NYU, Tandon School of Engineering

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CS-GY 6083

Principles of Database Systems

Section A, Fall 2024

Project #2

Submitted by:

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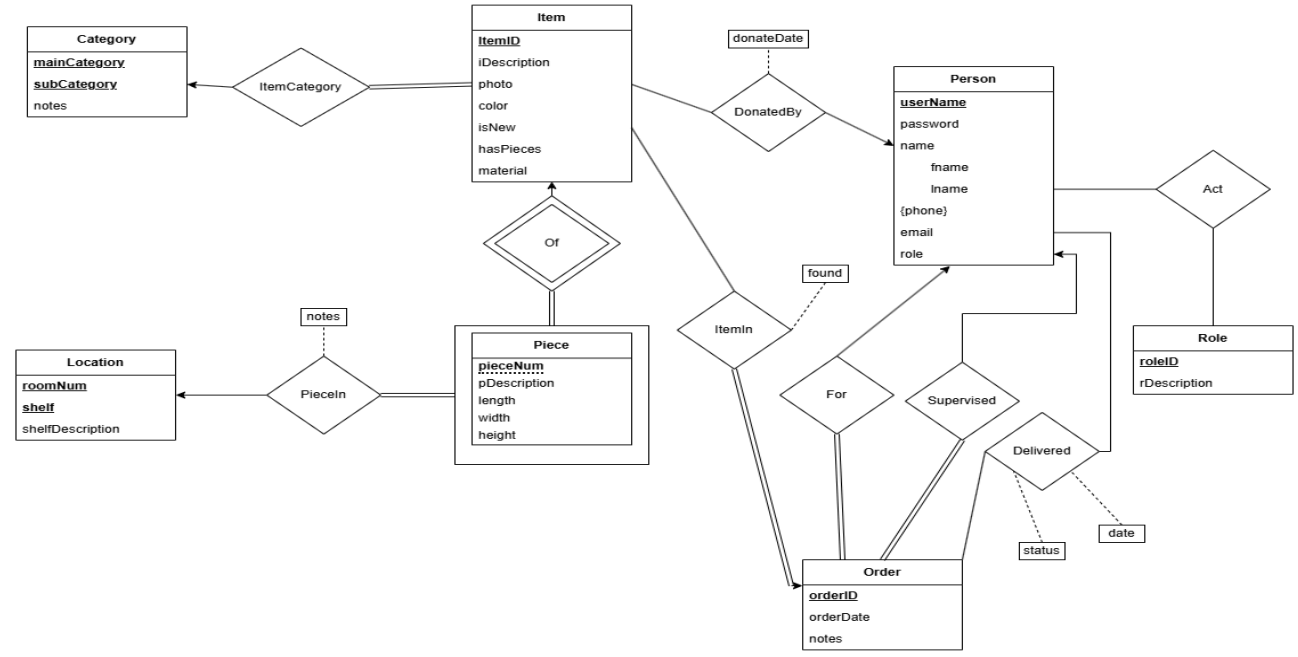
Guided By: Prof Phyllis Frankl

ER Diagram: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ItemCategory
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Location
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shelf
shelfDescription
PieceIn
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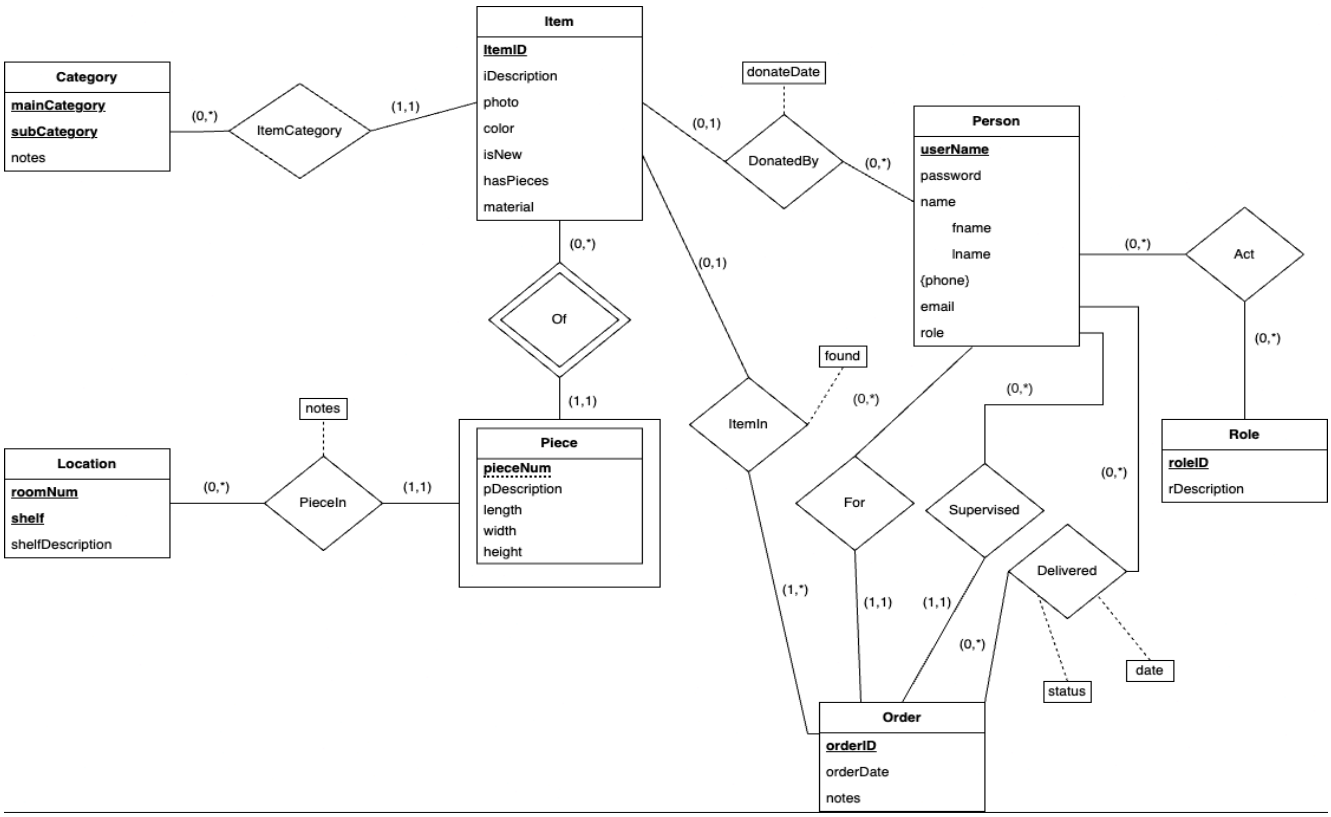
pieceNum
pDescription
length
width
height
For
Supervised
Delivered
status
date
Order
orderID
orderDate
notes


Category
mainCategory
subCategory
notes
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ItemCategory
(1,1)
Item
ItemID
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photo
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isNew
hasPieces
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(0,*)
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roleID
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(0,1)
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ItemIn
(0,*)
notes
Location
roomNum
shelf
shelfDescription
(0,*)
PieceIn
(1,1)
Piece
pieceNum
pDescription
length
width
height
For
Supervised
(0,*)
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(1,*)
(1,1)
(1,1)
(0,*)
status
date
Order
orderID
orderDate
notes

Project Part 2

Part A:

1] Category (mainCategory, subcategory, notes)

2] Item (itemID, iDescription, photo, color, isNew, hasPieces, material)

3] itemCategory (itemID, mainCategory, subCategory)

- itemCategory (itemID) REFERENCES Item (itemID)
- itemCategory (mainCategory, subCategory) REFERENCES Category (mainCategory, subCategory)

4] Person (userName, password, fname, lname, email)

5] Phone (username, phoneNo)

Phone (username) REFERENCES Person (username)

6] DonatedBy (itemID, userName, donateDate)

- DonatedBy (itemID) REFERENCES Item (itemID)
- DonatedBy (userName) REFERENCES Person (username)

7] Role (roleID, rDescription)

8] Act (userName , roleID)

- Act (userName) REFERENCES Person (userName)
- Act(roleID) REFERENCES Role(roleID)

9] Piece (pieceNum, pDescription, length, width, height, itemID)

Piece (itemID) REFERENCES Item(itemID)

10] Location(roomNum, shelf, shelfDescription)

11] PieceIn (roomNum, shelf , pieceNum, itemID , notes)

- PieceIn (roomNum, shelf) REFERENCES Location (roomNum, shelf)
- PieceIn (pieceNum, itemID) REFERENCES Piece (pieceNum, itemID)

12] Order (orderID , orderDate , notes)

13] ItemIn (itemID, orderID, found)

- ItemIn (itemID) REFERENCES Item(itemID)
- ItemIn (orderID) REFERENCES Order(orderID)

14] For (userName, orderID)

- For (UserName) REFERENCES Person (userName)

. For (orderID) REFERENCES Order(orderID)

15] Supervised (userName, orderID)

- Supervised (userName) REFERENCES Person (userName)
- supervised (orderID) REFERENCES Order(orderID)

16] Delivered (userName, orderID, status, date)

- Delivered (username) REFERENCES Person(userName)
- Delivered (orderID) REFERENCES Order (orderID)

Part B

```
--Create Database
drop database if exists welcomehome;
create database welcomehome;

Use welcomehome;

--Drop All Tables that already exist
Drop table if Exists ItemCategory;
Drop table if Exists Category;
Drop table if Exists PieceIn;
Drop table if Exists Piece;
Drop table if Exists ItemIn;
Drop table if Exists DonatedBy;
Drop table if Exists Item;
Drop table if Exists Phone;
Drop table if Exists Act;
Drop table if Exists OrderForPerson;
Drop table if Exists Supervised;
Drop table if Exists Delivered;
Drop table if Exists Person;
Drop table if Exists Location;
Drop table if Exists Role;
Drop table if Exists Orders;


-- Create the Category table
CREATE TABLE Category (
  mainCategory VARCHAR(100),
  subCategory VARCHAR(100),
  notes TEXT,
  PRIMARY KEY (mainCategory, subCategory)
);

-- Create the Item table
CREATE TABLE welcomehome.Item (
  ItemID INT PRIMARY KEY,
  iDescription TEXT,
  photo BLOB,
  color VARCHAR(50),
```

```
  isNew BOOLEAN,
  hasPieces BOOLEAN,
  material VARCHAR(50)
);

-- Create the ItemCategory table
CREATE TABLE ItemCategory (
  ItemID INT,
  mainCategory VARCHAR(100),
  subCategory VARCHAR(100),
  PRIMARY KEY (ItemID, mainCategory, subCategory),
  FOREIGN KEY (ItemID) REFERENCES Item(ItemID),
  FOREIGN KEY (mainCategory, subCategory) REFERENCES Category(mainCategory,
subCategory)
);

-- Create the Person table
CREATE TABLE Person (
  userName VARCHAR(100) PRIMARY KEY,
  password VARCHAR(100),
  fname VARCHAR(50),
  lname VARCHAR(50),
  email VARCHAR(100)
);

-- Create the Phone table for multi-valued attribute
CREATE TABLE Phone (
  userName VARCHAR(100),
  phoneNo VARCHAR(15),
  PRIMARY KEY (userName),
  FOREIGN KEY (userName) REFERENCES Person(userName)
);

-- Create the Role table
CREATE TABLE Role (
  roleID INT PRIMARY KEY,
  rDescription TEXT
);

-- Create the Act table
CREATE TABLE Act (
```

```
  userName VARCHAR(100),
  roleID INT,
  PRIMARY KEY (userName, roleID),
  FOREIGN KEY (userName) REFERENCES Person(userName),
  FOREIGN KEY (roleID) REFERENCES Role(roleID)
);

-- Create the Piece table
CREATE TABLE Piece (
  pieceNum INT ,
  pDescription TEXT,
  length DECIMAL(5,2),
  width DECIMAL(5,2),
  height DECIMAL(5,2),
  itemID INT,
  PRIMARY KEY (pieceNum, ItemID),
  FOREIGN KEY (itemID) REFERENCES Item(ItemID)
);

-- Create the Location table
CREATE TABLE Location (
  roomNum INT,
  shelf INT,
  shelfDescription TEXT,
  PRIMARY KEY (roomNum, shelf)
);

-- Create the PieceIn table
CREATE TABLE PieceIn (
  pieceNum INT,
  roomNum INT,
  shelf INT,
  itemID INT,
  notes TEXT,
  PRIMARY KEY (pieceNum, roomNum,shelf,ItemID),
  FOREIGN KEY (pieceNum,ItemID) REFERENCES Piece(pieceNum,ItemID),
  FOREIGN KEY (itemID) REFERENCES Item(ItemID),
  FOREIGN KEY (roomNum,shelf) REFERENCES Location(roomNum,shelf)
);

-- Create the Order table
```

```
CREATE TABLE Orders(
  orderID INT PRIMARY KEY,
  orderDate DATE,
  notes TEXT
);

-- Create the ItemIn table
CREATE TABLE ItemIn (
  itemID INT,
  orderID INT,
  found BOOLEAN,
  PRIMARY KEY (itemID, orderID),
  FOREIGN KEY (itemID) REFERENCES Item(ItemID),
  FOREIGN KEY (orderID) REFERENCES Orders(orderID)
);

-- Create the DonatedBy table
CREATE TABLE DonatedBy (
  itemID INT,
  userName VARCHAR(100),
  donateDate DATE,
  PRIMARY KEY (itemID, userName),
  FOREIGN KEY (itemID) REFERENCES Item(ItemID),
  FOREIGN KEY (userName) REFERENCES Person(userName)
);

-- Create the OrderForPerson table
CREATE TABLE OrderForPerson (
  userName VARCHAR(100),
  orderID INT,
  PRIMARY KEY (userName, orderID),
  FOREIGN KEY (userName) REFERENCES Person(userName),
  FOREIGN KEY (orderID) REFERENCES Orders(orderID)
);

-- Create the Supervised table
CREATE TABLE Supervised (
  userName VARCHAR(100),
  orderID INT,
  PRIMARY KEY (userName, orderID),
  FOREIGN KEY (userName) REFERENCES Person(userName),
```

```
  FOREIGN KEY (orderID) REFERENCES Orders(orderID)
);

-- Create the Delivered table
CREATE TABLE Delivered (
  userName VARCHAR(100),
  orderID INT,
  status VARCHAR(50),
  date DATE,
  PRIMARY KEY (userName, orderID),
  FOREIGN KEY (userName) REFERENCES Person(userName),
  FOREIGN KEY (orderID) REFERENCES Orders(orderID)
);

-- Insert data into the Category table
INSERT INTO Category (mainCategory, subCategory, notes)
VALUES
('electronics', 'television', 'Different sizes and types of TVs'),
('furniture', 'table', 'Dining and coffee tables');

-- Insert data into the Item table
INSERT INTO Item (ItemID, iDescription, photo, color, isNew, hasPieces, material)
VALUES
(1, '50 inch television', NULL, 'black', TRUE, FALSE, 'plastic'),
(2, 'Glass dining table', NULL, 'grey', FALSE, TRUE, 'glass');

-- Insert data into the ItemCategory table
INSERT INTO ItemCategory (ItemID, mainCategory, subCategory)
VALUES
(1, 'electronics', 'television'),
(2, 'furniture', 'table');

-- Insert data into the Person table
INSERT INTO Person (userName, password, fname, lname, email)
VALUES
('ansh123', 'password123', 'Ansh', 'Harjai', 'ansh@gmail.com'),
('khwaab456', 'password456', 'Khwaab', 'Thareja', 'khwaab@gmail.com'),
('neeha11', 'password11', 'Neeha', 'Sharma', 'neeha@gmail.com');

-- Insert data into the Phone table
INSERT INTO Phone (userName, phoneNo)
```

```
VALUES
('ansh123', '123-456-7890'),
('khwaab456', '234-567-8901'),
('neeha11', '345-678-9012');

-- Insert data into the Role table
INSERT INTO Role (roleID, rDescription)
VALUES
(1, 'Volunteer'),
(2, 'Donor');

-- Insert data into the Act table
INSERT INTO Act (userName, roleID)
VALUES
('ansh123', 2),
('khwaab456', 1),
('neeha11', 2);

-- Insert data into the Piece table
INSERT INTO Piece (pieceNum, pDescription, length, width, height, itemID)
VALUES
(201, 'TV Screen', 100, 60, 10, 2);

-- Insert data into the Location table
INSERT INTO Location (roomNum, shelf, shelfDescription)
VALUES
(1, 1, 'Living Room Shelf'),
(2, 2, 'Storage Room A'),
(3, 1, 'Electronics Shelf');

-- Insert data into the PieceIn table
INSERT INTO PieceIn (pieceNum, roomNum, shelf, itemID, notes)
VALUES (201, 3, 1, 2, 'Electronics storage shelf');

-- Insert data into the Orders table
INSERT INTO Orders (orderID, orderDate, notes)
VALUES
(12345, '2024-11-08', 'Urgent delivery'),
(12346, '2024-11-09', 'Scheduled for next week');

-- Insert data into the ItemIn table
```

```
INSERT INTO ItemIn (itemID, orderID, found)
VALUES
(1, 12345, TRUE),
(2, 12346, FALSE);

-- Insert data into the DonatedBy table
INSERT INTO DonatedBy (itemID, userName, donateDate)
VALUES
(1, 'ansh123', '2024-10-01'),
(2, 'khwaab456', '2024-10-15');

-- Insert data into the OrderForPerson table
INSERT INTO OrderForPerson (userName, orderID)
VALUES
('khwaab456', 12345),
('khwaab456', 12346);

-- Insert data into the Supervised table
INSERT INTO Supervised (userName, orderID)
VALUES
('neeha11', 12345);

-- Insert data into the Delivered table
INSERT INTO Delivered (userName, orderID, status, date)
VALUES
('khwaab456', 12346, 'Delivered', '2024-11-10');
```

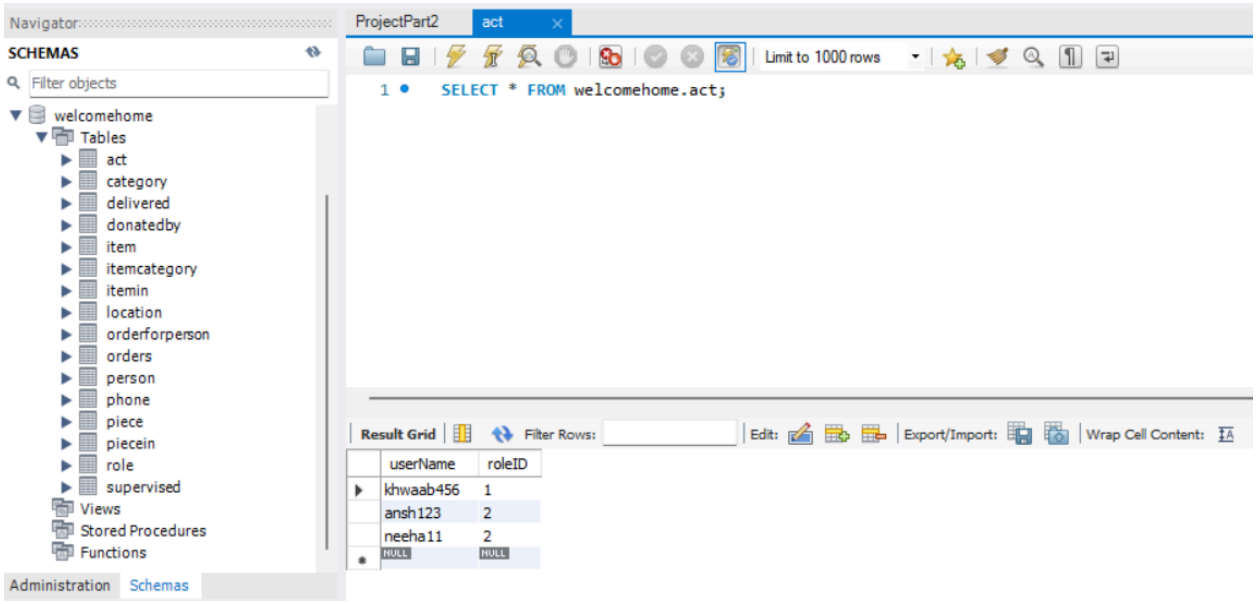
[All screenshots with populated data are attached after Part Ca since new insertions happen there also, these insertions will be reflected in those screenshots hence not putting redundant screenshots.]

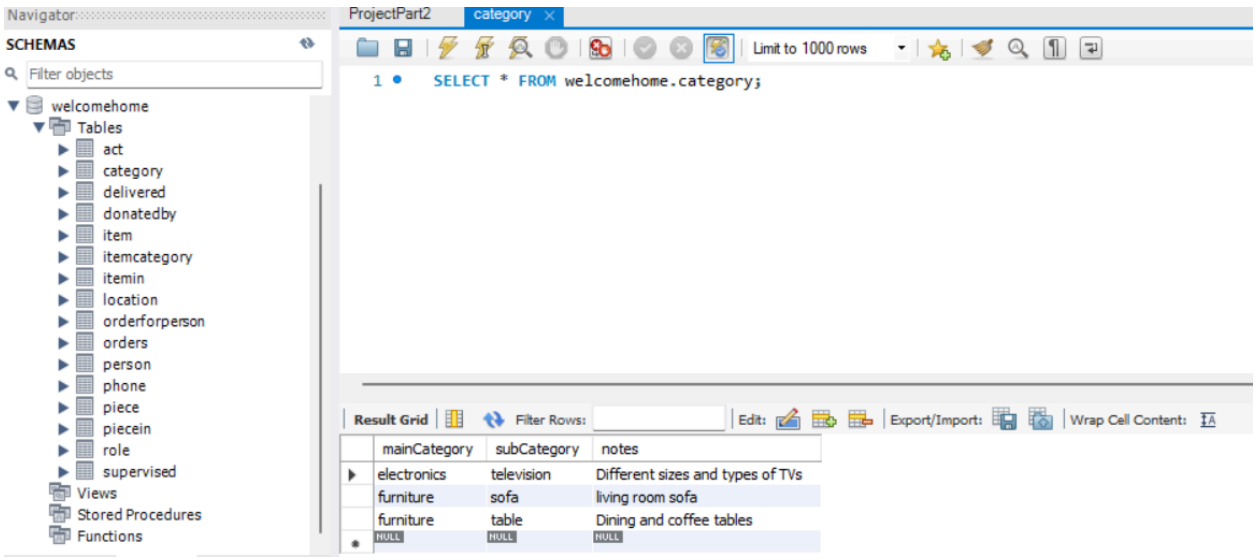
PART C.

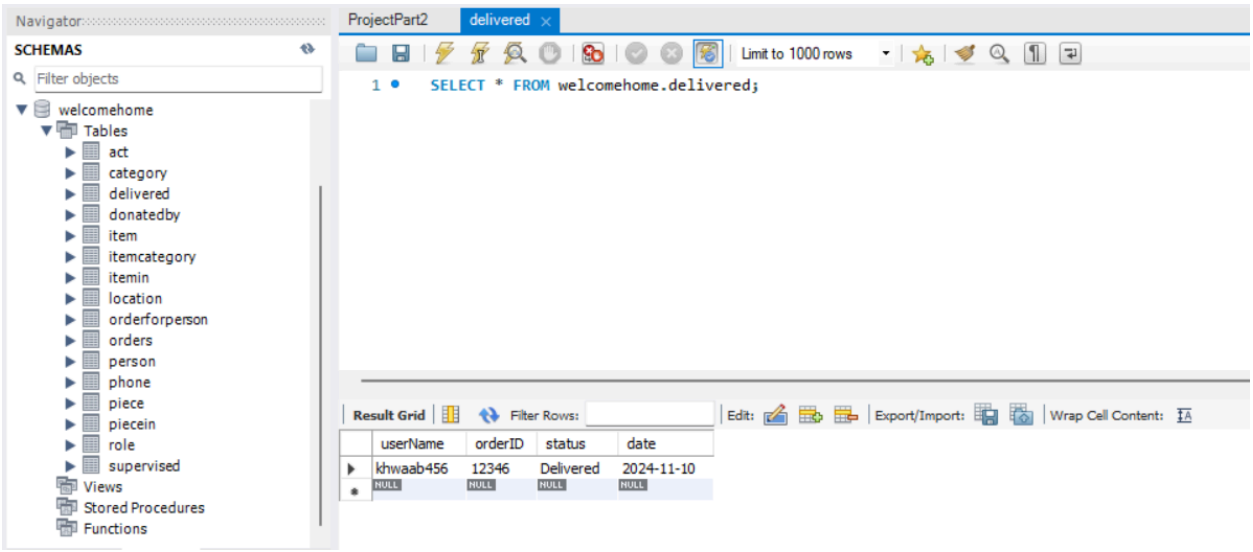
```
Use WelcomeHome;

-- Part C
-- a.
INSERT INTO Item (ItemID, iDescription, photo, color, isNew, hasPieces, material)
VALUES (3, 'Two-piece yellow sofa', NULL, 'yellow', TRUE, TRUE, 'fabric');

INSERT INTO Category (mainCategory, subCategory, notes)
VALUES ('furniture', 'sofa', 'living room sofa');


INSERT INTO ItemCategory (ItemID, mainCategory, subCategory)
VALUES (3, 'furniture', 'sofa');

INSERT INTO Piece (pieceNum, pDescription, length, width, height, itemID)
VALUES
(301, 'Sofa body', 200, 90, 75, 3),
(302, 'Cushion', 50, 50, 15, 3);

INSERT INTO Location (roomNum, shelf, shelfDescription)
VALUES
(9, 0, 'General storage area');

INSERT INTO PieceIn (pieceNum, roomNum, shelf, itemID, notes)
VALUES
(301, 9, 0, 3, 'Stored in Room 5 without a designated shelf'),
(302, 9, 0, 3, 'Stored in Room 5 wthout a designated shelf');

INSERT INTO ItemIn (itemID, orderID, found)
VALUES (3, 12345, True);


INSERT INTO DonatedBy (itemID, userName, donateDate)
```

VALUES (3, 'neeha11', '2024-10-15');

Screenshots of Tables with Populated Data -






Navigator:
SCHEMAS
Filter objects
welcomehome
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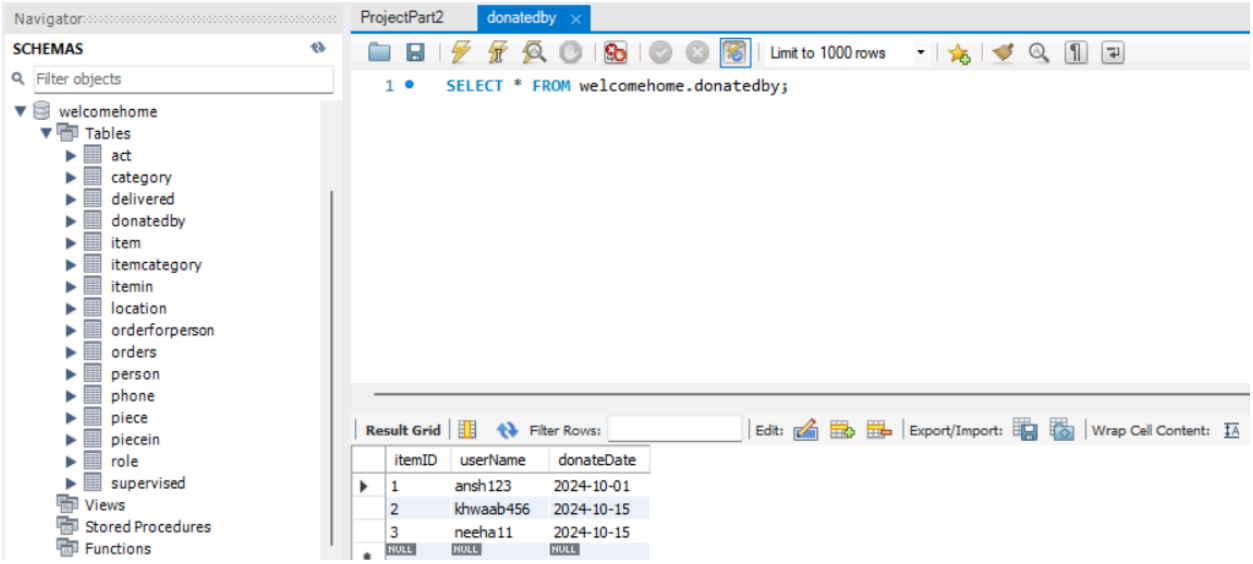
donatedby
item
itemcategory
itemin
location
orderforperson
orders
person
phone
piece
piecein
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
delivered
Limit to 1000 rows
1 • SELECT * FROM welcomehome.delivered;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
userName orderID status date
khwaab456 12346 Delivered 2024-11-10
NULL NULL NULL NULL


Navigator:
SCHEMAS
Filter objects
welcomehome
Tables
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item
itemcategory
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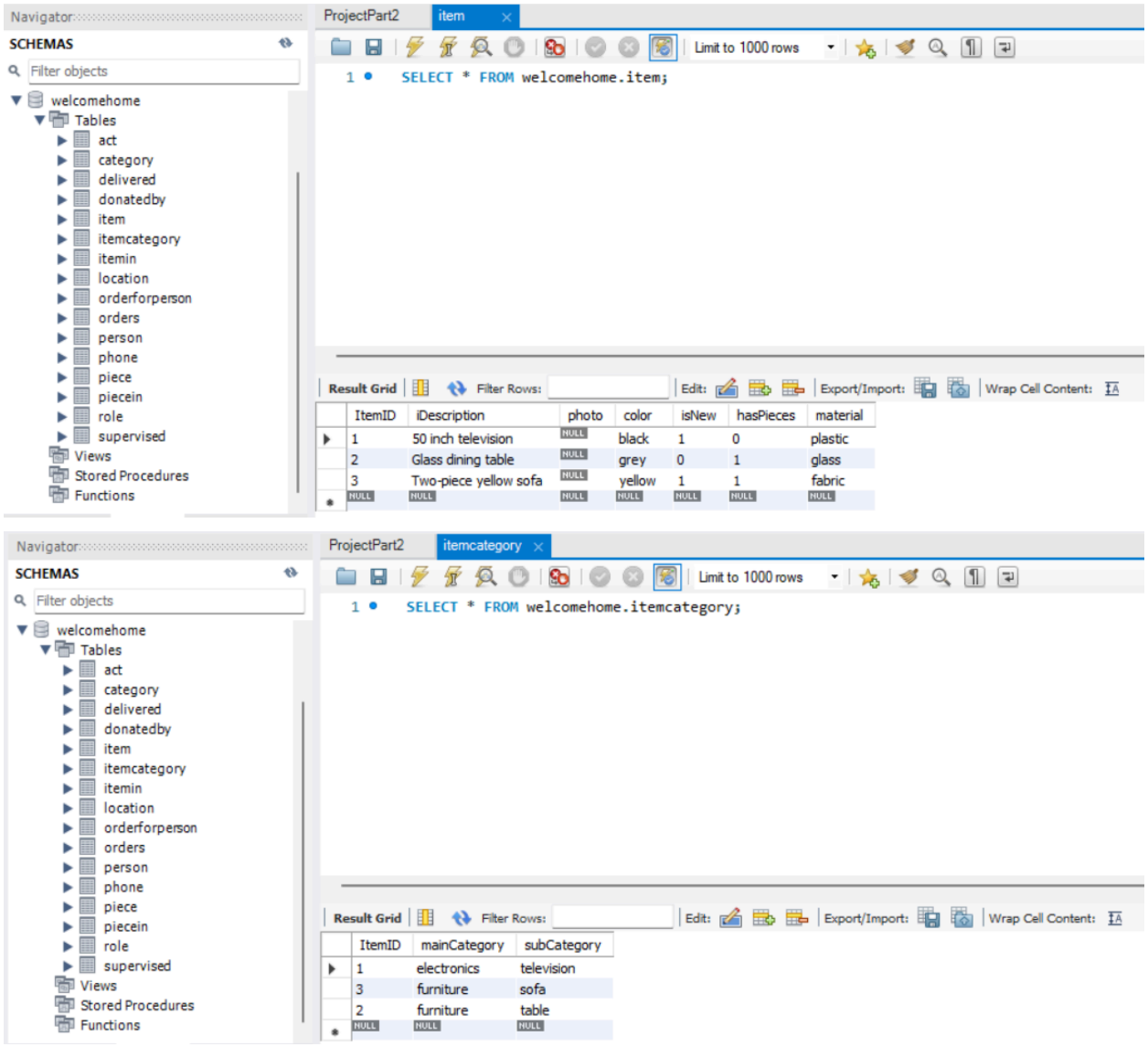
location
orderforperson
orders
person
phone
piece
piecein
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
donatedby
Limit to 1000 rows
1 • SELECT * FROM welcomehome.donatedby;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
itemID userName donateDate
1 ansh123 2024-10-01
2 khwaab456 2024-10-15
3 neeha11 2024-10-15
NULL NULL NULL


Navigator:
SCHEMAS
Filter objects
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orderforperson
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role
supervised
Views
Stored Procedures
Functions
ProjectPart2
item
Limit to 1000 rows
1 SELECT * FROM welcomehome.item;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
ItemID iDescription photo color isNew hasPieces material
1 50 inch television NULL black 1 0 plastic
2 Glass dining table NULL grey 0 1 glass
3 Two-piece yellow sofa NULL yellow 1 1 fabric
Navigator:
SCHEMAS
Filter objects
welcomehome
Tables
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item
itemcategory
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location
orderforperson
orders
person
phone
piece
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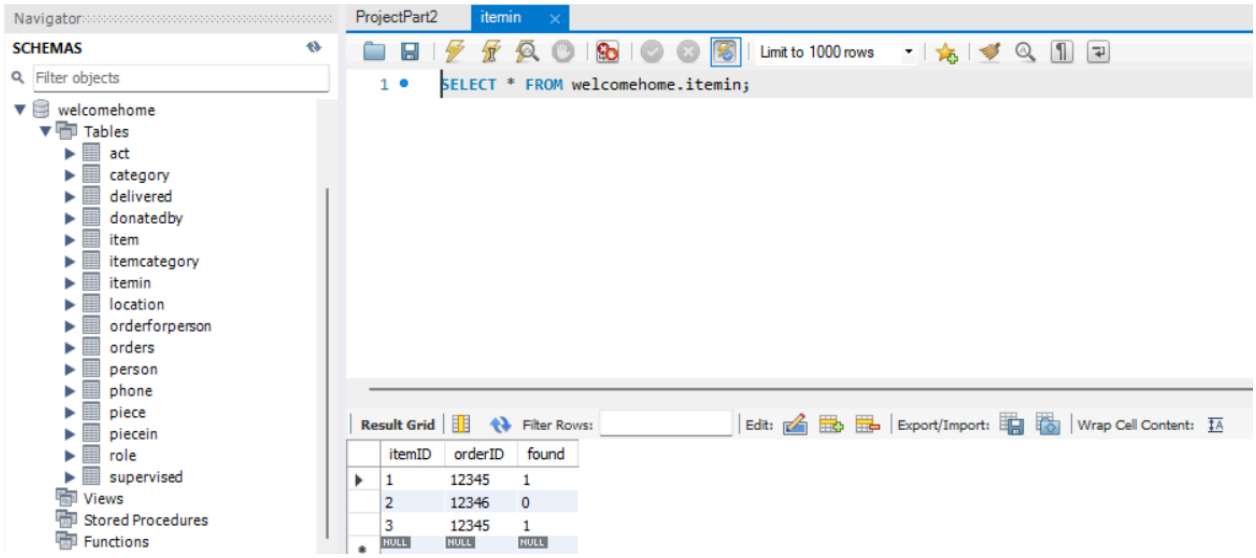
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
itemcategory
Limit to 1000 rows
1 SELECT * FROM welcomehome.itemcategory;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
ItemID mainCategory subCategory
1 electronics television
3 furniture sofa
2 furniture table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orderforperson
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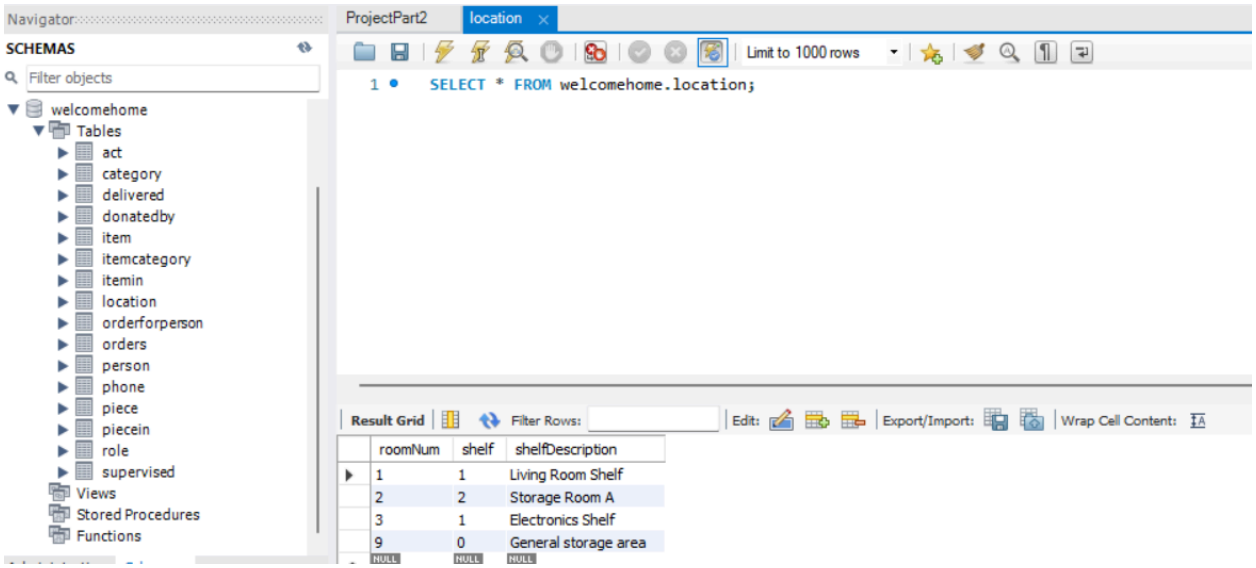
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
itemin
Limit to 1000 rows
1 SELECT * FROM welcomehome.itemin;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
itemID orderID found
1 12345 1
2 12346 0
3 12345 1
NULL NULL NULL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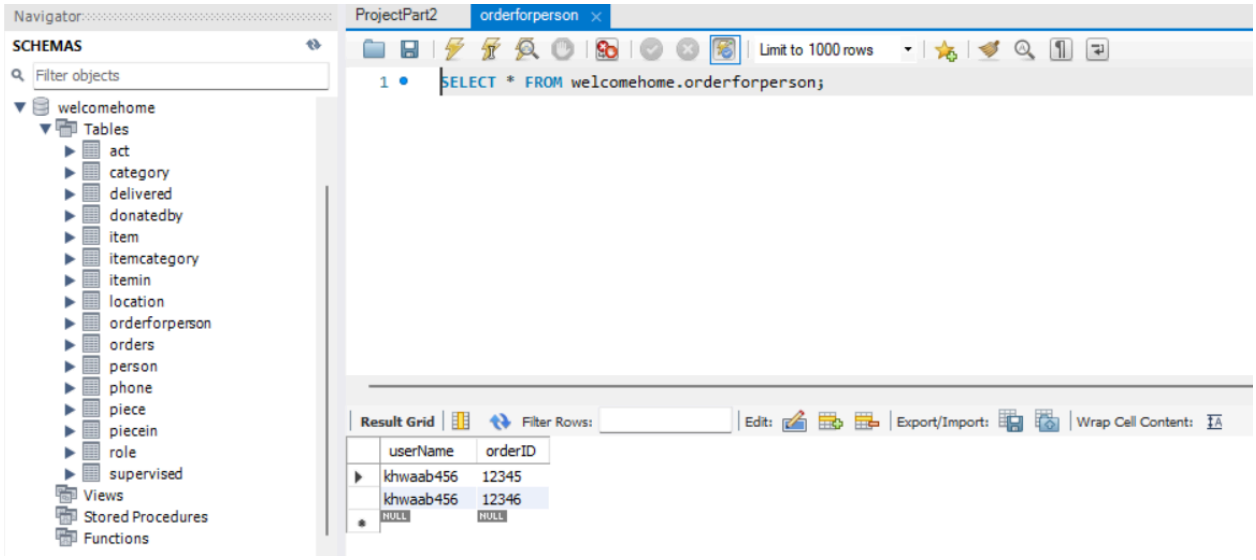
orderforperson
orders
person
phone
piece
piecein
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
location
Limit to 1000 rows
1 SELECT * FROM welcomehome.location;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
roomNum shelf shelfDescription
1 1 Living Room Shelf
2 2 Storage Room A
3 1 Electronics Shelf
9 0 General storage area
NULL NULL NULL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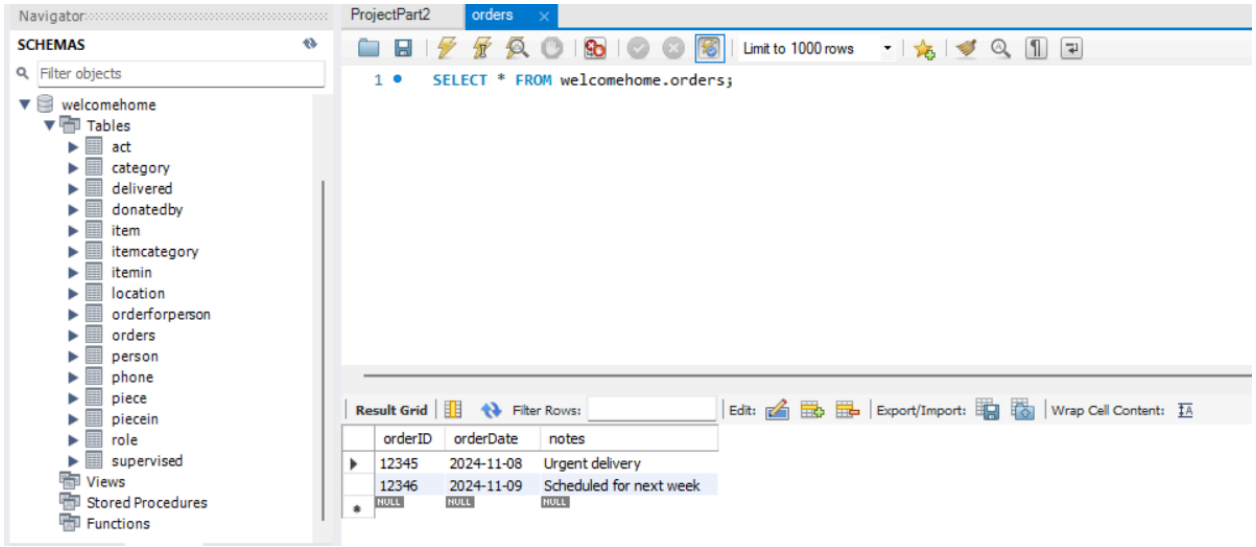
location
orderforperson
orders
person
phone
piece
piecein
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
orderforperson
Limit to 1000 rows
1 SELECT * FROM welcomehome.orderforperson;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
userName
orderID
khwaab456
12345
khwaab456
12346
NULL
NULL


Navigator:
SCHEMAS
Filter objects
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orders
person
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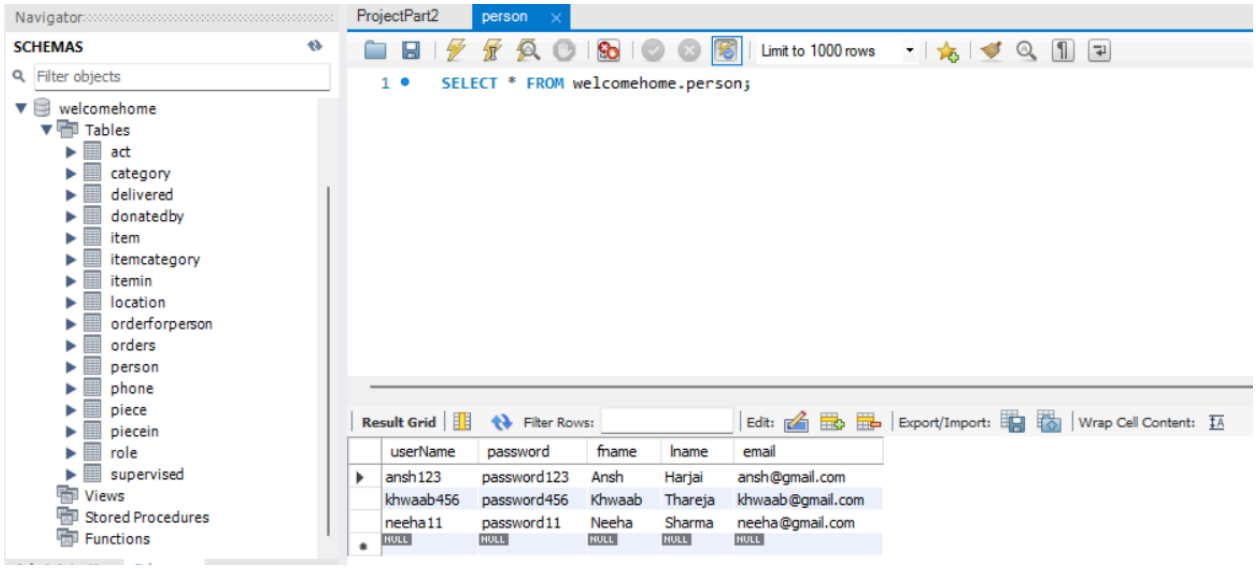
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
orders
Limit to 1000 rows
1 SELECT * FROM welcomehome.orders;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
orderID
orderDate
notes
12345
2024-11-08
Urgent delivery
12346
2024-11-09
Scheduled for next week
NULL
NULL
NULL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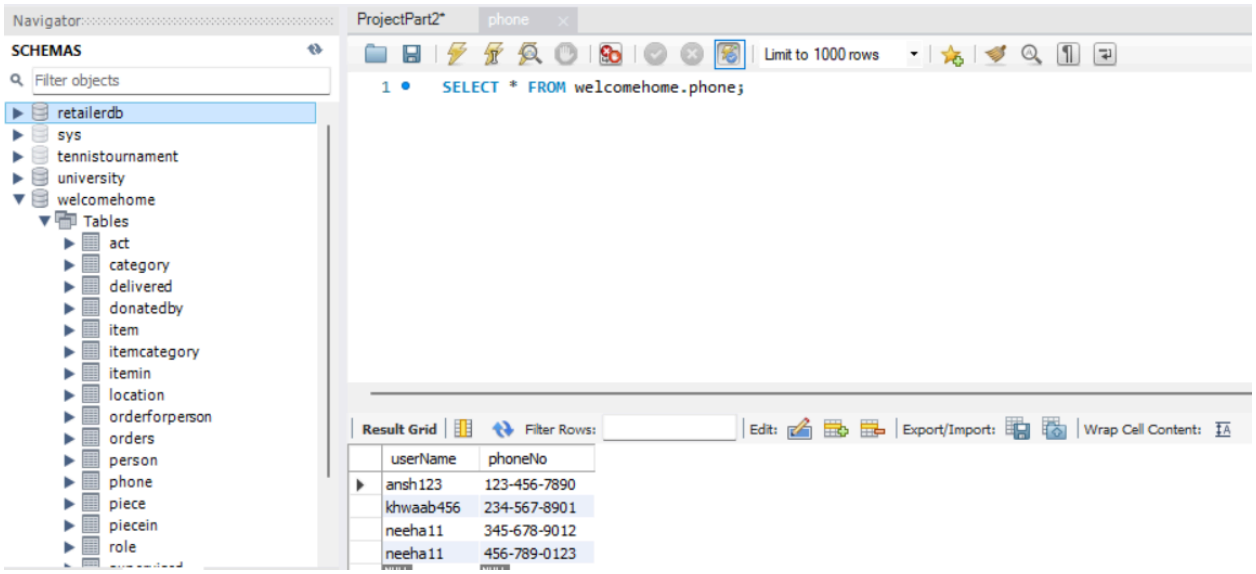
itemcategory
itemin
location
orderforperson
orders
person
phone
piece
piecein
role
supervised
Views
Stored Procedures
Functions
ProjectPart2
person
Limit to 1000 rows
1 SELECT * FROM welcomehome.person;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
userName password fname lname email
ansh123 password123 Ansh Harjai ansh@gmail.com
khwaab456 password456 Khwaab Thareja khwaab@gmail.com
neeha11 password11 Neeha Sharma neeha@gmail.com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role
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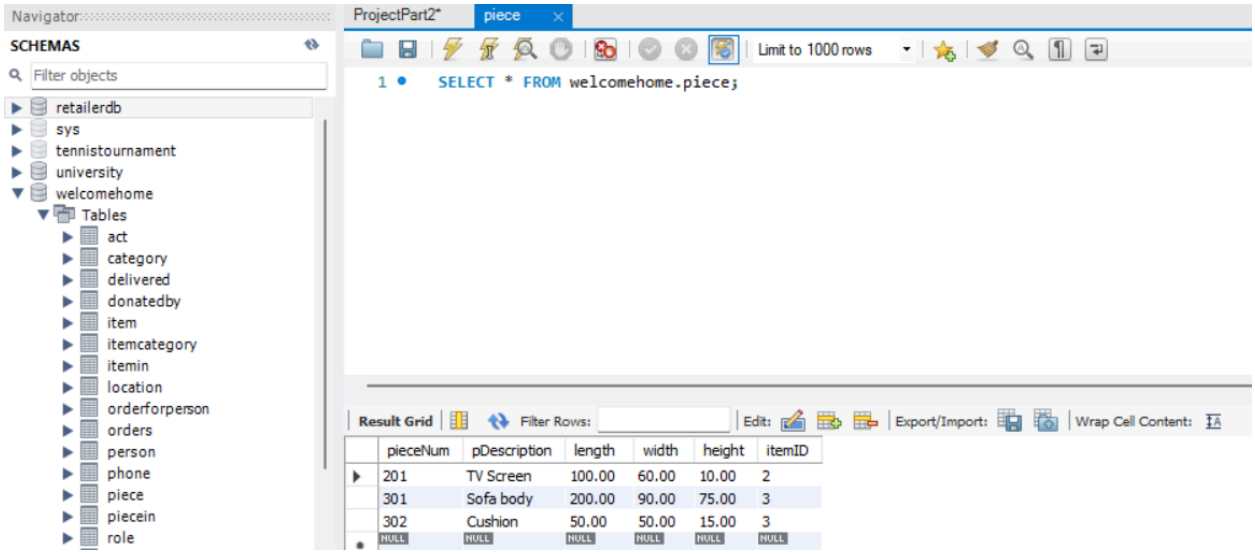
Limit to 1000 rows
1 SELECT * FROM welcomehome.phone;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
userName phoneNo
ansh123 123-456-7890
khwaab456 234-567-8901
neeha11 345-678-9012
neeha11 456-789-0123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university
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donatedby
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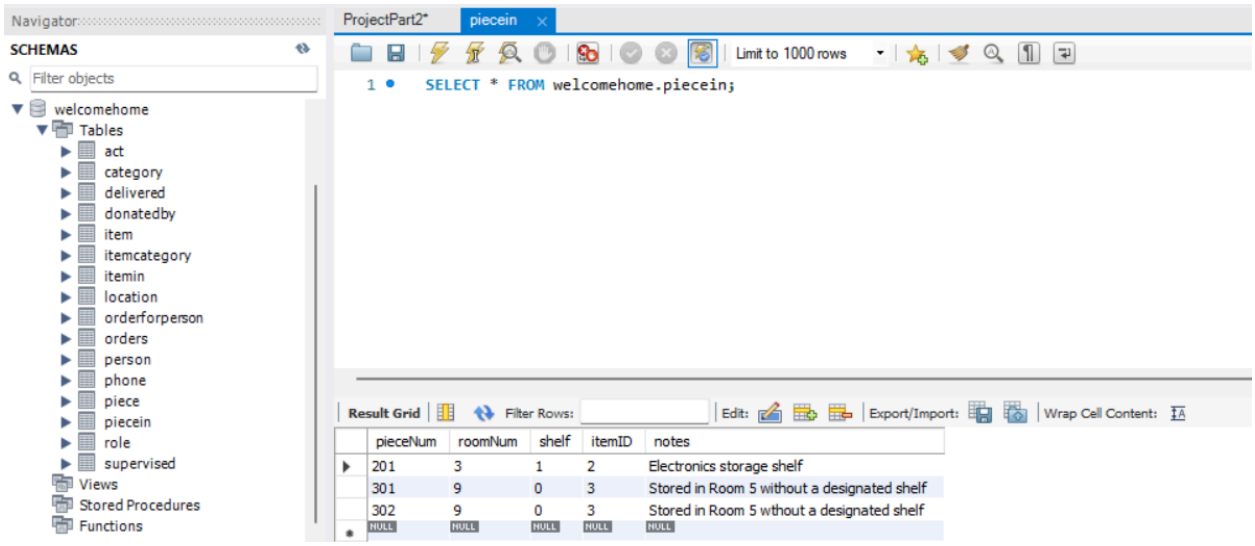
orders
person
phone
piece
piecein
role
ProjectPart2*
piece
Limit to 1000 rows
1 SELECT * FROM welcomehome.piece;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
pieceNum pDescription length width height itemID
201 TV Screen 100.00 60.00 10.00 2
301 Sofa body 200.00 90.00 75.00 3
302 Cushion 50.00 50.00 15.00 3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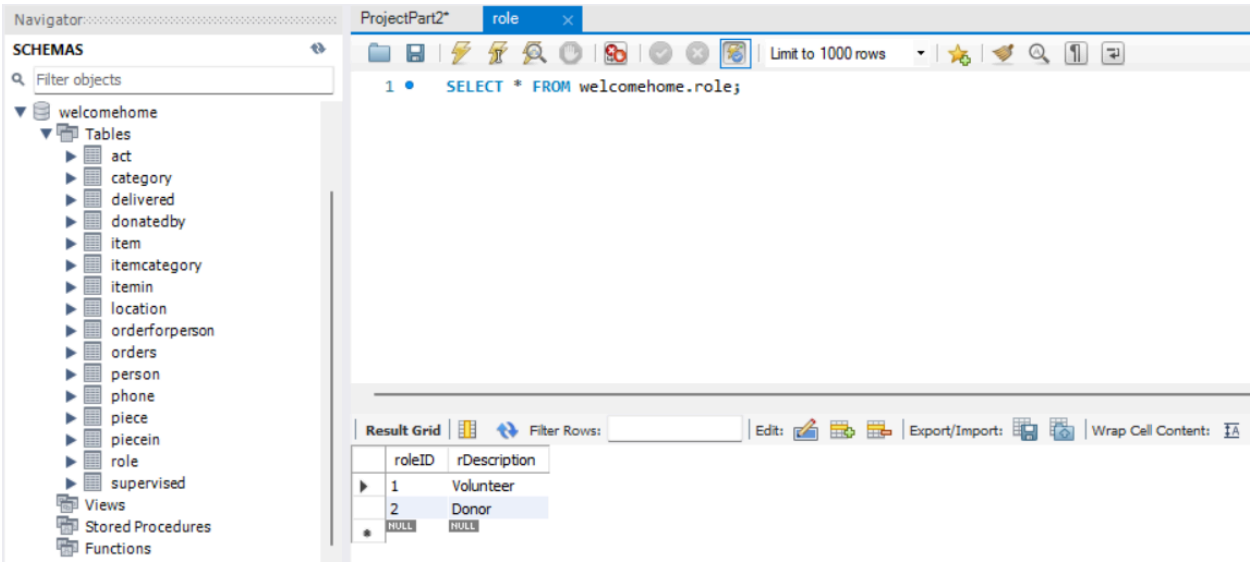
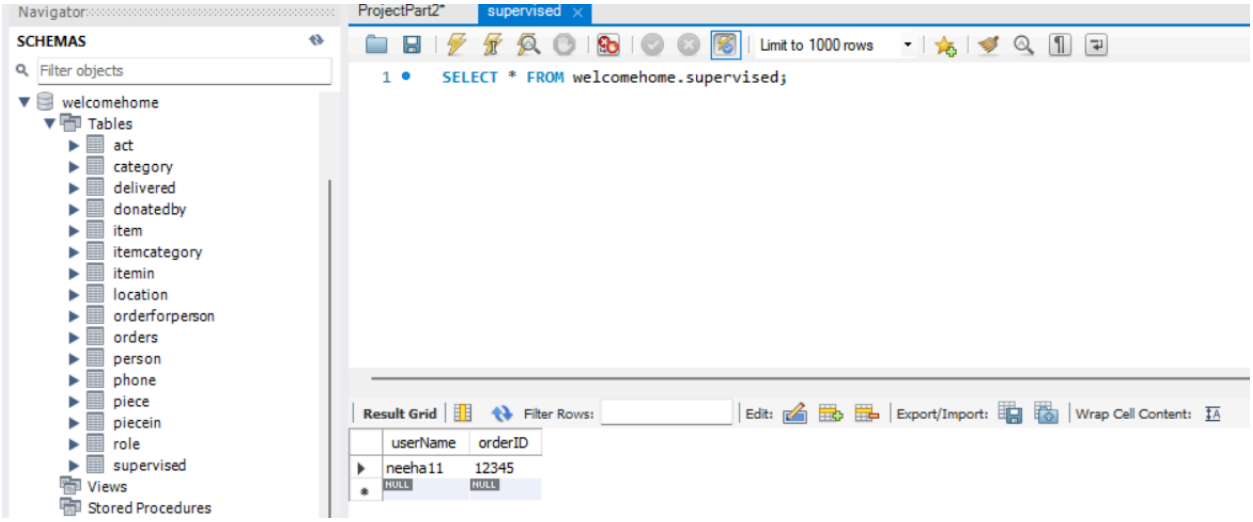
donatedby
item
itemcategory
itemin
location
orderforperson
orders
person
phone
piece
piecein
role
supervised
Views
Stored Procedures
Functions
ProjectPart2*
piecein
Limit to 1000 rows
1 SELECT * FROM welcomehome.piecein;
Result Grid
Filter Rows:
Edit:
Export/Import:
Wrap Cell Content:
pieceNum roomNum shelf itemID notes
201 3 1 2 Electronics storage shelf
301 9 0 3 Stored in Room 5 without a designated shelf
302 9 0 3 Stored in Room 5 wthout a designated shelf






```
-- Part C.
-- b.
SELECT
  P.itemID,
  P.pieceNum,
  I.iDescription AS ItemDescription,
  IC.mainCategory,
  IC.subCategory,
  PI.roomNum,
  COALESCE(PI.shelf, 'N/A') AS shelf, -- Assign 'N/A' if there's no specific shelf number
  L.shelfDescription,
  P.pDescription AS PieceDescription,
  P.length,
```

```
  P.width,
  P.height
FROM
  ItemIn II
JOIN
  Piece P ON II.itemID = P.itemID
JOIN
  Item I ON P.itemID = I.ItemID
JOIN
  ItemCategory IC ON I.ItemID = IC.ItemID
JOIN
  PieceIn PI ON P.pieceNum = PI.pieceNum AND P.itemID = PI.itemID
JOIN
  Location L ON PI.roomNum = L.roomNum AND PI.shelf = L.shelf
WHERE
  II.orderID = 12345
```

Output: