Online Auction System

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Introduction:

The purpose of this document is to build an Online Application System using Java , CSS, HTML, JavaScript, Servlet, JDBC, JSP and MVC Technology.

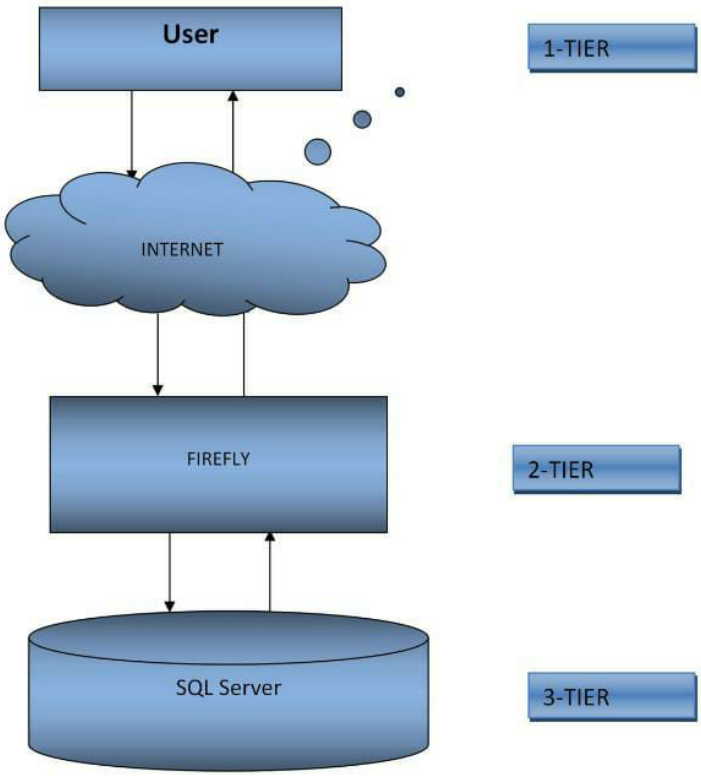
Scope:

The purpose of this project is to enable users to comfortably engage in Auction just by sitting at home , to place a bid for a product or add a product for an auction.

Three-tier architecture :

For the realization of the on line auction system we used a 3-tier system architecture as shown on this schema. In such architecture, there are 3 main elements:

- The client tier, that is responsible for the presentation of data, receiving user elements and controlling the user interface.
- The application server tier, that is responsible for the business logic of the system. In fact, business-objects that implement the business rules "live" here, and are available to the client-tier. This tier protects the data from direct access by the clients.
- The data server tier, that is responsible for data storage. As data server, we used Mysql, an open-source relational database.



Functional Requirements And System Design:

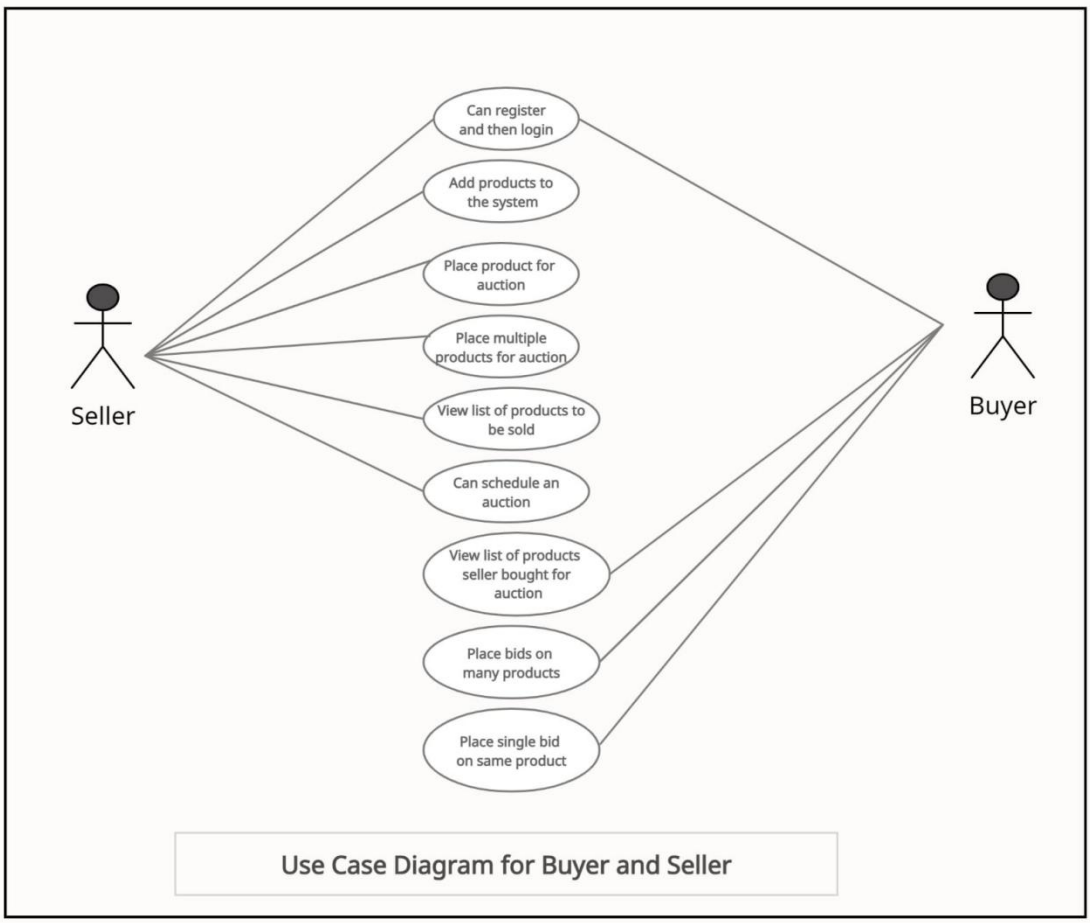
The first step of the project is to find the functional requirement of the on line auction portal with the help of techniques like Use Cases and User Stories.

After having found the functional requirements, the project goes on with the system design using the following techniques: the UML class diagram, the EER diagram for the database design and the page flow diagram.

Use Cases :

The first step for the functional requirement collection are the use cases. Use cases are "a description of set of sequences of actions, including variants, that a system performs that yield an observable result of value to an actor".
They are used in order to: design system from user's perspective, communicate system behaviour in user's term and enumerate all externally visible behaviour [11].

Here are the use cases for the on line auction system project (there are two actors for the system: a buyer and a seller).



Buyer:

Registration:

The registration page allows user to provide his/her personal data (name, address, date of birth, fiscal code, email address, phone number, buyerID, password) and receive a buyerID and a password. buyerID and password allow the user to access to his/her personal page, to take part to the auction and to post a new auction. It performs basic checks on entered data and provides user registration or an error message if the buyerID and/or user fiscal code are already present in the system.

Login :

Every time the user tries to access to non-public areas (personal page, bid, post an auction…), he/she is asked to provide his/her personal ID and password. These are entered through a form. If buyerID and password are correct, the user is logged in and is no more asked to login throughout the session. Otherwise an error message is raised.

Browse:

The user can browse the auctions selecting among several categories of items (e.g. cars, books etc.). The results will be shown in a table and the user can sort them by price, by auction interval (by lasting period of the auction).

Item page:

Item characteristics are shown in the item page. From this page the user can place a bid pushing the button "PLACE A BID" and view the chronology of the bids.

Bid:

The buyer that makes a bid is asked to login if not already logged. If the bid is accepted by the system, the item is listed in the user personal page. Bids can only be placed during the auction interval and they must be at least one minimum increment bid above the current price.

Seller:

Seller Page: From the login page, providing his/her administratorID and password, he/she can access the administrator page, that shows the administrator menu to access all the administration activities (manage items, manage users, manage categories).

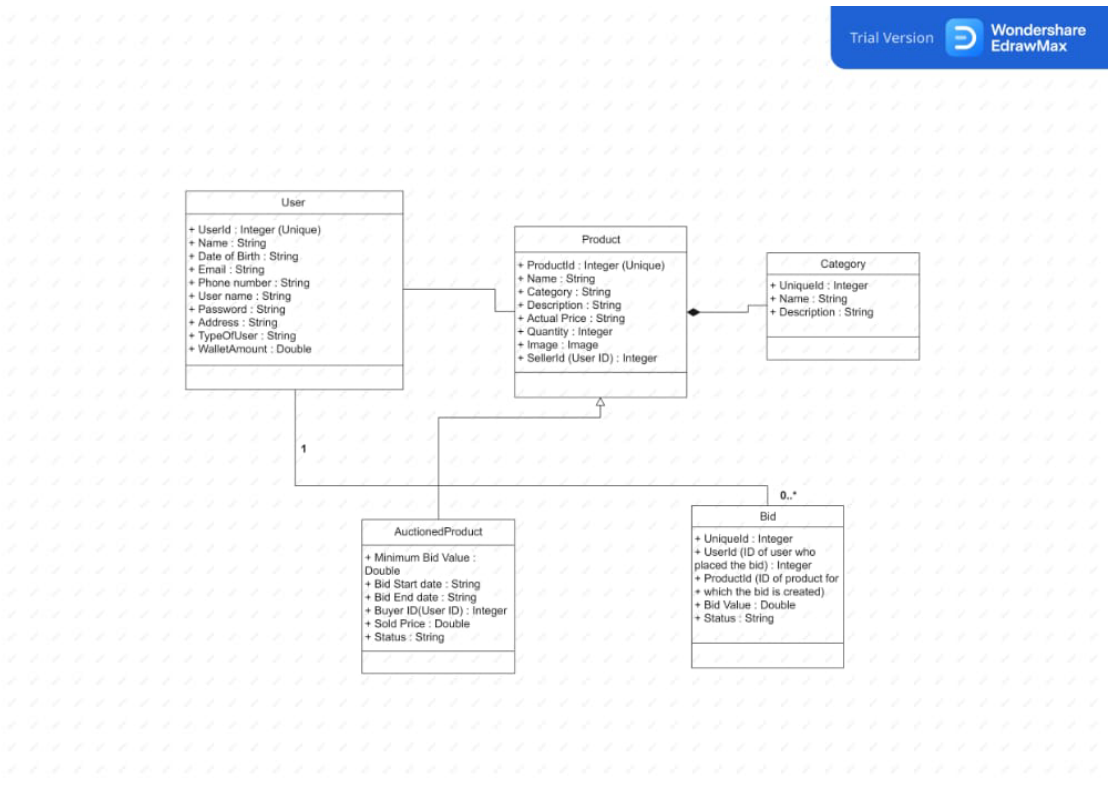
Manage Items: The Seller can access all data about items stored in the database and also delete them, but not modify the characteristics of the items (initial price, description etc.).

Manage Users: The Seller can access and modify all data about users stored in the database and also delete them.

Manage Categories: The Seller can access and modify all data about categories stored in the database, add a new category and also delete them. The administrator can delete a category if and only if no items are associated to that category; otherwise an error message is raised.

UML Class Diagram :

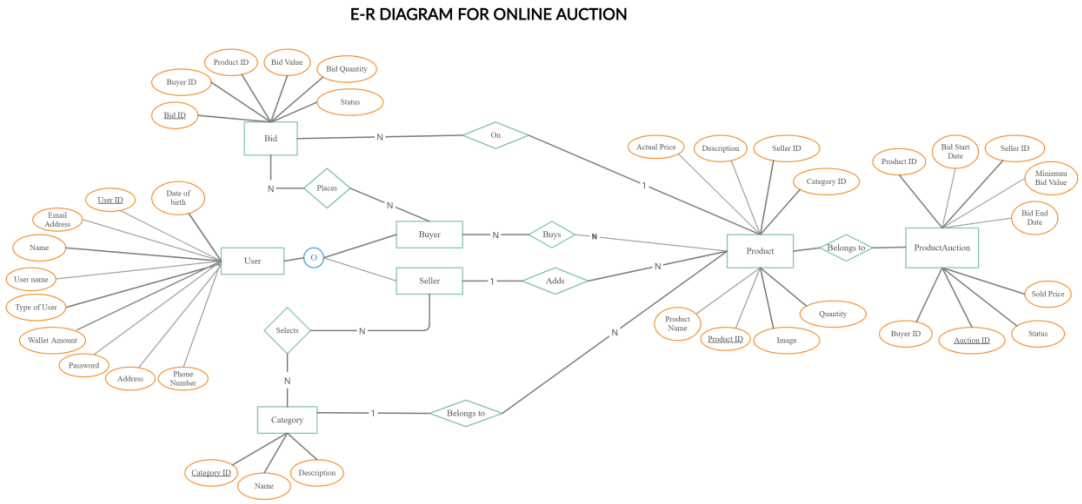
The next step of the design phase is to draw an UML Class Diagram of the system. Since the programming language of the system is an object oriented one, an UML Class Diagram is particularly adapted to show the classes of the system, their interrelationships, and the operations and attributes of the classes . Here is the class diagram of the project.



ER Diagram for Database Design :

After having drawn the UML Class Diagram for the On Line Auction System, it is clear what kind of data should be stored in the database. Since MySQL is a relational database, the EER modelling approach is very useful to design the database schema

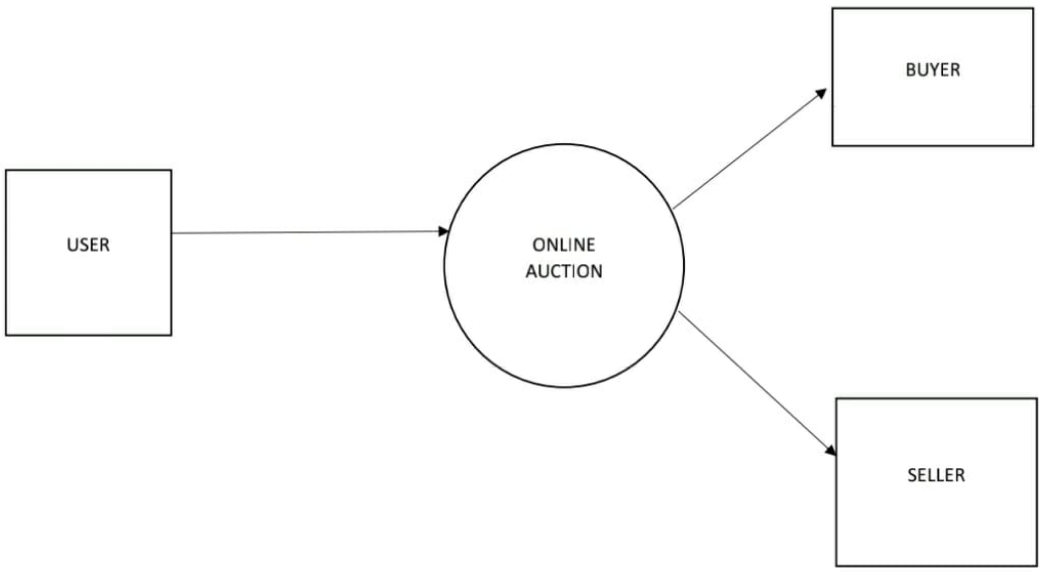
since it maps well to the relational model and the constructs used in the ER model can easily be transformed into relational tables . Here is the EER Diagram for the database of the system.



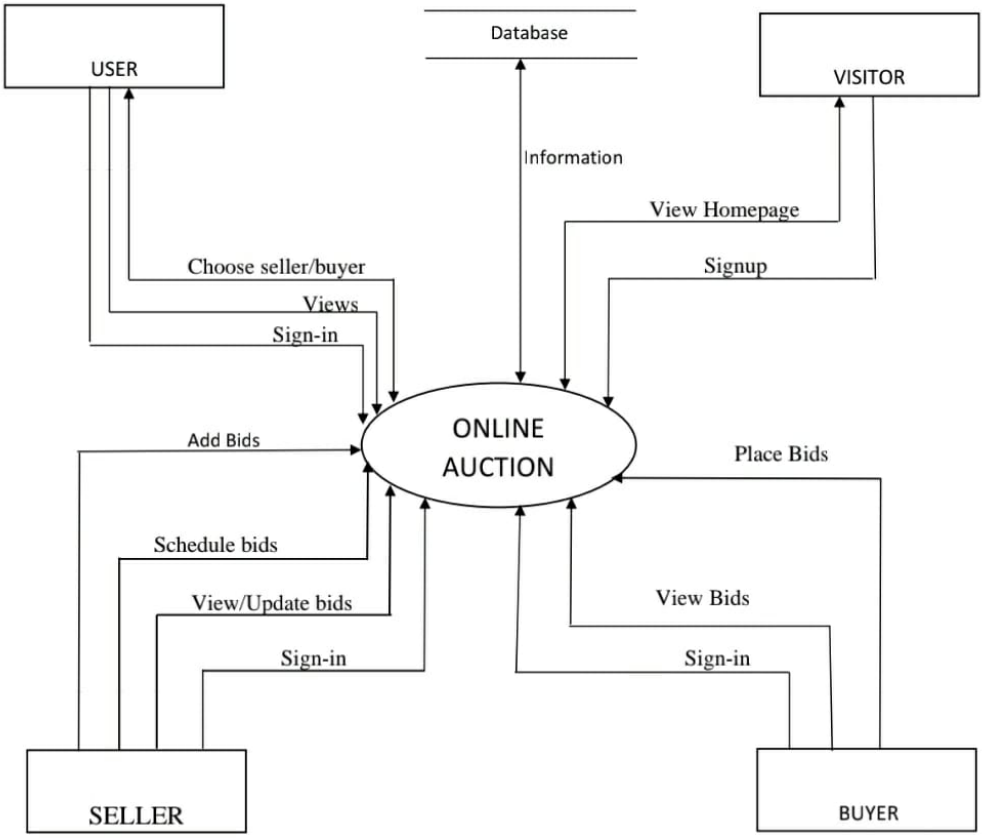
Data Flow Diagram :

Since the on line auction portal consists of web pages, it is useful to draw a page flow diagram. A page flow is a diagram that visually organizes the flow and actions of the web pages . Here is the page flow that represents the path, for a normal user, to register to the system, search for an item and place a bid and make a logon.

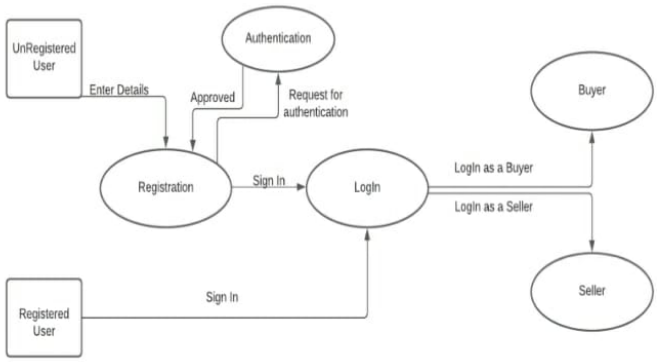
Level 0 DFD



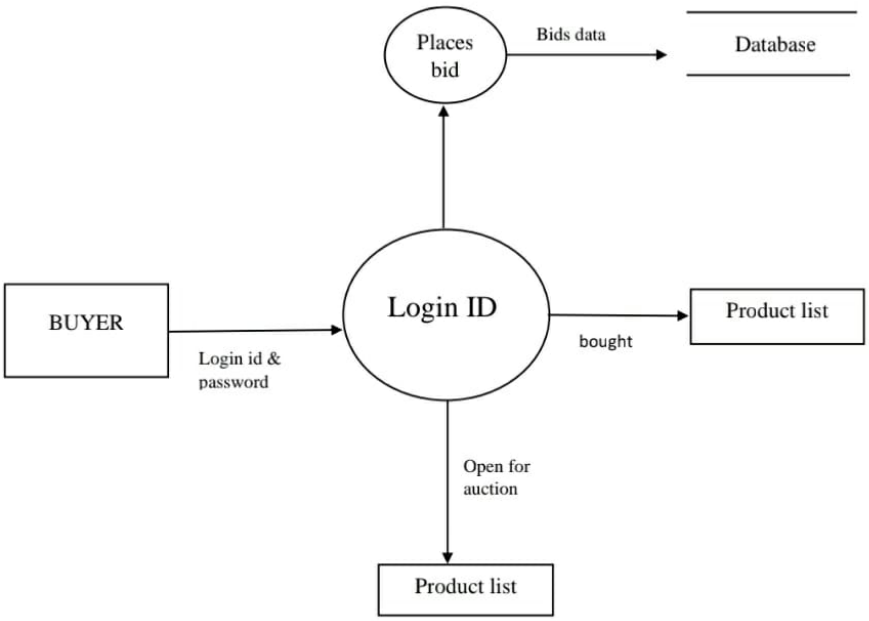
LEVEL- 1 DFD


USER
Database
VISITOR
Information
View Homepage
Choose seller/buyer
Signup
Views
Sign-in
ONLINE
AUCTION
Add Bids
Place Bids
Schedule bids
View Bids
View/Update bids
Sign-in
Sign-in
SELLER
BUYER

LEVEL 2 DFD



LEVEL 3 DFD (BUYER)



Conclusion:

Knowledge Acquired:

During the development of the project we have worked with all the technologies that we learned during our training in HSBC.
We tried to experiment and test all the technologies in this project.
With this project we also had the opportunity to see in practice the modelling techniques (use cases, user stories, UML class diagrams, EER diagrams, page flow diagrams).

Future Works: The online auction portal works very well in all of its functionality. However, some future works can be done on the existing system: • Add an SSL security system. Since a registered user can post new auctions, place bids, send messages etc., username and password are sensible data. So it could be useful to protect these data from being intercepted by a third party. • Add a chat room to the portal. It would be nice for a user to enter in a chat room to talk with other users about auctions or any other topic. This chat can be realized using the Java Applet technology. • Add a more attractive graphics to the web pages of the portal. The site is very easy to browse, also for new users, because the pages are simple and clear. However, the graphics of the site is also much simple, so it could be the case to improve it in order to attract more users.