

Database Systems

Digital Art Gallery and Auction Platform

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Executive Overview

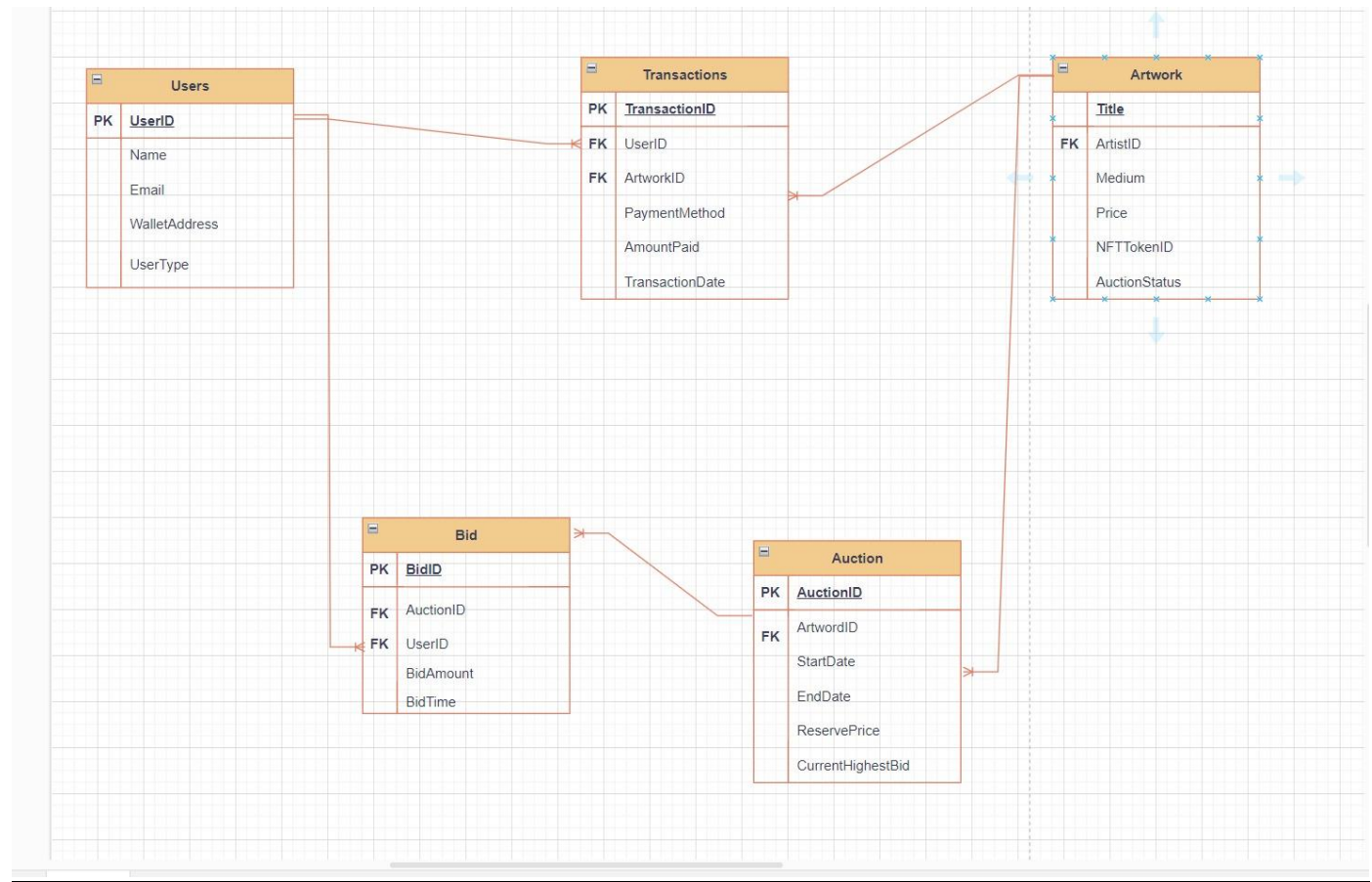
Primary Objective: The objective of our project is to develop a **Digital Art Gallery and Auction Platform** that manages digital artwork inventory, bids, auctions, transactions, and user information. Our system allows artists to easily upload their artwork, buyers to place bids in auctions, administrators to manage transactions, and users. This system provides an efficient way to manage artwork, track bids, and process sales.

Client: Digital Art Gallery And Auction Platform

Overview: An ER Diagram is drawn with the usage of IE Crow's Foot symbols, defining the relation between the entities, **Transactions, Auctions, Users, Bids, and Artwork**. Relational Schema is implemented with the help of MS Access, making sure Primary keys and Foreign keys are present and maintaining data consistency. Records will be subjected to CRUD, allowing users to create, read, update, or delete records within each table.

These features provide efficient management of digital art and auctions, providing real-time reports on artwork, auctions, and transactions. Our system enhances customer experience and supports the growth of the digital art marketplace

Entity-Relationship Diagram



Relational Schema

- Users (UserID [PK], Name, Email, WalletAddress, UserType)
- Artwork (ArtworkID [PK], Title, ArtistID [FK], Medium, Price, NFTTokenID, AuctionStatus)
- Auction (AuctionID [PK], ArtworkID [FK], StartDate, EndDate, ReservePrice, CurrentHighestBid)
- Bid (BidID [PK], AuctionID [FK], UserID [FK], BidAmount, BidTime)
- Transactions (TransactionID [PK], UserID [FK], ArtworkID [FK], PaymentMethod, AmountPaid, TransactionDate)
- Primary Keys (PK) and Foreign Keys (FK) are used to ensure referential integrity between tables.

Data Dictionary

Attribute	Table	Null	Unique	Foreign Key	Primary Key	Ref Table	Data Type
UserID	Users	N	Y	N	Y	N/A	AutoNumber
Name	Users	N	N	N	N	N/A	Short Text
Email	Users	N	Y	N	N	N/A	Short Text
WalletAddress	Users	N	Y	N	N	N/A	Short Text
UserType	Users	N	N	N	N	N/A	Short Text
ArtworkID	Artwork	N	Y	N	Y	N/A	AutoNumber
Title	Artwork	N	N	N	N	N/A	Short Text
ArtistID	Artwork	N	N	Y	N	Users	Number
Medium	Artwork	N	N	N	N	N/A	Short Text
Price	Artwork	N	N	N	N	N/A	Currency
NFTTokenID	Artwork	N	N	N	N	N/A	Short Text
AuctionStatus	Artwork	N	N	N	N	N/A	Yes/No
AuctionID	Auction	N	Y	N	Y	N/A	AutoNumber
ArtworkID	Auction	N	N	Y	N	Artwork	Number
StartDate	Auction	N	N	N	N	N/A	Date/Time
EndDate	Auction	N	N	N	N	N/A	Date/Time
ReservePrice	Auction	N	N	N	N	N/A	Currency
CurrentHighestBid	Auction	N	N	N	N	N/A	Currency
BidID	Bid	N	Y	N	Y	N/A	AutoNumber
AuctionID	Bid	N	N	Y	N	Auction	Number
UserID	Bid	N	N	Y	N	Users	Number
BidAmount	Bid	N	N	N	N	N/A	Currency
BidTime	Bid	N	N	N	N	N/A	Date/Time
TransactionID	Transactions	N	Y	N	Y	N/A	AutoNumber
UserID	Transactions	N	N	Y	N	Users	Number
ArtworkID	Transactions	N	N	Y	N	Artwork	Number
PaymentMethod	Transactions	N	N	N	N	N/A	Short Text
AmountPaid	Transactions	N	N	N	N	N/A	Currency
TransactionDate	Transactions	N	N	N	N	N/A	Date/Time

CRUD Matrix

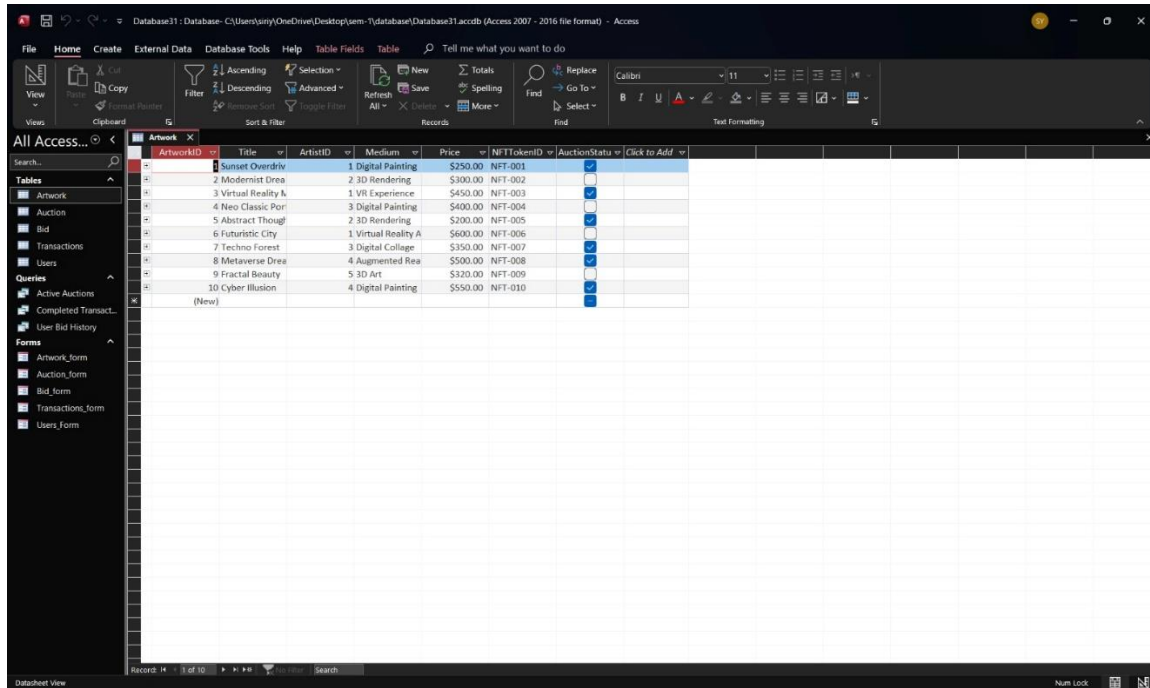
CRUD Matrix for Your Entities:					
	Users	Artwork	Auction	Bid	Transactions
Users	CRUD	R	R	R	CRUD
Artwork	R	CRUD	CRUD	R	R
Auction	R	R	CRUD	CRUD	R
Bid	R	R	R	CRUD	R
Transactions	R	R	R	R	CRUD
Legend:					
C = Create or Insert a record.					
R = Read or Select a record.					
U = Update or Modify a record.					
D = Delete a record.					

Table Description

1. User Table: Contains 10 records, which include artists, buyers, and administrators. It has attributes such as Name, Email, WalletAddress, and UserType.
2. Artwork Table: It has 10 entries of digital artwork. Each ArtworkID has a unique ArtworkID and other attributes like Title, ArtistID, Medium, Price, NFTTokenID, and AuctionStatus.
3. Auction Table: It has 10 entries of auctions, each tied to a specific artwork. Each AuctionID is unique for each auction and other attributes like StartDate, EndDate, ReservePrice, and CurrentHighestBid.
4. Bid Table: It links the AuctionID from the auction table and UserID from the Users table with the BidAmount and BidTime. This particular table has 10 records showcasing bids placed by users.
5. Transactions Table: Contains 10 records of transactions completed for the sale of artwork. Each transaction is uniquely identified by TransactionID and includes references to the UserID (buyer), ArtworkID, PaymentMethod, AmountPaid, and TransactionDate.

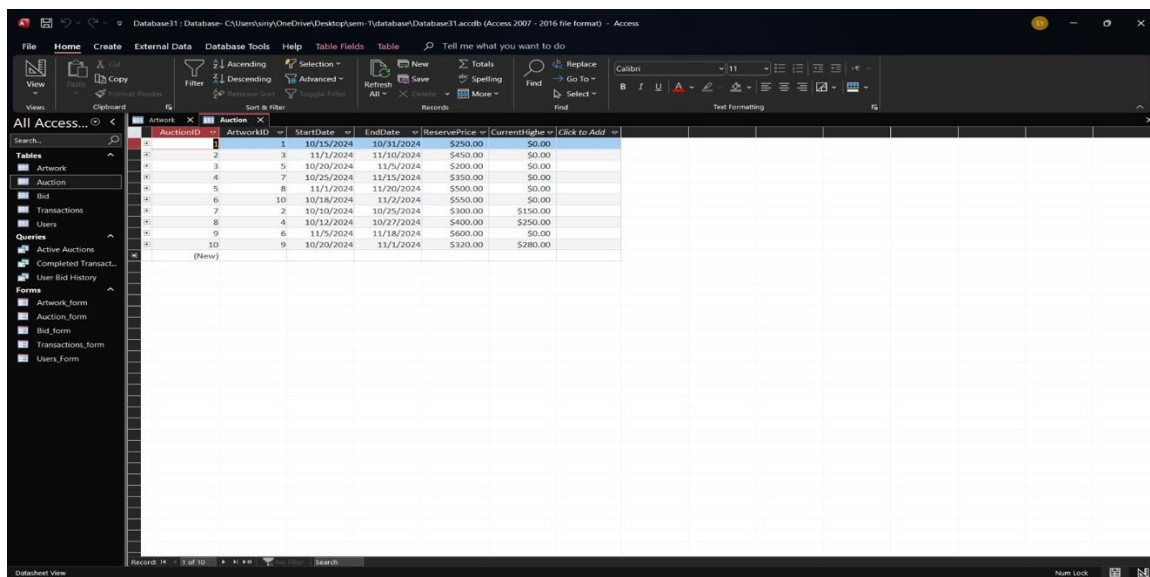
Database Tables

Artwork Datasheet:



ArtworkID	Title	ArtistID	Medium	Price	NFTTokenID	AuctionStatus	Click to Add
1	Sunset Overdriv	1	Digital Painting	\$250.00	NFT-001	<input checked="" type="checkbox"/>	
2	Modernist Drea	2	3D Rendering	\$300.00	NFT-002	<input checked="" type="checkbox"/>	
3	Virtual Reality A	1	VR Experience	\$450.00	NFT-003	<input checked="" type="checkbox"/>	
4	Nero Classic Por	3	Digital Painting	\$400.00	NFT-004	<input checked="" type="checkbox"/>	
5	Abstract Thoug	2	3D Rendering	\$200.00	NFT-005	<input checked="" type="checkbox"/>	
6	Futuristic City	1	Virtual Reality A	\$600.00	NFT-006	<input checked="" type="checkbox"/>	
7	Techno Forest	3	Digital Painting	\$350.00	NFT-007	<input checked="" type="checkbox"/>	
8	Metaverse Drea	4	Augmented Rea	\$500.00	NFT-008	<input checked="" type="checkbox"/>	
9	Fractal Beauty	5	3D Art	\$320.00	NFT-009	<input checked="" type="checkbox"/>	
10	Cyber Illusion	4	Digital Painting	\$550.00	NFT-010	<input checked="" type="checkbox"/>	
(New)						<input type="checkbox"/>	

Auction Datasheet:



AuctionID	ArtworkID	StartDate	EndDate	ReservePrice	CurrentHighest	Click to Add
1	1	10/15/2024	10/31/2024	\$250.00	\$0.00	
2	2	11/1/2024	11/10/2024	\$450.00	\$0.00	
3	5	10/20/2024	11/5/2024	\$200.00	\$0.00	
4	7	10/25/2024	11/15/2024	\$350.00	\$0.00	
5	8	11/1/2024	11/20/2024	\$500.00	\$0.00	
6	10	10/18/2024	11/2/2024	\$550.00	\$0.00	
7	2	10/10/2024	10/25/2024	\$300.00	\$150.00	
8	4	10/12/2024	10/27/2024	\$400.00	\$250.00	
9	6	11/5/2024	11/18/2024	\$600.00	\$0.00	
10	9	10/28/2024	11/1/2024	\$320.00	\$280.00	
(New)						

Bid Datasheet:

BidID	AuctionID	UserID	BidAmount	BidTime
1	1	2	\$260.00	#####
2	1	3	\$270.00	#####
3	3	4	\$460.00	#####
4	5	5	\$210.00	#####
5	7	2	\$355.00	#####
6	8	3	\$510.00	#####
7	9	2	\$330.00	#####
8	10	4	\$560.00	#####
9	2	3	\$310.00	#####
10	4	2	\$420.00	#####
(New)				

Transactions Datasheet:

TransactionID	UserID	ArtworkID	PaymentMet	AmountPaid	TransactionDate
1	2	1	Crypto	\$270.00	11/1/2024
2	3	3	Credit Card	\$460.00	11/12/2024
3	5	5	Crypto	\$210.00	11/5/2024
4	2	7	Credit Card	\$355.00	11/20/2024
5	3	8	Crypto	\$510.00	11/25/2024
6	2	9	Credit Card	\$330.00	11/3/2024
7	4	10	Crypto	\$560.00	11/2/2024
8	3	2	Credit Card	\$310.00	10/27/2024
9	2	4	Crypto	\$420.00	10/30/2024
10	3	6	Credit Card	\$600.00	11/18/2024
(New)					

Users Datasheet:

Database31: Database - C:\Users\jany\OneDrive\Desktop\sem-1\dataset\Database31.accdb (Access 2007 - 2016 file format) - Access

File Home Create External Data Database Tools Help Table Fields Table Tell me what you want to do

Views View Filter Sort & Filter Records

Clipboard Copy Paste Format Painter Filter Ascending Descending Selection Advanced Refresh Save New Totals Find Replace

Calibri 11 Bold Italic Underline Text Formatting

All Access Objects

Search...

Tables

- Artwork
- Auction
- Bid
- Transactions
- Users

Queries

- Active Auctions
- Completed Transact...
- User Bid History

Forms

- Artwork_form
- Auction_form
- Bid_form
- Transactions_form
- Users_form

Users

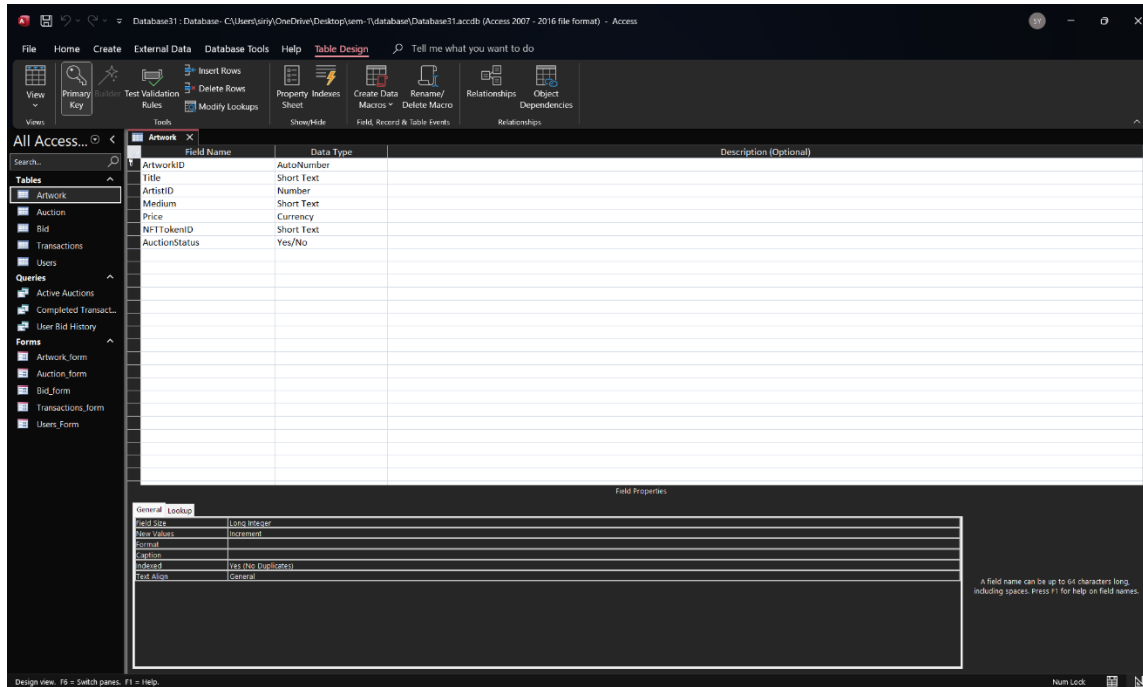
UserID	Name	Email	WalletAddress	UserType
1	Alice Artist	alice@art.com	0x123456789ab	Artist
2	Bob Buyer	bob@buy.com	0x987654321de	Buyer
3	Cathy Collector	cathy@collect.c	0xABCD123456g	Buyer
4	David Digital	david@digital.c	0xDEF654321kl	Artist
5	Eva Expert	eva@expert.co	0xFED0121654m	Admin
6	Frank Fine	frank@finest.c	0xBAC987654p	Buyer
7	Grace Gallery	grace@gallery.c	0xACD789121u	Artist
8	Helen High	helen@highend	0xXYZ2123456v	Buyer
9	Ivy Investor	ivy@investor.cc	0xYZ987654xy	Buyer
10	Jake Judge	jake@judge.con	0xQWE123456c	Admin
(New)				

Records: 14 - 3 of 10

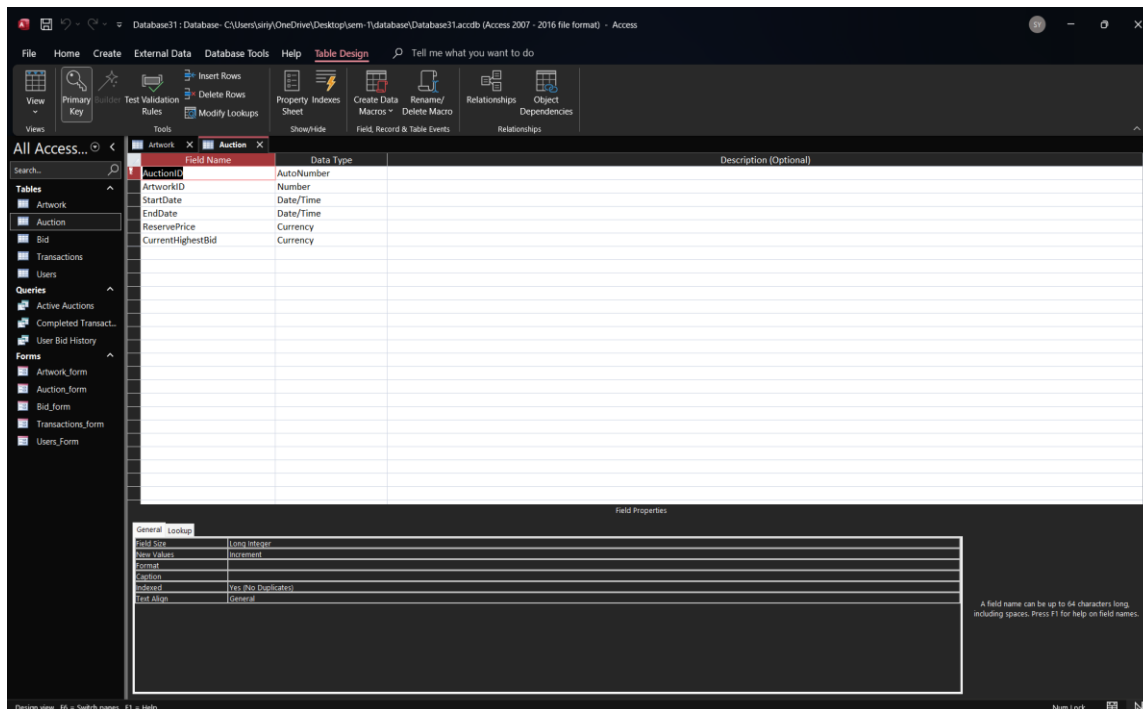
Num Lock

Design Tables

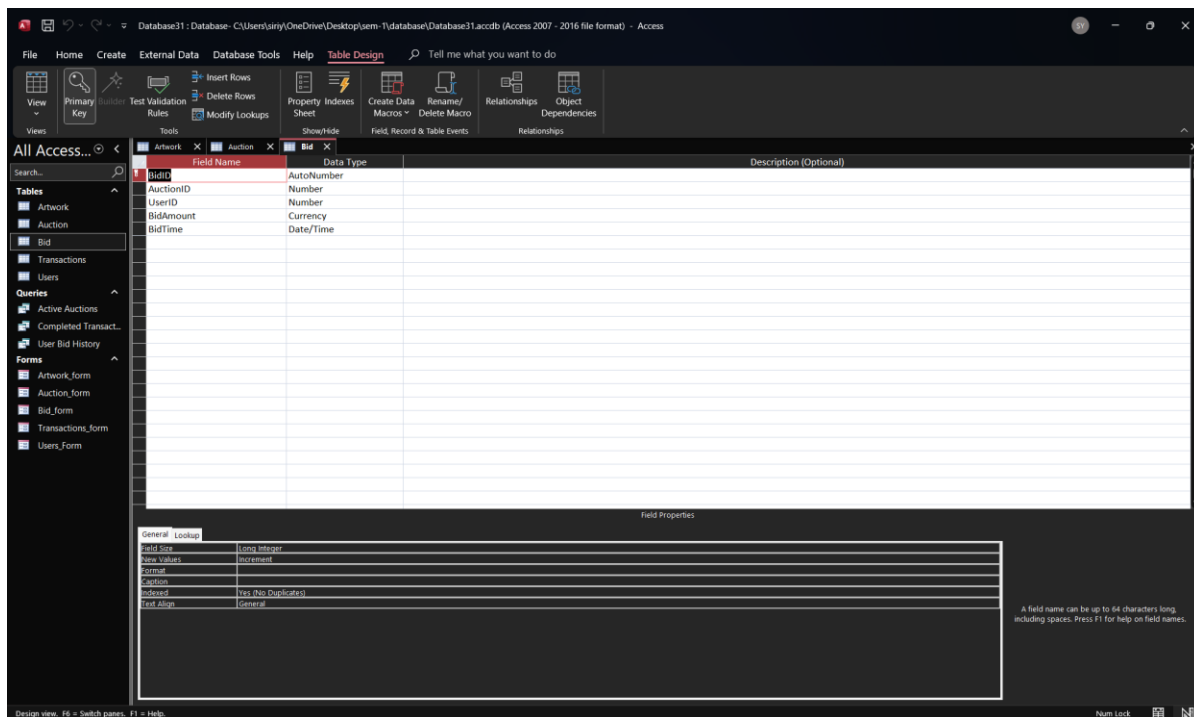
Artwork Table



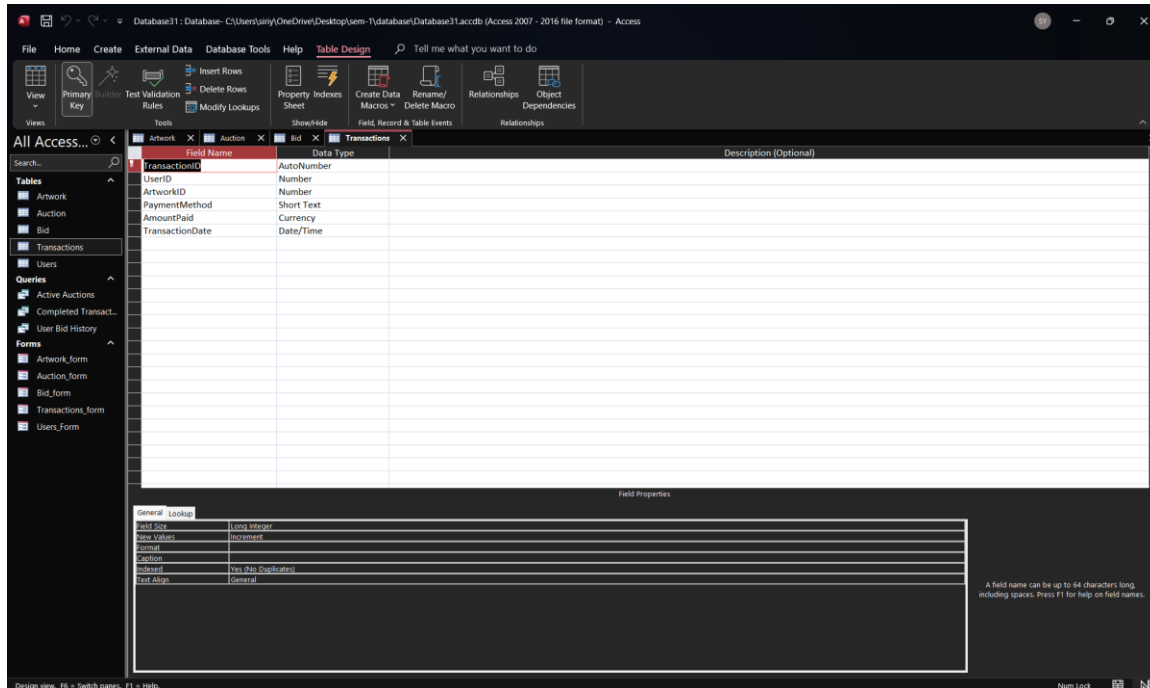
Auction Table



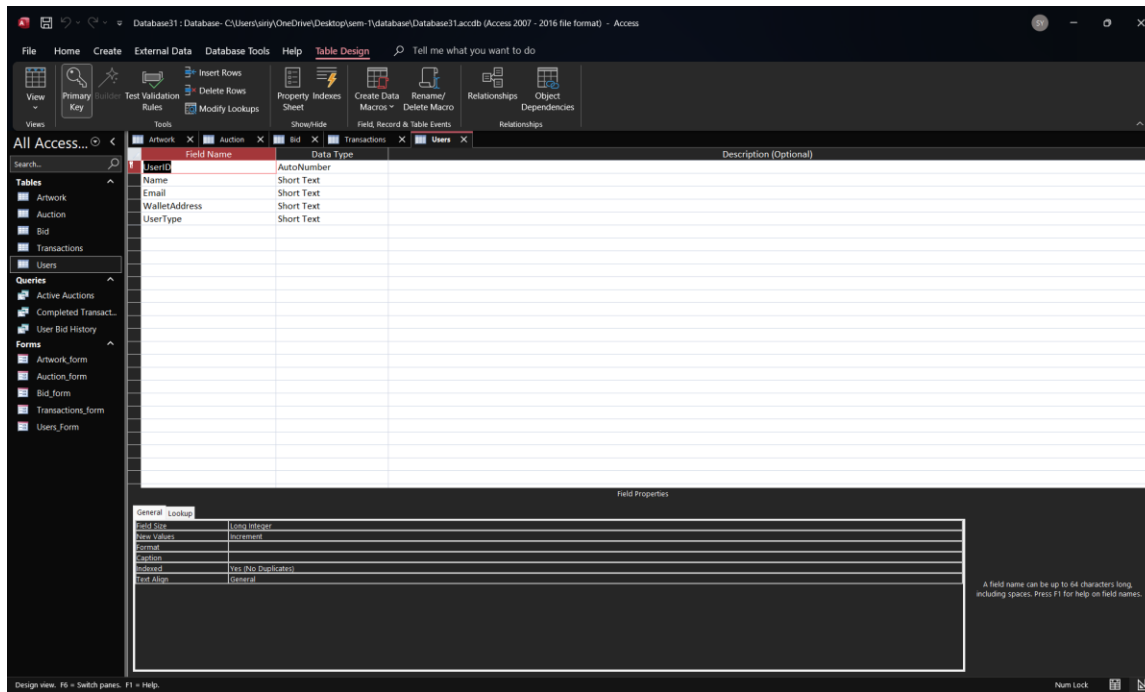
Bid Table



Transaction Table



Users Table



Forms

Database31: Database- C:\Users\jerry\OneDrive\Desktop\sem-1\database\Database31.accdb (Access 2007 - 2016 file format) - Access

File Home Create External Data Database Tools Help Tell me what you want to do

Views Filter Sort & Filter Selection Advanced Refresh Save Spelling Find Replace Go To Select Text Formatting

All Access... Search...

Tables Artwork Auction Bid Transactions Users

Queries Active Auctions Completed Transaction User Bid History

Forms Artwork_form Auction_form Bid_form Transactions_form Users_form

Artwork

ArtworkID:

Title:

ArtistID:

Medium:

Price:

NFTTokenID:

AuctionStatus:

Record: 1 of 10 Search Num Lock

Database31: Database- C:\Users\jerry\OneDrive\Desktop\sem-1\database\Database31.accdb (Access 2007 - 2016 file format) - Access

File Home Create External Data Database Tools Help Tell me what you want to do

Views Filter Sort & Filter Selection Advanced Refresh Save Spelling Find Replace Go To Select Text Formatting

All Access... Search...

Tables Artwork Auction Bid Transactions Users

Queries Active Auctions Completed Transaction User Bid History

Forms Artwork_form Auction_form Bid_form Transactions_form Users_form

Auction

AuctionID:

ArtworkID:

StartDate:

EndDate:

ReservePrice:

Current-HighestBid:

BidID	UserID	BidAmount	BidTime
1	2	\$260.00	#####
2	3	\$270.00	#####
(New)			

Record: 1 of 2 Search Num Lock

Database31 - Database - C:\Users\jiny\OneDrive\Desktop\sem-1\database\Database31.accdb (Access 2007 - 2016 file format) - Access

File Home Create External Data Database Tools Help Tell me what you want to do

Views Clipboard Filter Sort & Filter Selection Advanced Refresh Save Spelling Find Replace Go To Select Text Formatting

All Access... Users

Search...

Tables

- Artwork
- Auction
- Bid
- Transactions
- Users

Queries

- Active Auctions
- Completed Transact...
- User Bid History

Forms

- Artwork_form
- Auction_form
- Bid_form
- Transactions_form
- Users_Form

UserID

Name

Email

WalletAddress

UserType

Record: 1 of 10

Form View

Name Lock

Queries

- **SELECT** Auction.AuctionID, Artwork.ArtworkID, Artwork.Title, Auction.StartDate, Auction.EndDate, Auction.CurrentHighestBid **FROM** Artwork **INNER JOIN** Auction **ON** Artwork.ArtworkID = Auction.ArtworkID;

AuctionID	ArtworkID	Title	StartDate	EndDate	CurrentHighestBid
1	1	Sunset Overdrive	10/15/2024	10/31/2024	\$0.00
2	2	Midwestern Drive	10/10/2024	10/24/2024	\$150.00
3	3	Virtual Reality X	11/1/2024	11/10/2024	\$0.00
4	4	Neo Classic Port	10/12/2024	10/27/2024	\$250.00
5	5	Abstract Thought	10/20/2024	11/5/2024	\$0.00
6	6	Futuristic City	11/5/2024	11/18/2024	\$0.00
7	7	Techno Forest	10/25/2024	11/15/2024	\$0.00
8	8	Metaverse Drive	11/1/2024	11/20/2024	\$0.00
9	9	Fractal Beauty	10/20/2024	11/1/2024	\$280.00
10	10	Cyber Illusion	10/18/2024	11/2/2024	\$0.00

- **SELECT** Transactions.TransactionID, Transactions.UserID, Artwork.ArtworkID, Transactions.AmountPaid, Transactions.TransactionDate **FROM** Artwork **INNER JOIN** Transactions **ON** Artwork.ArtworkID = Transactions.ArtworkID

TransactionID	UserID	ArtworkID	AmountPaid	TransactionDate
1	2	3	\$270.00	11/1/2024
2	3	2	\$310.00	10/27/2024
3	2	3	\$460.00	11/11/2024
4	2	4	\$420.00	10/30/2024
5	3	5	\$210.00	11/5/2024
6	3	6	\$600.00	11/18/2024
7	2	7	\$355.00	11/20/2024
8	3	8	\$510.00	11/25/2024
9	2	9	\$330.00	11/3/2024
10	4	10	\$560.00	11/2/2024

- **SELECT Bid.BidID, Bid.AuctionID, Bid.BidAmount, Bid.BidTime, Bid.UserID, Auction.ArtworkID FROM Auction INNER JOIN (Users INNER JOIN Bid ON Users.UserID = Bid.UserID) ON Auction.AuctionID = Bid.AuctionID**

Database31 : Database - C:\Users\jany\OneDrive\Desktop\sem-1\database\Database31.accdb (Access 2007 - 2016 file format) - Access

File Home Create External Data Database Tools Help Tell me what you want to do

Views View Filter Sort & Filter

Tables

- Artwork
- Auction
- Bid
- Transactions
- Users

Queries

- Active Auctions
- Completed Transact...
- User Bid History

Forms

- Artwork_form
- Auction_form
- Bid_form
- Transactions_form
- Users_form

BidID	AuctionID	BidAmount	BidTime	UserID	ArtworkID
1	1	\$260.00	*****	2	1
2	1	\$270.00	*****	3	1
3	3	\$460.00	*****	4	5
4	5	\$210.00	*****	5	8
5	7	\$355.00	*****	2	2
6	8	\$510.00	*****	3	4
7	9	\$330.00	*****	2	6
8	10	\$560.00	*****	4	9
9	2	\$310.00	*****	3	3
10	4	\$420.00	*****	2	7
(New)					

Record: 14 of 10

Copilot

Num Lock

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