Furniture Company Management System

(Final Project # 1 SPRING 2023)

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CS-241(Data base management system)

BS CS Semester 4th Section C

Submitted To

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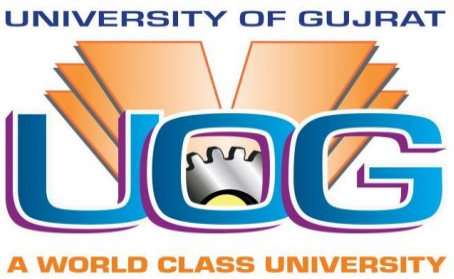

UNIVERSITY OF GUJRAT

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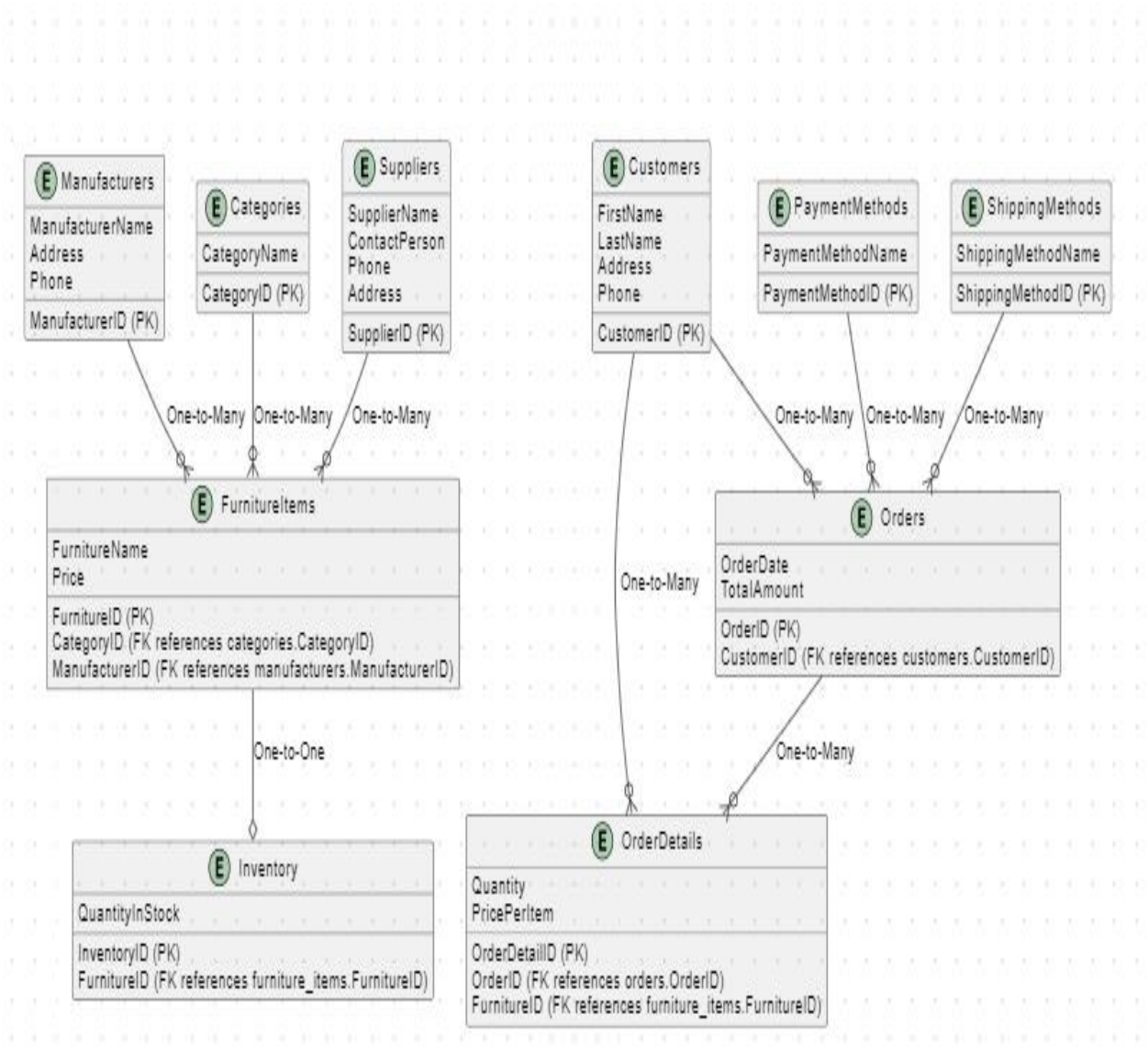
Project Description:

Our project is Furniture Company Management. In this project we'll deal with Employees, Customers, Products and Orders etc. We designed this database to provide ease for the data managers.

ER Diagram

ER Diagram shows the basic concept and idea of a database. It tells us about the relations between the tables and the relation between the tables and their attributes.

Following is the ER Diagram of our project.



Let's start by demonstrating the normalization process from the un normalized form (UNF) to the first three normal forms (1NF, 2NF, and 3NF) for the first three tables in the furniture company database: `Manufacturers`, `Categories`, and `Customers`.

Un normalized Form (UNF):

1. **Manufacturers (UNF):**

ManufacturerID	ManufacturerName	Address	Phone
1	ABC Furniture Co.	Gujrat city	123-456-7890
2	XYZ Furnishings	Jalalpur jattan	0318-4666333
3	Trust Furniture	Lahore	0318-466636
4	City Furniture	Islamabad	0318-6663643

2. **Categories (UNF):**

CATEGORYID	CATEGORYNAME
1	CHAIRS
2	TABLES
3	SOFAS
4	BEDS
5	DINING TABLES

3. **Customers (UNF):**

CUSTOMERID	FIRSTNAME	LASTNAME	ADDRESS	PHONE
1	MUNEEB	SHAHZAD	GUJRAT CITY	555-123-4567
2	QASIM	ALI	JALALPUR JATTAN	555-987-6543

First Normal Form (1NF):

In the first normal form, we ensure that each column contains atomic values, and there are no repeating groups or arrays.

Manufacturers (1NF):

MANUFACTURERID	MANUFACTURERNAME
1	ABC FURNITURE CO.
2	XYZ FURNISHINGS
3	TRUST FURNITURE
4	CITY FURNITURE

2. ManufacturerAddresses (1NF):

MANUFACTURERID	ADDRESS
1	GUJRAT CITY
2	JALALPUR JATTAN
3	LAHORE
4	ISLAMABAD

3. ManufacturerPhones (1NF):

MANUFACTURERID	PHONE
1	123-456-7890
2	0318-4666333
3	0318-466636
4	0318-6663643

Explanation:

- In `Manufacturers` (1NF), we remove the repeating `Address` and `Phone` attributes to create separate tables `ManufacturerAddresses` and `ManufacturerPhones`. The `ManufacturerID` serves as the primary key for both tables, and each attribute in these tables contains atomic values.

Second Normal Form (2NF): In the second normal form, we eliminate partial dependencies by ensuring that non-prime attributes are fully functionally dependent on the primary key.

1. Manufacturers (2NF):

MANUFACTURERID	MANUFACTURERNAME
1	ABC FURNITURE CO.
2	XYZ FURNISHINGS
3	TRUST FURNITURE
4	CITY FURNITURE

2. ManufacturerAddresses (2NF):

MANUFACTURERID	ADDRESSID	ADDRESS
1	1	GUJRAT CITY
2	2	JALALPUR JATTAN
3	3	LAHORE
4	4	ISLAMABAD

3. ManufacturerPhones (2NF):

MANUFACTURERID	PHONEID	PHONE
1	1	123-456-7890
2	2	0318-4666333
3	3	0318-466636
4	4	0318-6663643

Explanation:

- In `Manufacturers` (2NF), there are no partial dependencies, so no changes are made.

- In `ManufacturerAddresses` (2NF), we introduce a surrogate primary key `AddressID` to uniquely identify each address. The `ManufacturerID` and `AddressID` together form the composite primary key for this table.

- In `ManufacturerPhones` (2NF), we introduce a surrogate primary key `PhoneID` to uniquely identify each phone number. The `ManufacturerID` and `PhoneID` together form the composite primary key for this table.

Third Normal Form (3NF):

In the third normal form, we remove transitive dependencies by ensuring that non-prime attributes are not dependent on other non-prime attributes.

1. Manufacturers (3NF):

MANUFACTURERID	MANUFACTURERNAME
1	ABC FURNITURE CO.
2	XYZ FURNISHINGS
3	TRUST FURNITURE
4	CITY FURNITURE

2. Addresses (3NF):

ADDRESSID	ADDRESS
1	GUJRAT CITY
2	JALALPUR JATTAN
3	LAHORE
4	ISLAMABAD

3. ManufacturerAddresses (3NF):

MANUFACTURERID	ADDRESSID
1	1
2	2
3	3
4	4

4. Phones (3NF):

PHONEID	PHONE
1	123-456-7890
2	0318-4666333
3	0318-466636
4	0318-6663643

5. ManufacturerPhones (3NF):

MANUFACTURERID	PHONEID
1	1
2	2
3	3
4	4

Explanation:

- In Manufacturers (3NF), there are no transitive dependencies, so no changes are made.

- In Addresses (3NF), we create a separate table for addresses to remove the transitive dependency on `ManufacturerAddresses`. The `AddressID` is the primary key in this table.

- In Phones (3NF), we create a separate table for phone numbers to remove the transitive dependency on `ManufacturerPhones`. The `PhoneID` is the primary key in this table.

- In `ManufacturerAddresses` (3NF), both `ManufacturerID` and `AddressID` together form the composite primary key.

- In `ManufacturerPhones` (3NF), both `ManufacturerID` and `PhoneID` together form the composite primary key.

This completes the normalization process up to the third normal form (3NF) for the first three tables in the furniture company database. The same principles of normalization can be applied to the other tables as well.

Tables in the DB:

- Manufacturers
- Categories
- Customers
- FurnitureItems
- Inventory
- Orders
- OrderDetails
- PaymentMethods
- ShippingMethods
- Suppliers

These are the tables used in the DB to fulfill the purpose.

```sql
-- Create the Manufacturers table (1NF)
CREATE TABLE Manufacturers (
  ManufacturerID INT PRIMARY KEY,
  ManufacturerName VARCHAR(100) NOT NULL,
  Address VARCHAR(200),
  Phone VARCHAR(20)
);
```

```
INSERT INTO Manufacturers (ManufacturerID, ManufacturerName, Address, Phone)
VALUES
  (1, 'ABC Furniture Co.', 'Gujrat city', '123-456-7890'),
  (2, 'XYZ Furnishings', 'Jalalpur jattan', '0318-4666333'),
  (3, 'Trust Furniture', 'Lahore', '0318-466636'),
  (4, 'City Furniture', 'Islamabad', '0318-6663643');

select*from Manufacturers
```

Results Messages

	ManufacturerID	ManufacturerName	Address	Phone
1	1	ABC Furniture Co.	Gujrat city	123-456-7890
2	2	XYZ Furnishings	Jalalpur jattan	0318-4666333
3	3	Trust Furniture	Lahore	0318-466636
4	4	City Furniture	Islamabad	0318-6663643

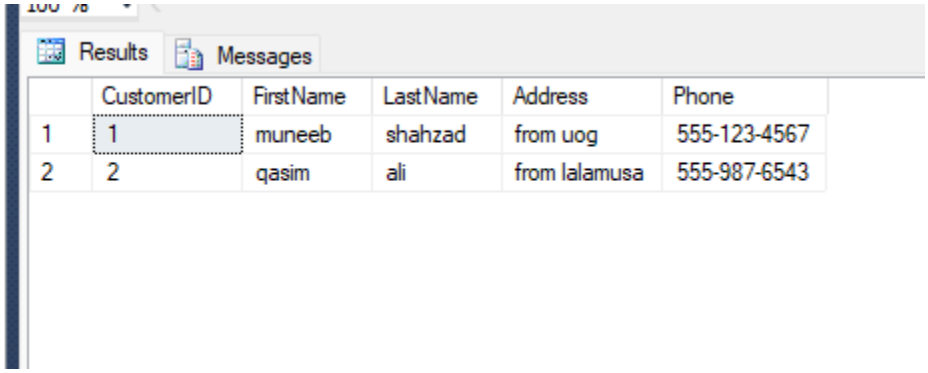
```
-- Create the Categories table (1NF)
CREATE TABLE Categories (
  CategoryID INT PRIMARY KEY,
  CategoryName VARCHAR(50) NOT NULL
);

INSERT INTO Categories (CategoryID, CategoryName)
VALUES
  (1, 'Chairs'),
  (2, 'Tables'),
  (3, 'Sofas'),
  (4, 'Beds'),
  (5, 'Dining Tables');
   select*from Categories
```

Results Messages

	CategoryID	CategoryName
1	1	Chairs
2	2	Tables
3	3	Sofas
4	4	Beds
5	5	Dining Tables

```
-- Create the Customers table (1NF)
CREATE TABLE Customers (
  CustomerID INT PRIMARY KEY,
  FirstName VARCHAR(50) NOT NULL,
  LastName VARCHAR(50) NOT NULL,
```

```
  Address VARCHAR(200),
  Phone VARCHAR(20)
);

INSERT INTO Customers (CustomerID, FirstName, LastName, Address, Phone)
VALUES
  (1, 'muneeb', 'shahzad', 'from uog', '555-123-4567'),
  (2, 'qasim', 'ali', 'from lalamusa', '555-987-6543');

select*from Customers
```



Results | Messages

	CustomerID	FirstName	LastName	Address	Phone
1	1	muneeb	shahzad	from uog	555-123-4567
2	2	qasim	ali	from lalamusa	555-987-6543

```
-- Create the FurnitureItems table (3NF)
CREATE TABLE FurnitureItems (
  FurnitureID INT PRIMARY KEY,
  FurnitureName VARCHAR(100) NOT NULL,
  CategoryID INT,
  ManufacturerID INT,
  Price DECIMAL(10, 2) NOT NULL,
  FOREIGN KEY (CategoryID) REFERENCES Categories(CategoryID),
  FOREIGN KEY (ManufacturerID) REFERENCES Manufacturers(ManufacturerID)
);

INSERT INTO FurnitureItems (FurnitureID, FurnitureName, CategoryID, ManufacturerID,
Price)
VALUES
  (1, 'Armchair', 1, 1, 199.99),
  (2, 'Dining Table', 2, 2, 399.99),
  (3, 'Sofa Bed', 3, 1, 549.99),
  (4, 'Office Chair', 1, 3, 299.99),
  (5, 'Nightstand', 5, 4, 149.99);
select*from FurnitureItems
```

Results Messages

	FurnitureID	FurnitureName	CategoryID	ManufacturerID	Price
1	1	Armchair	1	1	199.99
2	2	Dining Table	2	2	399.99
3	3	Sofa Bed	3	1	549.99
4	4	Office Chair	1	3	299.99
5	5	Nightstand	5	4	149.99

```
-- Create the Inventory table (1NF)
CREATE TABLE Inventory (
  InventoryID INT PRIMARY KEY,
  FurnitureID INT,
  QuantityInStock INT NOT NULL,
  FOREIGN KEY (FurnitureID) REFERENCES FurnitureItems(FurnitureID)
);

INSERT INTO Inventory (InventoryID, FurnitureID, QuantityInStock)
VALUES
  (1, 1, 10),
  (2, 2, 5),
  (3, 3, 3);
```

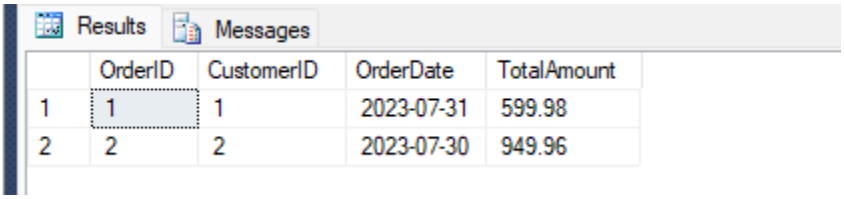
```
select*from Inventory
```

Results Messages

	InventoryID	FurnitureID	QuantityInStock
1	1	1	10
2	2	2	5
3	3	3	3

```
-- Create the Orders table (1NF)
CREATE TABLE Orders (
  OrderID INT PRIMARY KEY,
  CustomerID INT,
```

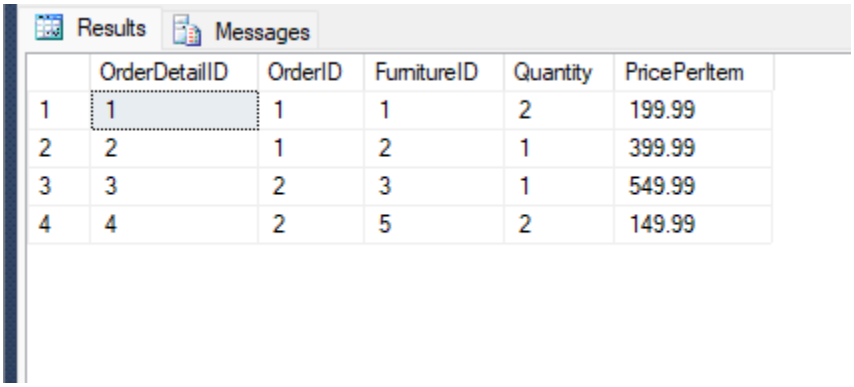
```
  OrderDate DATE NOT NULL,
  TotalAmount DECIMAL(10, 2) NOT NULL,
  FOREIGN KEY (CustomerID) REFERENCES Customers(CustomerID)
);

INSERT INTO Orders (OrderID, CustomerID, OrderDate, TotalAmount)
VALUES
  (1, 1, '2023-07-31', 599.98),
  (2, 2, '2023-07-30', 949.96);


select*from Orders
```



Results | Messages

	OrderID	CustomerID	OrderDate	TotalAmount
1	1	1	2023-07-31	599.98
2	2	2	2023-07-30	949.96

```
-- Create the OrderDetails table (1NF)
CREATE TABLE OrderDetails (
  OrderDetailID INT PRIMARY KEY,
  OrderID INT,
  FurnitureID INT,
  Quantity INT NOT NULL,
  PricePerItem DECIMAL(10, 2) NOT NULL,
  FOREIGN KEY (OrderID) REFERENCES Orders(OrderID),
  FOREIGN KEY (FurnitureID) REFERENCES FurnitureItems(FurnitureID)
);



INSERT INTO OrderDetails (OrderDetailID, OrderID, FurnitureID, Quantity, PricePerItem)
VALUES
  (1, 1, 1, 2, 199.99),
  (2, 1, 2, 1, 399.99),
  (3, 2, 3, 1, 549.99),
  (4, 2, 5, 2, 149.99);
select*from OrderDetails
```



Results | Messages

	OrderDetailID	OrderID	FurnitureID	Quantity	PricePerItem
1	1	1	1	2	199.99
2	2	1	2	1	399.99
3	3	2	3	1	549.99
4	4	2	5	2	149.99

```sql
-- Create the PaymentMethods table (1NF)
CREATE TABLE PaymentMethods (
  PaymentMethodID INT PRIMARY KEY,
  PaymentMethodName VARCHAR(50) NOT NULL
);

INSERT INTO PaymentMethods (PaymentMethodID, PaymentMethodName)
VALUES
  (1, 'Credit Card'),
  (2, 'PayPal'),
  (3, 'Cash'),
  (4, 'Check'),
  (5, 'Gift Card');
select*from PaymentMethods
```

Results | Messages

	PaymentMethodID	PaymentMethodName
1	1	Credit Card
2	2	PayPal
3	3	Cash
4	4	Check
5	5	Gift Card

```sql
-- Create the ShippingMethods table (1NF)
CREATE TABLE ShippingMethods (
  ShippingMethodID INT PRIMARY KEY,
  ShippingMethodName VARCHAR(50) NOT NULL
);

INSERT INTO ShippingMethods (ShippingMethodID, ShippingMethodName)
VALUES
  (1, 'Standard Shipping'),
  (2, 'Express Shipping'),
  (3, 'Next Day Delivery');

select*from ShippingMethods
```

Results Messages

	ShippingMethodID	ShippingMethodName
1	1	Standard Shipping
2	2	Express Shipping
3	3	Next Day Delivery

```
-- Create the Suppliers table (1NF)
CREATE TABLE Suppliers (
  SupplierID INT PRIMARY KEY,
  SupplierName VARCHAR(100) NOT NULL,
  ContactPerson VARCHAR(50),
  Phone VARCHAR(20),
  Address VARCHAR(200)
);
INSERT INTO Suppliers (SupplierID, SupplierName, ContactPerson, Phone, Address)
VALUES
  (1, 'Supplier A', 'anas', '555-111-2222', 'khairia'),
  (2, 'Supplier B', 'noman', '555-333-4444', 'gujrat');
select*from Suppliers
```

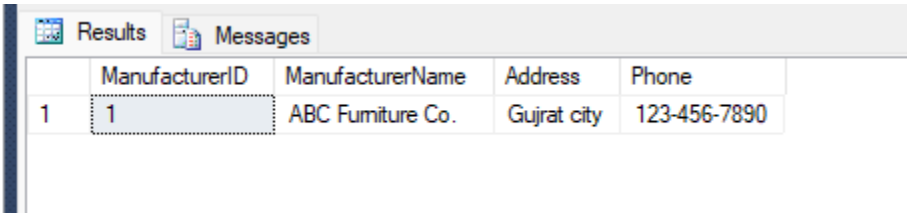
100 %

Results Messages

	SupplierID	SupplierName	ContactPerson	Phone	Address
1	1	Supplier A	anas	555-111-2222	khairia
2	2	Supplier B	noman	555-333-4444	gujrat

```
-- Create the procedure for Manufacturers table
GO
CREATE PROCEDURE GetManufacturerDetails(@manufacturerId INT)
AS
BEGIN
  SELECT * FROM Manufacturers WHERE ManufacturerID = @manufacturerId;
END;
GO
```

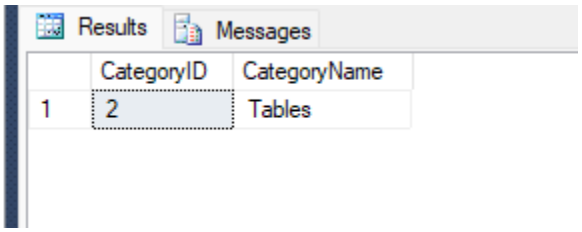
```
EXEC GetManufacturerDetails 1;
```



Results | Messages

	ManufacturerID	ManufacturerName	Address	Phone
1	1	ABC Furniture Co.	Gujrat city	123-456-7890

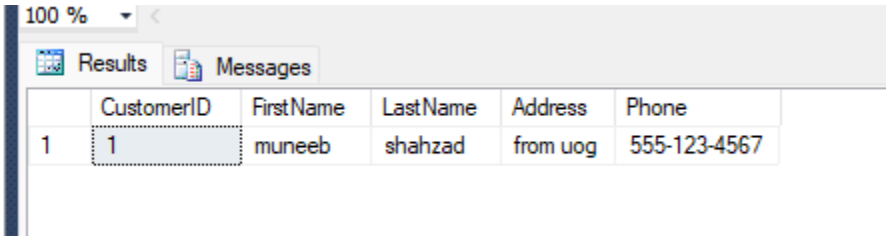
```
-- Create the procedure for Categories table
GO
CREATE PROCEDURE GetCategoryDetails(@categoryId INT)
AS
BEGIN
  SELECT * FROM Categories WHERE CategoryID = @categoryId;
END;
GO

EXEC GetCategoryDetails 2;
```



Results | Messages

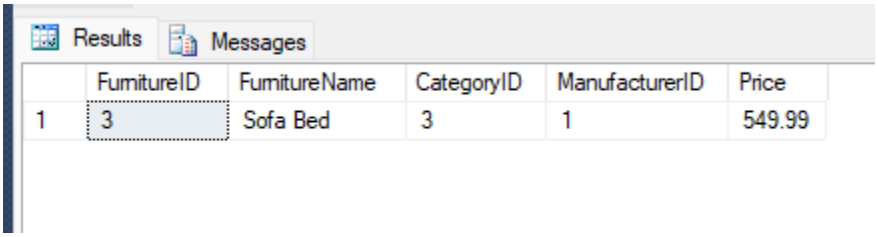
	CategoryID	CategoryName
1	2	Tables

```
-- Create the procedure for Customers table
GO
CREATE PROCEDURE GetCustomerDetails(@customerId INT)
AS
BEGIN
  SELECT * FROM Customers WHERE CustomerID = @customerId;
END;
GO




EXEC GetCustomerDetails 1;
```



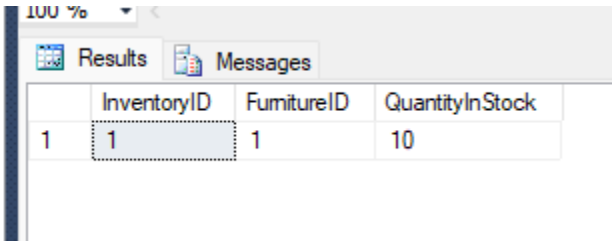
	CustomerID	FirstName	LastName	Address	Phone
1	1	muneeb	shahzad	from uog	555-123-4567

```
-- Create the procedure for FurnitureItems table
GO
CREATE PROCEDURE GetFurnitureItemDetails(@furnitureId INT)
AS
BEGIN
  SELECT * FROM FurnitureItems WHERE FurnitureID = @furnitureId;
END;
GO

EXEC GetFurnitureItemDetails 3;
```



	FurnitureID	FurnitureName	CategoryID	ManufacturerID	Price
1	3	Sofa Bed	3	1	549.99

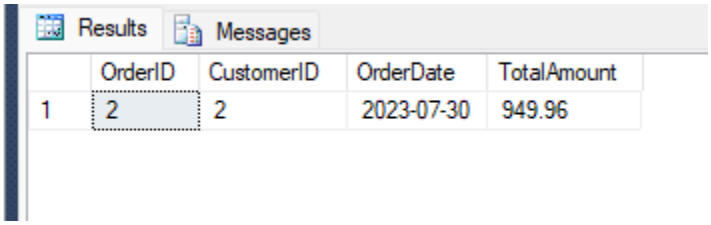
```
-- Create the procedure for Inventory table
GO
CREATE PROCEDURE GetInventoryDetails(@inventoryId INT)
AS
BEGIN
  SELECT * FROM Inventory WHERE InventoryID = @inventoryId;
END;
GO

EXEC GetInventoryDetails 1;
```



	InventoryID	FurnitureID	QuantityInStock
1	1	1	10

```
-- Create the procedure for Orders table
GO
```

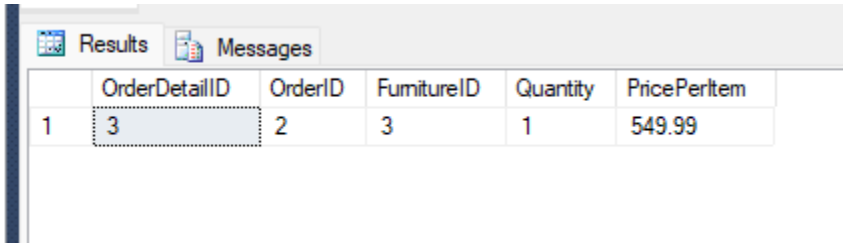
```
CREATE PROCEDURE GetOrderDetails(@orderId INT)
AS
BEGIN
  SELECT * FROM Orders WHERE OrderID = @orderId;
END;
GO

EXEC GetOrderDetails 2;
```



Results | Messages

	OrderID	CustomerID	OrderDate	TotalAmount
1	2	2	2023-07-30	949.96

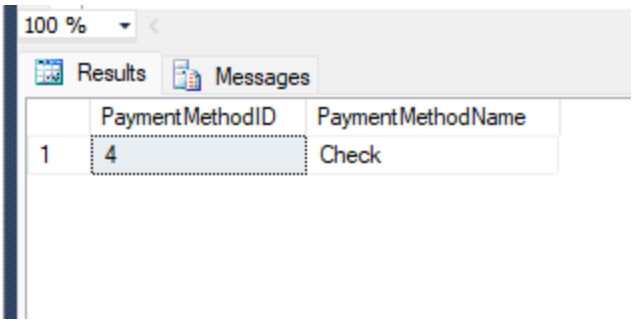
```
-- Create the procedure for OrderDetails table
GO
CREATE PROCEDURE GetOrderItemDetails(@orderDetailId INT)
AS
BEGIN
  SELECT * FROM OrderDetails WHERE OrderDetailID = @orderDetailId;
END;
GO


EXEC GetOrderItemDetails 3;
```



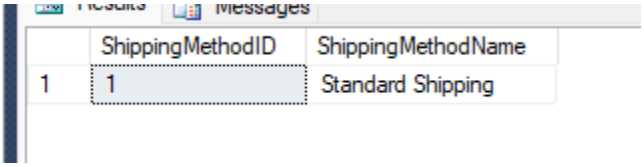
Results | Messages

	OrderDetailID	OrderID	FurnitureID	Quantity	PricePerItem
1	3	2	3	1	549.99

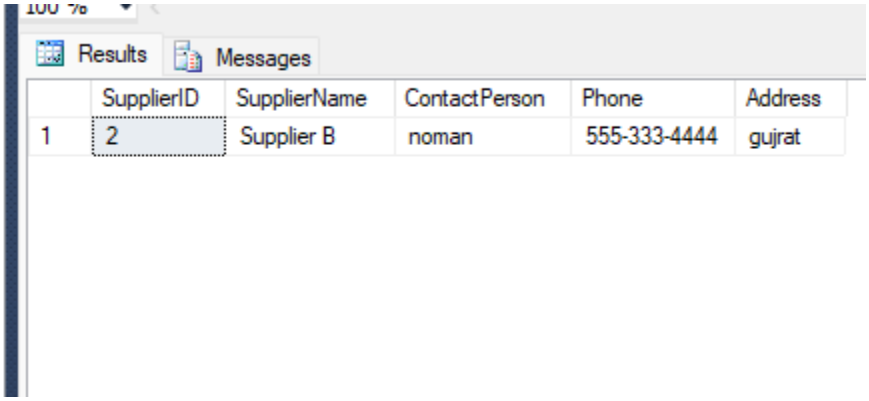
```
-- Create the procedure for PaymentMethods table
GO
CREATE PROCEDURE GetPaymentMethodDetails(@paymentMethodId INT)
AS
BEGIN
  SELECT * FROM PaymentMethods WHERE PaymentMethodID = @paymentMethodId;
END;
GO




EXEC GetPaymentMethodDetails 4;
```




```
-- Create the procedure for ShippingMethods table
GO
CREATE PROCEDURE GetShippingMethodDetails(@shippingMethodId INT)
AS
BEGIN
  SELECT * FROM ShippingMethods WHERE ShippingMethodID = @shippingMethodId;
END;
GO

EXEC GetShippingMethodDetails 1;
```




```
-- Create the procedure for Suppliers table
GO
CREATE PROCEDURE GetSupplierDetails(@supplierId INT)
AS
BEGIN
  SELECT * FROM Suppliers WHERE SupplierID = @supplierId;
END;
GO


EXEC GetSupplierDetails 2;
```




```
-- Inner Join
SELECT FurnitureItems.FurnitureID, FurnitureName, CategoryName, ManufacturerName, Price,
QuantityInStock
```

```
FROM FurnitureItems
INNER JOIN Categories ON FurnitureItems.CategoryID = Categories.CategoryID
INNER JOIN Manufacturers ON FurnitureItems.ManufacturerID = Manufacturers.ManufacturerID
INNER JOIN Inventory ON FurnitureItems.FurnitureID = Inventory.FurnitureID;
```

Results | Messages

	FurnitureID	FurnitureName	CategoryName	ManufacturerName	Price	QuantityInStock
1	1	Armchair	Chairs	ABC Furniture Co.	199.99	10
2	2	Dining Table	Tables	XYZ Furnishings	399.99	5
3	3	Sofa Bed	Sofas	ABC Furniture Co.	549.99	3

```
-- Left Join
SELECT FurnitureItems.FurnitureID, FurnitureName, CategoryName, ManufacturerName, Price,
QuantityInStock
FROM FurnitureItems
LEFT JOIN Categories ON FurnitureItems.CategoryID = Categories.CategoryID
LEFT JOIN Manufacturers ON FurnitureItems.ManufacturerID = Manufacturers.ManufacturerID
LEFT JOIN Inventory ON FurnitureItems.FurnitureID = Inventory.FurnitureID;
```

Results | Messages

	FurnitureID	FurnitureName	CategoryName	ManufacturerName	Price	QuantityInStock
1	1	Armchair	Chairs	ABC Furniture Co.	199.99	10
2	2	Dining Table	Tables	XYZ Furnishings	399.99	5
3	3	Sofa Bed	Sofas	ABC Furniture Co.	549.99	3
4	4	Office Chair	Chairs	Trust Furniture	299.99	NULL
5	5	Nightstand	Dining Tables	City Furniture	149.99	NULL

```
-- Right Join
```

```
SELECT FurnitureItems.FurnitureID, FurnitureName, CategoryName, ManufacturerName, Price,
QuantityInStock
FROM FurnitureItems
RIGHT JOIN Categories ON FurnitureItems.CategoryID = Categories.CategoryID
RIGHT JOIN Manufacturers ON FurnitureItems.ManufacturerID = Manufacturers.ManufacturerID
RIGHT JOIN Inventory ON FurnitureItems.FurnitureID = Inventory.FurnitureID;
```

Results Messages

	FurnitureID	FurnitureName	CategoryName	ManufacturerName	Price	QuantityInStock
1	1	Armchair	Chairs	ABC Furniture Co.	199.99	10
2	2	Dining Table	Tables	XYZ Furnishings	399.99	5
3	3	Sofa Bed	Sofas	ABC Furniture Co.	549.99	3

```
-- Full Outer Join
SELECT FurnitureItems.FurnitureID, FurnitureName, CategoryName, ManufacturerName, Price,
QuantityInStock
FROM FurnitureItems
FULL OUTER JOIN Categories ON FurnitureItems.CategoryID = Categories.CategoryID
FULL OUTER JOIN Manufacturers ON FurnitureItems.ManufacturerID =
Manufacturers.ManufacturerID
FULL OUTER JOIN Inventory ON FurnitureItems.FurnitureID = Inventory.FurnitureID;
```

100 %

Results Messages

	FurnitureID	FurnitureName	CategoryName	ManufacturerName	Price	QuantityInStock
1	1	Armchair	Chairs	ABC Furniture Co.	199.99	10
2	2	Dining Table	Tables	XYZ Furnishings	399.99	5
3	3	Sofa Bed	Sofas	ABC Furniture Co.	549.99	3
4	4	Office Chair	Chairs	Trust Furniture	299.99	NULL
5	5	Nightstand	Dining Tables	City Furniture	149.99	NULL
6	NULL	NULL	Beds	NULL	NULL	NULL