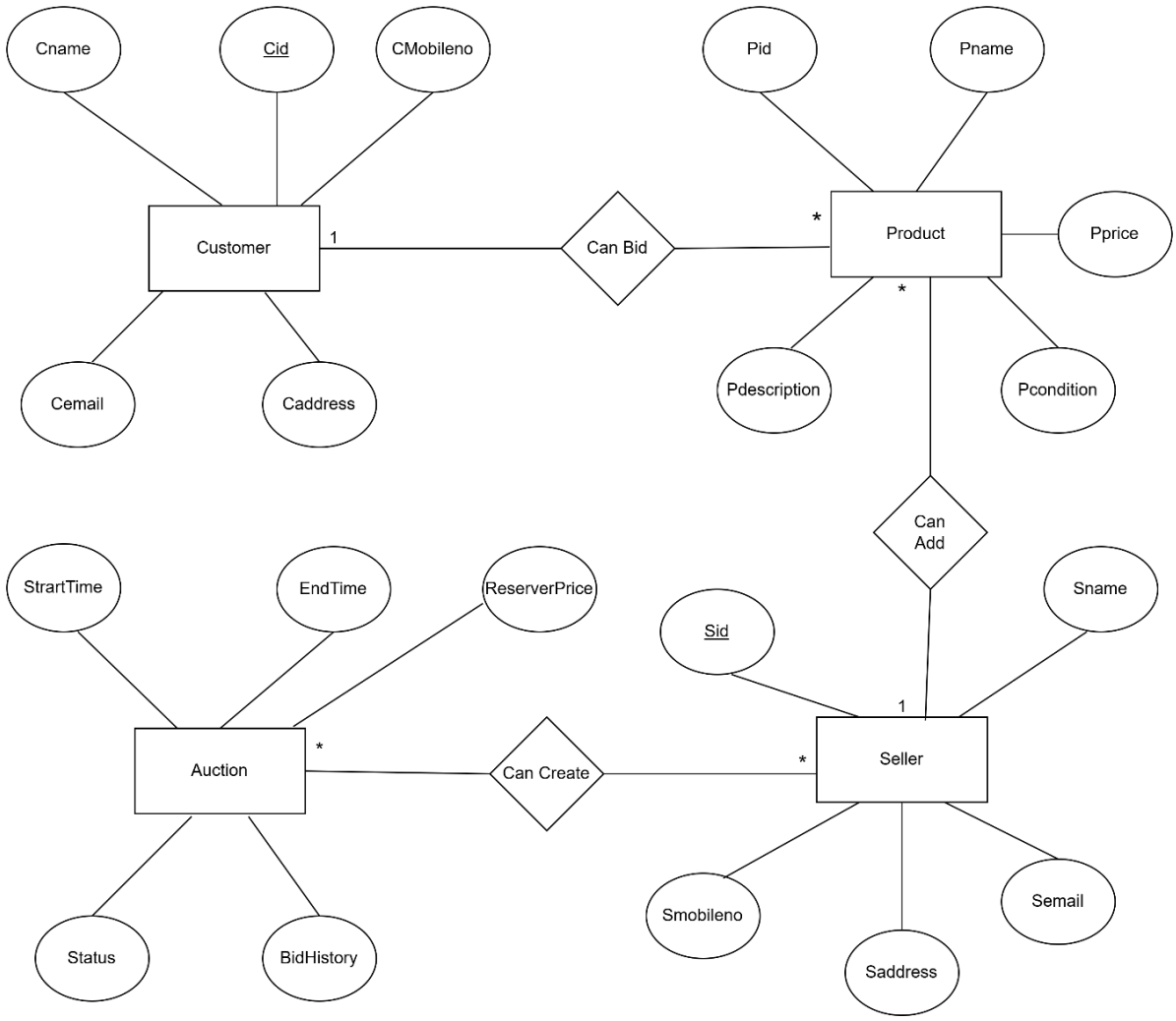
### 1.1 Module Hierarchy Diagram


**Module Hierarchy Diagram for Online Auction Platform**

The online auction platform is designed with a user-friendly structure, offering three main sections to facilitate smooth navigation and interaction. The Home section serves as the landing page, providing a welcoming entry point for all users. The Products section allows users to browse product listings, view detailed product information, and, if interested, access the bid history for each item. This section also provides quick links for user login and registration, ensuring that users can easily engage with the platform's features. The Account section enables users to manage their personal information and revisit their bid history, offering a centralized space for account-related activities. This intuitive layout supports a seamless transition from general browsing to specific actions such as bidding and profile management, enhancing the overall user experience.

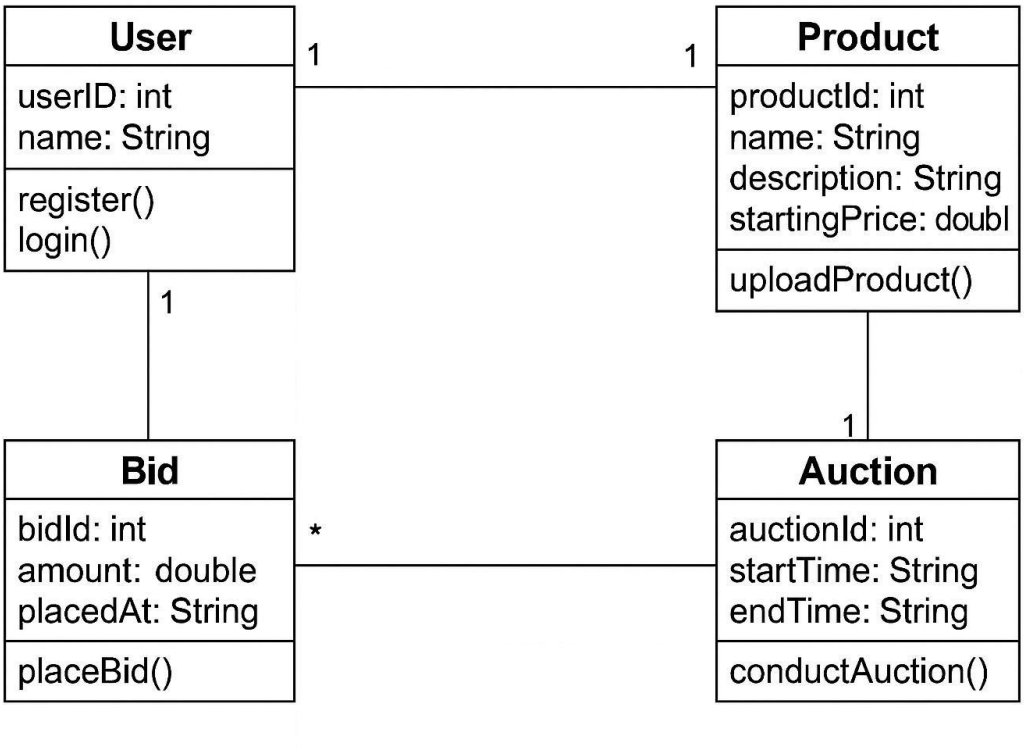
## 1.2 ER Diagram




**ER Diagram for Online Auction Platform**

The ER diagram for the online auction system outlines the relationships between three primary entities: Customer, Seller, and Product. Customers, identified by a unique Cid, participate in auctions by placing bids on available products. Each Auction records essential details such as the start time, end time, reserve price, status, and maintains a comprehensive bid history. On the other hand, Sellers—identified by Sid—are responsible for creating auctions and adding products to the platform. Seller profiles include key attributes such as name, email, mobile number, and address. The Product entity, linked to both auctions and sellers, contains critical product information including the product ID (Pid), name, price, description, and condition. This ER structure clearly defines how users interact with the system and how data is interconnected to support seamless online auction functionality.

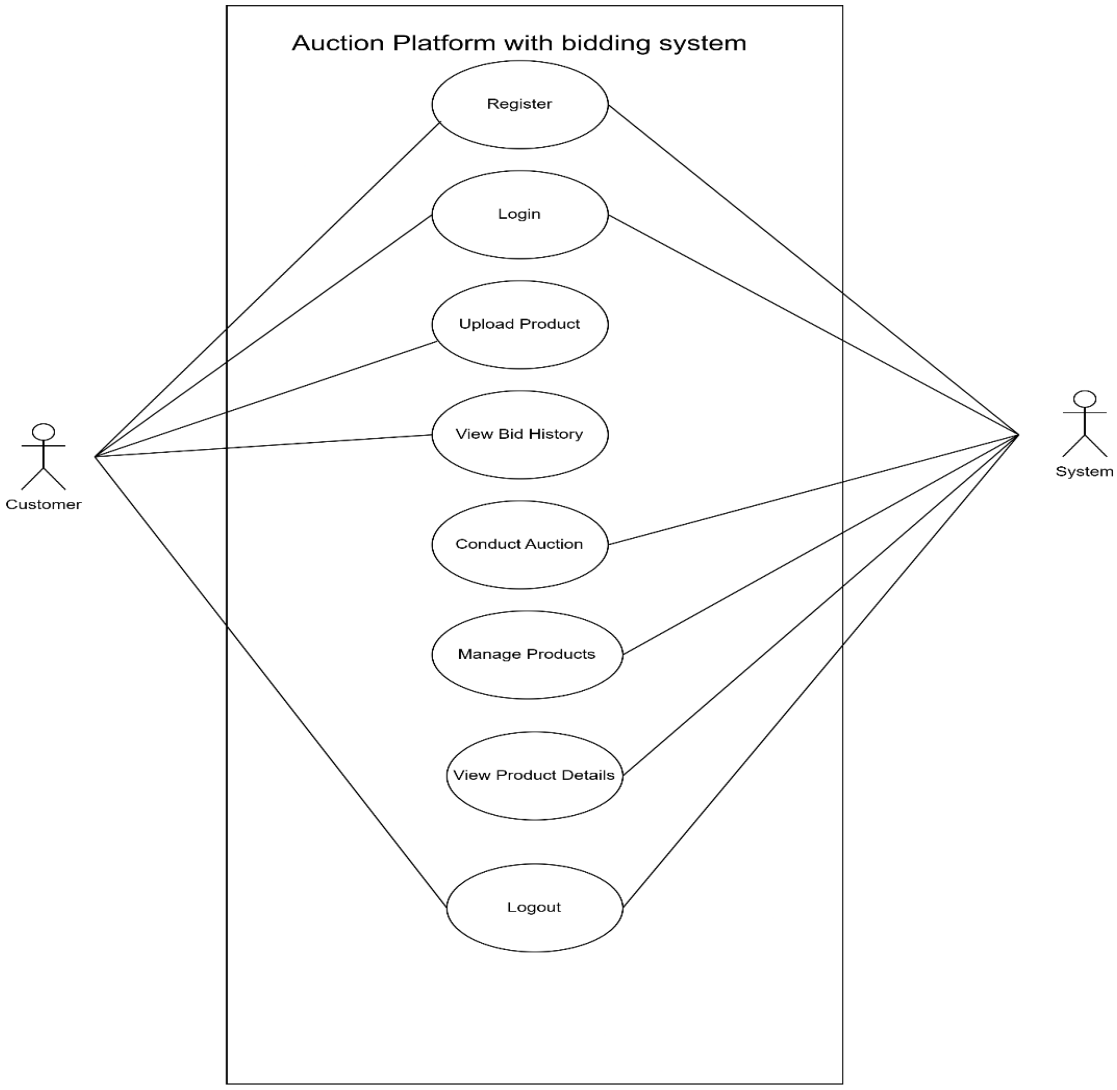
### 1.3 Class Diagram




**Class Diagram for Online Auction Platform**

This diagram captures the fundamental structure and functionality of an online auction system with proper cardinality, helping clearly understand user-product, auction, and bidding behaviors. It's useful for both system design and communication among development teams.

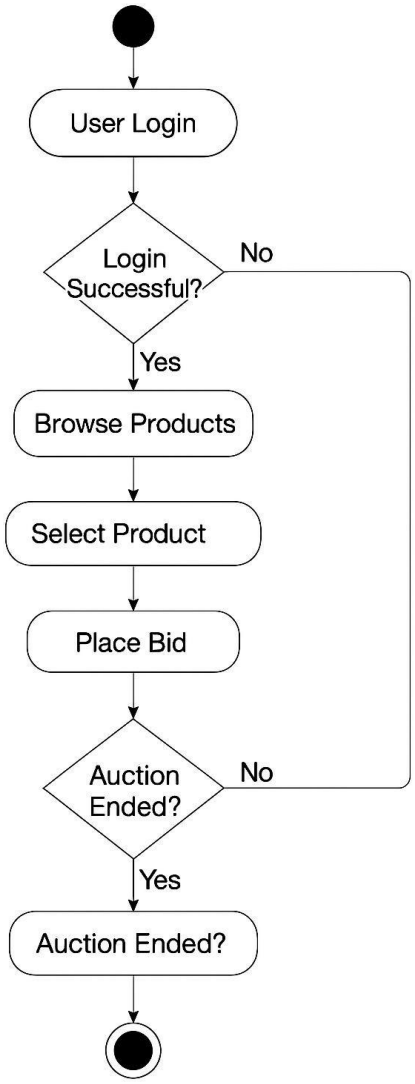
## 1.4 Use Case Diagram




**Use Case Diagram for Online Auction Platform**

This case diagram represents a user interacting with an online auction platform. The user can Register, Login, Upload Products, View Bid History, Conduct Auctions, Manage Products, View Product Details, and Logout. All actions are shown in a single, organized system boundary, with use cases aligned vertically for clarity. The diagram reflects a streamlined auction flow from account creation to product management and bidding participation.

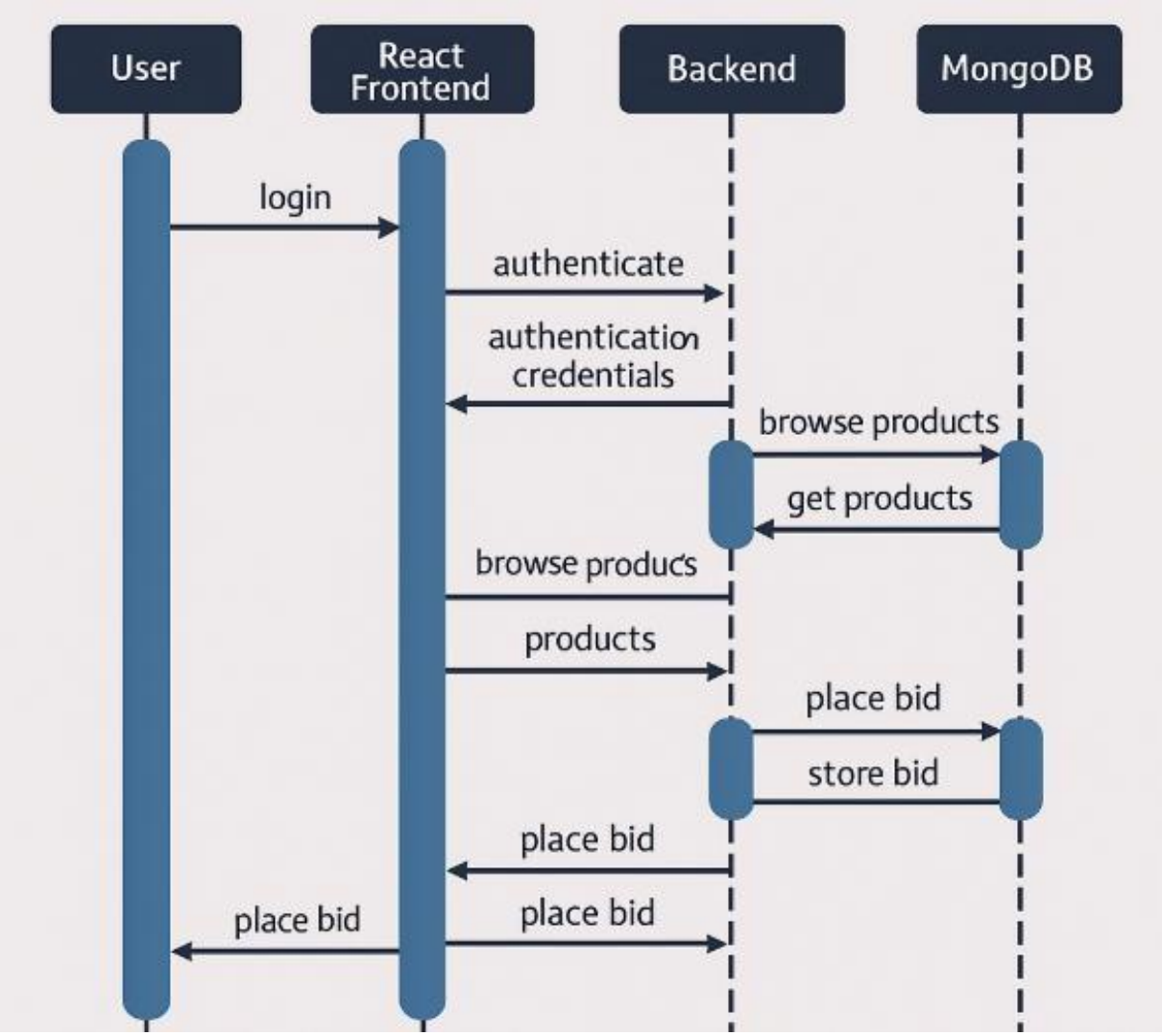
### 1.5 Activity Sequence




**Activity Sequence for Online Auction Platform**

The online auction platform follows a streamlined user interaction flow, beginning with the user login process. Once the user enters their credentials, the system performs a login check to verify authenticity; if unsuccessful, the user is prompted to try again. Upon successful login, the user can browse available products and select a product of interest. The system then displays detailed auction information related to the selected item. If the user wishes to participate, they can place a bid through the platform.

### 1.6 Sequence Diagram




**Sequence Diagram for Online Auction Platform**

The sequence diagram illustrates the user interaction flow within an online bidding system, highlighting the communication between the user, React frontend, backend, and MongoDB database. Initially, the user interacts with the frontend to log in, triggering an authentication request to the backend. The backend then validates the credentials with the database and returns the result to the frontend. Once authenticated, the user can browse products, prompting the frontend to request data from the backend, which in turn retrieves product information from MongoDB