MySQLi library, which is used to connect, retrieve, and manipulate data in a database. Specifically, for MySQL Database, MySQL is used, which is an implementation of the MySQLi interface that allows you to connect to MySQL database server from PHP applications.

The connection string is a crucial part of the database connection, which contains the necessary information to connect to the database server, such as the server address, database name, and authentication details. The connection string is then used to create a connection object, which is used to open and close the connection to the database.

Once the connection is established, SQL queries can be executed using the connection object to

retrieve or manipulate data in the database. The data retrieved from the database can then be displayed on the front-end using HTML, CSS, and JS.
It is important to note that the connection to the database should be closed after use to free up resources and prevent any potential security risks. This can be done using the "using" statement in PHP, which automatically closes the connection when the code exits the block.

2.5 Role of DBC in API

In an airline booking system project made in HTML, CSS, JS, PHP, and MySQL Database, the role of a database connection in the API is crucial. The API (Application Programming Interface) is responsible for handling requests and responses between the client-side and the server-side. When it comes to the database, the API needs to interact with the MySQL Database to perform CRUD (Create, Read, Update, Delete) operations.
To establish a connection between the API and the MySQL Database, you will need to use a database connector, such as MySQL Connector, which is an PHP provider for MySQL. This connector allows PHP applications to connect to MySQL databases and perform database operations.

2.6 SQL IN PHP

First, let's design the database schema for the Artistic exchange. We'll create thefollowingtables:
Products: stores information about each product, including product number, departure and arrival, departure and arrival dates.
Bookings: stores information about each booking, including booking ID, product number, Customer name, and booking status.
Customer: stores information about each Customer, including customer ID, name, and contact information.

2.7 Conclusion

The Artistic Exchange project is a full-stack web application that allows users to search for products, buy products, and manage their buying. The system is built using HTML, CSS, and JavaScript for the front-end, and PHP with MySQL Database for the back-end.
The project's objectives, outlined at the outset, have been successfully achieved. "Artistic Exchange" provides a user-friendly interface for artists to showcase their talent and connect with a global audience of buyers. The platform offers robust features for browsing, purchasing, and engaging with artworks, fostering a vibrant ecosystem where creativity thrives.
Throughout the development process, careful attention has been paid to user experience, security, and scalability. By adhering to best practices in web development and database management, we have ensured a seamless and secure transaction experience for all users. Moreover, the platform's scalability allows for future growth and expansion as the artistic community continues to evolve.
In conclusion, the "Artistic Exchange" project represents not only a technological achievement but also a testament to the transformative power of art in our digital world. By bridging the gap between artists and buyers, we hope to contribute to the enrichment of cultural exchange and appreciation worldwide.

3 Analysis

3.1 Introduction

This chapter will summarize the result from the research stage to descriptively analyse thesystem requirements and specifications and the project objectives.

3.2 Application description

The application should be able to allow customer details input, buying products, accepting manual payment and cancelling any booking with refund and all of these details are processed and stored in a database system.

3.2.1 Application objectives

This application will be designed mainly for individual or small business use. It can be improved to suite large scale enterprise which will be discussed later in this report. Recapping the purpose of the

project and to guide at the design stage, the following are the application objectives. The user will be able to:

- Enter customer details into database via GUI
- Buy products
- Edit customer details
- Delete customer records
- Take payments

3.3 Application input

The application will have interactive interface where the user can enter data. The input capture will be different depending on the task the user is to perform. The following are theinputs

Customer detail GUI: the user will enter the customer interface from here and save into the database storage.

Buying product interface: user will buy products for registered customers.

Payment: the basic transaction is carried out via this interface.

Cancel: product transaction cancellation is input through this form.

Search: the user will search for customer details using unique data field.

3.4 Application process (use case)

The process occurs in the main database. This is diagrammatically described below.

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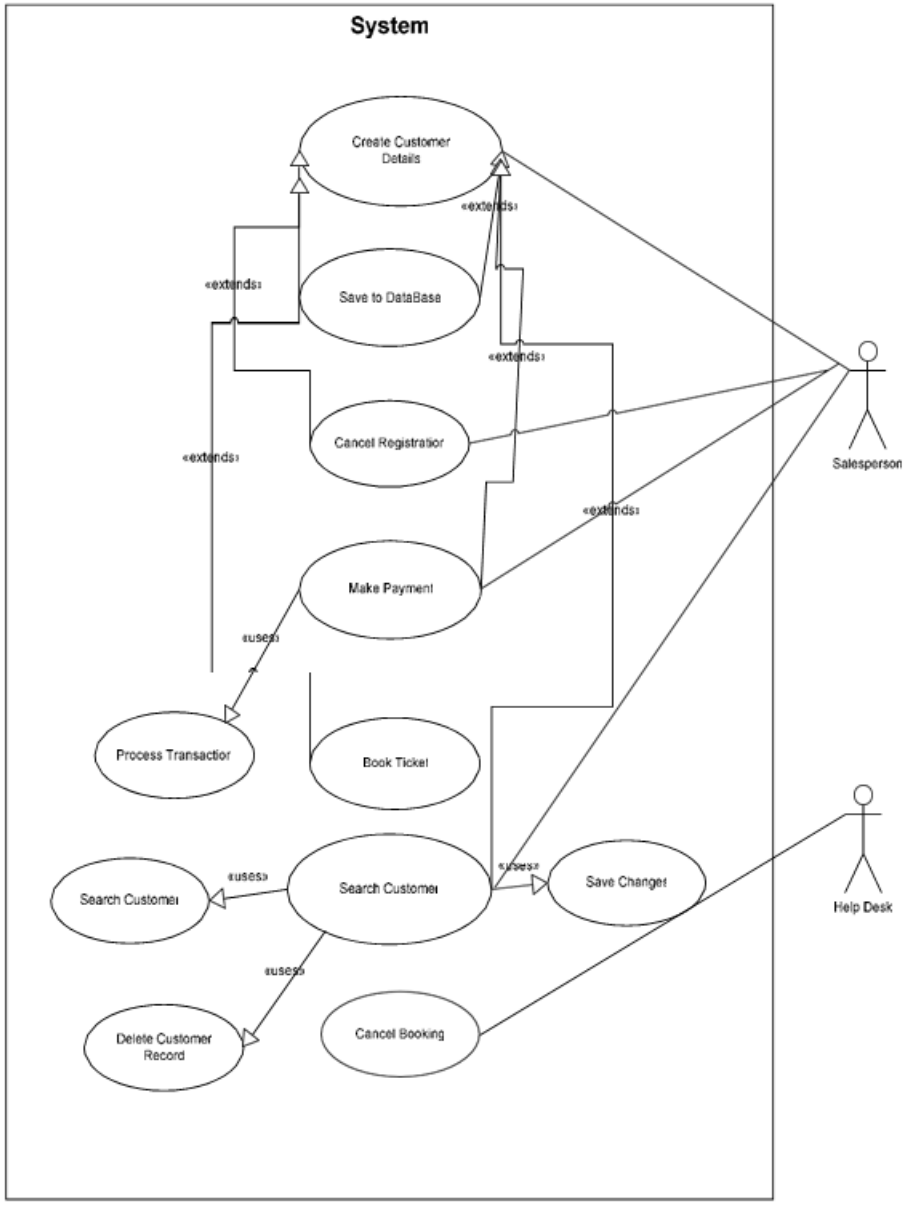

Figure 3 Use Case showing the System process

3.5 Application Output

The output of the application can be inform of a report but mainly will be in the table. Thefollowing are the possible tables that will be presumably designed.

Customer Table: showing the customer records

products: showing the booked products

Payment: showing the payment records.

Cancel: showing cancellation records.

Search: the customer details will be displayed when search is button is clicked and updatewill be stored in the customer detail records.

3.6 Business Requirements

This system is aimed to be Helpdesk-Driven rather than Internet-Driven due to some security issues that come with internet based, which causes transaction chaos and inconvenient to some customers, as evidence to how important helpdesk-driven or manual product buying system. . Also this can be used as a parallel application with the online buying which will help in the case of internet related problems (e.g. heavy network traffic, server overheating etc).

3.7 User Requirements

The user should have been able to log onto the system to access the program.

3.8 Functional Requirements

These are what the system should process:Enter new customers' details
Update customers' details
Search for customers using their phone numberEnter products
Enter payment detailsCancel product.
Delete record.

3.9 Non-Functional Requirements

The application performance requirement is basic computer system, which are the system or hardware requirements.

3.10 System Requirements

The system requirements are of twofold, first fold will be focused on minimum hardware specification and software specification will be the second fold.

3.10.1 Hardware requirements

- Processor; Pentium Dual core processor minimum, Intel or AMD
- Hard drive; 60 GB minimum
- RAM; 3GB
- Keyboard
- Mouse
- Disc drive
- Monitor

3.10.2 Software SpecificationFront-End

- HTML
- CSS
- JavaScript
- BootStrap

Back-End

- PHP
- MySQL

4 Design

4.1 Introduction

This chapter focus on the design model adopted from the analysis stage of the project, which will be blue print for the implementation stage.
The design will be of twofold which will be hierarchically selected and executed base on there dependency. The first fold will be brainstorming on how the interface and input prototype will be designed, following by the methods to use and tools that will help in achieving the design objectives.

4.2 Input interface

There are many tools available to design user interface prototype and considering the limited time available for this project, Microsoft Visio will be used for professionally looking design. Project inputs are shown below:

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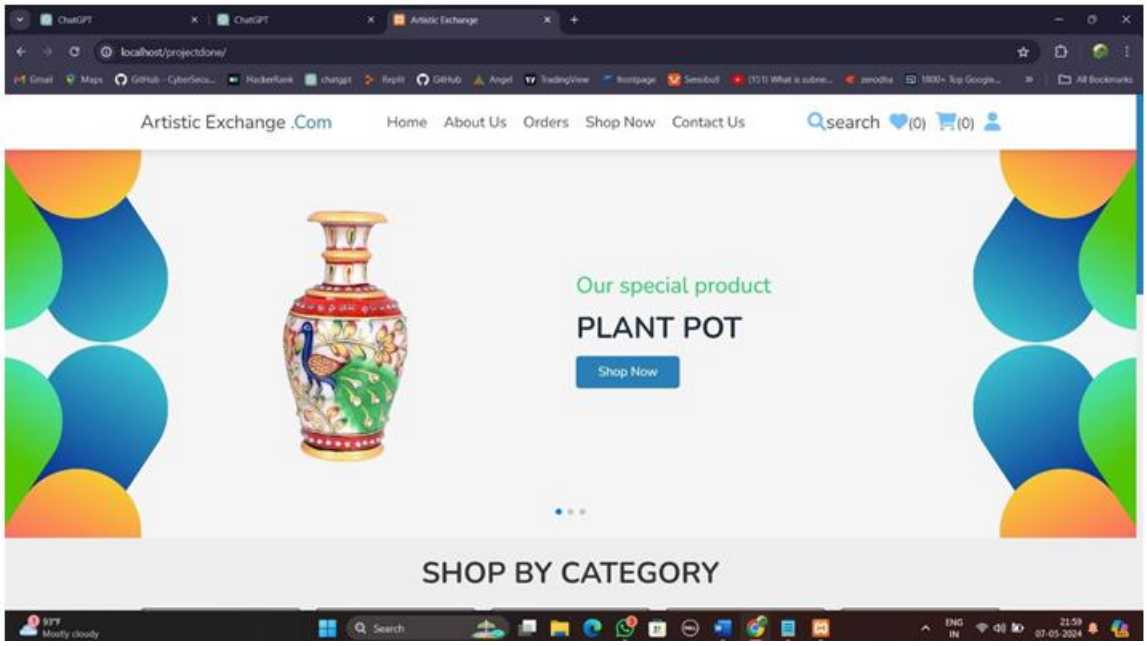

Figure 4 Customer Interface prototype

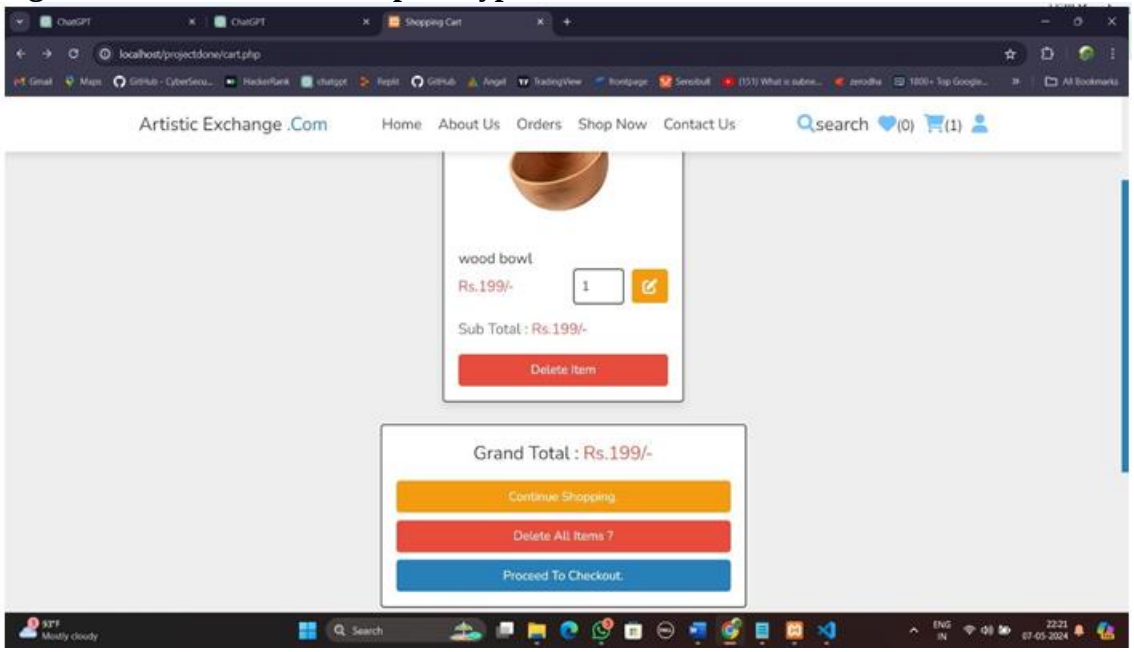

Figure 5 product buying Interface

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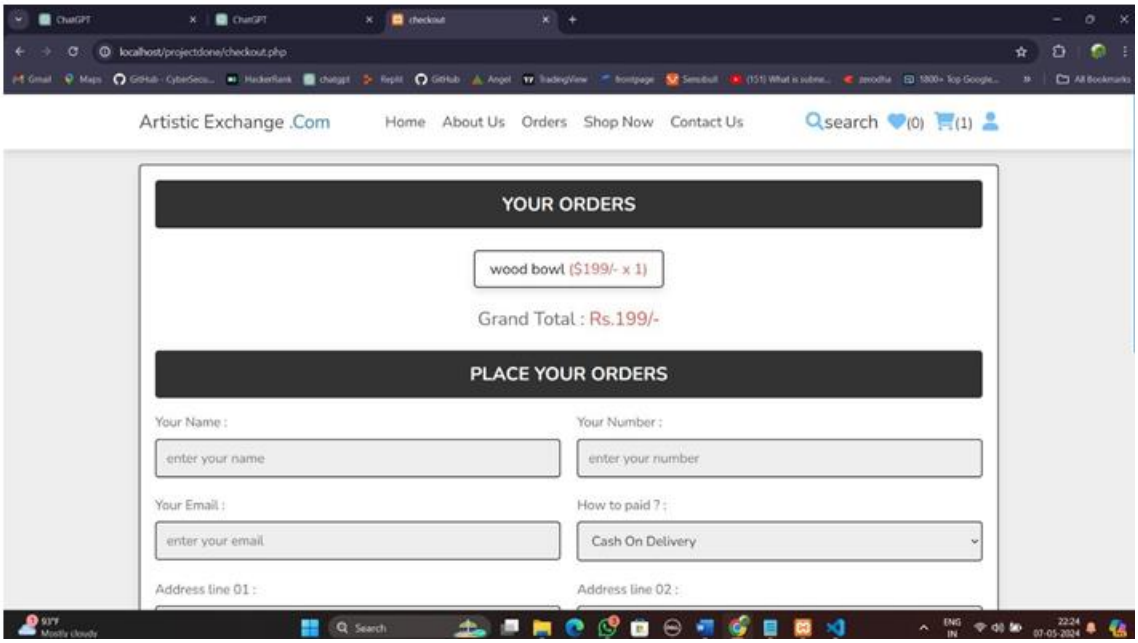

Figure 6 Payment Interface prototype

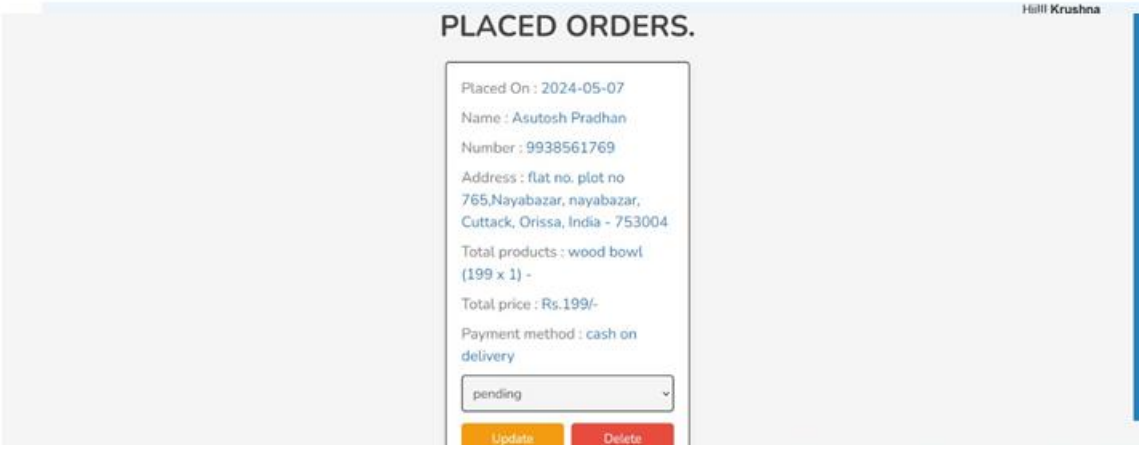

Figure 7 Cancel Order Interface

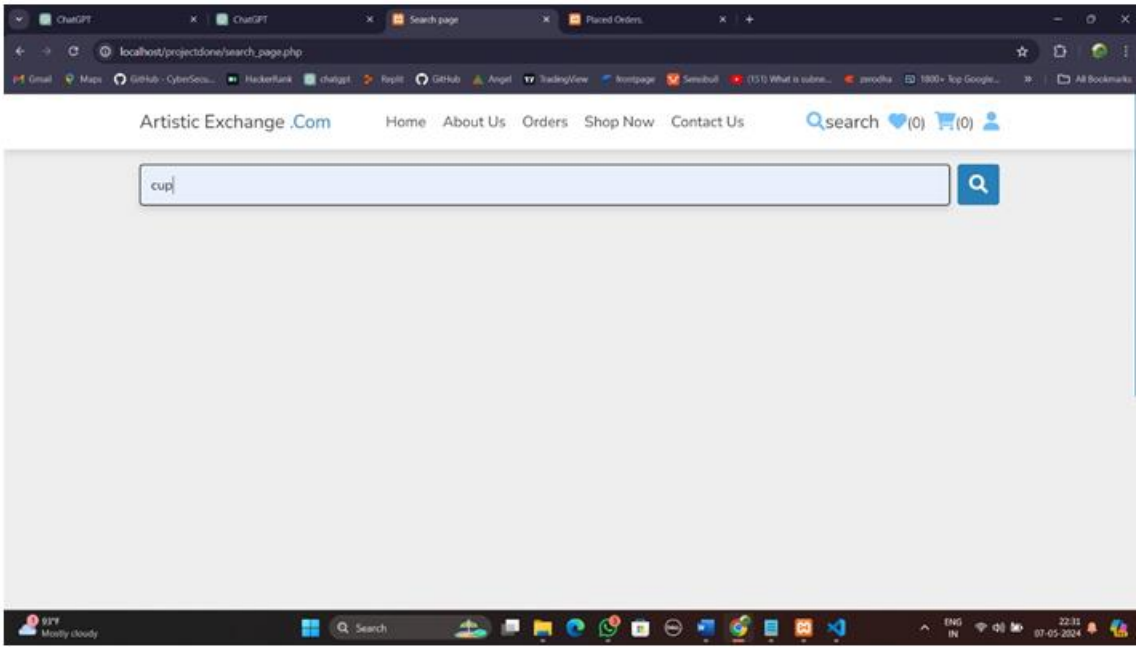

Figure 8 Search Interface

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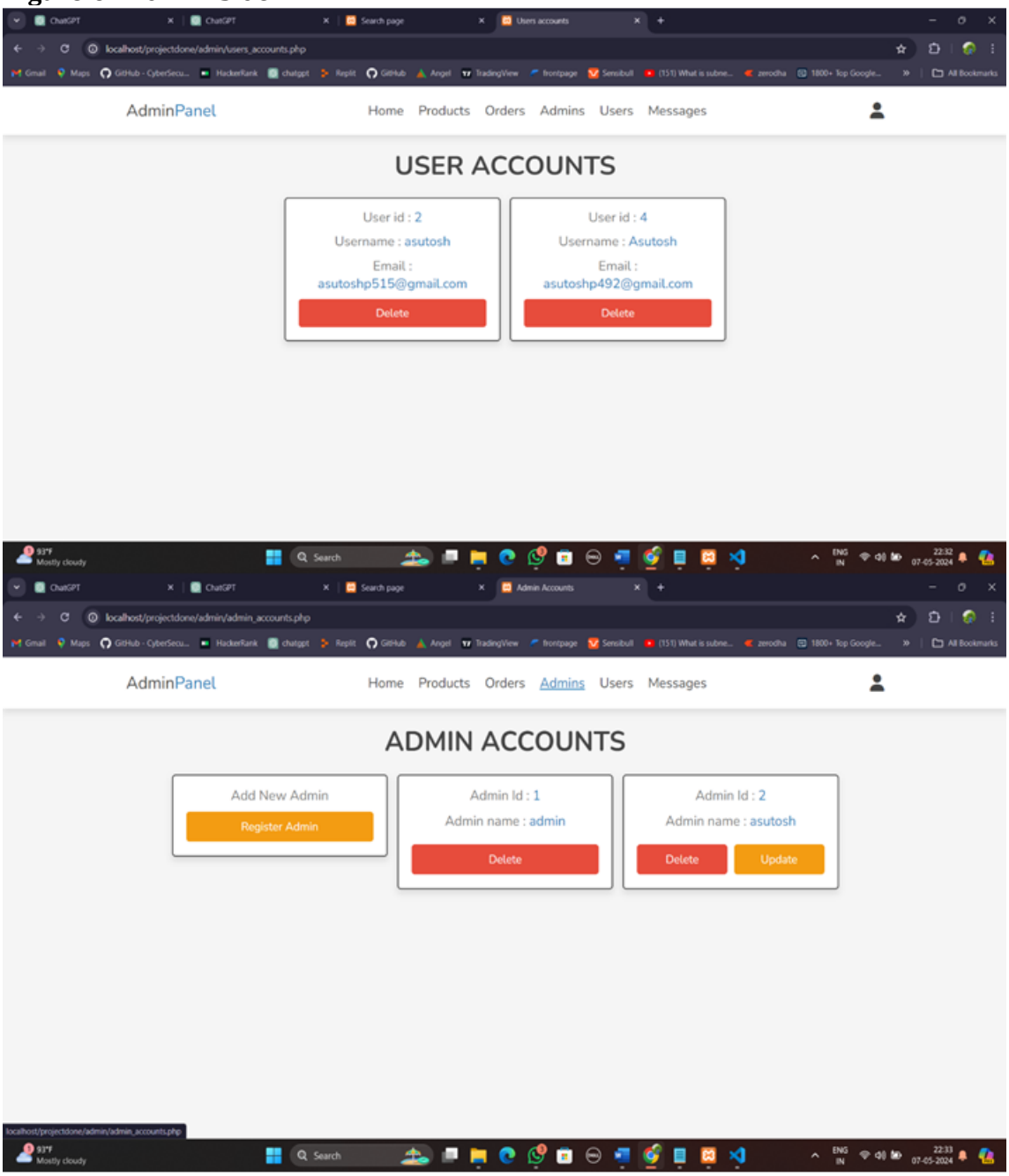
Figure of Admin Side



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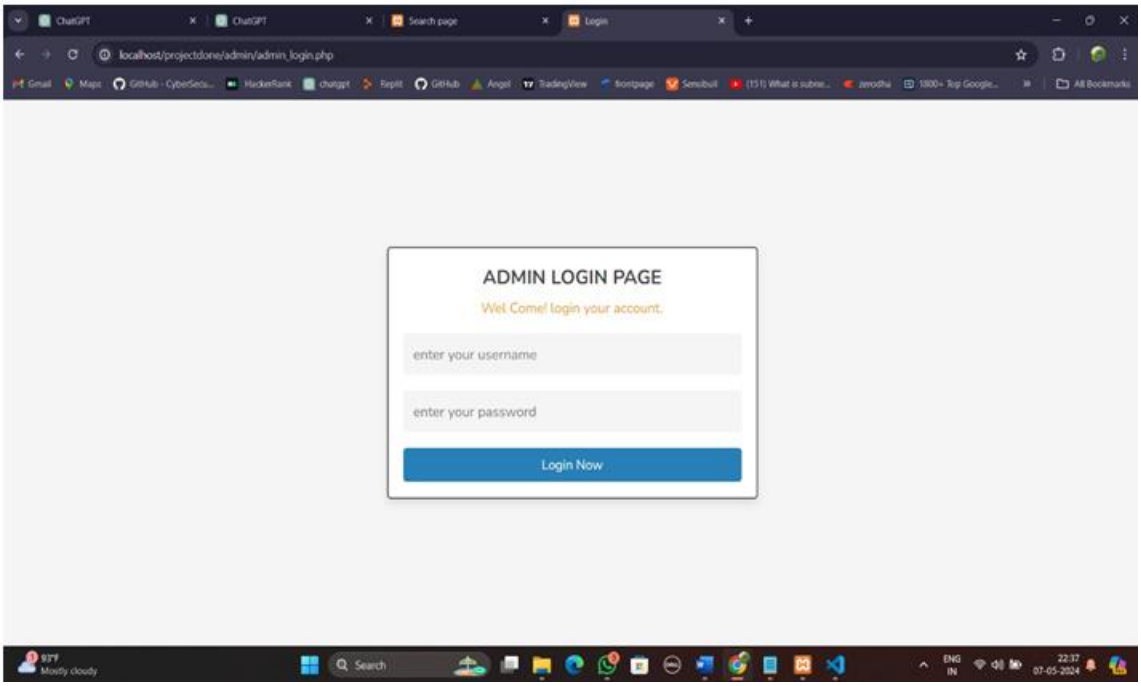

4.3 Tools and Software choice

Having successfully created input/interface prototype, the next line of action will be choice of tools and software to accomplish the task efficiently.

C In crafting the "Artistic Exchange" platform, strategic selections of tools and software were pivotal. For front-end development, HTML, CSS, and JavaScript formed the foundation, complemented by Bootstrap for responsive design components. Sublime Text and Visual Studio Code served as the primary text editors and IDEs, offering efficiency and customization.On the back end, PHP was employed for server-side scripting, managing form submissions, and interacting with the MySQL database. Git and GitHub facilitated version control and collaborative coding, ensuring seamless integration and tracking of project changes. Project management relied on Trello for task organization and Slack for real-time communication among team members.For testing and debugging, Chrome Developer Tools and PHPUnit were instrumental, ensuring code quality and website performance. Lastly, deployment and hosting were managed through Apache Server and cPanel, providing reliable hosting and server management capabilities..

4.4 Class Diagram

It is necessary to have the clear understanding of how the class will be created when coding and fore-think about the possible methods, interface, attributes and variables that can be possibly used. The internationally and professionally recognised too for achieving this task is Unified Modeling Language (UML) which splits into class or object diagram.

The following is the class diagram for my project and there associations:

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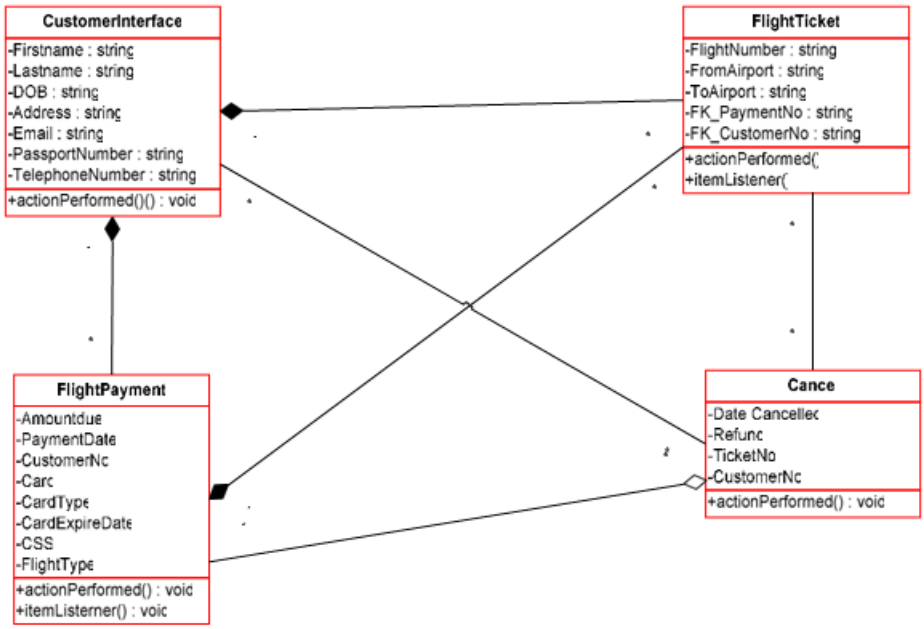

Figure 9 Class diagram and there associations

4.5 Database relation schema

It is understandable, if there is more than one table in a database, then they must be somehow related and this necessitate to show the entity relational diagram of the database.

The ERD is not just about links, but the flow of communications between the table and also constraints.

Example; a customer can book many flight tickets, many payment can be made by one customer, many customers can cancel many bookings etc. Also, one of the advantages of creating relationship between the tables is to enforce referential integrity which ensures there are no data replications and primary keys properties are not over ride by mistake.

The diagram below shows the relationship between the tables

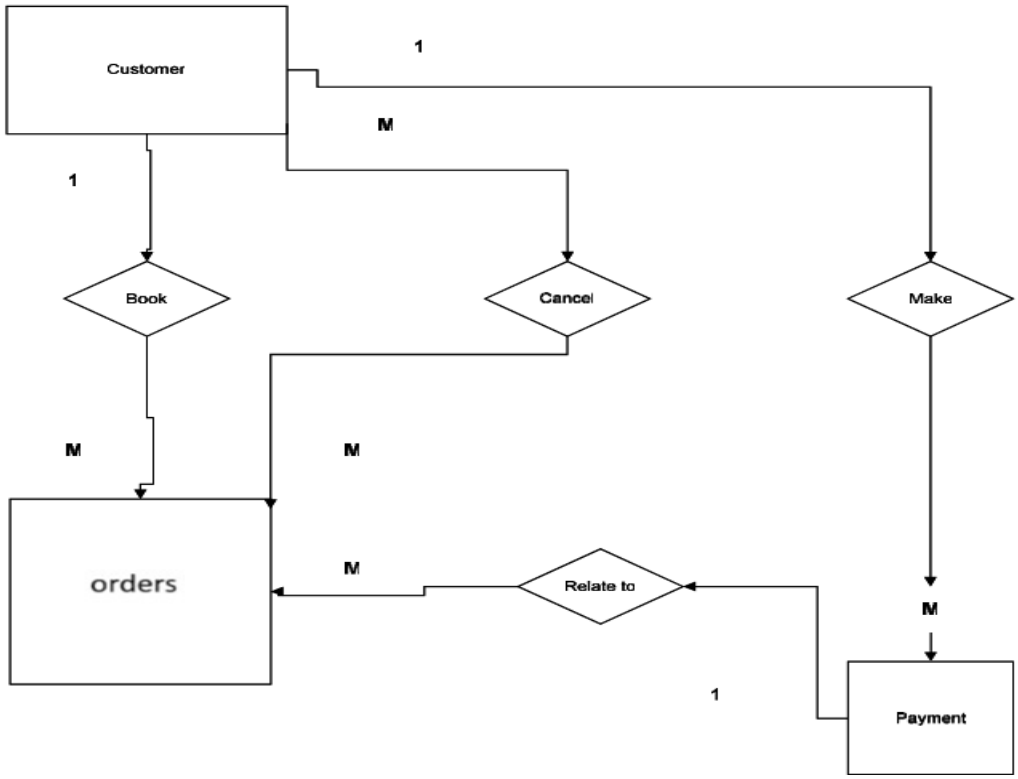

Figure 10 DATA TABLE

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4.6 Process

The process that occurs in the project or application is diagrammatically shown below;

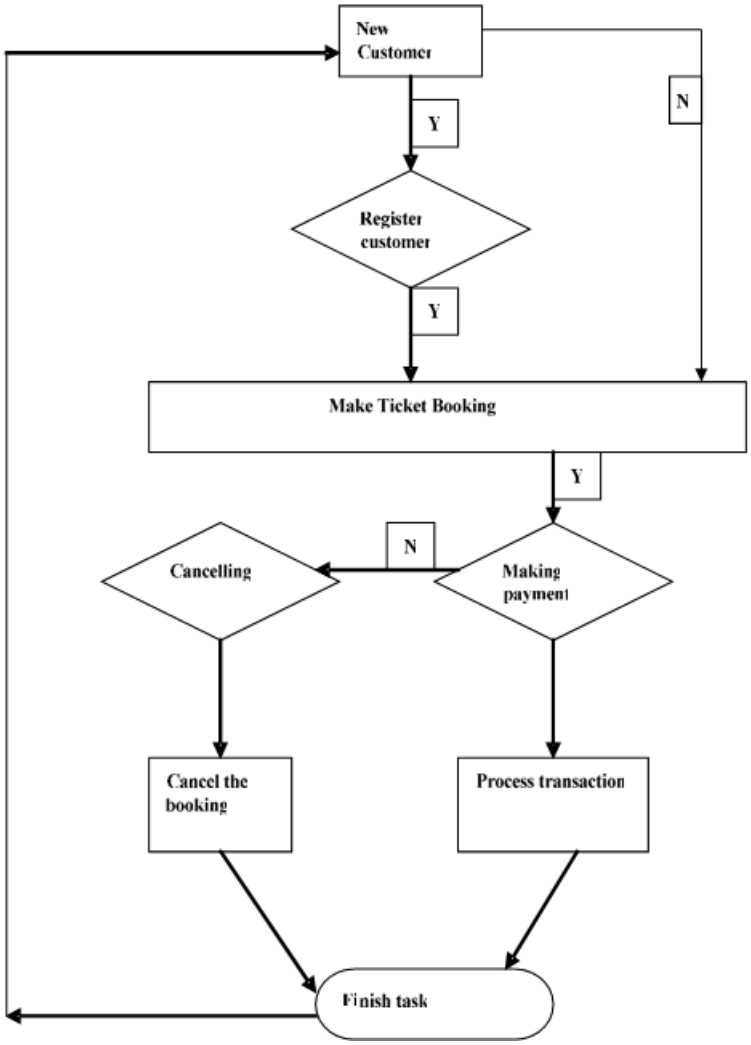

Figure 11 Flow of Process

4.7 Output

The out put of system will be displayed in GUI and/or DOS screen

Most of the output for customer details, Product buying records and payment records can be viewed in the tables, if the program is run in the text pad with DOS screen in the background, the record or data inserted into the database will show as shown in figure12 below.

5 Implementation

5.1 Introduction

This section will focus on the development of actual system having layout it out in the design stage, however there is possibility that a change erupt during this stage as changes at the implementation are sometime inevitable.

The stage will range from input design which will be of twofold, follow by the database schema design and coding as unarguably part of implementation.

5.2 Software choice

Software Choice for Artistic Exchange Project

For an artistic exchange project, the following software choices can be considered:

Frontend:

HTML/CSS: For building the user interface and user experience of the website. JavaScript: For adding interactive elements and dynamic functionality to the website.**Backend:**

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PHP: A framework for building web applications, providing a robust and scalablearchitecture.

Database:

MySQL: A relational database management system for storing and managing data.

Additional Tools:

Visual Studio: An integrated development environment (IDE) for building, debugging,and testing the application.

Entity Framework: An object-relational mapping (ORM) framework for interacting withthe database.

5.3 User interface (screen shots)

The user interface of "Artistic Exchange" prioritizes simplicity and intuitiveness, featuringa clean and visually appealing design. Navigation is streamlined, with easy access to key functionalities such as browsing artworks, viewing artist profiles, and managing user accounts. A responsive layout ensures seamless accessibility across various devices, enhancing user experience. Interactive elements, such as search filters and image galleries, facilitate efficient exploration of artworks. Clear call-to-action buttons guide users throughthe buying process, from adding items to the shopping cart to completing transactions.

Overall, the user interface aims to provide a seamless and engaging platform for artists andbuyers to interact and exchange artworks effortlessly..

Below is the screen shot of the code used when designing the graphical user interface;

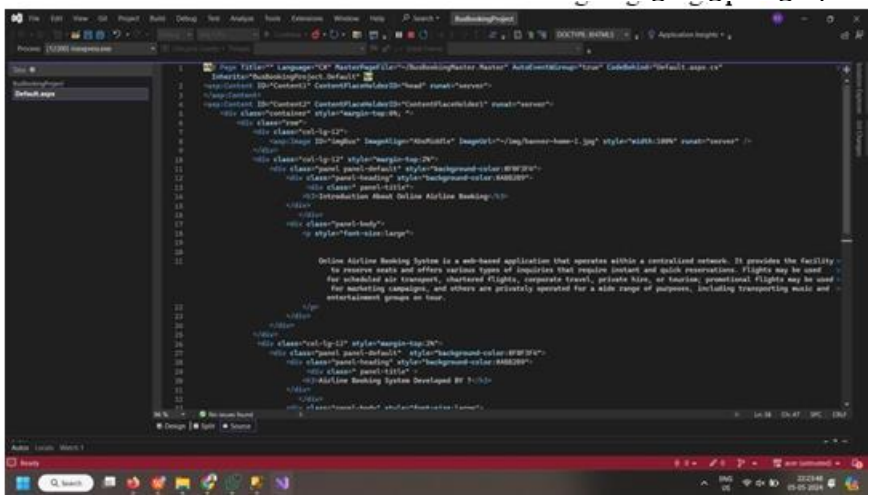

Figure 14 Customer Interface using PHP

The code details can be seen in the interface actual class where the buttons, labels, textfield, are pined onto the frame

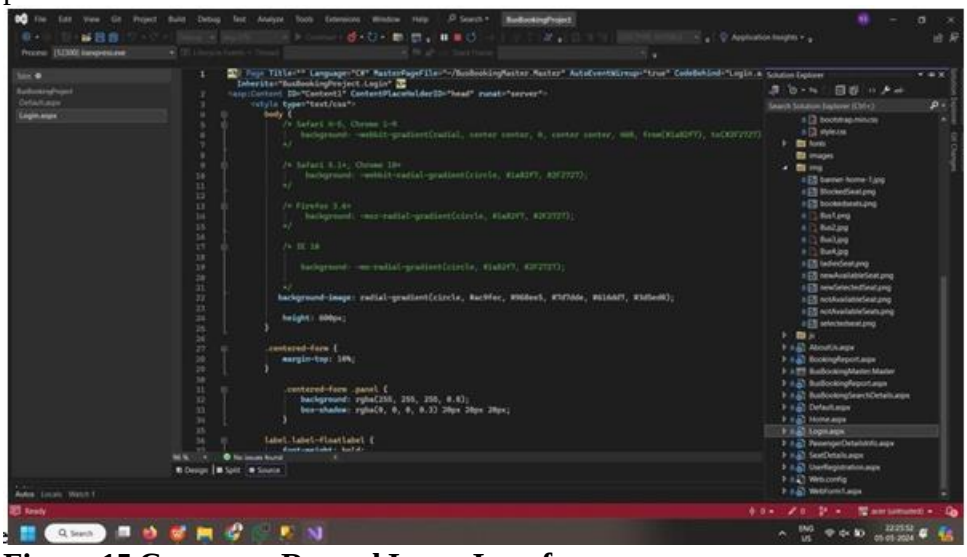

Figure 15 Customer Record Input Interface

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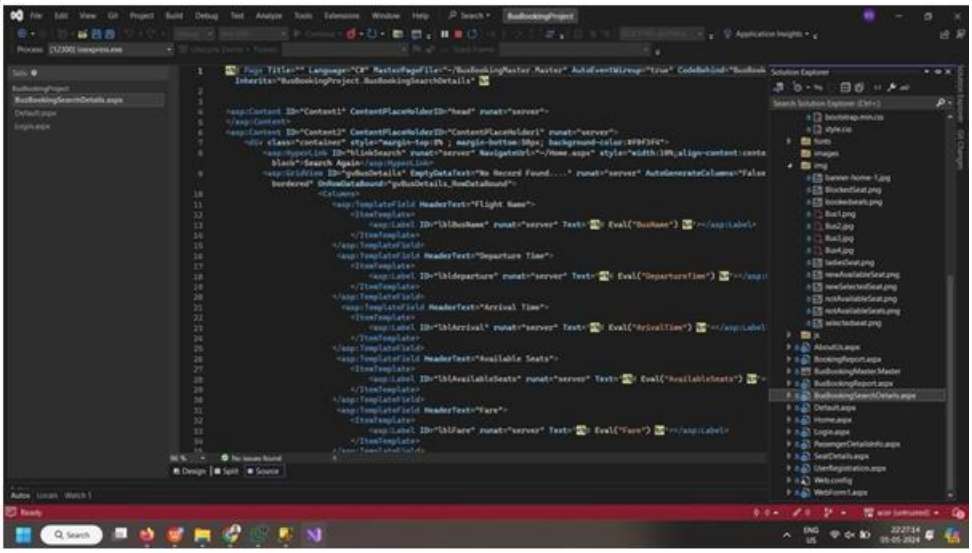

Figure 16 Search Detail Interface

5.4 Database schema

Using the database schema (Figure 10) at the design stage as a prototype, helps isachieving effective actual database schema shown below.

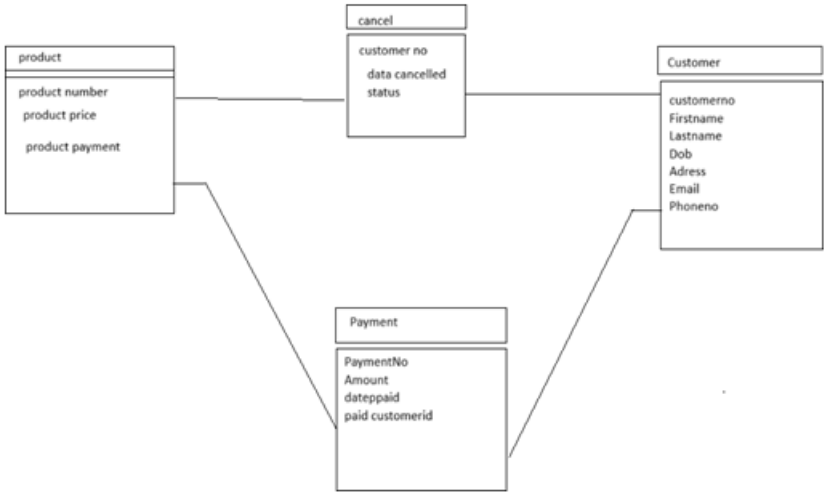

Figure 20 DB Schema screenshot

DBC Connection is created using Administrative tool in control panel. Screen shot showing the connection

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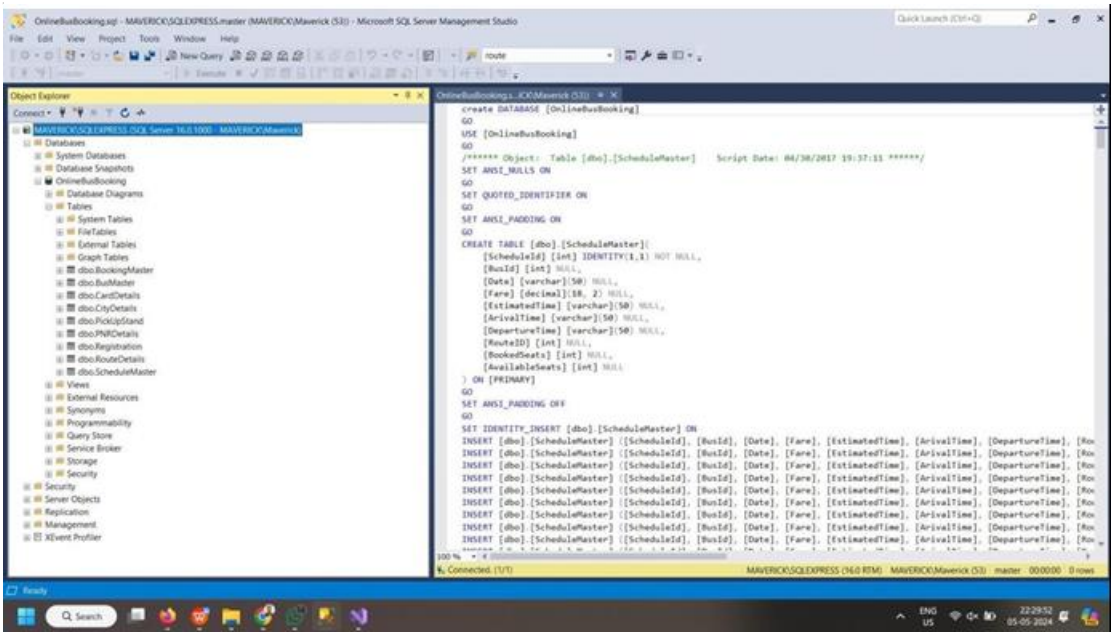

Figure 21 DBC DSN screenshot

5.5 Database Connection

To connect the PHP backend to the MySQL database, you can use the MySQLI Connector, which is alibrary that enables PHP applications to connect to MySQL databases. Here is an example of howtoestablish a connection to the database in TextField,

```php
<?php
// Database credentials
$servername = "localhost"; // Change this to your database server name
$username = "your_username"; // Change this to your database username
$password = "your_password"; // Change this to your database password
$database = "your_database"; // Change this to your database name

// Create connection
$conn = new mysqli($servername, $username, $password, $database);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}

echo "Connected successfully";
?>
```

ComboBox and Button used in this project, with the If Statement whichcarries out the conditions and statements for each button pressed.

Below is the screen shot of “Save to Database” button and the customer record is inserted into the customer table using the SQL statement.

The absence of customer number is intentional because it is assigned automatically in the database which is set to be primary key in the table and also in payment table and product table.

The following screen shot showing when the each button is added to the ActionListener Method, if by any mistake the button is not added to the method, no action will perform regales of complex codes or SQL queries.

```
sbutton.addActionListener(this);
cbutton.addActionListener(this);
vbutton.addActionListener(this);
searchcustomer.addActionListener(this);
makepayment.addActionListener(this);
```

Considering the time, the above codes are adopted in other classes (flight ticket, cancel andpayment).

6 Testing

6.1 Introduction

This chapter is centred on checking if the system is doing what is suppose to be doing. The testing is crucial stage in any development and this project it will be inevitable but also necessary for checking system functionalities. The testing will be of twofold:

6.2 Test Plan:

To test the artistic exchange project, the following test plan can be used:

6.3 Functional Testing:

Verify that users can search for products based on various parameters (origin, productname,productid etc.)

Verify that users can select and buy a product, and that the order is saved in the databaseVerify that users can view their orders and cancel or modify them if necessary

Verify that payment processing is working correctly and that orders are marked as paidor unpaid accordingly

Verify that users receive confirmation emails after making a order

6.4 Usability Testing:

Verify that the user interface is intuitive and easy to use

Verify that the layout and styling are consistent and visually appealing

Verify that the system is responsive and works well on different devices and screen sizesVerify that error messages and prompts are clear and helpful

6.5 Performance Testing:

Verify that the system can handle a high volume of traffic and requests

Verify that the system responds quickly and efficiently, even with a large number of usersVerify that the system can handle multiple orders and payments at the same time

6.6 Security Testing:

Verify that the system is secure and protects sensitive user data

Verify that the system is resistant to common attacks, such as SQL injection or cross-sitescripting

Verify that the system uses secure protocols, such as HTTPS, for transmitting data

6.7 Compatibility Testing:

Verify that the system is compatible with different web browsers, such as Chrome, Firefox,and Safari

Verify that the system works well with different operating systems, such as Windows,macOS, and Linux

Verify that the system is compatible with different devices, such as desktop computers,laptops, and mobile phones.

7 Conclusion

7.1 Introduction

This chapter is focused on both the work carried out so far in this project and the system functionality evaluation.

7.2 Analysis and Design evaluation

An Artistic Exchange system is a complex and critical application that enables customers to search, select, and orders online. The system should provide a user-friendly interface, fast and accurate search results, and secure payment processing.

The following are some key aspects to consider in the analysis of an airline booking system:

User interface design: The system should have an intuitive and easy-to-use interface that allows customers to quickly find and order.
Product search: The system should provide fast and accurate search results based on various parameters, such as productname and category .
order process: The system should provide a streamlined and secure order process that guides customers through the steps of selecting products, entering shipping information,and making payments.
Payment processing: The system should support various payment methods, such as credit cards, debit cards, and online payment systems, and provide secure and reliable payment processing.
Customer management: The system should allow customers to manage their order, view their order status, and access their order history.
Data management: The system should provide robust data management capabilities, including data storage, retrieval, and analysis, to support business operations and decision- making.

7.2.1 Design stage

The design of an artistic exchange should be based on the analysis of the system requirements and the user needs. The following are some key aspects to consider in the design evaluation of artistic exchange:
Usability: The system should be easy to use and navigate, with clear and concise instructions and feedback.
Performance: The system should provide fast and accurate search results and order processing, with minimal downtime and errors.
Security: The system should provide secure payment processing and data management, with robust encryption and authentication mechanisms.
Scalability: The system should be scalable and flexible, with the ability to handle a large volume of traffic and support future growth and expansion.
Integration: The system should be able to integrate with other systems and services, such as payment gateways, product buying, and customer relationship management systems. Testing: The system should be thoroughly tested and validated, with regular updates andmaintenance to ensure optimal performance and security.

7.2.2 Possible Improvement

There many features that can be added to the system to make it better.

- Card payment system can be used instead of manual type. Also, the system can be linked to company website so that customer can access and use the system independently of the staff.
- Security; The system's security is not very good which is a loop for unauthorised access and this can be enhanced by incorporating authentication system with the system so that access or operation will base on user's permission and this will give
the administrator to manage the system efficiently, effectively and less vulnerable to unauthorised access and system malfunctions.
- Communication; the business to customer communication channels can be improved via auto email for buying products and invoice confirmation. Database queries, pricing engine with a tax calculator for a website's shopping cart.
- Print; the system can be enhanced to be able to print records for filing purpose.

8 References

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