

BDMS of an Auction Website – Part 1

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This project is about Relational Database Design, Implementation, and Deployment Project and used Oracle SQL Developer to complete.

Part 1:

Application Description:

DBMS of an Auction website

Auction is a type of trading products that purchasers will offer the price they are willing to pay to the seller. In the modern world, bidders can bid products they want online, and auction website is a website where many products can be bought and sold. An auction data model should have the following functionalities:

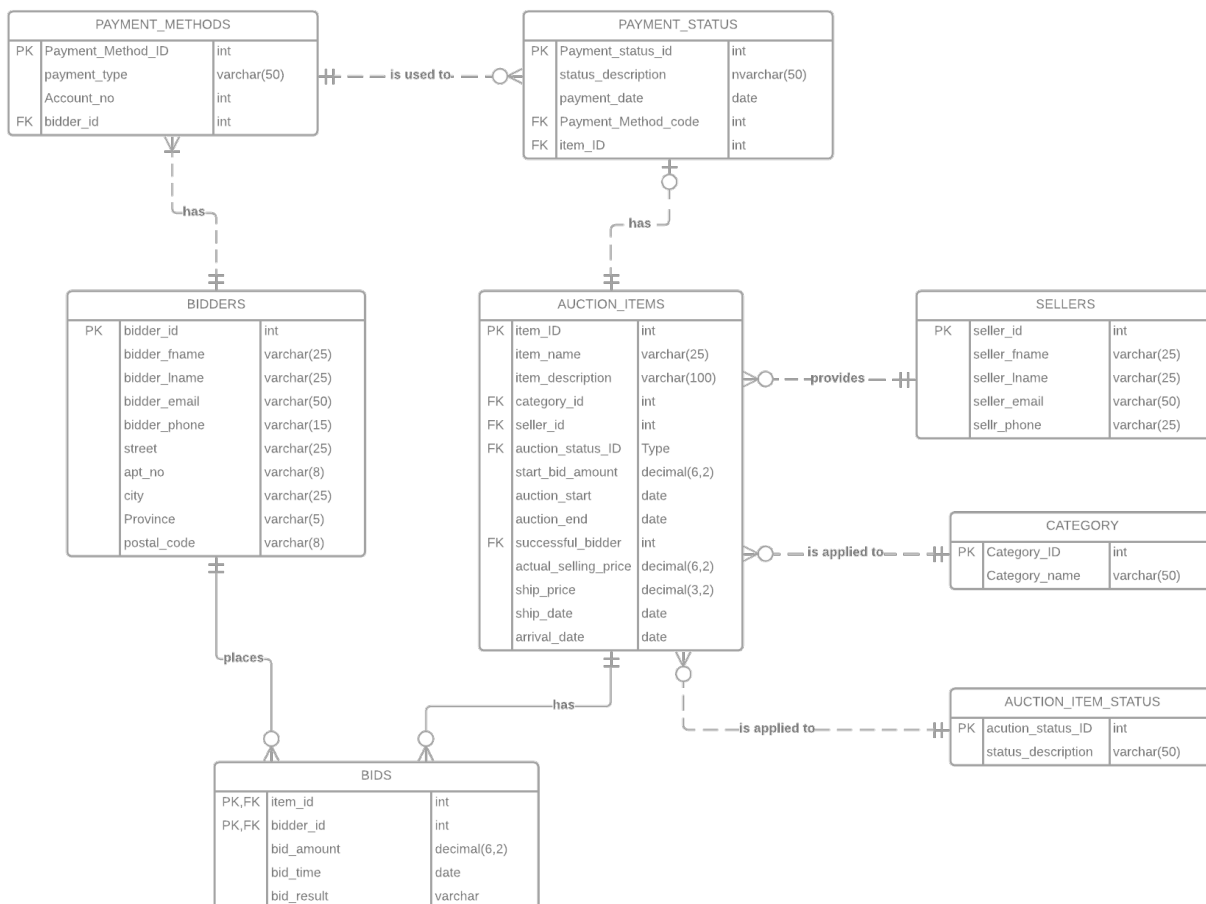
(1) The Things of Interest:

- Auction Items
- Auction Item Categories
- Auction Item Status
- Bids
- Bidders
- Payment Methods
- Payment Status
- Sellers

(2) Business Rules:

- A SELLER can provide one or more AUCTION ITEMS.
- A BIDDER can place zero or many BIDS.
- A BID is always placed by one and only one BIDDER.
- A BID is always applied to one and only one AUCTION ITEM.
- An AUCTION ITEM can have zero or many BIDS.
- An AUCTION ITEM can be in one AUCTION ITEM CATEGORY.
- AUCTION ITEM CATEGORY can be applied to zero or many AUCTION ITEMS.
- An AUCTION ITEM has only one AUCTION ITEM STATUS.
- An AUCTION ITEM STATUS can be applied to zero or many AUCTION ITEMS.
- An AUCTION ITEM can have zero or one PAYMENT STATUS.
- A BIDDER can have one or many PAYMENT METHODS.
- A PAYMENT METHOD can be used to pay for zero or many PAYMENT STATUS.
- An AUCTION ITEM can have zero or one SUCCESSFUL BIDDER. Before a successful Bidder is identified, this field would be blank or NULL, and would be populated after every successful bid.
- An AUCTION ITEM has zero or one ACTUAL SELLING PRICE. Before a item is successful sold, this field would be blank or NULL, and would be populated after every successful bid.

- **Design the ER model:** that has different type of entity relationships (1:1, 1:N, N:M) (1.5 marks)



SELLER

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Seller_ID	Integer, Primary key	5 digits	Seller ID number
Seller_fname	Varchar	25 chars	Seller's first name
Seller_lname	Varchar	25 chars	Seller's last name
Seller_email	Varchar	50 chars	Seller's email
Seller_phone	Varchar	15 chars	Seller's phone number

AUCTION_ITEM

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Item_ID	Integer, Primary key	5 digits	Auction item ID number
Item_name	Varchar	25 chars	Item name
Item_description	Varchar	50 chars	Item description
Category_ID	Integer, Foreign key	3 digits	Category ID
Seller_ID	Integer, Foreign key	5 digits	Seller ID
Auction_status_ID	Integer, Foreign key	3 digits	Auction item status code
Start_bid_amount	Decimal	6 digits decimal 2 digits	Start bid amount
Auction_start	date	Date/time format	Auction start date
Auction_end	date	Date/time format	Auction end date
Bidder_ID	Integer, Foreign key	5 digits	Bidder ID who is the successful bidder
Actual_selling_price	Decimal	6 digits decimal 2 digits	Actual selling price
Ship_price	Decimal	3 digits decimal 2 digits	Shipping price
Ship_date	date	Date/time format	Shipping date
Arrival_date	datetime	Date/time format	Date that item is delivered to bidder's address

CATEGORY

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Category_ID	Integer, Primary key	3 digits	Category ID
Category_name	Varchar	15 chars	Category name

AUCTION_ITEM_STATUS

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Auction_status_ID	Integer, Primary key	3 digits	Auction item status code
Status_description	Varchar	10 chars (Future, Current, Closed)	Auction item status description

BIDDERS

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Bidder_ID	Integer, Primary key	5 digits	Bidder ID number
Bidder_fname	Varchar	25 chars	Bidder's first name
Bidder_lname	Varchar	25 chars	Bidder's last name
Bidder_email	Varchar	50 chars	Bidder's email
Bidder_phone	Varchar	15 chars	Bidder's phone number
Street	Varchar	25 chars	Bidder's street
Apt_no	Varchar	8 chars	Bidder's apartment number
City	Varchar	25 chars	Bidder's city
Province	Varchar	5 chars	Bidder's province
Postal_code	Varchar	8 chars	Bidder's postal code

BIDS

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Bidder_ID	Integer, Primary key, Foreign key	5 digits	Bidder ID number
Item_ID	Integer, Primary key, Foreign key	5 digits	Auction item ID number
Bid_amount	Decimal	6 digits decimal 2 digits	Amount that bidder bids on an auction item
Bid_time	Datetime	Date/time format	Date that bidder bids on the item
Bid_result	varchar	3 chars (Yes, No). Default to No	Bid result for a potential bidder

PAYMENT_METHODS

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Payment_method_ID	Integer, Primary key	6 digits	Payment method ID number
Payment_type	Varchar	16 varchars (PayPal, Visa, Mastercard)	Type of payment method
Account_no	Varchar	16 chars	Credit card number of bidder
Bidder_ID	Integer, Foreign key	5 digits	Bidder ID number

PAYMENT_STATUS

ATTRIBUTE	DATATYPE	DOMAIN	DESCRIPTION
Payment_status_ID	Integer, Primary key	6 digits	Payment status ID number
Status_description	Varchar	10 chars (Paid, Pending)	Payment status description
Payment_date	date	Date/time format	Payment date
Payment_method_ID	Integer, Foreign key	6 digits	Payment method ID number
Item_ID	Integer, Foreign key	5 digits	Auction item ID number

- **Schema design:** Use Oracle SQL Developer to create the tables derived from ER/EER diagram

```
CREATE TABLE SELLERS (
  Seller_ID          number(5) CONSTRAINT seller_pk PRIMARY KEY,
  Seller_fname       varchar2(25) NOT NULL,
  Seller_lname       varchar2(25) NOT NULL,
  Seller_email       varchar2(50) NOT NULL,
  Seller_phone       varchar2(15) NOT NULL
);
```

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	SELLER_ID	NUMBER(5,0)	No	(null)	1	(null)
2	SELLER_FNAME	Filter... VARCHAR2(25 BYTE)	No	(null)	2	(null)
3	SELLER_LNAME	VARCHAR2(25 BYTE)	No	(null)	3	(null)
4	SELLER_EMAIL	VARCHAR2(50 BYTE)	No	(null)	4	(null)
5	SELLER_PHONE	VARCHAR2(15 BYTE)	No	(null)	5	(null)

```
CREATE TABLE BIDDERS (
  Bidder_ID          number(5) CONSTRAINT bidder_pk PRIMARY KEY,
  Bidder_fname       varchar2(25) NOT NULL,
  Bidder_lname       varchar2(25) NOT NULL,
  Bidder_email       varchar2(50) NOT NULL,
  Bidder_phone       varchar2(15) NOT NULL,
  Street             varchar2(25) NOT NULL,
  Apt_no            varchar2(8) NOT NULL,
  City              varchar2(25) NOT NULL,
  Province           varchar2(5) NOT NULL,
  Postal_code        varchar2(8) NOT NULL
);
```

	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	BIDDER_ID	NUMBER(5,0)	No	(null)	1	(null)
2	BIDDER_FNAME	VARCHAR2(25 BYTE)	No	(null)	2	(null)
3	BIDDER_LNAME	VARCHAR2(25 BYTE)	No	(null)	3	(null)
4	BIDDER_EMAIL	VARCHAR2(50 BYTE)	No	(null)	4	(null)
5	BIDDER_PHONE	VARCHAR2(15 BYTE)	No	(null)	5	(null)
6	STREET	VARCHAR2(25 BYTE)	No	(null)	6	(null)
7	APT_NO	VARCHAR2(8 BYTE)	No	(null)	7	(null)
8	CITY	VARCHAR2(25 BYTE)	No	(null)	8	(null)
9	PROVINCE	VARCHAR2(5 BYTE)	No	(null)	9	(null)
10	POSTAL_CODE	VARCHAR2(8 BYTE)	No	(null)	10	(null)

CREATE TABLE CATEGORY (

Category_ID number(3) CONSTRAINT category_pk PRIMARY KEY,

Category_name varchar2(15) NOT NULL

);

	↕ COLUMN_NAME	↕ DATA_TYPE	↕ NULLABLE	DATA_DEFAULT	↕ COLUMN_ID	↕ COMMENTS
1	CATEGORY_ID	NUMBER(3,0)	No	(null)	1 (null)	
2	CATEGORY_NAME	VARCHAR2(15 BYTE)	No	(null)	2 (null)	

CREATE TABLE AUCTION_ITEM_STATUS (

Auction_status_ID number(3) CONSTRAINT auction_status_pk PRIMARY KEY,

Status_description varchar2(10) NOT NULL

);

	↕ COLUMN_NAME	↕ DATA_TYPE	↕ NULLABLE	DATA_DEFAULT	↕ COLUMN_ID	↕ COMMENTS
1	AUCTION_STATUS_ID	NUMBER(3,0)	No	(null)	1 (null)	
2	STATUS_DESCRIPTION	VARCHAR2(10 BYTE)	No	(null)	2 (null)	

CREATE TABLE AUCTION_ITEM (

Item_ID number(5) CONSTRAINT item_pk PRIMARY KEY,

Item_name varchar2(25) NOT NULL,

Item_description varchar2(50) ,

Category_ID number(3),

Seller_ID number(5),

Auction_status_ID number(3),

Start_bid_amount decimal(6,2),

Auction_start date,

Auction_end date,

Bidder_ID number(5) DEFAULT NULL,

Actual_selling_price decimal(6,2) DEFAULT NULL,

Ship_price decimal(3,2),

Ship_date date DEFAULT NULL,

Arrival_date date DEFAULT NULL,

CONSTRAINT item_fk1 FOREIGN KEY (Category_ID) REFERENCES CATEGORY(Category_ID),

CONSTRAINT item_fk2 FOREIGN KEY (Seller_ID) REFERENCES SELLERS(Seller_ID),

CONSTRAINT item_fk3 FOREIGN KEY (Auction_status_ID) REFERENCES

AUCTION_ITEM_STATUS(Auction_status_ID),

CONSTRAINT item_fk4 FOREIGN KEY (Bidder_ID) REFERENCES BIDDERS(Bidder_ID)

);

	❖ COLUMN_NAME	❖ DATA_TYPE	❖ NULLABLE	DATA_DEFAULT	❖ COLUMN_ID	❖ COMMENTS
1	ITEM_ID	NUMBER(5,0)	No	(null)	1 (null)	
2	ITEM_NAME	VARCHAR2(25 BYTE)	No	(null)	2 (null)	
3	ITEM_DESCRIPTION	VARCHAR2(50 BYTE)	Yes	(null)	3 (null)	
4	CATEGORY_ID	NUMBER(3,0)	Yes	(null)	4 (null)	
5	SELLER_ID	NUMBER(5,0)	Yes	(null)	5 (null)	
6	AUCTION_STATUS_ID	NUMBER(3,0)	Yes	(null)	6 (null)	
7	START_BID_AMOUNT	NUMBER(6,2)	Yes	(null)	7 (null)	
8	AUCTION_START	DATE	Yes	(null)	8 (null)	
9	AUCTION_END	DATE	Yes	(null)	9 (null)	
10	BIDDER_ID	NUMBER(5,0)	Yes	NULL	10 (null)	
11	ACTUAL_SELLING_PRICE	NUMBER(6,2)	Yes	NULL	11 (null)	
12	SHIP_PRICE	NUMBER(3,2)	Yes	(null)	12 (null)	
13	SHIP_DATE	DATE	Yes	NULL	13 (null)	
14	ARRIVAL_DATE	DATE	Yes	NULL	14 (null)	

CREATE TABLE BIDS (

Bidder_ID number(5),

Item_ID number(5),

Bid_amount number(6,2),

Bid_time date,

Bid_result varchar(15) DEFAULT 'Uncertain' ,

CONSTRAINT bit_fk1 FOREIGN KEY (Bidder_ID) REFERENCES BIDDERS(Bidder_ID),

CONSTRAINT bit_fk2 FOREIGN KEY (Item_ID) REFERENCES AUCTION_ITEM(Item_ID),

CONSTRAINT bit_pk2 PRIMARY KEY (Bidder_ID, Item_ID)

);

	❖ COLUMN_NAME	❖ DATA_TYPE	❖ NULLABLE	DATA_DEFAULT	❖ COLUMN_ID	❖ COMMENTS
1	BIDDER_ID	NUMBER(5,0)	No	(null)	1 (null)	
2	ITEM_ID	NUMBER(5,0)	No	(null)	2 (null)	
3	BID_AMOUNT	NUMBER(6,2)	Yes	(null)	3 (null)	
4	BID_TIME	DATE	Yes	(null)	4 (null)	
5	BID_RESULT	VARCHAR2(15 BYTE)	Yes	'Uncertain'	5 (null)	

CREATE TABLE PAYMENT_METHODS (

Payment_method_ID number(6) CONSTRAINT payment_mothod_pk PRIMARY KEY,

Payment_type varchar(16),

Account_no varchar(16),

Bidder_ID number(5),

CONSTRAINT payment_method_fk1 FOREIGN KEY (Bidder_ID) REFERENCES BIDDERS(Bidder_ID)

);

	COLUMN_NAME	DATA_TYPE	NUL...	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	PAYMENT_METHOD_ID	NUMBER(6,0)	No	(null)	1	(null)
2	PAYMENT_TYPE	VARCHAR2(16 BYTE)	Yes	(null)	2	(null)
3	ACCOUNT_NO	VARCHAR2(16 BYTE)	Yes	(null)	3	(null)
4	BIDDER_ID	NUMBER(5,0)	Yes	(null)	4	(null)

CREATE TABLE PAYMENT_STATUS (

Payment_status_ID number(6) CONSTRAINT payment_status_pk PRIMARY KEY,

Status_description varchar(10),

Payment_date date,

Payment_method_ID number(6),

Item_ID number(5),

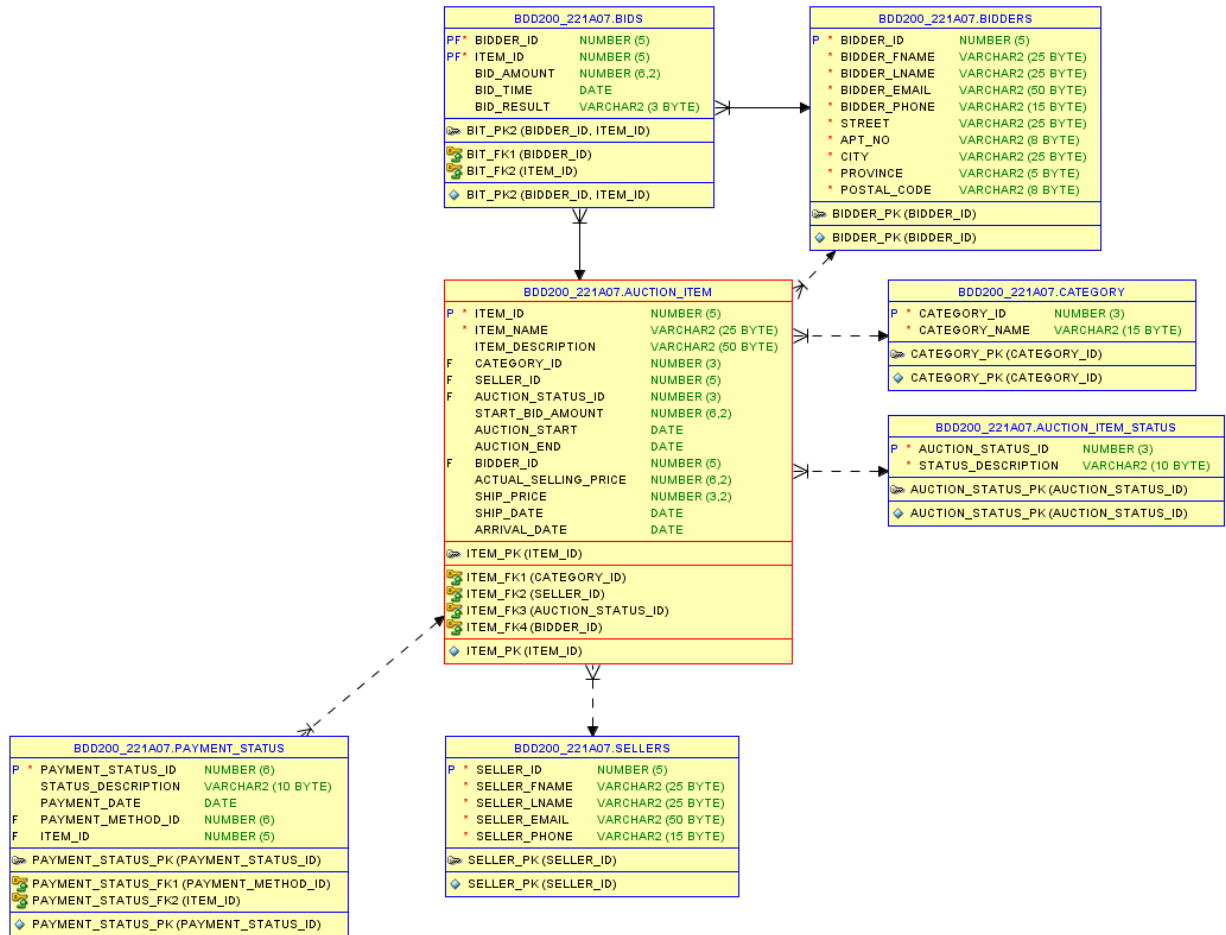
CONSTRAINT payment_status_fk1 FOREIGN KEY (Payment_method_ID) REFERENCES

PAYMENT_METHODS(Payment_method_ID),

CONSTRAINT payment_status_fk2 FOREIGN KEY (Item_ID) REFERENCES AUCTION_ITEM(Item_ID)

);

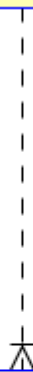
	COLUMN_NAME	DATA_TYPE	NULLABLE	DATA_DEFAULT	COLUMN_ID	COMMENTS
1	PAYMENT_STATUS_ID	NUMBER(6,0)	No	(null)	1	(null)
2	STATUS_DESCRIPTION	VARCHAR2(10 BYTE)	Yes	(null)	2	(null)
3	PAYMENT_DATE	DATE	Yes	(null)	3	(null)
4	PAYMENT_METHOD_ID	NUMBER(6,0)	Yes	(null)	4	(null)
5	ITEM_ID	NUMBER(5,0)	Yes	(null)	5	(null)

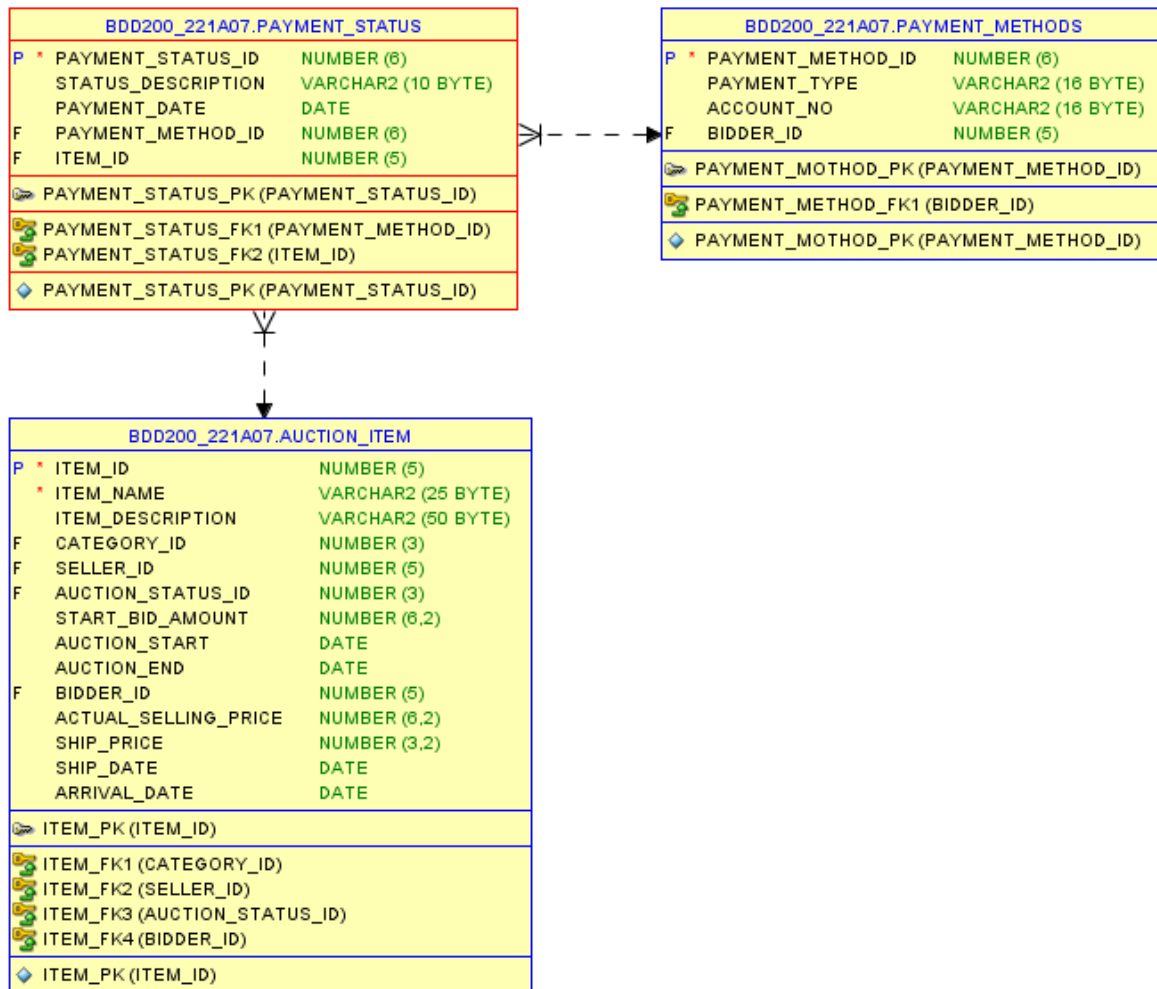


BDD200_221A07.PAYMENT_METHODS		
P *	PAYMENT_METHOD_ID	NUMBER (6)
	PAYMENT_TYPE	VARCHAR2 (16 BYTE)
	ACCOUNT_NO	VARCHAR2 (16 BYTE)
F	BIDDER_ID	NUMBER (5)
🔑 PAYMENT_MOTHOD_PK (PAYMENT_METHOD_ID)		
🔗 PAYMENT_METHOD_FK1 (BIDDER_ID)		
💎 PAYMENT_MOTHOD_PK (PAYMENT_METHOD_ID)		

BDD200_221A07.BIDDERS		
P *	BIDDER_ID	NUMBER (5)
*	BIDDER_FNAME	VARCHAR2 (25 BYTE)
*	BIDDER_LNAME	VARCHAR2 (25 BYTE)
*	BIDDER_EMAIL	VARCHAR2 (50 BYTE)
*	BIDDER_PHONE	VARCHAR2 (15 BYTE)
*	STREET	VARCHAR2 (25 BYTE)
*	APT_NO	VARCHAR2 (8 BYTE)
*	CITY	VARCHAR2 (25 BYTE)
*	PROVINCE	VARCHAR2 (5 BYTE)
*	POSTAL_CODE	VARCHAR2 (8 BYTE)
🔑 BIDDER_PK (BIDDER_ID)		
💎 BIDDER_PK (BIDDER_ID)		

BDD200_221A07.PAYMENT_STATUS		
P *	PAYMENT_STATUS_ID	NUMBER (6)
	STATUS_DESCRIPTION	VARCHAR2 (10 BYTE)
	PAYMENT_DATE	DATE
F	PAYMENT_METHOD_ID	NUMBER (6)
F	ITEM_ID	NUMBER (5)
🔑 PAYMENT_STATUS_PK (PAYMENT_STATUS_ID)		
🔗 PAYMENT_STATUS_FK1 (PAYMENT_METHOD_ID)		
🔗 PAYMENT_STATUS_FK2 (ITEM_ID)		
💎 PAYMENT_STATUS_PK (PAYMENT_STATUS_ID)		





- **Database construction:**Populate the tables of database by using SQL commands

```
INSERT INTO SELLERS VALUES (19001, 'John', 'Smith', 'johnsmith@email.com', '345-998-1234');
INSERT INTO SELLERS VALUES (19002, 'Larry', 'Black', 'larryblack@email.com', '864-555-2345');
INSERT INTO SELLERS VALUES (19003, 'Channel', 'Ralph', 'channelralph@email.com', '866-123-3445');
```

	SELLER_ID	SELLER_FNAME	SELLER_LNAME	SELLER_EMAIL	SELLER_PHONE
1	19001	John	Smith	johnsmith@email.com	345-998-1234
2	19002	Larry	Black	larryblack@email.com	864-555-2345
3	19003	Channel	Ralph	channelralph@email.com	866-123-3445

```
INSERT INTO BIDDERS VALUES(24001, 'David','Tras', 'davidtras@email.com', '856-456-9875',
'Keele str', '187', 'Toronto', 'ON', 'M3J 1P3');
INSERT INTO BIDDERS VALUES(24002, 'Zubeka','Dane', 'zubekadane@email.com', '365-998-6789',
'Carberry', '12', 'Brampton', 'ON', 'L6J 9E8');
INSERT INTO BIDDERS VALUES(24003, 'Roy','Lin', 'roylin@email.com', '541-546-4569', 'Sherbrooke
St W', '845', 'Montreal', 'QC', 'H3A 0G4');
```

	BIDDER_ID	BIDDER_FNAME	BIDDER_LNAME	BIDDER_EMAIL	BIDDER_PHONE	STREET	APT_NO	CITY	PROVINCE	POSTAL_CODE
1	24001	David	Tras	davidtras@email.com	856-456-9875	Keele str	187	Toronto	ON	M3J 1P3
2	24002	Zubeka	Dane	zubekadane@email.com	365-998-6789	Carberry	12	Brampton	ON	L6J 9E8
3	24003	Roy	Lin	roylin@email.com	541-546-4569	Sherbrooke St W	845	Montreal	QC	H3A 0G4

```
INSERT INTO CATEGORY VALUES (301, 'Art');
INSERT INTO CATEGORY VALUES (302, 'Car');
INSERT INTO CATEGORY VALUES (303, 'Sculpture');
INSERT INTO CATEGORY VALUES (304, 'Jewelry');
INSERT INTO CATEGORY VALUES (305, 'Real Estate');
INSERT INTO CATEGORY VALUES (306, 'Music');
```

	CATEGORY_ID	CATEGORY_NAME
1	301	Art
2	302	Car
3	303	Sculpture
4	304	Jewelry
5	305	Real Estate
6	306	Music

```
INSERT INTO AUCTION_ITEM_STATUS VALUES (101, 'Future');
INSERT INTO AUCTION_ITEM_STATUS VALUES (102, 'Current');
INSERT INTO AUCTION_ITEM_STATUS VALUES (103, 'Closed');
```

	AUCTION_STATUS_ID	STATUS_DESCRIPTION
1	101	Future
2	102	Current
3	103	Closed

```
INSERT INTO AUCTION_ITEM VALUES (90001, 'Starry Night', 'Famous oil painting by Van Gogh',
301, 19001, 101, 50000.00, '8/31/2022', '9/30/2022', NULL, NULL, 0.00, NULL, NULL);
INSERT INTO AUCTION_ITEM VALUES (90002, '1909 Volkswagen Beetle', 'Classical red Volkswagen
Beetle, sunroof', 302, 19001, 102, 3000.00, '2/26/2022', '3/26/2022', NULL, NULL, 0.00, '4/3/2022',
NULL);
INSERT INTO AUCTION_ITEM VALUES (90003, 'Millenia necklace', 'Octagon cut, Pink, Rose gold-
tone plated', 304, 19002, 103, 155.00, '1/10/2022', '1/20/2022', 24002, 300.00, 0.00, '1/21/2022',
'1/25/2022');
INSERT INTO AUCTION_ITEM VALUES (90004, 'Best Of Bob Marley', 'Audio CD', 306, 19003, 103,
27.00, '3/1/2022', '3/26/2022', 24001, 50.00, 0.00, NULL, NULL);
```

ITEM_ID	ITEM_NAME	ITEM_DESCRIPTION	CATEGORY_ID	SELLER_ID	AUCTION_STATUS_ID	START_BID_AMOUNT	AUCTION_START	AUCTION_END	BIDDER_ID	ACTUAL_SELLING_PRICE	SHIP_PRICE	SHIP_DATE
1	90003 Millenia necklace	Octagon cut, Pink, Rose gold-tone plated	304	19002	103	155	01-10-2022	01-20-2022	24002	300	0	01-21-2022
2	90001 Starry Night	Famous oil painting by Vincent Van Gogh	301	19001	101	5000	08-31-2022	09-30-2022	(null)	(null)	0	(null)
3	90004 Best Of Bob Marley	Audio CD	306	19003	103	27	03-01-2022	03-26-2022	24001	50	0	(null)
4	90002 1909 Volkswagen Beetle	Classical red Volkswagen Beetle, sunroof	302	19001	102	3000	02-26-2022	03-26-2022	(null)	(null)	0	04-03-2022

ACTUAL_SELLING_PRICE	SHIP_PRICE	SHIP_DATE	ARRIVAL_DATE
300	0	01-21-2022	01-25-2022
(null)	0	(null)	(null)
50	0	(null)	(null)
(null)	0	04-03-2022	(null)

```
INSERT INTO BIDS VALUES (24001, 90004, 50.00, '3/15/2022', 'Winner');
INSERT INTO BIDS VALUES (24001, 90002, 8000.00, '3/15/2022', 'Uncertain');
INSERT INTO BIDS VALUES (24002, 90003, 300.00, '1/20/2022', 'Winner');
INSERT INTO BIDS VALUES (24002, 90002, 6000.00, '3/22/2022', 'Uncertain');
```

INSERT INTO BIDS VALUES (24003, 90003, 200.00, '1/10/2022','Loser');
 INSERT INTO BIDS VALUES (24003, 90002, 5000.00, '3/10/2022', 'Uncertain');
 INSERT INTO BIDS VALUES (24002, 90004, 30.00, '3,11/2022','Loser');

	BIDDER_ID	ITEM_ID	BID_AMOUNT	BID_TIME	BID_RESULT
1	24001	90004	50	03-15-2022	Winner
2	24001	90002	8000	03-15-2022	Uncertain
3	24002	90003	300	01-20-2022	Winner
4	24002	90002	6000	03-22-2022	Uncertain
5	24003	90003	200	01-10-2022	Loser
6	24003	90002	5000	03-10-2022	Uncertain
7	24002	90004	30	03-11-2022	Loser

INSERT INTO PAYMENT_METHODS VALUES (161301, 'Visa', '4550-1977-56489', 24001);
 INSERT INTO PAYMENT_METHODS VALUES (161302, 'Master Card', '6932-5640-56325', 24002);
 INSERT INTO PAYMENT_METHODS VALUES (161303, 'Paypal', '564582', 24003);

	PAYMENT_METHOD_ID	PAYMENT_TYPE	ACCOUNT_NO	BIDDER_ID
1	161301	Visa	4550-1977-56489	24001
2	161302	Master Card	6932-5640-56325	24002
3	161303	Paypal	564582	24003

INSERT INTO PAYMENT_STATUS VALUES (161901, 'Paid', '1/20/2022', 161302 ,90003);
 INSERT INTO PAYMENT_STATUS VALUES (161902, 'Pending', Null, Null ,90004);

	PAYMENT_STATUS_ID	STATUS_DESCRIPTION	PAYMENT_DATE	PAYMENT_METHOD_ID	ITEM_ID
1	161901	Paid	01-20-2022	161302	90003
2	161902	Pending	(null)	(null)	90004

- **Designing Simple Queries:** Prepare at least 8 simple queries (at least one for each of your tables) and show the snapshots of their results. In general, you have to produce professional report results for queries. The query results should show records in collections with meaningful titles and proper format.

1. Display the number of Auction item from the AUCTION_ITEM table

```
Select Count(*)
From AUCTION_ITEM;
```

	COUNT(*)
1	4

2. Rename table "Category" to "Categories"
ALTER TABLE Category RENAME TO Categories;

Table CATEGORY altered.

```
Select * from categories;
```

	CATEGORY_ID	CATEGORY_NAME
1	301	Art
2	302	Car
3	303	Sculpture
4	304	Jewelry
5	305	Real Estate
6	306	Music

3. List all the items that are in current auction.

```
Select *
From auction_item
Where auction_status_id = 102;
```

	ITEM_ID	ITEM_NAME	ITEM_DESCRIPTION	CATEGORY_ID	SELLER_ID	AUCTION_STATUS_ID	START_BID_AMOUNT	AUCTION_START	AUCTION_END	BIDDER_ID	ACTUAL_SELLING_PRICE	SHIP_PRICE	SHIP_DATE	A
1	90002	1909 Volkswagen Beetle	Classical red Volkswagen Beetle, sunroof	302	19001	102	3000	02-26-2022	03-26-2022	(null)	(null)	(null)	04-03-2022	(nu

4. Find all sold items, their actual sold price and the different between start bid amount and the sold price.

```
Select item_id, item_name, item_description, actual_selling_price, actual_selling_price -
start_bid_amount As Higher_Amount
```

From auction_item

Where actual_selling_price is Not Null;

	IT...	ITEM_NAME	ITEM_DESCRIPTION	ACTUAL_SELLING_PRICE	HIGHER_AMOUNT
1	90003	Filter...a necklace	Octagon cut, Pink, Rose gold-tone plated	300	145
2	90004	Best Of Bob Marley	Audio CD	50	23

5. List all items has been sold but the bidders have not paid yet.

Select a.item_id, a.item_name

From auction_item a

Inner Join payment_status p

On a.item_id = p.item_id

Where p.payment_status_id = 161902;

	ITEM_ID	ITEM_NAME
1	90004	Best Of Bob Marley

6. List all the auction that occur after Feb 10, 2022 before March 10, 2022.

Select *

From auction_item

Where auction_start < '3.10.2022'

And auction_start > '2.10.2022' ;

	ITEM_ID	ITEM_NAME	ITEM_DESCRIPTION	CATEGORY_ID	SELLER_ID	AUCTION_STATUS_ID	START_BID_AMOUNT	AUCTION_START	AUCTION_END	BIDDER_ID	ACTUAL_SELLING_PRICE	SHIP_PRICE
1	90004	Best Of Bob Marley	Audio CD	306	19003	103	27	03-01-2022	03-26-2022	24001	50	0
2	90002	1909 Volkswagen Beetle	Classical red Volkswagen Beetle, sunroof	302	19001	102	3000	02-26-2022	03-26-2022	(null)	(null)	0

7. Show all the bidders full name, and their payment methods

Select b.bidder_fname || ' ' || b.bidder_lname, p.payment_type, p.account_no

From bidders b

Inner Join payment_methods p

On b.bidder_id = p.bidder_id;

	B.BIDDER_FNAME " B.BIDDER_LNAME	PAYMENT_TYPE	ACCOUNT_NO
1	DavidTras	Visa	4550-1977-56489
2	ZubekaDane	Master Card	6932-5640-56325
3	RoyLin	Paypal	564582

8. Show total number of bidders who bid for item '1909 Volkswagen Beetle'

```

Select Count(bidder_id)
From Bids
Where item_id = 90002;

```

	COUNT(BIDDER_ID)
1	3

- **Designing Advanced Quarries:** Prepare at least 6 advanced queries to retrieve data from two or more collections. All queries should have clear and nice formatted results. (1.5 marks)

1. Find all items and their category that John Smith has sold.

```
Select a.item_id, a.item_name, c.category_name, s.seller_fname || '|' || s.seller_lname
From auction_item a
Inner Join sellers s
On a.seller_id = s.seller_id
Inner Join categories c
On a.category_id = c.category_id
Where s.seller_fname = 'John'
And s.seller_lname = 'Smith';
```

	ITEM_ID	ITEM_NAME	CATEGORY_NAME	S.SELLER_FNAME ' ' S.SELLER_LNAME
1	90001	Starry Night	Art	JohnSmith
2	90002	1909 Volkswagen Beetle	Car	JohnSmith

2. What is the average bid price of each sold item received?

```
Select a.item_id, a.Item_name, AVG(b.bid_amount) as Bid_average_amount
From auction_item a
Inner Join bids b
On a.item_id = b.item_id
Where a.auction_status_ID = 103
Group By a.item_id, a.Item_name, a.auction_status_ID;
```

	ITEM_ID	ITEM_NAME	BID_AVERAGE_AMOUNT
1	90003	Millenia necklace	250
2	90004	Best Of Bob Marley	40

3. List the Item name which has more than 1 bid.

```
Select a.item_id, a.Item_name, COUNT(b.bidder_id)
From auction_item a
Inner Join bids b
On a.item_id = b.item_id
Group By a.item_id, a.Item_name
Having Count(b.bidder_id) > 1;
```

	ITEM_ID	ITEM_NAME	COUNT(B.BIDDER_ID)
1	90002	1909 Volkswagen Beetle	3
2	90003	Millenia necklace	2
3	90004	Best Of Bob Marley	2

4. Show the bidder and the number of bids that they placed

```

Select bidders.bidder_fname || ' ' || bidders.bidder_lname as Bidder_Fullname,
Count(bids.bid_time) as times_of_bid
From Bids
Inner Join Bidders
On bids.bidder_id = bidders.bidder_id
Group By bidders.bidder_fname, bidders.bidder_lname;

```

	BIDDER_FULLNAME	TIMES_OF_BID
1	Zubeka Dane	3
2	Roy Lin	2
3	David Tras	2

5. Create a view for list of items and their number of bids.

```

Create View Total_Bids AS
Select a.item_id as I_ID, a.Item_name as I_name, COUNT(b.bidder_id) as Num_of_bids
From auction_item a
Inner Join bids b
On a.item_id = b.item_id
Group By a.item_id, a.Item_name
Order by COUNT(b.bidder_id) DESC ;

Select * From Total_Bids;

```

	I_ID	I_NAME	NUM_OF_BIDS
1	90002	1909 Volkswagen Beetle	3
2	90004	Best Of Bob Marley	2
3	90003	Millenia necklace	2

6. Show the item that has the most number of bids.

```

With special_rank As (
Select I_ID, I_name, Num_of_bids, Rank() Over (Order By Num_of_bids DESC) AS

```

bid_rank

From Total_Bids)

Select I_ID, I_name, Num_of_bids, bid_rank

From special_rank

Where bid_rank = 1;

	I_ID	I_NAME	NUM_OF_BIDS	BID_RANK
1	90002	1909 Volkswagen Beetle	3	1

- **Updating and deleting database content:** Prepare at least 4 commands for updating different collections and the same for the other 4 deleting database content commands. (1.5 marks)

1. Set the winner for item '1909 Volkswagen Beetle' to the bidder Davis Tras.

Update Bids

Set Bid_result = 'winner'

Where bidder_ID = 24001

and item_id = 90002;

Select a.item_name, bidders.bidder_fname || ' ' || bidders.bidder_lname As Bidder_fullname,
bids.bid_result

From bids

Inner Join bidders

On bids.bidder_id = bidders.bidder_id

Inner Join Auction_item a

On a.item_id = bids.item_id

Where a.item_id = 90002

and bids.bid_result = 'winner';

	ITEM_NAME	BIDDER_FULLNAME	BID_RESULT
1	1909 Volkswagen Beetle	David Tras	winner

2. Set bid result for other bidder of item '1909 Volkswagen Beetle' as 'loser'.

Update Bids

Set Bid_result = 'Loser'

Where Bid_result = 'Uncertain'

and item_id = 90002;

Select * from bids where item_id = 90002;

	BIDDER_ID	ITEM_ID	BID_AMOUNT	BID_TIME	BID_RESULT
1	24001	90002	8000	03-15-2022	winner
2	24002	90002	6000	03-22-2022	Loser
3	24003	90002	5000	03-10-2022	Loser

- Update actual selling price for item '1909 Volkswagen Beetle' as the price that bidder Davis Tras offered.

Update Auction_item

Set Actual_selling_price = (Select bid_amount From Bids

Where bid_result = 'winner'

and item_id = 90002)

Where item_id = 90002;

- Update auction status of item '1909 Volkswagen Beetle' as 'closed'

Update Auction_item

Set Actual_selling_price = (Select bid_amount From Bids

Where bid_result = 'winner'

and item_id = 90002)

Where item_id = 90002;

Select item_id, Item_name, actual_selling_price

From auction_item

Where item_id = 90002;

	ITEM_ID	ITEM_NAME	ACTUAL_SELLING_PRICE
1	90002	1909 Volkswagen Beetle	8000

5. Delete bids with bid status is 'Loser'

Delete From Bids Where bid_result = 'Loser';

4 rows deleted.

Select * From bids;

	BIDDER_ID	ITEM_ID	BID_AMOUNT	BID_TIME	BID_RESULT
1	24001	90004	50	03-15-2022	Winner
2	24001	90002	8000	03-15-2022	winner
3	24002	90003	300	01-20-2022	Winner

6. Delete payment status where payment status is 'Paid'.

Delete From Payment_status Where status_description = 'Paid';

1 row deleted.

Select * from Payment_status;

	PAYMENT_STATUS_ID	STATUS_DESCRIPTION	PAYMENT_DATE	PAYMENT_METHOD_ID	ITEM_ID
1	161902	Pending	(null)	(null)	90004

7. Delete payment method 'Paypal'

Delete From Payment_methods Where payment_type = 'Paypal';

1 row deleted.

Select * From Payment_methods;

	PAYMENT_METHOD_ID	PAYMENT_TYPE	ACCOUNT_NO	BIDDER_ID
1	161301	Visa	4550-1977-56489	24001
2	161302	Master Card	6932-5640-56325	24002

8. Delete the category "Real Estate".

Delete From Categories Where category_name = 'Real Estate';

1 row deleted.

Select * From Categories ;

	CATEGORY_ID	CATEGORY_NAME
1	301	Art
2	302	Car
3	303	Sculpture
4	304	Jewelry
5	306	Music