

# Qualitees System - Database Normalization

## 1. Users Table

Attribute	Key	Description
user_id	PK	Unique identifier for each user
username	Unique	Login/handle name
email	Unique	User's email address
password_hash		Encrypted password
role		Defines if user is bidder or admin
created_at		Account creation time

**Explanation:** Keeps all user data centralized. Referenced by other tables.

## 2. Items Table

Attribute	Key	Description
item_id	PK	Unique identifier for each item
seller_id	FK → Users.user_id	User who listed the item
title		Name of the item
description		Details about the item
category		Category such as shirts, pants, shoes
item_condition		Condition (new, used, etc.)
starting_price		Initial bid price
created_at		Listing creation time

**Explanation:** Items are linked to sellers. Bidding details handled separately.

## 3. Auctions Table

Attribute	Key	Description
auction_id	PK	Unique auction identifier
item_id	FK → Items.item_id	Item being auctioned
start_time		Auction start time
end_time		Auction end time
status		Auction state
highest_bid_id	FK → Bids.bid_id	Tracks highest bid
created_at		Record creation time

**Explanation:** Separates auction event from item details.

## 4. Bids Table

Attribute	Key	Description
bid_id	PK	Unique bid identifier
auction_id	FK → Auctions.auction_id	Auction the bid belongs to
bidder_id	FK → Users.user_id	User who placed the bid
amount		Bid amount
bid_time		When bid was placed

**Explanation:** Each row = one bid. Links bidders to auctions.

## 5. Payments Table

Attribute	Key	Description
payment_id	PK	Unique payment record
auction_id	FK → Auctions.auction_id	Associated auction
payer_id	FK → Users.user_id	Buyer (winning bidder)
payee_id	FK → Users.user_id	Seller receiving funds
amount		Payment amount
currency		Currency code (e.g., PHP, USD)
payment_method		Method (GCash, PayPal, etc.)
transaction_ref		External transaction reference
status		Payment status
created_at		Payment initiation time
confirmed_at		Confirmation time

**Explanation:** Links auction outcomes to actual transactions.

## 6. Messages Table

Attribute	Key	Description
message_id	PK	Unique chat message
sender_id	FK → Users.user_id	Message sender
receiver_id	FK → Users.user_id	Message receiver
content		Message text
sent_at		Message timestamp

**Explanation:** Stores buyer-seller communication history.

## 7. Notifications Table

Attribute	Key	Description
notification_id	PK	Unique notification
user_id	FK → Users.user_id	Notification recipient
type		Type (auction, payment, system)

message		Notification text
is_read		Read/unread status
created_at		Notification creation time

**Explanation:** Tracks system alerts, outbid warnings, and payment updates.