A Project Report
On:

AuctiSafe: Building a Robust & Reliable Auction System

Presented To:
Department of FEST Faculty of Engineering Science & Technology.
IQRA University, Karachi.

Coordinator: Dr. Aarij Mahmood Hussaan
Supervisor: Dr. Abdul Ahad Abro

Final Year Project – 1

1. Project Title:

- ✓ AuctiSafe: Building a Robust & Reliable Auction System

1.1. Project Description:

An online auction management system streamlines the process of organizing and conducting auctions, enabling auctioneers to manage efficiently all aspects of the auction from start to finish. The system provides a platform for bidders to participate in the auction process remotely, which increases the reach and visibility of the auction, leading to increased participation and higher bidding amounts. It simplifies the process of organizing and conducting auctions, enabling auctioneers to efficiently manage all aspects of the auction, from item cataloging to bidder registration and payment processing. The system's functional requirements include registration and login, auction creation, item listing, bidding, payment processing, notifications, and auction history. Non-functional requirements include performance, usability, security, and reliability. The end-users of the system can include auction administrators, sellers, bidders, buyers, and shipping and logistics providers. The system is designed to protect user data, and prevent fraud, while being stable and available at all times, with minimal downtime.

1.2. Supervisor:

- Dr. Abdul Ahad Abro

1.3. Group Members:

Members	**Registration.ID**	**Email**	**Role**
Wajiha Jawwad Ali	021-20-52023	Wajiha.52023@iqra.edu.pk	Group Leader
Muhammad Yasir	021-20-52030	Muhammad.52030@iqra.edu.pk	Member
Abdul Qadir	021-20-52841	Abdul.52841@iqra.edu.pk	Member
Ibrar Ali	021-20-54199	Ibrar.54199@iqra.edu.pk	Member

1.4. Project Main Features:

- ✓ Authentication When Seller/Bidder Creates Account
- ✓ Implementations of more types of auction as possible,
  - Dutch Auction
  - English Auction
  - Reverse Auction
  - Forward Auction
  - Reserve Auction
  - First Price Auction
  - Sealed Bid Auction
- ✓ Online Payment Processing
- ✓ Report service to Seller/Bidder

2. Requirements:

2.1. Functional Requirements:

2.1.1. Admin:

To access the admin panel, the admin must enter their email and password and then click on the login button. Next, an OTP will send to the admin's system email, which they will need to enter in order to redirect to the home page.

The admin will have the rights to view details of:

- sellers and bidders, items
- activities of sellers and bidders
- Delete accounts (optional)
- Manually suspend or activate accounts
- Manually register accounts
- Manually change passwords
- Manually edit account information.

2.1.2. Authentication:

By default, the application's base URL (xyz.com) should take the user to the index page (i.e. xyz.com/index.aspx) or a similarly qualified URL. To enter the application, the user must successfully log in using their correct email and password, then click on a button to request an OTP Verification code, which will be sent to their registered email address. The user must enter the correct OTP verification code to be redirect to their home page.

There will be no limit on the number of attempts, the user can make to log in, but they will receive an error message whenever they provide invalid credentials. The login page should include links to the Registration page for new users, login as an Admin, and the Forgot password page. To log out of the application, the user should click on the Log Out link provided on the right-hand corner of each page (appearing after they have successfully logged in).

2.1.3. Signup/Registration:

The New Registration page provides a form for new users to register themselves by providing unique identification. It should also contain a link to the Login page. The form will have the following mandatory fields:

- First Name
- Last Name
- Email
- Password

- Confirm Password
- Phone Number
- CNIC
- Address
- Account Number (for receiving amounts from bidders)

After filling in the required fields, the user can click on the Register button. Next, there will be a two-way authentication process.

First, a verification code will send to the email address the user provided during registration. The user will need to enter the verification code to complete the first step of authentication.

For the second step of authentication, Insert a captcha of any image.

Additionally, there will be a check box on the registration form for users to agree to all terms and policies before successfully registering on the website.

2.1.4. **Forgot/Remember Password:**

If a user forgets their password, they can retrieve it using the Forgot Password page. They will need to provide their registered email address and click on the "Forgot Password" button. The system will then send an OTP code to their email address. The user will need to enter the OTP code in the system. If the given OTP matches the sent OTP, the system will display two new fields: New Password and Confirm Password. The user can then enter their desired new password and confirm it in the corresponding fields. After that, they can click on the "Change Password" button to finalize the password change.

2.1.5. List Items/Create Auction/Sell Item:

To create a new auction for selling an item, the user must provide the following mandatory details:

- Picture of the item
- Category of the item
- Product name
- Title
- Desired auction type or customize their auction from the following
    i. Dutch Auction
    ii. English Auction
    iii. Reverse Auction
    iv. Forward Auction
    v. Reserve Auction
    vi. First Price Auction
    vii. Sealed Bid Auction
- Money amount depending on the selected auction

- Time period of the auction
- Description about the item

Once the user has filled in all the required fields, they can click on the "Create" button. The system will then send an OTP verification code to the user's email address. The user must enter the OTP code in the system to create the auction.

After successfully creating the auction, it will display on the user's (owner) homepage with the name of their item.

2.1.6. Start Bidding/Give Offer:

Before starting a bid on any item, the system will check whether the item has remaining time or has already started selling. If the selling has started, the system will send an OTP code to the bidder's email, and the bidder must enter the code in the system.

2.1.7. Bid Winner:

After Creating auction, bidders will be able to bid and bidding pattern will behave upon the selected auction on product and after auction time system will execute a query and find the winner according to auction which will be selected auction and then bidder will pay amount of bid then tax (13%) and registration fees (10%) will deduct from auction payment and then remaining payment will transfer from our company to auctioneer after delivered the product to bidder.

2.1.8. Payment Processing:

After the bidding is complete, a confirmation email will send to the winner/selected bidder of the auction. The bidder will then need to pay the amount of the item that they have won, which depends on how much they have bid. The system will provide some text fields that the bidder will need to fill out including

- Credit card No
- CV
- card issue date
- card expiry date
- Amount

The amount field will automatically fill by the system to reflect the amount the bidder has to pay the seller. Once the bidder fills out the required fields, they can click on the "Transfer" button to transfer the money from their account to the seller's account.

There are several payment methods available, including

- PayPal (not available in Pakistan)
- HBL API

- Allied Bank API
- Bank Al Habib API
- Easy-Paisa API

During the development phase, one of these payment APIs will selected based on its suitability.

2.1.9. Report:

If a person is fraud by someone, they can report the offender by filling out a form with the fraudster's email and description of the incident. Once the report submitted, it will save in the system.

The system will track the number of reports received against each seller/bidder account. If an account receives three or more reports from different accounts, it will suspend, and an email notification will send to the account holder. If the suspended account holder attempts to log in, they will redirect to a suspension page.

2.2. Non-Functional Requirements:

2.2.1. Response Time:

If user performs any function in software so the redirection on new page / completion of task will done in maximum 5 seconds.

2.2.2. Security:

- **Confidentiality:**
  Confidentiality must implement to ensure that the sensitive Data of individual users will secured and protected from other users.
- **Integrity:**
  To ensure the security of sensitive data during operations like authentication and payment processing, it is essential to maintain integrity in the system. This involves using security algorithms like MD5 or SHA to hash the data and secure its transmission from the client-side to the server-side.

2.2.3. Usability:

The Software Design should be very user-friendly meaning it should cater all types of users, including like technical person, non-technical individual. This will

Achieve by using fluent and understandable English, Common Icons and avoid complicated design.

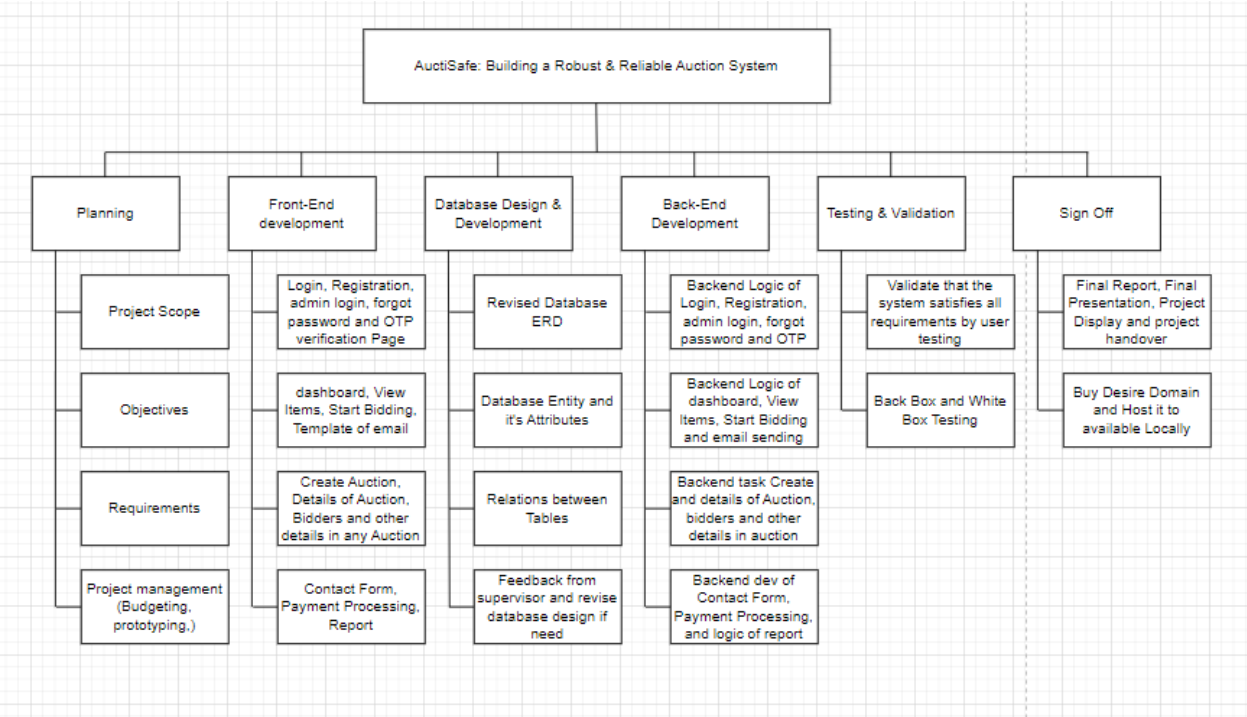
2.2.4. Maintainability:

The Software data should be have maintained and stored in a database. The database should design in a Normalized form and all the data of the system should kept up-to-date in Database.

3. Gantt Chart:

	Task name	Start date	End date	Duration	Status	Progress	Resource
		01/04/2023	05/01/2024	40w		28%	
1	AuctiSafe: Building a Robust and Reliable ...	01/04/2023	05/01/2024	40w	In progress	20%	All Member
2	FYP-I Timelines	01/04/2023	16/06/2023	11w	In progress	20%	All Members
3	Project Approval	01/04/2023	07/04/2023	1w	Done	100%	All Members
4	Introduction of Project: Project Title, Scop...	08/04/2023	14/04/2023	1w	Done	100%	All Members
5	Literature Review Of Auction System	15/04/2023	21/04/2023	1w	Done	100%	Yasir & Qadir
6	Research Methodology: Complete Resear...	22/04/2023	28/04/2023	1w	Done	100%	Wajiha & Qadir
7	Iteration 1: Functional & Non-Functional ...	29/04/2023	12/05/2023	2w	Done	100%	All Members
8	Iteration 2: Development Analysis by ERD...	13/05/2023	26/05/2023	2w	In progress	50%	Wajiha, Qadir ...
9	Iteration 3: Designing & Prototype of Auc...	27/05/2023	02/06/2023	1w	Open	0%	Yasir, Qadir & I...
10	Poster Making	03/06/2023	09/06/2023	1w	Open	0%	All Members
11	Complete Project Report	10/06/2023	16/06/2023	1w	Open	0%	All Members
12	FYP-II Timelines	23/09/2023	05/01/2024	15w	Open	0%	All Members
13	Iteration 1: Development of 'Login/Signup...	23/09/2023	06/10/2023	2w	Open	0%	Wajiha, Yasir & ...
14	Iteration 2: Core Features Development &...	07/10/2023	13/10/2023	1w	Open	0%	Ibrar & Qadir
15	Testing: Login/Signup, Main Home Page, ...	14/10/2023	17/10/2023	4d	Open	0%	Wajiha & Ibrar
16	Iteration 3: Additional Features Developm...	18/10/2023	27/10/2023	1w 3d	Open	0%	Wajiha, yasir & ...
17	Iteration 4: Implementation of Payment P...	28/10/2023	10/11/2023	2w	Open	0%	Ibrar , Qadir
18	Testing of Implemented Parts, Bug Testing	11/11/2023	17/11/2023	1w	Open	0%	Wajiha & Ibrar
19	Iteration 5: Design & Development: Woul...	18/11/2023	01/12/2023	2w	Open	0%	All Members
20	Iteration 6: Final Testing, Bug Testing and ...	02/12/2023	22/12/2023	3w	Open	0%	All Members
21	Final Draft	23/12/2023	05/01/2024	2w	Open	0%	All Menbers

4. WBS:

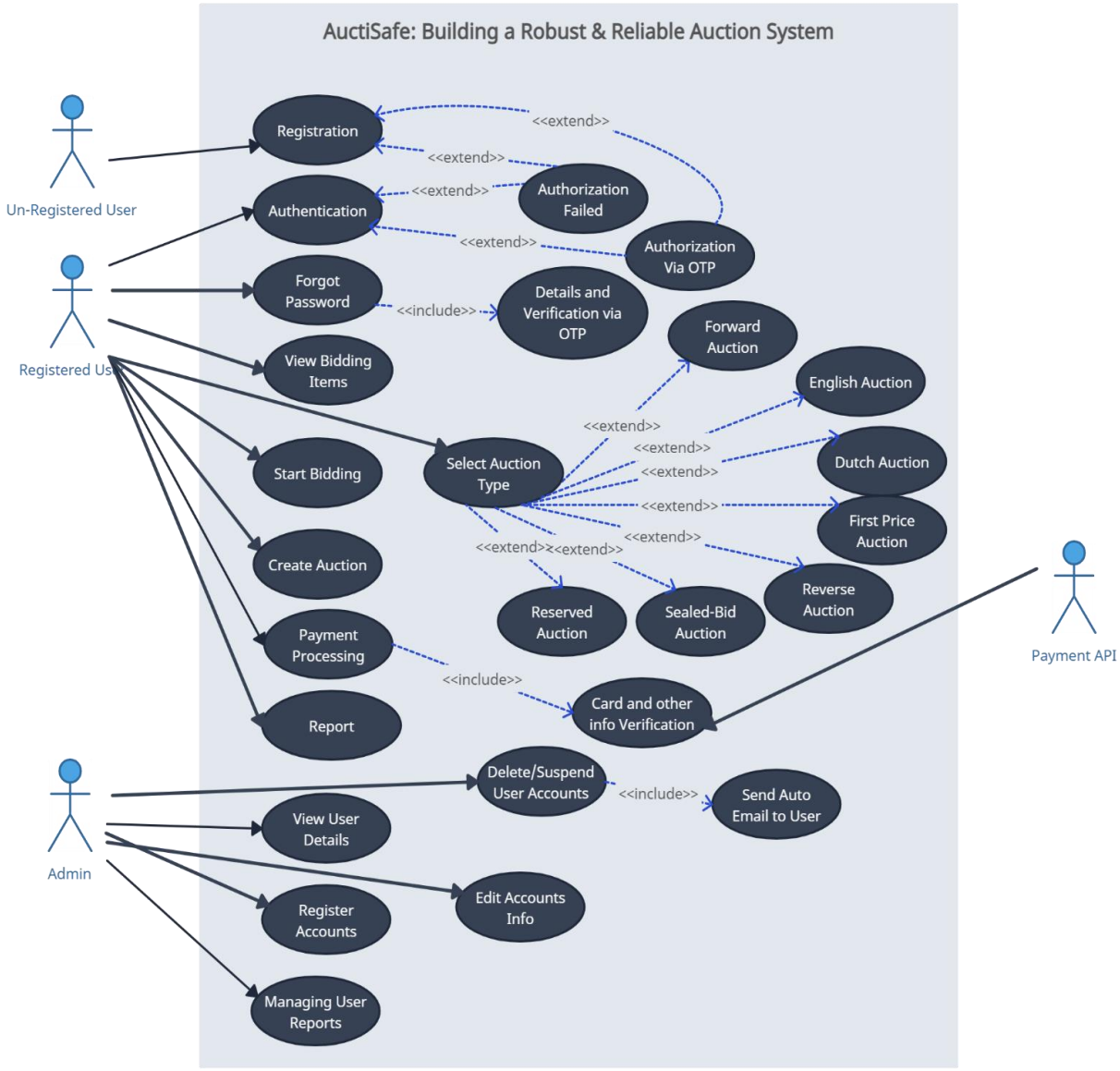


5. Task Distribution:

Task	Wajiha	Yasir	A.Qadir	Ibrar

FYP 1 Tasks:				
Project Approval	✓	✓	✓	✓
Introduction to project: project title, scope, objective	✓	✓	✓	✓
Literature View of auction System	--	✓	✓	--
Research Methodology: Complete Research	✓	--	✓	--
Iteration 1: Functional & non Functional Requirement, Gantt Chart, WBS	✓	✓	✓	✓
Iteration 2: Development Analysis by ERD, Use Case	✓	✓	✓	--
Iteration 3: Designing & Prototyping of AuctiSafe	--	✓	✓	✓
Poster Making & Budgeting	✓	✓	✓	✓
Complete Project Report	✓	✓	✓	✓
FYP 2 Tasks:				
Iteration 1: Development of "login, signup, registration, forget password and OTP"	--	✓	✓	--
Iteration 2: Core Features Development & Basic User Interface Design	--	--	✓	✓
Testing: Login, Signup, home page, bug testing	✓	--	--	✓
Iteration 3: Additional Features Development "7 Types of Auction", Listing items, Create Auction, Selling, Bidding & Feedback, Database Creation, and API integration	✓	✓	✓	--
Iteration 4: Implementation of Payment Processing Authentication with Database , APIs Conditions	--	✓	✓	✓
Testing of implemented Parts: Bug Testing, white and black box testing	✓	--	--	✓
Iteration 5: Design & development would do changes if necessary	✓	✓	✓	✓
Iteration 6: Final Testing , bug , white box, black box, user testing and overall system refinement	✓	✓	✓	✓
Final Draft	✓	✓	✓	✓

6. Use Case Diagram:



7. Use Case Stories:

Use Case-1 REGISTRATION	
Description:	This use case involves the process of registration for an unregistered user who wants to get registered in AuctiSafe. The user provides the necessary information, completes the registration form, verifies their email address using OTP, and successfully passes the CAPTCHA verification to create an account and gain access to the system's features.
Actor:	Unregistered Users
Trigger:	The trigger for this use case is when an unregistered user initiates the registration process by accessing the AuctiSafe platform.
Preconditions:	1. The user has not previously registered or created an account in AuctiSafe. 2. The user has access to a device with an internet connection.
Normal Flow:	1. The user visits the AuctiSafe website or opens the AuctiSafe application. 2. The user locates the registration section or clicks on the "Register" button/link. 3. The system presents the registration form to the user, prompting them to provide the required information. 4. The user fills in the necessary details, including their name, email address, desired username, and password. 5. The user agrees to the terms and conditions of using AuctiSafe 6. The user completes the CAPTCHA verification by entering the displayed characters or solving the provided puzzle. 7. The user submits the registration form. 8. The system validates the entered information, checking for any errors or missing fields. 9. If the provided information is valid, the system generates a One-Time Password (OTP) and sends it to the user's provided email address. 10. The user checks their email, retrieves the OTP, and enters the received OTP in the provided field on the registration page. 11. The system verifies the entered OTP against the generated OTP. 12. If the entered OTP matches the generated OTP, the system proceeds to the next step. 13. The system activates the user's account, making it accessible for login. 14. The system redirects the user to the login page, indicating that the registration process is complete. 15. The user can now log in using their registered username or email and the provided password.
Exceptional Flow:	1. If the user enters invalid or incomplete information, the system displays error messages highlighting the specific fields that require correction. 2. If the user's chosen username is already taken, the system prompts the user to select a different username. 3. If the user fails to correctly enter the CAPTCHA verification, the system prompts the user to try again. 4. If the user enters an incorrect OTP, the system prompts the user to re-enter the correct OTP or request a new one.
Post Conditions	1. Upon successful registration, the user's account is created in AuctiSafe. 2. The user can log in to the system using their registered credentials and participate in auctions and other activities offered by AuctiSafe.

Use Case-2 AUTHENTICATION & AUTHORIZATION	
Description:	This use case involves the process of user authentication and authorization for AuctiSafe. Registered users attempt to access the auction management system by providing their credentials. The authentication process includes two methods: authorization via a One-Time Password (OTP) or failed authorization.
Actor:	Registered Users
Trigger:	The trigger for this use case is when a registered user attempts to log in to the AuctiSafe.
Preconditions:	3. The user has already registered and created an account in the auction management system. 4. The user has a valid username or email associated with their account. 5. The user has chosen to perform the authentication process.
Normal Flow:	16. The user opens the login page of the auction management system. 17. The user enters their registered username or email and the associated password. 18. The system verifies the entered credentials against the stored user information. 19. If the entered credentials match the stored information, the system grants access to the user. 20. If the entered credentials do not match, the system proceeds to the next step. 21. The user selects the "Authorization via OTP" option. 22. The system sends an OTP to the user's registered mobile number or email. 23. The user retrieves the OTP and enters it in the provided field. 24. The system verifies the entered OTP against the generated OTP. 25. If the entered OTP matches the generated OTP, the system grants access to the user. 26. If the entered OTP does not match, the system prompts the user to re-enter the correct OTP.
Exceptional Flow:	5. If the user's entered credentials do not match the stored information, the system displays an error message indicating failed authorization for AuctiSafe. 6. In the case of failed authorization, the user will not granted access to the AuctiSafe.
Post conditions:	1. If the user's authentication is successful, the user gains access to the AuctiSafe. 2. If the user's authentication fails, the user will not granted access to the AuctiSafe and is notified about the failed authorization for auction management.

Use Case-3 FORGOT PASSWORD	
Description:	This use case involves the process of password recovery for registered users who have forgotten their password. Users initiate the password reset process by selecting the "Forgot Password" option. The system generates and sends a One-Time Password (OTP) to the user's registered email address, allowing them to reset their password and regain access to their account.
Actor:	Registered Users
Trigger:	The trigger for this use case is when a registered user selects the "Forgot Password" option.
Preconditions:	1. The user has already registered and created an account in the system. 2. The user has a valid registered email associated with their account.
Normal Flow:	1. The user clicks on the "Forgot Password" link or option on the login page. 2. The system displays a password recovery form, prompting the user to enter their registered email. 3. The user enters their registered email address in the provided field. 4. The system validates the entered email and proceeds to the next step. 5. The system generates a One-Time Password (OTP) and associates it with the user's account. 6. The system sends an email to the user's registered email address containing the OTP and instructions for password reset. 7. The user checks their email, retrieves the OTP, and proceeds with the password reset process. 8. The user enters the received OTP in the provided field. 9. The system verifies the entered OTP against the associated user account. 10. If the entered OTP matches the generated OTP, the system proceeds to the next step. 11. The system presents a form where the user can enter a new password. 12. The user enters their desired new password in the provided field. 13. The user submits the form to complete the password reset process. 14. The system updates the user's account with the new password and confirms the successful password reset.
Exceptional Flow:	1. If the entered email will not found in the system or is invalid, the system displays an error message indicating that the email is not registered. 2. If the user encounters any issues during the password recovery process, they can contact the system administrator or support team for further assistance.
Post conditions:	1. If the password reset process is successful, the user's account password is updated with the new password. 2. The user can log in to the system using the new password and regain access to their account.

Use Case-4 VIEW BIDDING	
Description:	This use case involves the process of registered users viewing bidding items in AuctiSafe. Registered users, who have successfully logged into the system, can access the list of available items up for bidding, review item details, and make informed decisions regarding their participation in the auction..
Actor:	Registered Users
Trigger:	The trigger for this use case is when a registered user logs into AuctiSafe and navigates to the bidding section.
Preconditions:	1. The user is a registered user and has successfully logged into AuctiSafe. 2. The user has appropriate permissions to view and participate in auctions.
Normal Flow:	1. After logging into AuctiSafe, the user is directed to the dashboard or main page. 2. The user navigates to the bidding section of the platform. 3. AuctiSafe retrieves a list of available bidding items from the database. 4. AuctiSafe displays the list of bidding items to the user, including relevant details such as item name, description, starting bid, current bid, bid end time, and any additional information. 5. The user scrolls through the list of bidding items to explore available options. 6. If desired, the user clicks on a specific bidding item to view more detailed information. 7. AuctiSafe presents the detailed view of the selected bidding item, including high-quality images, additional descriptions, specifications, and any special conditions or terms associated with the item. 8. The user reviews the details and determines their interest in bidding on the item. 9. If the user decides to participate, they note the bid end time and current bid amount for reference. 10. The user may continue browsing other bidding items or proceed with placing a bid on the selected item, depending on their preference.
Exceptional Flow:	1. If there are no bidding items available at the time, AuctiSafe may display a message indicating that no items are currently up for bidding. 2. If the user encounters technical issues or errors while browsing or viewing bidding items, they may need to refresh the page
Post conditions:	1. The user has successfully viewed the available bidding items in AuctiSafe. 2. The user can make an informed decision regarding their participation in the auction based on the item details and current bidding status.

	Use Case-5 START BIDDING
Description:	This use case involves the process of registered users starting bidding on items in AuctiSafe. Registered users can participate in auctions by selecting the type of auction they wish to engage in and placing bids on the available items accordingly.
Actor:	Registered Users
Trigger:	The trigger for this use case is when a registered user navigates to the bidding section in AuctiSafe and selects the type of auction they want to participate in.
Preconditions:	3. The user is a registered user and has successfully logged into AuctiSafe. 4. The user has appropriate permissions to participate in auctions.
Normal Flow:	11. After logging into AuctiSafe, the user accesses the bidding section. 12. AuctiSafe displays the available types of auctions, such as "English Auction," "Dutch Auction," or "Sealed Bid Auction." User selects the desired auction type. 13. AuctiSafe displays the available items for bidding within the chosen auction type. 14. User selects an item and enters their bid amount based on auction type. 15. User confirms the bid. 16. AuctiSafe validates and updates the bid if valid. 17. User receives confirmation of their successful bid 18. User can monitor the bidding progress and adjust their bid if desired within the chosen auction type.
Exceptional Flow:	3. If the bid amount entered by the user is below the minimum bid increment or invalid for the selected auction type, AuctiSafe displays an error message and prompts the user to enter a valid bid amount. 4. If bidders within the same auction type place a higher bid before the user's bid is confirmed, AuctiSafe notifies the user that their bid has been surpassed and provides an opportunity to place a new bid within the chosen auction type.
Post conditions:	3. The user's bid will successfully place on the selected item within the chosen auction type in AuctiSafe. 4. The user can monitor the bidding progress, receive notifications about outbid scenarios within the selected auction type, and adjust their bid accordingly.

	Use Case-6 CREATE AUCTION
Description:	This use case involves the process of a registered user creating an auction for their items in AuctiSafe. The registered user utilizes the system's functionality to list their items, set auction parameters, select the type of auction, and make them available for bidding by other users
Actor:	Registered Users
Trigger:	The trigger for this use case is when a registered user logs into AuctiSafe and initiates the process of creating an auction for their items, selecting the auction type in the system.
Preconditions:	1. The user is a registered user and has successfully logged into AuctiSafe. 2. The user has logged to create and manage auctions.
Normal Flow:	1. After logging into AuctiSafe, the user is directed to the dashboard or main page. 2. The user navigates to the auction creation section within the system. 3. AuctiSafe provides a form or interface for the user to input the details of the auction. 4. The user selects the desired auction type from the available options, such as "English Auction," "Dutch Auction," or "Sealed Bid Auction." 5. The user enters the necessary information, such as item description, starting bid price, auction duration, reserve price, and any additional terms or conditions. 6. The user uploads images or provides links to showcase the item being auctioned. 7. The user confirms the auction details and submits the auction listing. 8. AuctiSafe validates the information provided and creates the auction in the system, associating it with the selected auction type. 9. AuctiSafe assigns a unique identifier or code to the auction for tracking purposes. 10. The auction becomes active and is made available for other users to view and bid on, adhering to the selected auction type's rules and mechanisms. 11. The user receives confirmation that their auction has successfully created.
Exceptional Flow:	1. If the user encounters errors or missing information during the auction creation process, AuctiSafe prompts the user to correct the necessary fields before submission.
Post conditions:	1. The user's auction has successfully created and listed in AuctiSafe, associated with the selected auction type. 2. The auction becomes active and visible to other users adhering to the rules and mechanisms of the selected auction type. 3. Other users can view the auction details, place bids, and participate in the auction based on the selected auction type's rules. 4. The user can monitor the progress of their auction, receive notifications on bids, and manage the auction settings specific to the chosen auction type if applicable.

Use Case-7 PAYMENT PROCESSING	
Description:	This use case involves the process of a registered user selecting the payment processing option in AuctiSafe, to facilitate secure transactions for auction items. The user chooses the preferred payment method, provides the necessary card and verification information, and ensures a smooth payment process.
Actor:	Registered Users
Trigger:	The trigger for this use case is when a registered user proceeds to make a payment for an item won or purchased in an auction on AuctiSafe.
Preconditions:	1. The user is a registered user and has successfully logged into AuctiSafe. 2. The user has participated in an auction and won an item or intends to purchase an item through the system.
Normal Flow:	1. After winning an auction or deciding to purchase an item, the user navigates to the payment processing section within AuctiSafe. 2. AuctiSafe presents the available payment options to the user, such as credit card, debit card, or other approved payment methods. 3. The user selects the preferred payment method, specifically choosing the option for card payment. 4. AuctiSafe prompts the user to provide the necessary card information, including card number, cardholder name, expiration date, and security code (CVV). 5. The user enters the card details accurately. 6. AuctiSafe securely processes the card information using encryption via security measures such as OTP. 7. AuctiSafe validates the card information and verifies the user's eligibility for payment. 8. The user provides the required verification details, such as a one-time password (OTP) or billing address. 9. AuctiSafe verifies the provided information and confirms the payment. 10. AuctiSafe generates a payment confirmation and provides a receipt to the user. 11. The user receives confirmation of the successful payment and the completion of the transaction.
Exceptional Flow:	1. If the user encounters errors or missing information during the payment process, AuctiSafe prompts the user to correct the necessary fields before proceeding with the payment. 2. If the card payment fails due to technical issues or invalid card details, AuctiSafe provides appropriate error messages and allows the user to retry the payment or choose an alternative payment method.
Post conditions:	1. The user's payment is successfully processed and recorded in AuctiSafe. 2. AuctiSafe updates the transaction status and marks the item as paid. 3. The user receives a payment confirmation and receipt. 4. AuctiSafe initiates the necessary procedures for order fulfillment, such as shipping or item release.

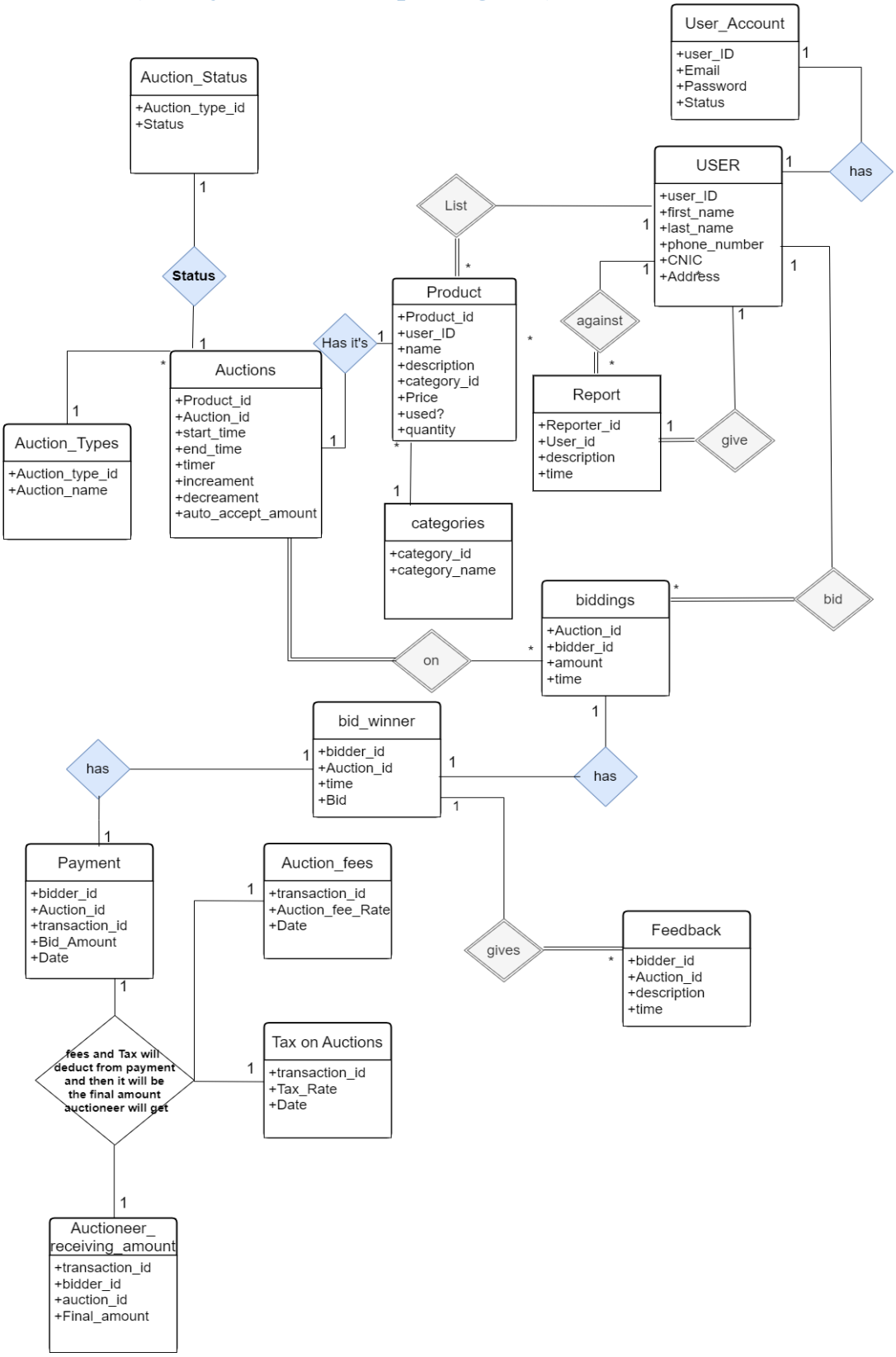
Use Case-8 REPORT	
Description:	This use case involves the process of a registered user reporting a complaint against another registered user in AuctiSafe. The user identifies an issue or violation of the platform's policies and initiates a complaint. AuctiSafe implements a mechanism to track and handle complaints, and if a user receives three valid complaints, their account is blocked or suspended.
Actor:	Registered Users
Trigger:	When a registered user encounters an issue or observes a violation of AuctiSafe's policies by another registered user and decides to report a complaint.
Preconditions:	1. The user is a registered user and has successfully logged into AuctiSafe. 2. The user has identified an issue or violation committed by another registered user.
Normal Flow:	1. The registered user navigates to the complaint reporting section in AuctiSafe. 2. They provide details about the complaint, including the username of the reported user and a description of the issue. 3. The user submits the complaint. 4. AuctiSafe acknowledges the complaint and assigns it a unique identifier. 5. AuctiSafe reviews the complaint for validity and compliance with platform policies. 6. If the complaint is valid, AuctiSafe takes appropriate actions, such as warning the reported user or conducting an investigation. 7. AuctiSafe communicates updates to the user who reported the complaint. 8. If three valid complaints are filed against a user, AuctiSafe blocks or suspends their account. 9. AuctiSafe notifies the user who reported the complaints about the outcome.
Exceptional Flow:	1. If the user encounters any issues or difficulties during the complaint submission process, AuctiSafe provides appropriate error messages or support channels for assistance.
Post conditions:	1. The user's complaint has successfully submitted and recorded in AuctiSafe's complaint tracking system. 2. AuctiSafe takes appropriate actions based on the validity and severity of the complaint. 3. AuctiSafe communicates the outcome and actions taken to the user who reported the complaint. 4. If a user receives three valid complaints, AuctiSafe blocks or suspends that user's account as per the platform's policies and guidelines.

Use Case-9 VIEW USER DETAILS	
Description:	This use case involves the process of an admin accessing and viewing various details in AuctiSafe. The admin can view the details of registered users, listing items, and bidder information to monitor and manage the platform effectively.
Actor:	Admin - An authorized individual with administrative privileges in AuctiSafe.
Trigger:	The trigger for this use case is when the admin needs to access and view specific details in AuctiSafe for administrative purposes.
Preconditions:	1. The admin has the necessary credentials to log into AuctiSafe as an admin. 2. AuctiSafe is operational and accessible.
Normal Flow:	1. The admin logs into AuctiSafe using their admin credentials. 2. They access the admin dashboard or control panel. 3. The admin navigates to the section for viewing user details. 4. They search for a specific registered user using criteria such as username or email. 5. AuctiSafe displays the user's details, including profile information and activity history. 6. The admin goes to the listing items section. 7. They view a list of active and inactive listings, filtering and sorting as needed. 8. AuctiSafe presents the details of each listing, including item description and bidding status. 9. The admin accesses bidder details for a specific auction. 10. They review bidder information, such as usernames, bid amounts, and timestamps. 11. The admin may export or download the user, listing, and bidder details for further analysis or reporting.
Exceptional Flow:	2. If the admin encounters any technical issues or errors while accessing the details, AuctiSafe provides appropriate error messages or support channels for assistance.
Post conditions:	1. The admin successfully views the requested details of registered users, listing items, and bidder information in AuctiSafe. 2. The admin can use the obtained information for administrative tasks, monitoring platform activities, and making informed decisions.

Use Case-10 DELETE / SUSPEND USER ACCOUNTS	
Description:	This use case involves the process of an admin deleting or suspending a user account in AuctiSafe. The admin has the authority to take action against a user account based on violations or non-compliance with platform policies. After deleting or suspending the account, AuctiSafe automatically sends an email notification to the user, explaining the reasons for the suspension.
Actor:	Admin - An authorized individual with administrative privileges in AuctiSafe.
Trigger:	The trigger for this use case is when the admin identifies a user account that needs to be deleted or suspended due to violations or non-compliance with platform policies.
Preconditions:	3. The admin has the necessary credentials to log into AuctiSafe as an admin. 4. AuctiSafe is operational and accessible.
Normal Flow:	1. The admin logs into AuctiSafe using their admin credentials. 2. They access the admin dashboard or control panel. 3. The admin navigates to the user's account management section. 4. They search for the specific user account. 5. AuctiSafe displays the user's details, including profile information and activity history. 6. The admin selects the option to delete or suspend the user account. 7. AuctiSafe prompts for confirmation and reasons for the action. 8. The admin confirms and provides the necessary information. 9. AuctiSafe deletes or suspends the user account. 10. AuctiSafe automatically sends an email notification to the suspended user, explaining the reasons for the suspension.
Exceptional Flow:	If the admin encounters any technical issues or errors while accessing the details, AuctiSafe provides appropriate error messages or support channels for assistance.
Post conditions:	1. The admin successfully deletes or suspends the user account in AuctiSafe. 2. AuctiSafe sends an email notification to the suspended user, providing the reasons for the suspension. 3. The user's account is permanently deleted or temporarily suspended based on the admin's action.

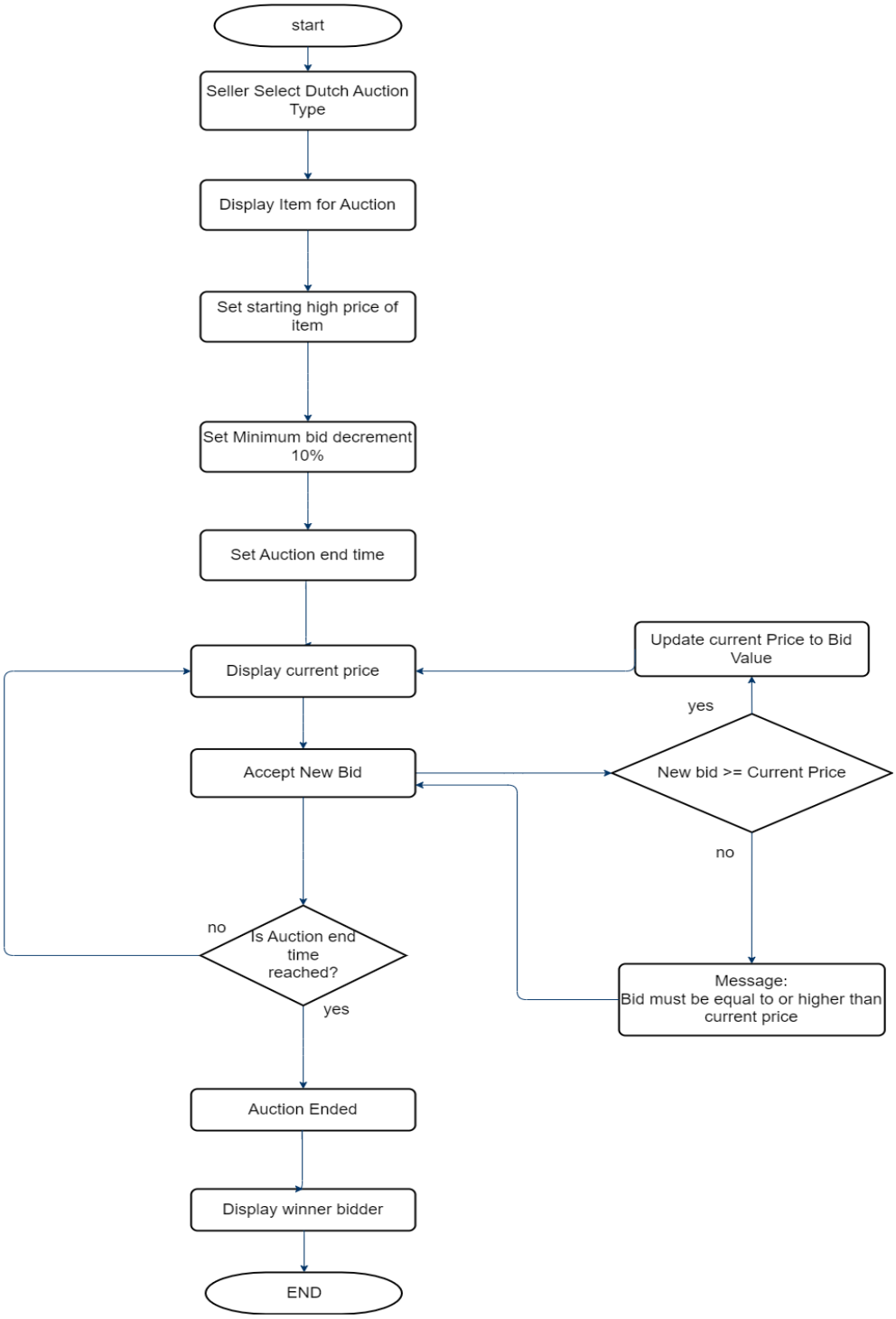
Use Case-11 Admin Manually Manages/ Monitors Reports	
Description:	This use case involves the process of an admin manually managing and monitoring reports in AuctiSafe, an Auction Management System. The admin reviews and takes appropriate actions based on the reports filed by users regarding violations, disputes, or suspicious activities. This allows the admin to ensure a fair and secure auction environment.
Actor:	Admin - An authorized individual with administrative privileges in AuctiSafe.
Trigger:	The trigger for this use case is when the admin receives reports from users regarding violations, disputes, or suspicious activities in the auction system.
Preconditions:	1. The admin has the necessary credentials to log into AuctiSafe as an admin. 2. AuctiSafe is operational and accessible. 3. Users have the ability to file reports within the AuctiSafe system.
Normal Flow:	1. The admin logs into AuctiSafe using their admin credentials. 2. They access the admin dashboard or control panel. 3. The admin navigates to the section for managing reports or receives notifications of new reports. 4. They review the list of reports filed by users, including details and evidence. 5. The admin selects a specific report to review in detail. 6. They evaluate the report based on platform policies and guidelines. 7. The admin takes appropriate action, such as warning the reported user or initiating an investigation. 8. They update the report status in AuctiSafe. 9. If needed, the admin communicates with the reporter or reported user for additional information. 10. The admin repeats the process for other pending reports, addressing them one by one.
Exceptional Flow:	If the admin encounters any technical issues or errors while accessing the details, AuctiSafe provides appropriate error messages or support channels for assistance.
Post conditions:	1. The admin successfully reviews and manages the reports filed in AuctiSafe. 2. The admin takes appropriate actions based on the reports, ensuring a fair and secure auction environment. 3. The status of each report has updated in AuctiSafe, reflecting the actions taken and resolutions achieved.

8. ERD (Entity Relationship Diagram):

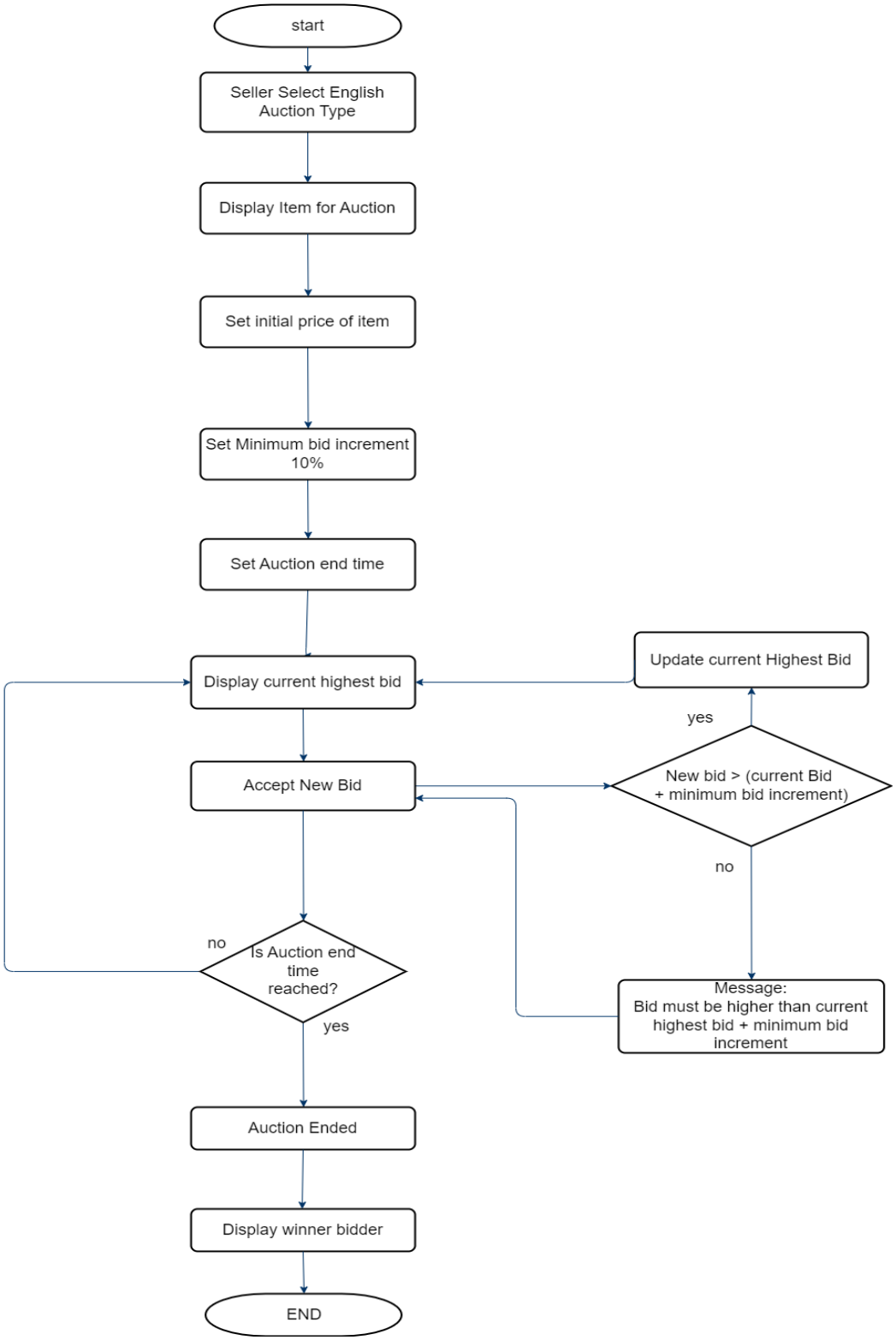


9. Flow Chart of Auction Types:

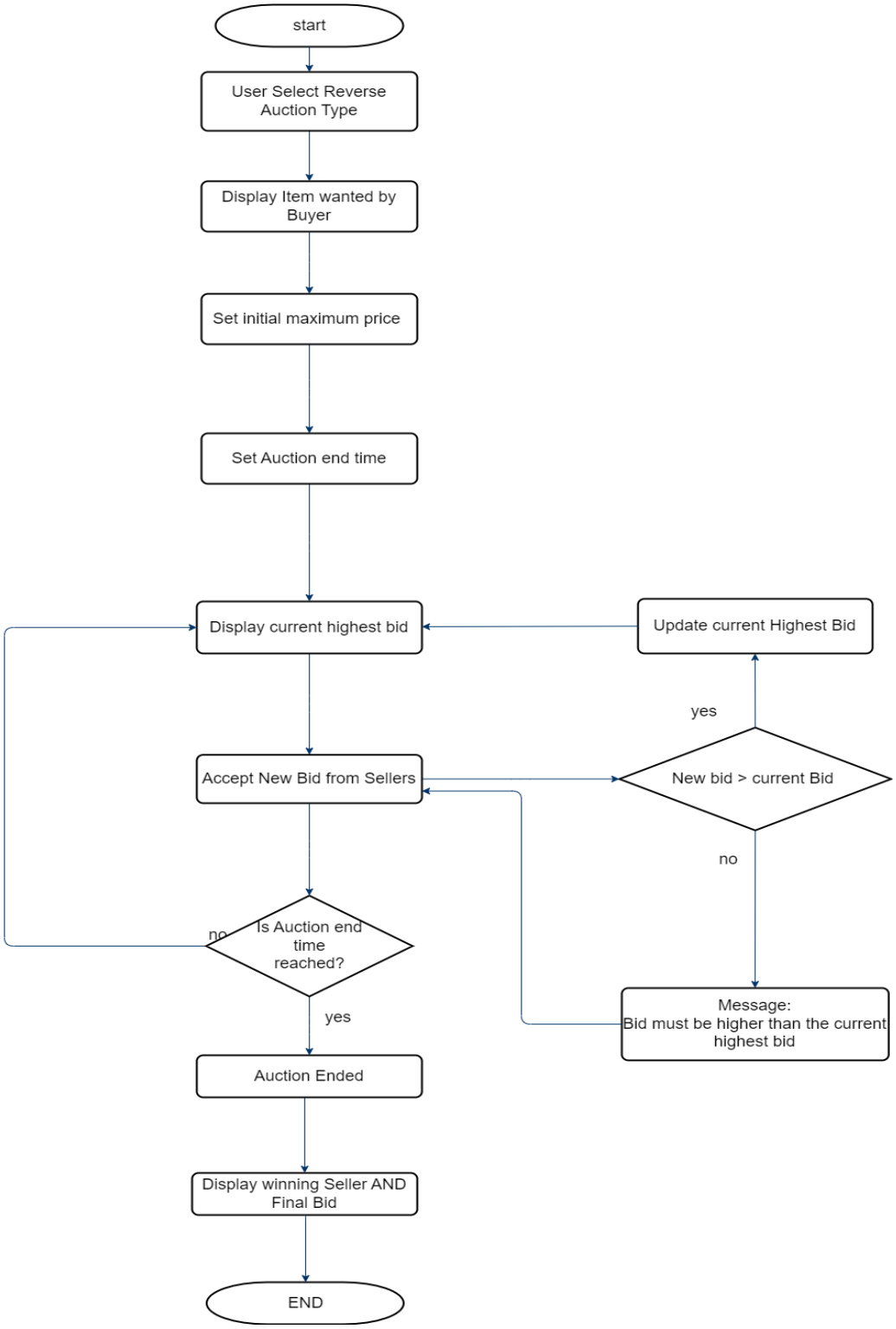
1. Dutch auction



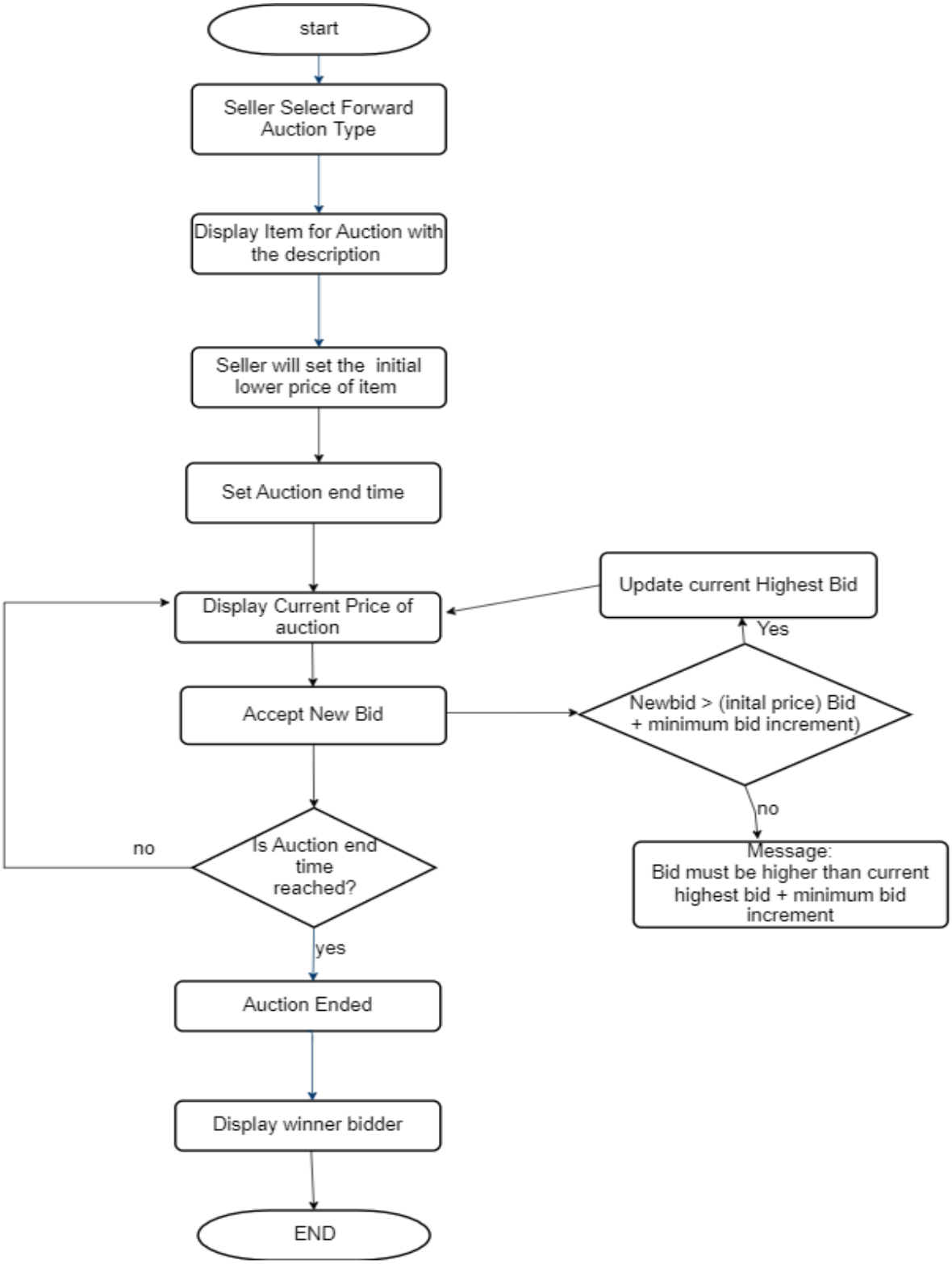
2. English Auction:



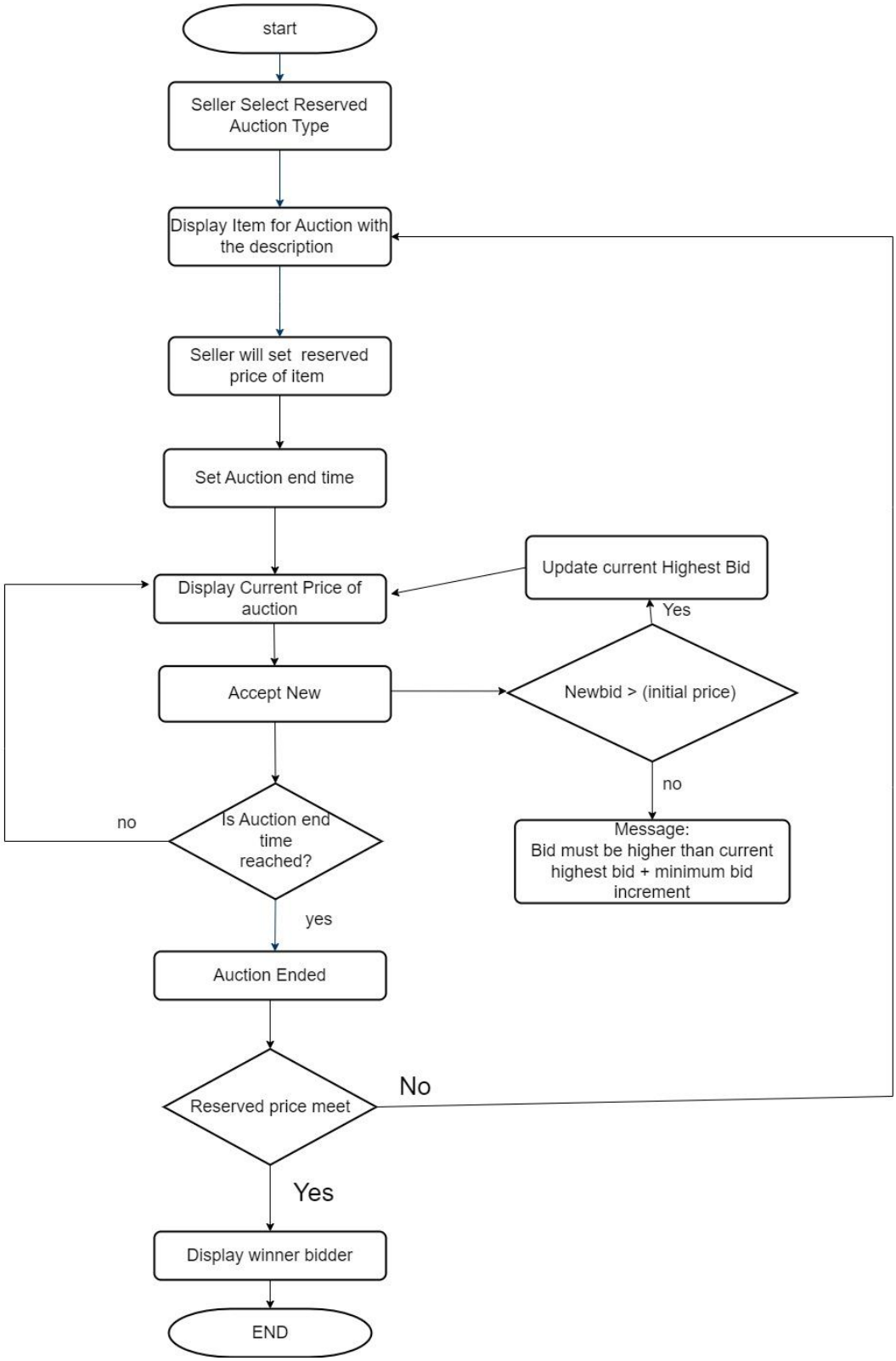
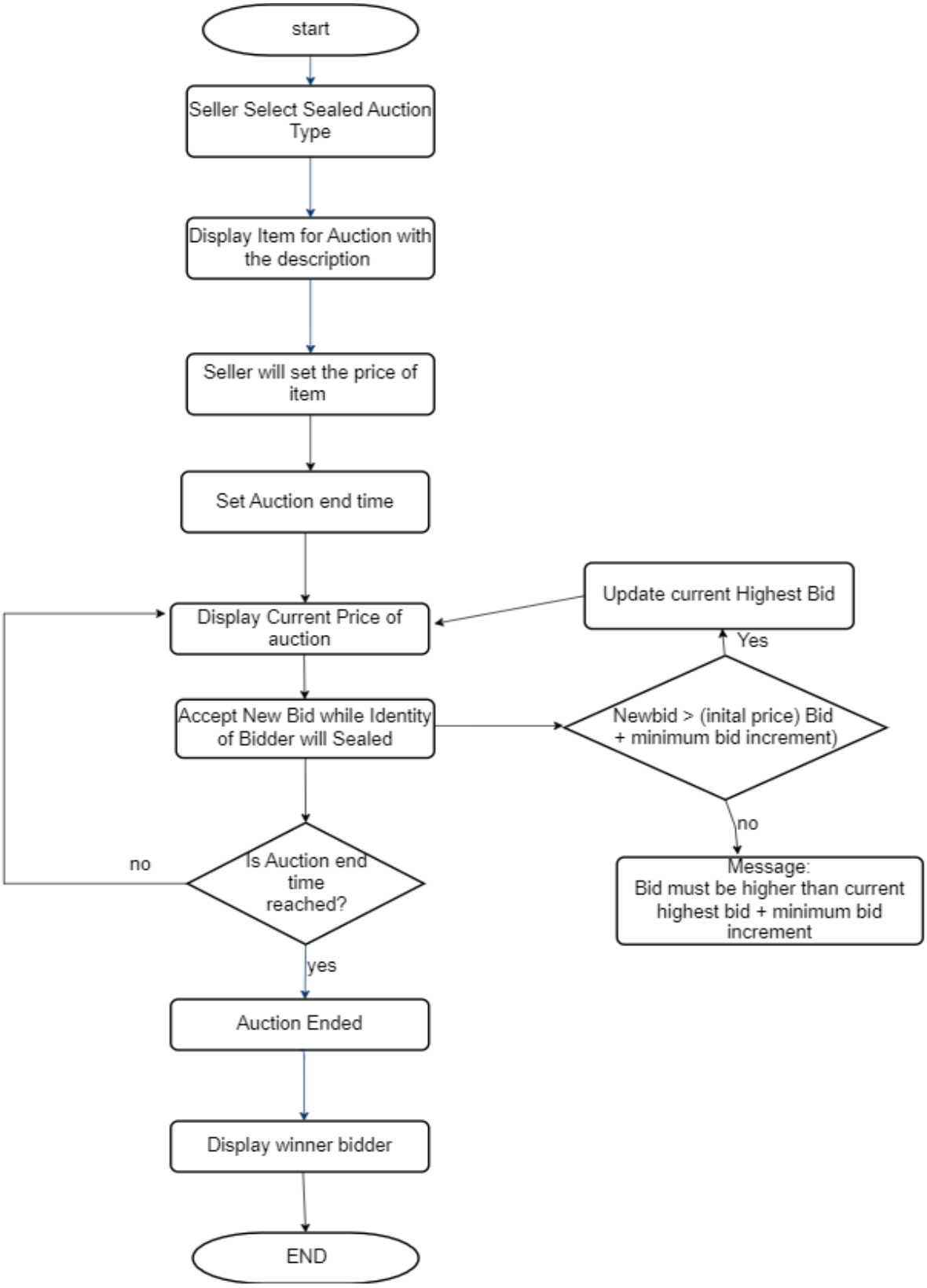
3. Reverse Auction:



4. Forward Auction:



5. Reserved Auction:



6. Sealed Auction: