Bahria university Islamabad campus.

Project Report: Database management system.

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Online auction System

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Introduction:

An online auction system is a web platform designed to facilitate the buying and selling of items through the auction process. It provides a virtual marketplace where users can bid on various items listed by sellers. The system manages the entire auction process, from item categorization to bid closing, and allows users to engage in competitive bidding.

Working:

Categories: The system includes a category entity that organizes items into different categories, making it easier for users to browse and search for specific items of interest.

Itemsofcategories: This entity creates a relationship between categories and items, allowing multiple items to be associated with a category. Each item is associated with a specific category, allowing users to browse items within their preferred category.

Users: The system manages user accounts, registration and authentication. Users can create profiles, browse items, place bids and track auction progress.

Items: Sellers can list their items for auction and provide relevant details such as item description, images, starting bid price and auction duration. Interested buyers can view these items, place bids, and track their bidding activity.

Bid Closure: The system includes a bid closure feature that automatically closes the bidding process after the auction duration has expired. This ensures fairness and prevents bids from being submitted after the specified time.

Bid: Users can bid on items they are interested in. The system tracks bid amounts, time stamps and bidder information. It also manages the bidding process and ensures that the highest bid is displayed and updated in real time.

Limitations:

The system relies on the Internet for user access and may be affected by connectivity issues. It does not guarantee the authenticity or quality of the listed items as it is the users responsibility

to provide accurate information. The system may face security risks such as fraudulent activities or unauthorized access, which must be addressed with appropriate security measures.

Objectives:

Provide a convenient platform for users to buy and sell items through auctions. Facilitate fair and competitive bidding between users. Create a user-friendly interface for browsing items and entering bids. Simplify the auction process and ensure efficient management of categories, items and bids.

Reducing complexity:

The online auction system aims to simplify the process of conducting auctions by automating various tasks and providing a centralized platform for all users. It eliminates the need for a physical presence at auction sites and allows users to participate from anywhere with an internet connection.

Scope:

The scope of the Online Auction System includes. User registration and verification. Item categorization and listing. Menu feature with real-time updates. Automatic closing of the offer. Management of user profiles. Search and filter options. Notification system for bid updates and auction status.

Functional requirements:

User registration: Users should be able to create accounts and provide the necessary information for verification. Item Listing: Sellers should be able to create item listings with details such as description, images, starting bid and auction duration.

Bidding: Users should be able to bid on listed items and the system should handle bid management, tracking and updating the highest bid.

Category Management: Administrators or authorized users should be able to manage categories, add new categories, and assign items to appropriate categories.

Bidding Close: The system should automatically close the bidding process for each item after the specified auction duration.

User Profiles: Users should be able to view and update their profiles, including contact information and bid history.

Search and Filter: Users should be able to search for items by category, keywords or specific criteria. The system should provide filtering options to refine the search results.

Normalization:

Normalization is the process of reducing redundancy and wastage of data from the relational database. We are using this technique to avoid du[plication of data from the database and to make sure that data is valid. Normalization reduces data storage, which can lead to us less data storage being used and it reduces the need of data structuring in the database. It also normalize the database for the data inconsistencies to occur.

There are several types of anomalies that normalization can aim to avoid in a database.

Insertion anomalies:

These occur when it is difficult to insert new data into the database because of the way the data is structured. For example, if a database contains a table for storing information about students and a separate table for storing information about their enrolment in courses, it may be difficult to add a new student if that student has not yet enrolled in any courses.

Deletion anomalies:

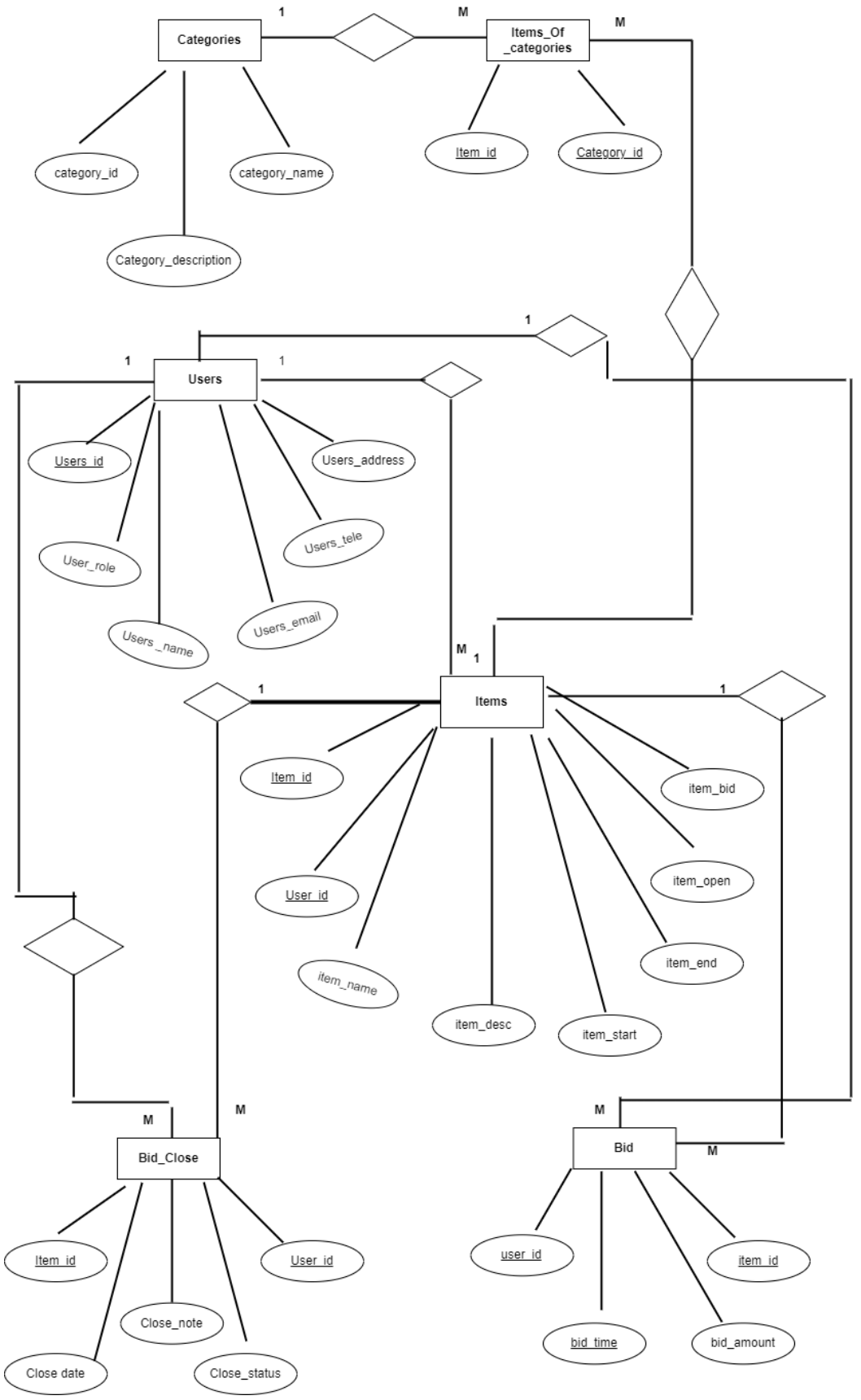
These occur when deleting data from the database can result in the loss of important related data. For example, if a database contains a table for storing information about students and a separate table for storing information about their enrolment in courses, deleting a student from the students table would also delete all of the information about their course enrolments.

Update anomalies:

These occur when updating data in the database can result in data inconsistencies. For example, if a database contains a table for storing information about students and a separate table for storing information about their enrolment in courses, and the same course information is duplicated in both tables, then updating the course information in one table may not necessarily update it in the other table, resulting in inconsistencies.

- Each attribute/column consists of atomic (single) value.
- there was no functional dependency every column is dependent on primary key.
- no transitive dependency exists.

Erd:


Categories
1
M
Items_Of _categories
M
category_id
category_name
Category_description
Item_id
Category_id
1
1
1
Users
Users_id
User_role
Users _name
Users_email
Users_tele
Users_address
M
1
1
1
Items
Item_id
User_id
item_name
item_desc
item_start
item_end
item_open
item_bid
M
M
Bid_Close
Item_id
Close date
Close_note
Close_status
User_id
M
M
Bid
user_id
bid_time
item_id
bid_amount

Rdm:

Categories:

categoriesid	categoriesname	Categorydescription

Itemsofcategories:

Itemid(pk)	Categoryid(fk)

Users:

Userid(pk)	userrole	username	useremail	usertelephone	useraddress

Items:

Itemid(fk)	Userid(pk)	itemname	itemdescrip	itemstart	itemend	itemopen

,itembid

Bid close:

Itemid(pk)	Userid(fk)	closedate	closestatus	Closenotes

Bids:

Userid(fk)	Itemid(fk)	Bidtime(pk)	Bid amount

Online auction System

Table Creation

Categories Table:

Run SQL Command Line

```
SQL> create table categories2(
  2  categoriesid int primary key,
  3  categoriesname varchar(255),
  4  categoriesdescription varchar(255)
  5  );

Table created.
```

Items of categories:

Run SQL Command Line

```
SQL> create table itemsofcategories2(
  2  itemid int primary key,
  3  categoriesid int
  4  );

Table created.
```

Users:

Run SQL Command Line

```
SQL> create table users2(
  2  userid int primary key,
  3  userrole varchar(255),
  4  username varchar(255),
  5  useremail varchar(255),
  6  usertelephone int
  7  );

Table created.
```

Items:

Run SQL Command Line

```
SQL> create table items2(
  2  itemid int,
  3  userid int primary key,
  4  itemname varchar(255),
  5  itemdescription varchar(255),
  6  itemstart varchar(255),
  7  itemend varchar(255),
  8  itemopen varchar(255),
  9  itembid int
 10  );

Table created.
```

Bid close:

Run SQL Command Line

```
SQL> create table bidclose3(
  2  itemid int primary key,
  3  userid int,
  4  closedate date,
  5  closestatus varchar(255),
  6  closenotes varchar(255)
  7  );

Table created.
```

Bids:

Run SQL Command Line

```
SQL> create table bids2(
  2  userid int,
  3  itemid int,
  4  bidamount int
  5  );

Table created.
```

Alteration of tables & Adding foreign keys

Items of categories:

Run SQL Command Line

```
SQL> alter table itemsofcategories2
  2  add constraint itemsofcategories2_fk foreign key(categoriesid) references categories2(categoriesid);

Table altered.
```

Items2:

Run SQL Command Line

```
SQL> alter table items2
  2  add constraint items_fk foreign key(itemid) references itemsofcategories2(itemid);

Table altered.
```

Users2:

```
Run SQL Command Line

SQL> alter table users2
  2  add useraddress varchar(255);

Table altered.
```

Bids2:

```
Run SQL Command Line

SQL> alter table bids2
  2  add constraint bids2_fk foreign key(userid) references users2(userid);

Table altered.
```

Bid close3:

```
Run SQL Command Line

SQL> alter table bidclose3
  2  add constraint bidclose3_fk foreign key(userid) references users2(userid);

Table altered.
```

Bid close3:

```
Run SQL Command Line
SQL> alter table bidclose3
  2  add constraint bidclose3_fk foreign key (itemid) references items2(itemid);
add constraint bidclose3_fk foreign key (itemid) references items2(itemid)
                                                                        *
ERROR at line 2:
ORA-02270: no matching unique or primary key for this column-list
```

It shows us error because we cant perform multiple operations on a querry. I have done it manually.

Bids2:

```
Run SQL Command Line
SQL> alter table bidclose3
  2  add constraint bidclose3_fk foreign key (itemid) references items2(itemid);
add constraint bidclose3_fk foreign key (itemid) references items2(itemid)
                                                            *
ERROR at line 2:
ORA-02270: no matching unique or primary key for this column-list
```

It shows us error because we cant perform multiple operations on a querry. I have done it manually.

Insertion into the tables:

Categories:

Select Run SQL Command Line

```
SQL> insert into categories2
  2  values(1,'vehicle','good');

1 row created.
```

Select Run SQL Command Line

```
SQL> insert into categories2
  2  values(2,'&enterthename','xyz');
Enter value for enterthename: land
old   2: values(2,'&enterthename','xyz')
new   2: values(2,'land','xyz')

1 row created.

SQL> insert into categories2
  2  values(3,'electronics','xyz');

1 row created.

SQL> insert into categories2
  2  values(4,'house','xyz');

1 row created.

SQL> insert into categories2
  2  values(5,'household','xyz');

1 row created.
```

```
SQL> select * from categories2;
```

Select Run SQL Command Line

```
                                                CATEGORIESDESCRIPTION
------------ ------------------------------------------------------------
-----------------------------------------------------------------------
---------------------------- ---------------------------------------------
-----------------------------------------------------------------------
--------------------------------------------
           1 vehicle

                                   good
           2 land

                                   xyz
           3 electronics

                                   xyz
           4 house

                                   xyz
           5 household

                                   xyz
```

Items of categories:

Select Run SQL Command Line

```
SQL> insert into itemsofcategories2
  2  values(101,1);

1 row created.

SQL> insert into itemsofcategories2
```

Select Run SQL Command Line

```
SQL> insert into itemsofcategories2
  2  values(102,2);

1 row created.

SQL> insert into itemsofcategories2
  2  values(103,3);

1 row created.

SQL> insert into itemsofcategories2
  2  values(104,4);

1 row created.

SQL> insert into itemsofcategories2
  2  values(105,5);

1 row created.
```

Select Run SQL Command Line

```
1 row created.

SQL> select *from itemsofcategories2;

    ITEMID CATEGORIESID
---------- ------------
       101            1
       102            2
       103            3
       104            4
       105            5
```

Users2:

Select Run SQL Command Line

```
SQL> insert into users2
  2  values(1,'buyer','hammad','xyx',03005566778,'fazaltown');

1 row created.

SQL> insert into users2
  2  values(2,'buyer','zaryab','xyz',03015566778,'sixthroad');

1 row created.

SQL> insert into users2
  2  values(3,'buyer','rafay','xyx',0315566778,'g9');

1 row created.

SQL> insert into users2
  2  values(4,'seller','hamza','xyz',03205566778,'e11');

1 row created.

SQL> insert into users2
  2  values(5,'seller','umar','xyz',0325566778,'e8');

1 row created.
```

Select Run SQL Command Line

```
1 row created.

SQL> select * from users2;
```

Select Run SQL Command Line

```
--------------------------------------------------------------------------------------------------------------
--------------
        1 buyer
                                hammad
                                                                xyx
                                                                                                    3005566778
fazaltown
        2 buyer
                                zaryab
                                                                xyz
                                                                                                    3015566778
sixthroad
        3 buyer
                                rafay
                                                                xyx
                                                                                                     315566778
g9
```

Select Run SQL Command Line

```
                              rafay
                                                                xyx
                                                                                                                    315566778
g9

   USERID USERROLE
                                        USERNAME
                                                                        USEREMAIL
                                                                                                                        USERTELEPHONE
---------- ------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
-------------------------- ---------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
---------------------------------------- ------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------- -------------
USERADDRESS
------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
---------------
         4 seller
```

Select Run SQL Command Line

```
------------------------------------------------------------------------------------------------------------------------------------
---------------
         4 seller
                              hamza
                                                                xyz
                                                                                                                    3205566778
e11
         5 seller
                              umar
                                                                xyz
                                                                                                                     325566778
e8
```

Items2:

Select Run SQL Command Line

```
SQL> insert into items2
  2  values(101,1001,'house','xyz','xyz','xyz','xyz',10);

1 row created.

SQL> insert into items2
  2  values(102,1002,'house','xyz','xyz','xyz','xyz',11);

1 row created.

SQL> insert into items2
  2  values(103,1003,'plot','xyz','xyz','xyz','xyz',12);

1 row created.

SQL> insert into items2
  2  values(104,1004,'vehicle','xyz','xyz','xyz','xyz',13);

1 row created.

SQL> insert into items2
  2  values(105,1005,'electronics','xyz','xyz','xyz','xyz',14);

1 row created.
```

```
SQL> insert into bids2
  2  values(1,101,1000000);

1 row created.

SQL> insert into bids2
  2  values(2,102,10000000);

1 row created.

SQL> insert into bids2
  2  values(3,103,1000000);

1 row created.

SQL> insert into bids2
  2  values(4,104,1000000);

1 row created.

SQL> insert into bids2
  2  values(5,105,10000);
```

Select Run SQL Command Line

```
SQL> select * from bids2;

    USERID     ITEMID  BIDAMOUNT
---------- ---------- ----------
         1        101    1000000
         2        102   10000000
         3        103    1000000
         4        104    1000000
         5        105      10000
```

Bidclose3:

Select Run SQL Command Line

```
SQL> insert into bidclose3
  2  values(101,1,to_date('01-01-2021','dd-mm-yyyy'),'xyx','xyz');

1 row created.

SQL> insert into bidclose3
  2  values(102,2,to_date('02-01-2023','dd-mm-yyyy'),'xyx','xyz');

1 row created.

SQL> insert into bidclose3
  2  values(103,3,to_date('03-01-2021','dd-mm-yyyy'),'xyx','xyz');

1 row created.

SQL> insert into bidclose3
  2  values(104,4,to_date('04-01-2023','dd-mm-yyyy'),'xyx','xyz');

1 row created.

SQL> insert into bidclose3
  2  values(105,5,to_date('04-01-2021','dd-mm-yyyy'),'xyx','xyz');

1 row created.
```

Select Run SQL Command Line

```
---------------
       101          1 01-JAN-21 xyx
xyz

       102          2 02-JAN-23 xyx
xyz

       103          3 03-JAN-21 xyx
xyz


    ITEMID     USERID CLOSEDATE CLOSESTATUS
---------- ---------- --------- --------------
--------------------------------------------
--------------------------------------------
CLOSENOTES
--------------------------------------------
--------------------------------------------
---------------
       104          4 04-JAN-23 xyx
xyz

       105          5 04-JAN-21 xyx
xyz
```

Views & joins:

Select Run SQL Command Line

```
                                                CATEGORIESDESCRIPTION
------------ ------------------------------------------------------------
---------------------------------------------------------------------------
---------------------------- -------------------------------------------
---------------------------------------------------------------------------
-------------------------------------------
           1 vehicle

                                   good
           2 land

                                   xyz
           3 electronics

                                   xyz
           4 house

                                   xyz
           5 household

                                   xyz
```

Select Run SQL Command Line

```
1 row created.

SQL> select *from itemsofcategories2;

    ITEMID CATEGORIESID
---------- ------------
       101            1
       102            2
       103            3
       104            4
       105            5
```

Select Run SQL Command Line

```
    ITEMID     USERID ITEMNAME
---------- ---------- ----------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
-------------------------------------
ITEMDESCRIPTION
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
---------------
ITEMSTART
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
---------------
ITEMEND
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
---------------
ITEMOPEN

                                   ITEMBID
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
--------------- ----------
       101       1001 house
xyz
xyz

    ITEMID     USERID ITEMNAME
---------- ---------- ----------------------------------------------------------------------------------------------------
```

Select Run SQL Command Line

```
-------------------------------------
ITEMDESCRIPTION
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
---------------
ITEMSTART
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
---------------
ITEMEND
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
---------------
ITEMOPEN

                                   ITEMBID
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
--------------- ----------
xyz
xyz

                                        10


    ITEMID     USERID ITEMNAME
---------- ---------- ----------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------
-------------------------------------
ITEMDESCRIPTION
```

Select Run SQL Command Line

```
                                        10


    ITEMID     USERID ITEMNAME
---------- ---------- ----------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
-------------------------------------
ITEMDESCRIPTION
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
---------------
ITEMSTART
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
---------------
ITEMEND
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
---------------
ITEMOPEN

                                      ITEMBID
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
--------------- ----------
       102       1002 house
xyz
xyz
```

Select Run SQL Command Line

```
xyz

    ITEMID     USERID ITEMNAME
---------- ---------- ----------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
-------------------------------------
ITEMDESCRIPTION
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
---------------
ITEMSTART
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
---------------
ITEMEND
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
---------------
ITEMOPEN

                                     ITEMBID
------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------
--------------- ----------
xyz
xyz

                                        11
```

Select Run SQL Command Line

```
-----------------------------------------------------------------
-------------------------------------
ITEMDESCRIPTION
-----------------------------------------------------------------
-----------------------------------------------------------------
---------------
ITEMSTART
-----------------------------------------------------------------
-----------------------------------------------------------------
---------------
ITEMEND
-----------------------------------------------------------------
-----------------------------------------------------------------
---------------
ITEMOPEN

                                   ITEMBID
-----------------------------------------------------------------
-----------------------------------------------------------------
--------------- ----------
xyz
xyz

                                        12


    ITEMID     USERID ITEMNAME
--------- ---------- ----------------------------------------
-----------------------------------------------------------------
-------------------------------------
```

Select Run SQL Command Line

```
xyz

   ITEMID     USERID ITEMNAME
---------- ---------- ------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------
ITEMDESCRIPTION
------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
---------------
ITEMSTART
------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
---------------
ITEMEND
------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
---------------
ITEMOPEN

                                ITEMBID
------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
--------------- ----------
xyz
xyz

                                   11
```

Select Run SQL Command Line

```
------------------------------------------------------------------------------
------------------------------------------------------------------------------
---------------
ITEMOPEN

                                  ITEMBID
------------------------------------------------------------------------------
------------------------------------------------------------------------------
--------------- ----------
       104       1004 vehicle
xyz
xyz

    ITEMID     USERID ITEMNAME
---------- ---------- ------------------------------------------------------
------------------------------------------------------------------------------
--------------------------------------
ITEMDESCRIPTION
------------------------------------------------------------------------------
------------------------------------------------------------------------------
---------------
ITEMSTART
------------------------------------------------------------------------------
------------------------------------------------------------------------------
---------------
ITEMEND
------------------------------------------------------------------------------
------------------------------------------------------------------------------
---------------
ITEMOPEN
```

Select Run SQL Command Line

```
--------------- ----------
       105       1005 electronics
xyz
xyz

    ITEMID     USERID ITEMNAME
---------- ---------- ------------------------------
--------------------------------------------------------
--------------------------------------
ITEMDESCRIPTION
--------------------------------------------------------
--------------------------------------------------------
---------------
ITEMSTART
--------------------------------------------------------
--------------------------------------------------------
---------------
ITEMEND
--------------------------------------------------------
--------------------------------------------------------
---------------
ITEMOPEN

                                    ITEMBID
--------------------------------------------------------
--------------------------------------------------------
--------------- ----------
xyz
xyz
```

Select Run SQL Command Line

```
xyz
xyz

                                        14
```

Select Run SQL Command Line

```
---------------------------------------------------------------------------------------------------------------
---------------
         1 buyer
                                hammad
                                                                xyx
                                                                                                    3005566778
fazaltown
         2 buyer
                                zaryab
                                                                xyz
                                                                                                    3015566778
sixthroad
         3 buyer
                                rafay
                                                                xyx
                                                                                                     315566778
g9
```

Select Run SQL Command Line

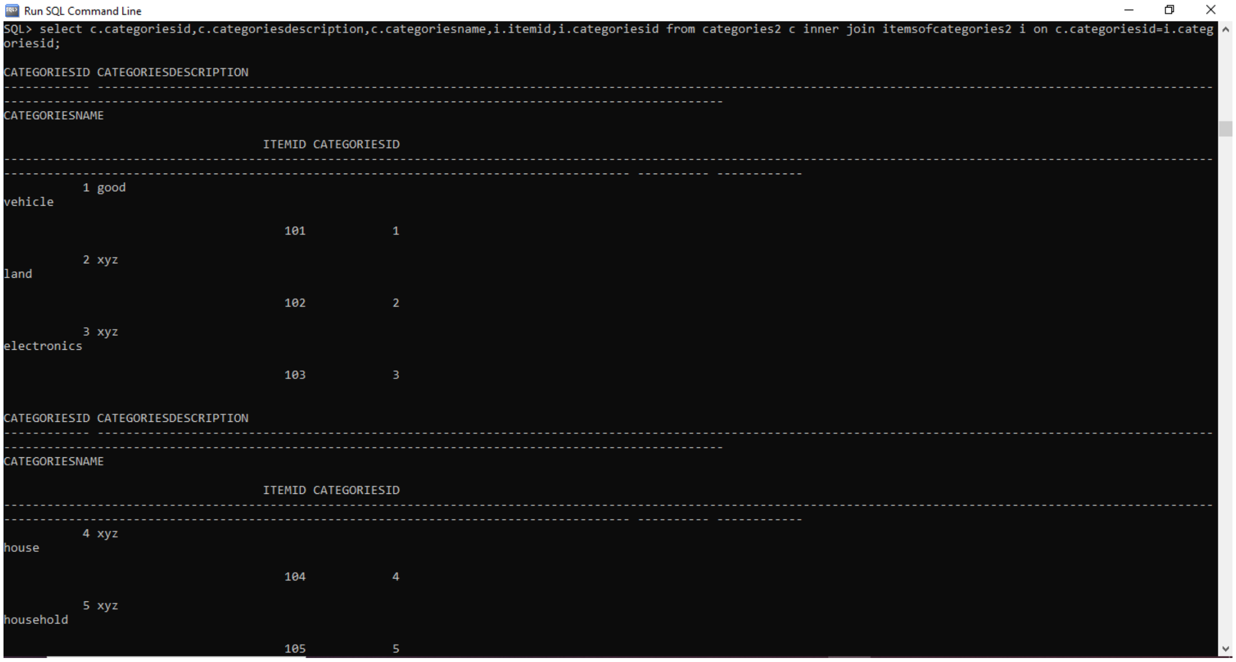
```
                                rafay
                                                                xyx
                                                                                                     315566778
g9

    USERID USERROLE
                                        USERNAME
                                                                        USEREMAIL
                                                                                                USERTELEPHONE
---------- ---------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------
------------------------- --------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------
---------------------------------------- -------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------
------------------------------------------------------------ -------------
USERADDRESS
---------------------------------------------------------------------------------------------------------------
---------------------------------------------------------------------------------------------------------------
---------------
         4 seller
```

```
Select Run SQL Command Line
--------------------------------------------------------------------------------------------------------------------------
--------------
        4 seller
                                hamza
                                                                        xyz
                                                                                                                  3205566778
e11
        5 seller
                                umar
                                                                        xyz
                                                                                                                   325566778
e8
```

```
Select Run SQL Command Line
SQL> select * from bids2;

    USERID     ITEMID  BIDAMOUNT
---------- ---------- ----------
         1        101    1000000
         2        102   10000000
         3        103    1000000
         4        104    1000000
         5        105      10000
```

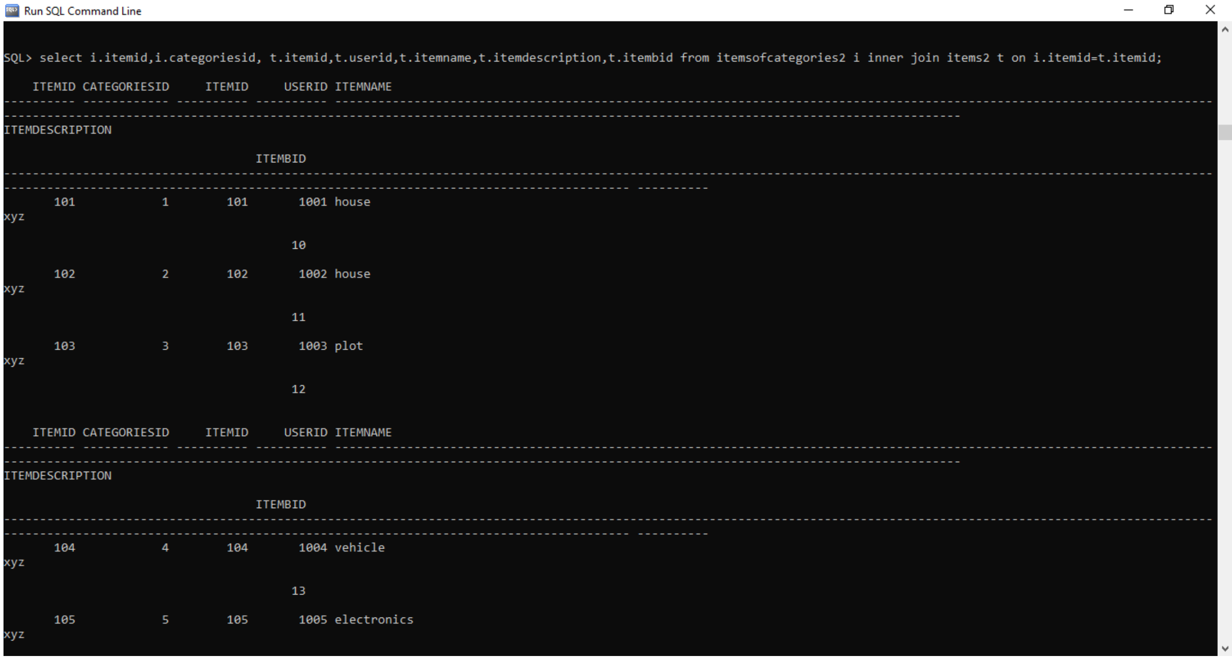
Joins:

<u>On categories2 & itemsofcategories2:</u>

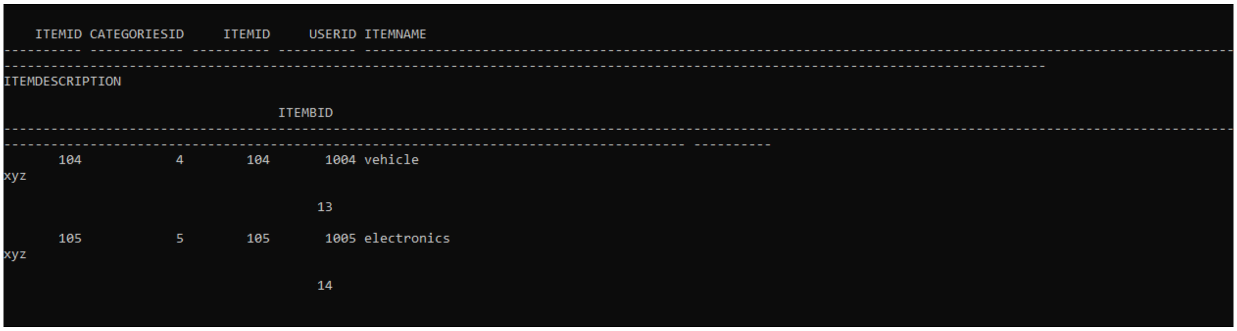


```
SQL> select c.categoriesid,c.categoriesdescription,c.categoriesname,i.itemid,i.categoriesid from categories2 c inner join itemsofcategories2 i on c.categoriesid=i.categ
oriesid;

CATEGORIESID CATEGORIESDESCRIPTION
------------ -------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------
CATEGORIESNAME

                                    ITEMID CATEGORIESID
--------------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------- ---------- ------------
           1 good
vehicle

                                       101            1

           2 xyz
land

                                       102            2

           3 xyz
electronics

                                       103            3

CATEGORIESID CATEGORIESDESCRIPTION
------------ -------------------------------------------------------------------------------------------------------------------------------------------------------
----------------------------------------------------------------------------------------------------
CATEGORIESNAME

                                    ITEMID CATEGORIESID
--------------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------- ---------- ------------
           4 xyz
house

                                       104            4

           5 xyz
household

                                       105            5
```

Itemsofcategories2 & items2:

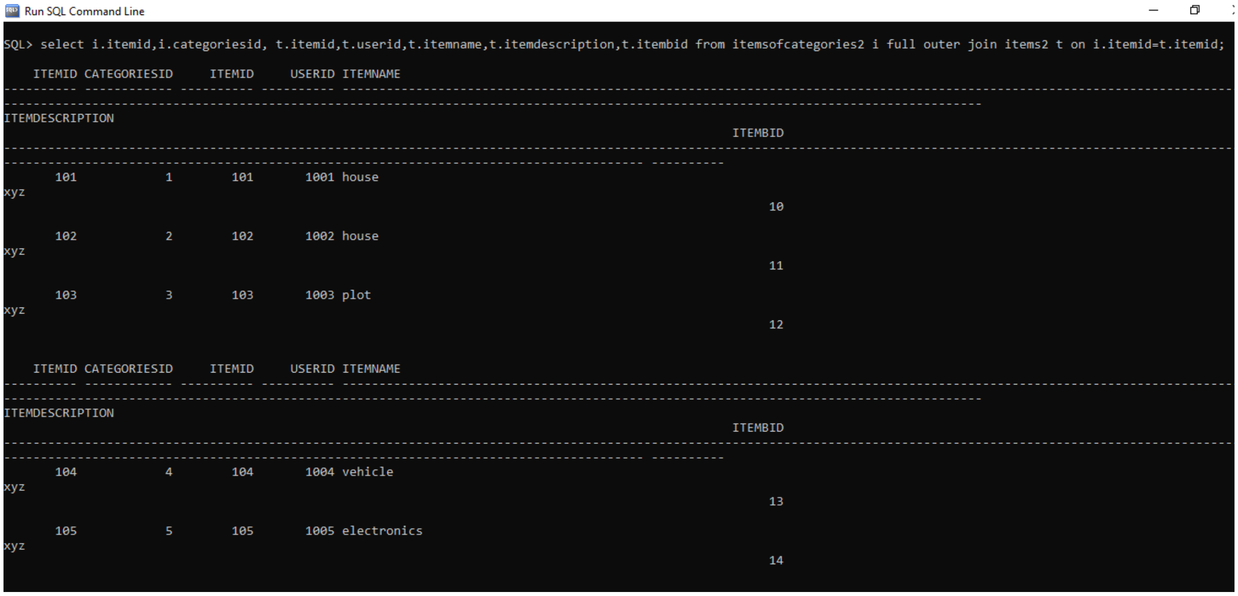


```
SQL> select i.itemid,i.categoriesid, t.itemid,t.userid,t.itemname,t.itemdescription,t.itembid from itemsofcategories2 i inner join items2 t on i.itemid=t.itemid;

    ITEMID CATEGORIESID     ITEMID     USERID ITEMNAME
---------- ------------ ---------- ---------- --------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------------------------------------------------------
ITEMDESCRIPTION

                                   ITEMBID
--------------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------- ----------
       101            1        101       1001 house
xyz

                                        10

       102            2        102       1002 house
xyz

                                        11

       103            3        103       1003 plot
xyz

                                        12

    ITEMID CATEGORIESID     ITEMID     USERID ITEMNAME
---------- ------------ ---------- ---------- --------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------------------------------------------------------
ITEMDESCRIPTION

                                   ITEMBID
--------------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------- ----------
       104            4        104       1004 vehicle
xyz

                                        13

       105            5        105       1005 electronics
xyz
```



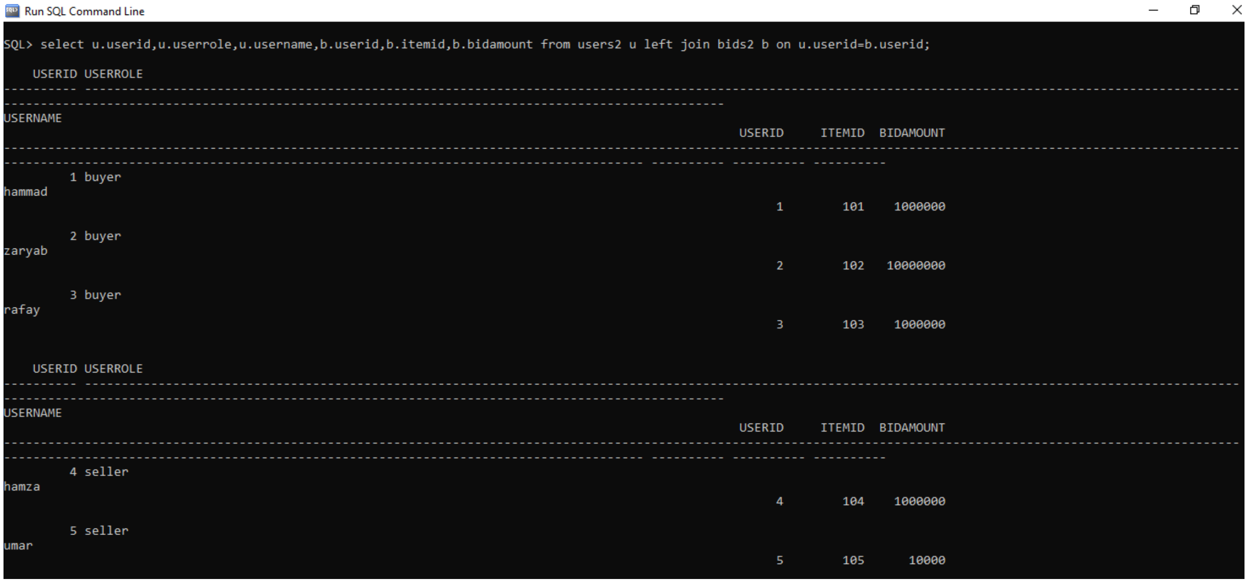
```
    ITEMID CATEGORIESID     ITEMID     USERID ITEMNAME
---------- ------------ ---------- ---------- ------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
ITEMDESCRIPTION

                                   ITEMBID
---------------------------------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------- ----------
       104            4        104       1004 vehicle
xyz

                                        13

       105            5        105       1005 electronics
xyz

                                        14
```

Full OUTER JOIN:



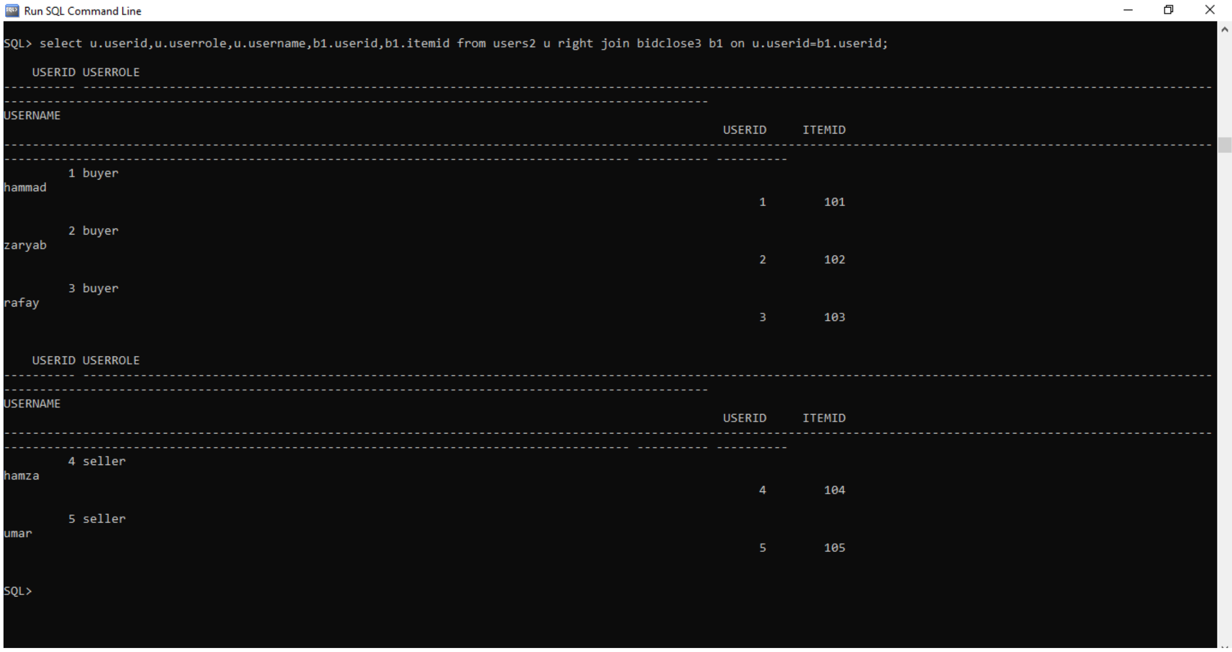
```
SQL> select i.itemid,i.categoriesid, t.itemid,t.userid,t.itemname,t.itemdescription,t.itembid from itemsofcategories2 i full outer join items2 t on i.itemid=t.itemid;

    ITEMID CATEGORIESID     ITEMID     USERID ITEMNAME
---------- ------------ ---------- ---------- ------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
ITEMDESCRIPTION
                                                                                                    ITEMBID
---------------------------------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------- ----------
       101            1        101       1001 house
xyz
                                                                                                         10

       102            2        102       1002 house
xyz
                                                                                                         11

       103            3        103       1003 plot
xyz
                                                                                                         12

    ITEMID CATEGORIESID     ITEMID     USERID ITEMNAME
---------- ------------ ---------- ---------- ------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------------------------------------------
ITEMDESCRIPTION
                                                                                                    ITEMBID
---------------------------------------------------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------------- ----------
       104            4        104       1004 vehicle
xyz
                                                                                                         13

       105            5        105       1005 electronics
xyz
                                                                                                         14
```

USERS2 & BIDS2:



```
SQL> select u.userid,u.userrole,u.username,b.userid,b.itemid,b.bidamount from users2 u left join bids2 b on u.userid=b.userid;

    USERID USERROLE
---------- -------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------------------
USERNAME
                                                                                                    USERID     ITEMID  BIDAMOUNT
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------- ---------- ---------- ----------
         1 buyer
hammad
                                                                                                         1        101    1000000

         2 buyer
zaryab
                                                                                                         2        102   10000000

         3 buyer
rafay
                                                                                                         3        103    1000000


    USERID USERROLE
---------- -------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------------------
USERNAME
                                                                                                    USERID     ITEMID  BIDAMOUNT
--------------------------------------------------------------------------------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------- ---------- ---------- ----------
         4 seller
hamza
                                                                                                         4        104    1000000

         5 seller
umar
                                                                                                         5        105      10000
```

Users2 & bidclose3:



```
SQL> select u.userid,u.userrole,u.username,b1.userid,b1.itemid from users2 u right join bidclose3 b1 on u.userid=b1.userid;

    USERID USERROLE
---------- -----------------------------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------
USERNAME
                                                                                                  USERID     ITEMID
----------------------------------------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------- ---------- ----------
         1 buyer
hammad
                                                                                                       1        101

         2 buyer
zaryab
                                                                                                       2        102

         3 buyer
rafay
                                                                                                       3        103


    USERID USERROLE
---------- -----------------------------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------------------
USERNAME
                                                                                                  USERID     ITEMID
----------------------------------------------------------------------------------------------------------------------------------------------------------------------
------------------------------------------------------------------------------------- ---------- ----------
         4 seller
hamza
                                                                                                       4        104

         5 seller
umar
                                                                                                       5        105


SQL>
```

Roles Creation:

Run SQL Command Line

```
SQL> connect sys/password as sysdba
Connected.
SQL> create role buyer identified by 1000;

Role created.
```

Run SQL Command Line

```
SQL> create role seller identified by 1001;

Role created.

SQL> create role admin identified by 1001;

Role created.

SQL>
```

Assigning Roles:

Run SQL Command Line

```
SQL> create user hamza identified by admin;

User created.
```

```
Run SQL Command Line
SQL> create user hammad1 identified by buyer;

User created.

SQL> create user zaryab identified by seller;

User created.

SQL>
```

Granting Permission:

```
Run SQL Command Line
SQL> grant create session to hamza;

Grant succeeded.

SQL> grant create session to hammad1;

Grant succeeded.

SQL> grant create session to zaryab;

Grant succeeded.

SQL>
```

```
Run SQL Command Line
SQL> grant unlimited tablespace to hamza;

Grant succeeded.

SQL> grant unlimited tablespace to hammad1;

Grant succeeded.

SQL> grant unlimited tablespace to zaryab;

Grant succeeded.

SQL>
```