CIS3400

THE BOOKSTORE DATABASE PROJECT

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Group 13

I. INTRODUCTION

For the past five years, our business has maintained and managed a small bookstore at a local neighborhood in Park Slope, Brooklyn. In recent times, an increase in productivity and service within the bookstore has deemed recording through the conventional method of a paper logbook as inefficient. To improve efficacy, we want to transition from our traditional process onto a more advance digital platform such as a database management system—to keep track of our customers, payments, books and wholesale distributors' transactions.

Customers can rent or buy their favorite books at our bookstore. As our business expands, we need to oversee information such as the Customer Order (purchase date, order payment), Customer Order Details (quantity, price, sold or rented) and Book details (title, year published, genre, version number, and price). To continue to supply unique and popular books, we also need to monitor details for the wholesale distributing company; in many instances, customers demand for certain books that we must request from the Distributing company. We must also regulate the Distributor Order and Order Details to keep a record of our transactions with them.

Alongside keeping a record of the physical addresses and contact information of customers, we also must manage the new membership plan we introduced with our growing business. Through the membership, the customer is assigned to one of the three Membership Levels: Bronze, Silver or Gold. As active customers accumulate membership points, they are upgraded to a new level and are offered promotional discounts with their purchases.

We believe we can create a more efficient system of aggregating data through a database management system and in hopes, create a more supportive and welcoming experience for our customers.

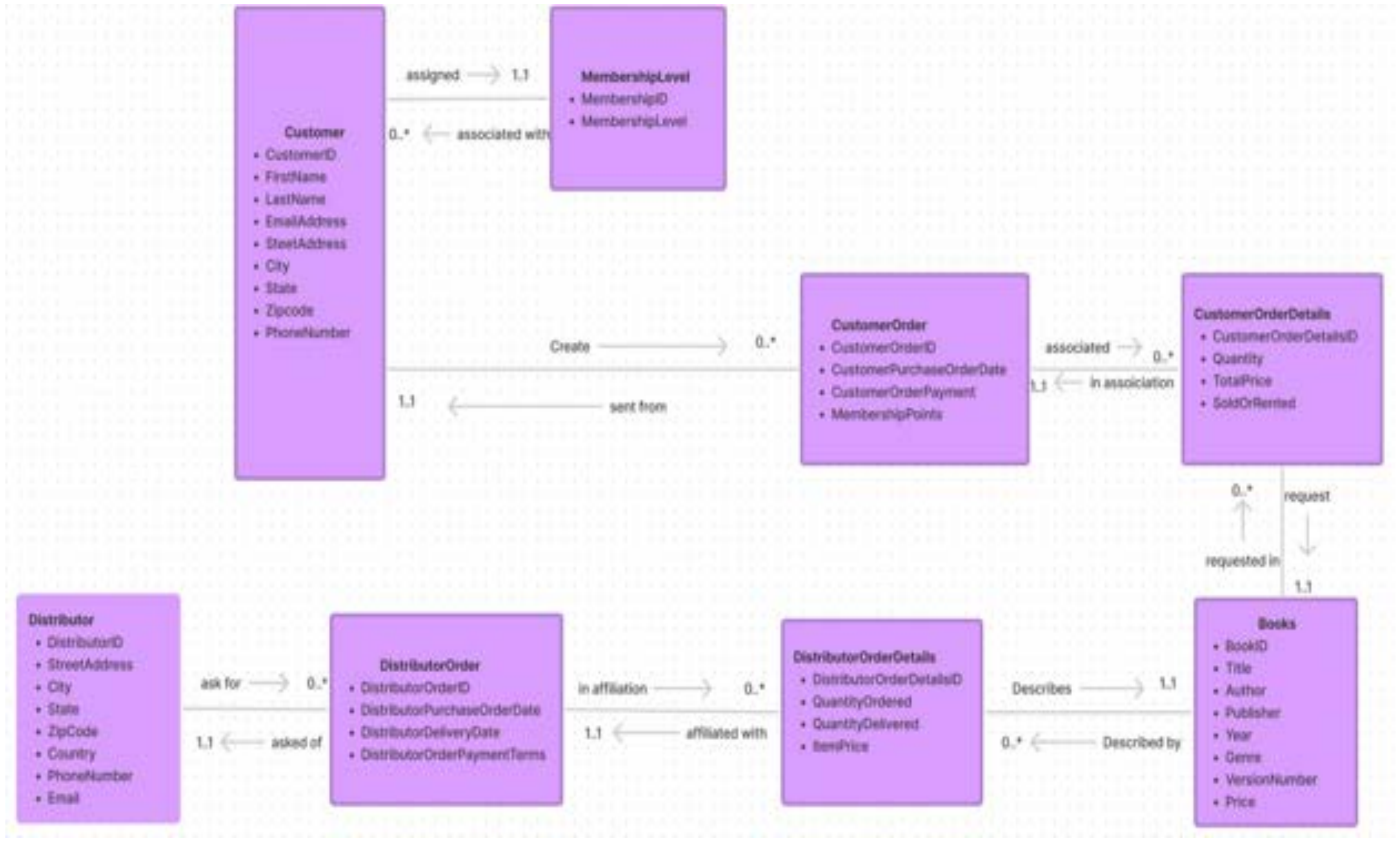
II. ENTITIES IDENTIFIED

I. Customers
II. Membership Level
III. Customer Order
IV. Customer Order Details
V. Book
VI. Distributor Order
VII. Distributor Order Details
VIII. Distributor

III. ROLES

I. Honsam Fan: Application Developer
II. Moshe Khalili: Systems Analyst
III. Audite Talukder: Documentation Writer
IV. Jonathan Zhao: Systems Analyst

IV. E-R DIAGRAM



V. UML Notation to Sentences

I. One Customer *must be* assigned to one and only one Membership Level
II. One Membership Level *may be* associated with one or more Customers
III. One Customer *may* create one or more Customer Orders
IV. One Customer Order *must be* sent by one and only one Customer
V. One Customer Order *may be* associated with many Customer Order Details
VI. One Customer Order Details *must be* in association with one and only one Customer Order
VII. One Customer Order Details *must have* a request of one and only one Books
VIII. One Books *may be* requested in one or more Customer Order Details
IX. One Book *may be* described by many Distributor Order Details
X. One Distributor Order Detail *must* describe one and only one Book
XI. One Distributor Order Detail *must be* affiliated with one and only one Distributor Order
XII. One Distributor Order *may be* in affiliation with one or more Distributor Order Detail
XIII. One Distributor Order *must be* asked of by one and only one Distributors
XIV. One Distributor *may* ask for many Distributor Orders

VI. UML Notation to Relations

I. MembershipLevel [MembershipID (key), MembershipLevel]
II. Customer [CustomerID (key), FirstName, LastName, EmailAddress, StreetAddress, City, State, ZipCode, PhoneNumber, MembershipID (fk)]
III. CustomerOrder [CustomerOrderID (key), CustomerPurchaseOrderDate CustomerOrderPayment, MembershipPoints, CustomerID (fk)]
IV. CustomerOrderDetails [CustomerOrderDetailsID (key), Quantity, TotalPrice, SoldOrRented, CustomerOrderID (fk), BooksID (fk)]
V. Books [BookID (key) , Title, Author, Publisher, Year, Genre, VersionNumber, Price]
VI. DistributorOrderDetails [DistributorOrderDetailsID (key) , QuantityOrdered, QuantityDelivered, ItemPrice, DistributorOrderID (fk), BookID (fk)]
VII. DistributorOrder [DistributorOrderID (key), DistributorPurchaseOrderDate, DistributorDeliveryDate, DistributorOrderPaymentTerms, DistributorID (key)]Distributor [DistributorID (key), StreetAddress, City, State, ZipCode, Country, PhoneNumber, Email]

I. Normalization

MembershipLevel (MembershipID (key), MembershipLevel)
Key: MembershipID
FD1: MembershipID → MembershipLevel
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

Customer (CustomerID (key), FirstName, LastName, EmailAddress, StreetAddress, City, State, ZipCode, PhoneNumber, MembershipID (fk))
Key: CustomerID
FD1: CustomerID → FirstName, LastName, EmailAddress, StreetAddress, City, State, ZipCode, PhoneNumber, MembershipID
FD2: ZipCode → City, State
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: No, because ZipCode → City, State is a transitive dependency

Because FD2: ZipCode → City, State is the functional dependency that is causing error we must split Customer into two new relations and copy the attribute on the left of the arrow and remove the attribute on the right to the arrow. In this case, we must

FD2: Copy ZipCode → Remove City, State

Customer (CustomerID, FirstName, LastName, EmailAddress, StreetAddress, City, State, ZipCode, PhoneNumber, MembershipID) → CustInfo (CustomerID, FirstName, LastName, EmailAddress, StreetAddress, ZipCode, PhoneNumber, MembershipID) + Zipcodes (ZipCode, City, State)

**CustInfo (CustomerID,
FirstName, LastName, EmailAddress, StreetAddress, ZipCode, PhoneNumber, MembershipID)**
Key: CustomerID
FD1: CustomerID →
FirstName, LastName, EmailAddress, StreetAddress, ZipCode, PhoneNumber, MembershipID
1NF: Yes, because it is split off a relation
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

Zipcodes (ZipCode, City, State)
Key: ZipCode
FD1: ZipCode → City, State
1NF: Yes, because it is split off a relation
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

We know will denormalize the Zipcodes (ZipCode, City, State) back to the original relation to avoid redundancy to simplify and improve the model for performance.

CustomerOrder (CustomerOrderID (key), CustomerPurchaseOrderDate, CustomerOrderPayment, MembershipPoints, CustomerID (fk))
Key: CustomerOrderID
FD1: CustomerOrderID → CustomerPurchaseOrderDate, CustomerOrderPayment, MembershipPoints, CustomerID
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

CustomerOrderDetails (CustomerOrderDetailsID (key), Quantity, TotalPrice, SoldOrRented, CustomerOrderID (key)(fk), BooksID (fk))
Key: CustomerOrderDetailsID, CustomerOrderID
FD1: CustomerOrderDetailsID, CustomerOrderID → Quantity, TotalPrice, SoldOrRented, BooksID
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

Books (BookID (key) , Title, Author, Publisher, Year, Genre, VersionNumber, Price)
Key: BookID
FD1: BookID → Title, Author, Publisher, Year, Genre, VersionNumber, Price
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

DistributorOrderDetails (DistributorOrderDetailsID (key), QuantityOrdered, QuantityDelivered, ItemPrice, DistributorOrderID (key)(fk), BookID (fk))
Key: DistributorOrderDetailsID, DistributorOrderID
FD1: DistributorOrderDetailsID, DistributorOrderID → QuantityOrdered, QuantityDelivered, ItemPrice, BookID
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

DistributorOrder (DistributorOrderID (key), DistributorPurchaseOrderDate, DistributorDeliveryDate, DistributorOrderPaymentTerms, DistributorID (fk))
Key: DistributorOrderID
FD1: DistributorOrderID → DistributorPurchaseOrderDate, DistributorDeliveryDate, DistributorOrderPaymentTerms, DistributorID
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

Distributor (DistributorID (key), StreetAddress, City, State, ZipCode, Country, PhoneNumber, Email)
Key: DistributorID
FD1: DistributorID → StreetAddress, City, State, ZipCode, Country, PhoneNumber, Email
FD2: ZipCode → City, State
1NF: Yes, because it meets all the criteria of 1NF
2NF: Yes, there are no partial dependencies
3NF: No, because ZipCode → City, State is a transitive dependency

We must split Distributor into two new relations and from the functional dependency
FD2: ZipCode → City, State we must copy ZipCode and remove City, State

Distributor (DistributorID (key), StreetAddress, City, State, ZipCode, Country, PhoneNumber, Email) → DistributorInfo (DistributorID (key), StreetAddress, ZipCode, Country, PhoneNumber, Email) + DistributorZipcodes (ZipCode, City, State)

DistributorInfo (DistributorID (key), StreetAddress, ZipCode, Country, PhoneNumber, Email)
Key: DistributorID
FD1: DistributorID → StreetAddress, ZipCode, Country, PhoneNumber, Email
1NF: Yes, because it is split off a relation
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

DistributorZipcodes (ZipCode, City, State)
Key: ZipCode
FD1: ZipCode → City, State
1NF: Yes, because it is split off a relation
2NF: Yes, there are no partial dependencies
3NF: Yes, there are no transitive dependencies

We know will denormalize the DistributorZipcodes (ZipCode, City, State) back to the original relation to avoid redundancy to simplify and improve the model for performance.

Final Relations:

MembershipLevel (MembershipID (key), MembershipLevel)

Customer (CustomerID (key), FirstName, LastName, EmailAddress, StreetAddress, City, State, ZipCode, PhoneNumber, MembershipID (fk))

CustomerOrder (CustomerOrderID (key), CustomerPurchaseOrderDate CustomerOrderPayment, MembershipPoints, CustomerID (fk))

CustomerOrderDetails (CustomerOrderDetailsID (key), Quantity, TotalPrice, SoldOrRented, CustomerOrderID (key)(fk), BooksID (fk))

Books (BookID (key), Title, Author, Publisher, Year, Genre, VersionNumber, Price)

DistributorOrderDetails (DistributorOrderDetailsID (key), QuantityOrdered, QuantityDelivered, ItemPrice, DistributorOrderID (key)(fk), BookID (fk))

DistributorOrder (DistributorOrderID (key), DistributorPurchaseOrderDate, DistributorDeliveryDate, DistributorOrderPaymentTerms, DistributorID (fk))

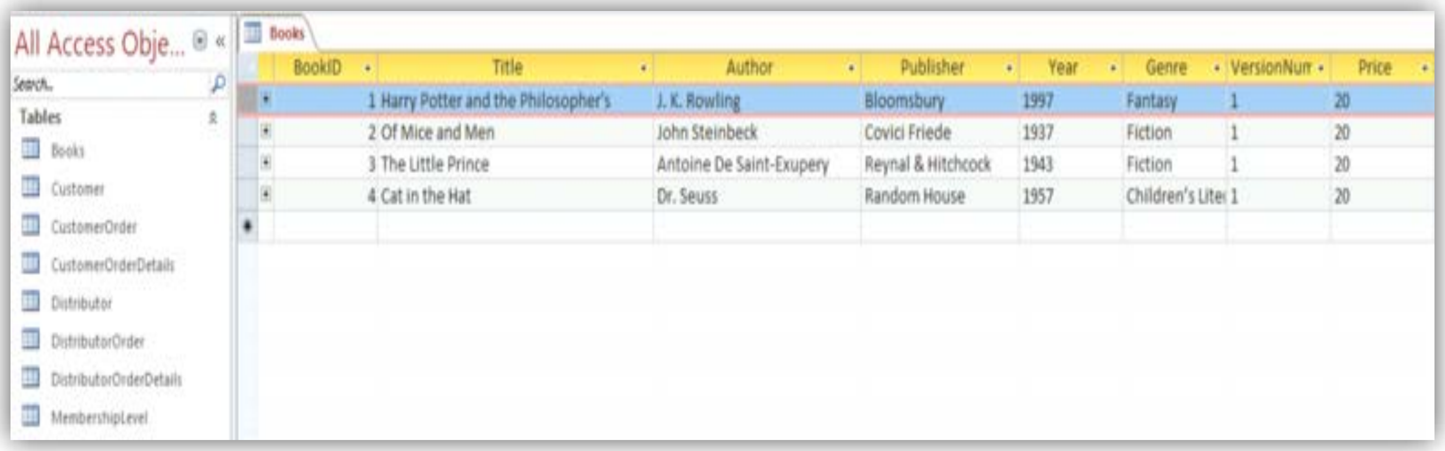
Distributor (DistributorID (key), StreetAddress, City, State, ZipCode, Country, PhoneNumber, Email)

II. CREATE TABLE SQL

```
CREATE TABLE MembershipLevel
(
        MembershipID NUMBER NOT NULL,
        Membership_Level VARCHAR(20),
        CONSTRAINT pk_membershiplevel
        PRIMARY KEY (MembershipID)
)

CREATE TABLE Customer
(
        CustomerID NUMBER NOT NULL,
        FirstName VARCHAR(35),
        LastName VARCHAR(35),
        EmailAddress VARCHAR(35),
        StreetAddress VARCHAR(35),
        City VARCHAR(35),
        State VARCHAR(4),
        ZipCode VARCHAR(20),
        PhoneNumber VARCHAR(20),
        MembershipID NUMBER,
        CONSTRAINT pk_customer
        PRIMARY KEY (CustomerID)
)

CREATE TABLE CustomerOrder
(
        CustomerOrderID NUMBER NOT NULL,
        CustomerPurchaseOrderDate DATE,
        CustomerOrderPayment VARCHAR(35),
        MembershipPoints VARCHAR(35),
        CustomerID NUMBER,
        CONSTRAINT pk_customerorder
        PRIMARY KEY (CustomerOrderID)
)

CREATE TABLE Books
(
        BookID NUMBER NOT NULL,
        Title VARCHAR(35),
        Author VARCHAR(35),
        Publisher VARCHAR(35),
        Year VARCHAR(20),
        Genre VARCHAR(35),
        VersionNumber VARCHAR(35),
        Price VARCHAR(35),
        CONSTRAINT pk_books
        PRIMARY KEY (BookID)
)
```

```
CREATE TABLE CustomerOrderDetails
(
	CustomerOrderDetailsID NUMBER NOT NULL,
	Quantity VARCHAR(35),
	TotalPrice VARCHAR(35),
	SoldOrRented VARCHAR(35),
	CustomerOrderID NUMBER,
	BookID NUMBER,
	CONSTRAINT pk_customerorderdetails
	PRIMARY KEY (CustomerOrderDetailsID)
)

CREATE TABLE Distributor
(
	DistributorID NUMBER NOT NULL,
	StreetAddress VARCHAR(35),
	City VARCHAR(35),
	State VARCHAR(4),
	ZipCode VARCHAR(20),
	PhoneNumber VARCHAR(20),
	EmailAddress VARCHAR(35),
	CONSTRAINT pk_distributor
	PRIMARY KEY (DistributorID)
)

CREATE TABLE DistributorOrder
(
	DistributorOrderID NUMBER NOT NULL,
	DistributorPurchaseOrderDate DATE,
	DistributorDeliveryDate DATE,
	DistributorOrderPaymentTerms VARCHAR(35),
	DistributorID NUMBER,
	CONSTRAINT pk_distributororder
	PRIMARY KEY (DistributorOrderID)
)

CREATE TABLE DistributorOrderDetails
(
	DistributorOrderDetailsID NUMBER,
	QuantityOrdered VARCHAR(35),
	QuantityDelivered VARCHAR(35),
	ItemPrice VARCHAR(35),
	DistributorOrderID NUMBER,
	BookID NUMBER,
	CONSTRAINT pk_distributororderdetails
	PRIMARY KEY (DistributorOrderDetailsID)
)
```

SAMPLE TABLES



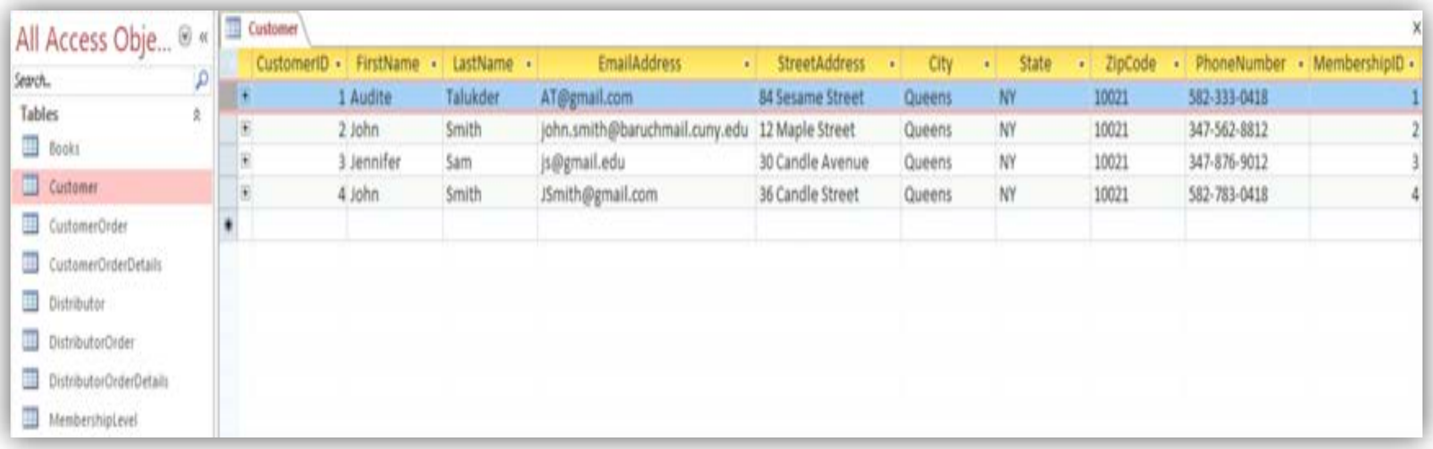
All Access Obje...

Search...

Tables
- Books
- Customer
- CustomerOrder
- CustomerOrderDetails
- Distributor
- DistributorOrder
- DistributorOrderDetails
- MembershipLevel

Books

BookID	Title	Author	Publisher	Year	Genre	VersionNum	Price
1	Harry Potter and the Philosopher's	J. K. Rowling	Bloomsbury	1997	Fantasy	1	20
2	Of Mice and Men	John Steinbeck	Covici Friede	1937	Fiction	1	20
3	The Little Prince	Antoine De Saint-Exupery	Reynal & Hitchcock	1943	Fiction	1	20
4	Cat in the Hat	Dr. Seuss	Random House	1957	Children's Lite	1	20



All Access Obje...

Search...

Tables
- Books
- Customer
- CustomerOrder
- CustomerOrderDetails
- Distributor
- DistributorOrder
- DistributorOrderDetails
- MembershipLevel

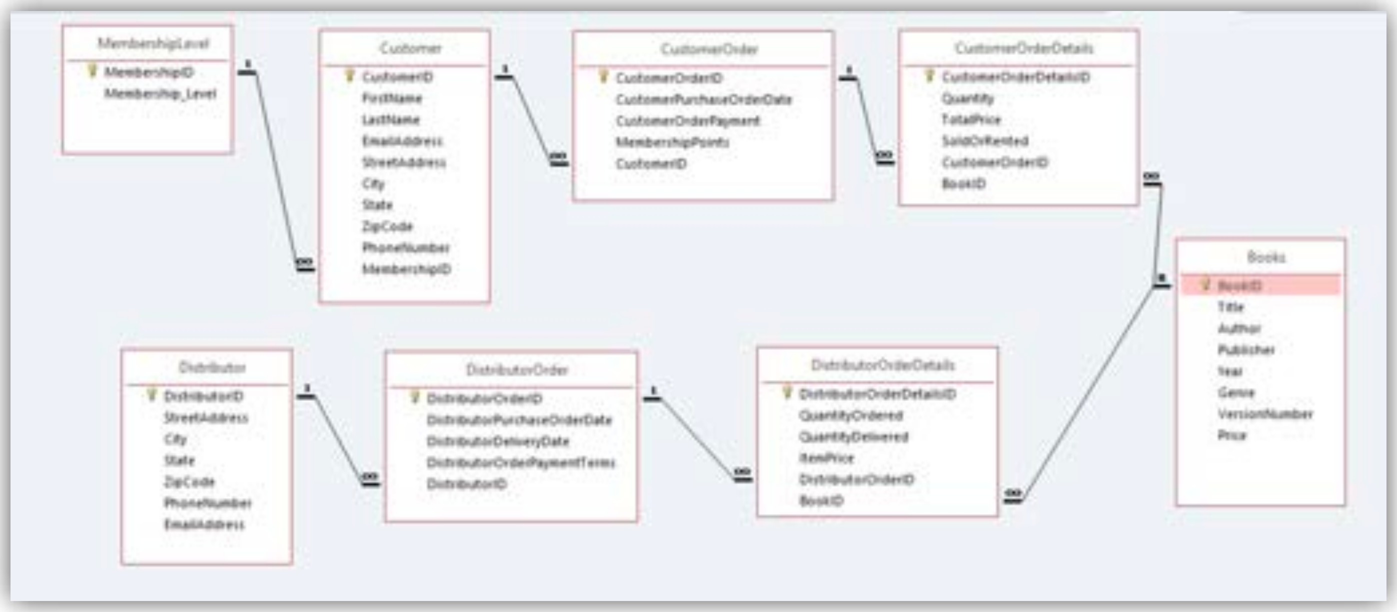
Customer

CustomerID	FirstName	LastName	EmailAddress	StreetAddress	City	State	ZipCode	PhoneNumber	MembershipID
1	Audite	Talukder	AT@gmail.com	84 Sesame Street	Queens	NY	10021	582-333-0418	1
2	John	Smith	john.smith@baruchmail.cuny.edu	12 Maple Street	Queens	NY	10021	347-562-8812	2
3	Jennifer	Sam	js@gmail.edu	30 Candle Avenue	Queens	NY	10021	347-876-9012	3
4	John	Smith	JSmith@gmail.com	36 Candle Street	Queens	NY	10021	582-783-0418	4

III. ALTER TABLE SQL

```
ALTER TABLE Customer
        ADD CONSTRAINT fk_customer_membershiplevel
                FOREIGN KEY (MembershipID)
                        REFERENCES MembershipLevel(MembershipID)

ALTER TABLE CustomerOrder
        ADD CONSTRAINT fk_customerorder_customer
                FOREIGN KEY (CustomerID)
                        REFERENCES Customer(CustomerID)

ALTER TABLE CustomerOrderDetails
        ADD CONSTRAINT fk_customerorderdetails_customerorder
                FOREIGN KEY (CustomerOrderID)
                        REFERENCES CustomerOrder(CustomerOrderID)

ALTER TABLE CustomerOrderDetails
        ADD CONSTRAINT fk_customerorderdetails_books
                FOREIGN KEY (BookID)
                        REFERENCES Books(BookID)

ALTER TABLE DistributorOrder
        ADD CONSTRAINT fk_distributororder_distributor
                FOREIGN KEY (DistributorID)
                        REFERENCES Distributor(DistributorID)

ALTER TABLE DistributorOrderDetails
        ADD CONSTRAINT fk_distributororderdetails_books
                FOREIGN KEY (BookID)
                        REFERENCES Books(BookID)
```

SAMPLE RELATIONSHIP

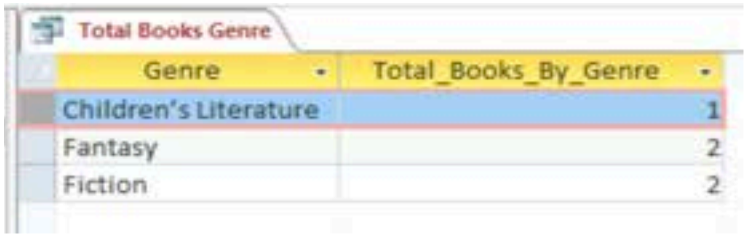


IV. INSERT STATMENTS SQL

```
INSERT INTO MembershipLevel
VALUES (1, "Gold");

INSERT INTO MembershipLevel
VALUES (2, "Silver");

INSERT INTO MembershipLevel
VALUES (3, "Bronze");

INSERT INTO MembershipLevel
VALUES (4, "Gold");

INSERT INTO Customer
VALUES (001, "Audite", "Talukder", "AT@gmail.com", "84 Sesame Street", "Queens", "NY",
"10021", "582-333-0418", 1);

INSERT INTO Customer
VALUES (002, "John", "Smith", "john.smith@baruchmail.cuny.edu", "12 Maple Street", "Queens",
"NY", "10021", "347-562-8812", 2);

INSERT INTO Customer
VALUES (003, "Jennifer", "Sam", "js@gmail.edu", "30 Candle Avenue", "Queens", "NY", "10021",
"347-876-9012", 3);

INSERT INTO Customer
VALUES (004, "John", "Smith", "JSmith@gmail.com", "36 Candle Street", "Queens", "NY", "1002",
"582-783-0418", 4);

INSERT INTO CustomerOrder
VALUES (1, "12/12/2021", "Cash", "50", 2) ;

INSERT INTO CustomerOrder
VALUES( 2, "11/12/2021", "Cash", "120", 1);

INSERT INTO CustomerOrder
VALUES( 3, "10/12/2021", "Credit", "20", 3);

INSERT INTO CustomerOrder
VALUES( 4, "9/10/2021", "Credit", "100", 4);

INSERT INTO Books VALUES (1, "Harry Potter and the Philosopher's Stone", "J. K. Rowling",
"Bloomsbury", "1997", "Fantasy", "1", "20");

INSERT INTO Books VALUES (2, "Of Mice and Men", "John Steinbeck", "Covici Friede", "1937",
"Fiction", "1", "20");

INSERT INTO Books VALUES (3, "The Little Prince", "Antoine De Saint-Exupery", "Reynal &
Hitchcock", "1943", "Fiction", "1", "20");

INSERT INTO Books VALUES (4, "Cat in the Hat", "Dr. Seuss", "Random House", "1957", "Children’s
Literature", "1", "20");
INSERT INTO Books VALUES (5, "Ella Enchanted", "Gail Carson Levine", "HarperTrophy", "1997",
"Fantasy", "1", "20");
```

```
INSERT INTO CustomerOrderDetails
VALUES(1, "1", "20", "Sold", 1, 1);

INSERT INTO CustomerOrderDetails
 VALUES(2, "1", "20", "Sold", 2, 1);

INSERT INTO CustomerOrderDetails
 VALUES(3, "1", "20", "Sold", 3, 1);

INSERT INTO CustomerOrderDetails
 VALUES(4, "1", "20", "Sold", 3, 1);

INSERT INTO Distributor
VALUES(1, "24 Bow Street", "Brooklyn", "NY", "10432", "2120982239", "D1@gmail.com");

INSERT INTO Distributor
VALUES(2, "144 SE. Fremont Street", "Flushing", "NY", "11230", "917-858-9920",
"D2@gmail.com");

INSERT INTO Distributor
VALUES(3, "52 Smith Avenue", "Brooklyn", "NY", "10320", "2120982123", "D3@gmail.com");

INSERT INTO Distributor
VALUES(4, "120 James Lane", "Brooklyn", "NY", "11233", "917-858-6898", "D4@gmail.com");

INSERT INTO DistributorOrder
VALUES(1, "11/11/2021", "12/12/2021", COD, 1);

INSERT INTO DistributorOrder
VALUES(2, "10/10/2021", "10/20/2021", COD, 2);

INSERT INTO DistributorOrder
VALUES(3, "10/15/2021", "10/25/2021", COD, 3);

INSERT INTO DistributorOrder
VALUES(4, "11/11/2021", "12/12/2021", COD, 4);

INSERT INTO DistributorOrderDetails
VALUES(1, "40", "40", "20", 1, 1);

INSERT INTO DistributorOrderDetails
VALUES(2, "32", "32", "20", 2, 2);

INSERT INTO DistributorOrderDetails
VALUES(3, "50", "50", "20", 3, 3);

INSERT INTO DistributorOrderDetails
VALUES(4, "30", "30", "20", 4, 4);
```

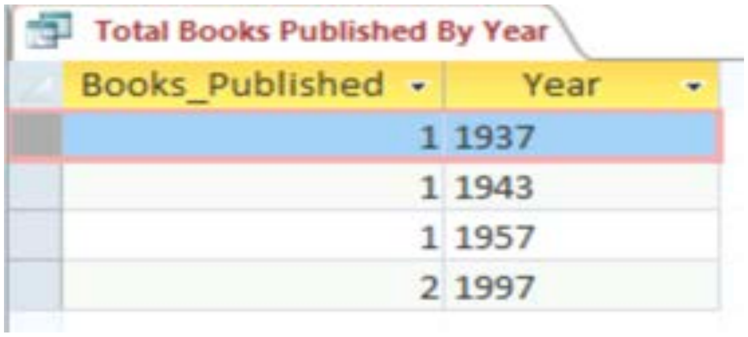
V. COUNT SQL CODE


Total Books Genre

Genre	Total_Books_By_Genre
Children's Literature	1
Fantasy	2
Fiction	2

Query: Total Books by Genre
Description: Counts the total number of books for each genre in the store. This can help identify which genre needs to be increased within the store to help maintain variety for customers.

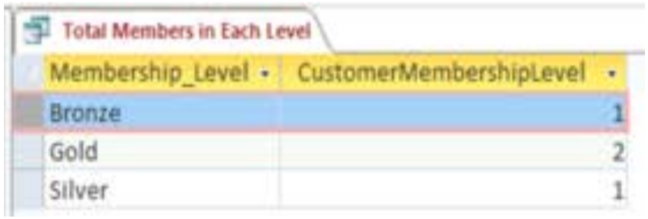
```
SELECT Books.Genre, Count(*) AS Total_Books_By_Genre
FROM Books
GROUP BY Books.Genre;
```


Total Books Published By Year

Books_Published	Year
1	1937
1	1943
1	1957
2	1997

Query: Total Books Published By Year
Description: Counts the total number of books released by the year. This can help analyze the variety within books by the year it was published and which type of books should be ordered to appeal to the customer demographic.

```
SELECT Count(*) AS Books_Published, Books.Year
FROM Books
GROUP BY Books.Year;
```

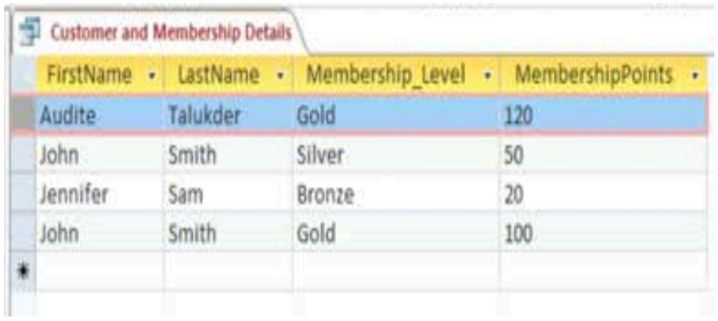

Total Members in Each Level

Membership_Level	CustomerMembershipLevel
Bronze	1
Gold	2
Silver	1

Query: Total Members in each level
Description: Counts the number of customers in each of the three membership levels: bronze, silver, and gold. Gives a general view of activeness within the business. More customers in the Gold level indicates appeal and interest between the franchise and the people.

```
SELECT MembershipLevel.Membership_Level, Count(Membership_Level) AS
CustomerMembershipLevel
FROM MembershipLevel
GROUP BY MembershipLevel.Membership_Level;
```

VI. JOIN SQL CODE

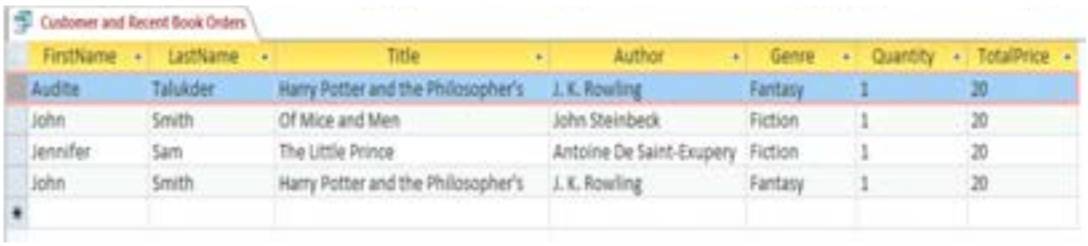


Customer and Membership Details

FirstName	LastName	Membership_Level	MembershipPoints
Audite	Talukder	Gold	120
John	Smith	Silver	50
Jennifer	Sam	Bronze	20
John	Smith	Gold	100

Query: Customer and Membership Details
Description: A query that displays each customer on record and their membership level and points. Helps maintain insight of loyal and active customers, whom should receive more attention and benefits from the bookstore, as well as which customers the store needs to gain more response from.

```
SELECT Customer.FirstName, Customer.LastName,
MembershipLevel.Membership_Level, CustomerOrder.MembershipPoints
FROM (MembershipLevel INNER JOIN Customer ON MembershipLevel.MembershipID
= Customer.MembershipID) INNER JOIN CustomerOrder ON Customer.CustomerID =
CustomerOrder.CustomerID;
```

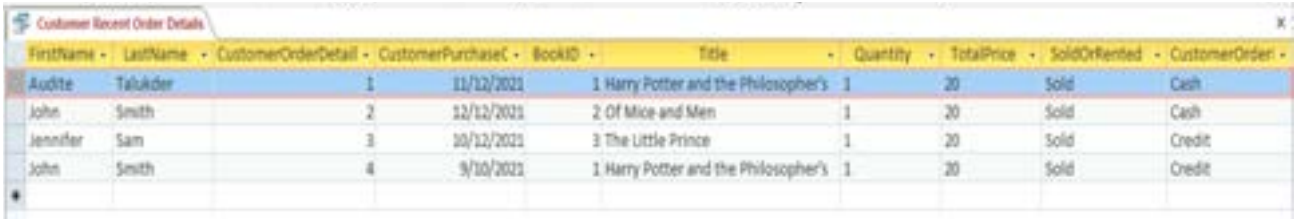


Customer and Recent Book Orders

FirstName	LastName	Title	Author	Genre	Quantity	TotalPrice
Audite	Talukder	Harry Potter and the Philosopher's	J. K. Rowling	Fantasy	1	20
John	Smith	Of Mice and Men	John Steinbeck	Fiction	1	20
Jennifer	Sam	The Little Prince	Antoine De Saint-Exupery	Fiction	1	20
John	Smith	Harry Potter and the Philosopher's	J. K. Rowling	Fantasy	1	20

Query: Customer and Recent Book Orders
Description: A query that shows recently bought books from customers. This can help keep track of their favorite books and the type of books that are popular amongst customers that are in demand.

```
SELECT Customer.FirstName, Customer.LastName, Books.Title, Books.Author, Books.Genre,
CustomerOrderDetails.Quantity, CustomerOrderDetails.TotalPrice
FROM Books INNER JOIN (Customer INNER JOIN CustomerOrderDetails ON
Customer.CustomerID = CustomerOrderDetails.CustomerOrderDetailsID) ON Books.BookID =
CustomerOrderDetails.BookID;
```



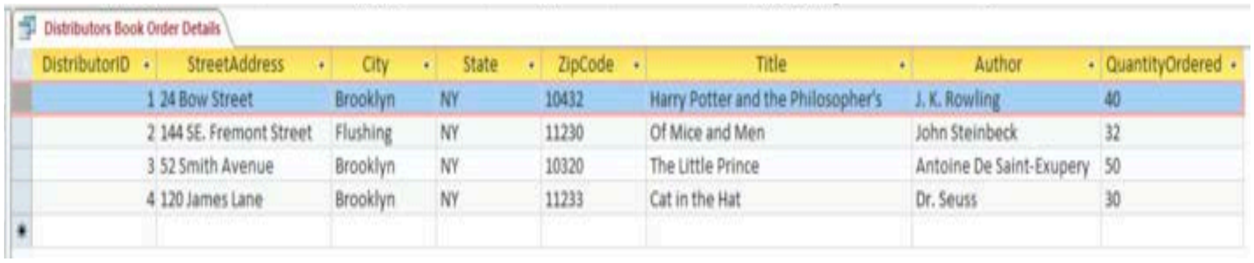
Customer Recent Order Details

FirstName	LastName	CustomerOrderDetail	CustomerPurchaseC	BookID	Title	Quantity	TotalPrice	SoldOrRented	CustomerOrder
Audite	Talukder	1	11/12/2021	1	Harry Potter and the Philosopher's	1	20	Sold	Cash
John	Smith	2	12/12/2021	2	Of Mice and Men	1	20	Sold	Cash
Jennifer	Sam	3	10/12/2021	3	The Little Prince	1	20	Sold	Credit
John	Smith	4	9/10/2021	1	Harry Potter and the Philosopher's	1	20	Sold	Credit

Query: Customer Recent Order Details
Description: A query that demonstrates details of each customers recent transaction: customer’s name, order details like purchase order date, payment method, and book(s) purchased.

```
SELECT Customer.FirstName, Customer.LastName, CustomerOrderDetails.*,
CustomerOrder.CustomerPurchaseOrderDate,
CustomerOrder.CustomerOrderPayment, Books.Title
```

```
FROM Books INNER JOIN ((Customer INNER JOIN CustomerOrderDetails ON
Customer.CustomerID = CustomerOrderDetails.CustomerOrderDetailsID) INNER JOIN
CustomerOrder ON Customer.CustomerID = CustomerOrder.CustomerID) ON
Books.BookID = CustomerOrderDetails.BookID;
```

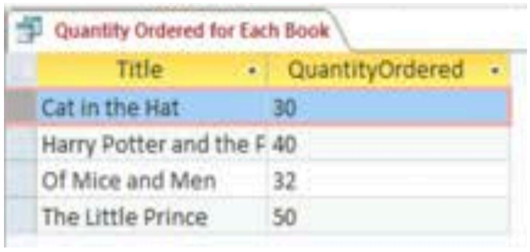


Distributors Book Order Details

DistributorID	StreetAddress	City	State	ZipCode	Title	Author	QuantityOrdered
1	24 Bow Street	Brooklyn	NY	10432	Harry Potter and the Philosopher's	J. K. Rowling	40
2	144 SE. Fremont Street	Flushing	NY	11230	Of Mice and Men	John Steinbeck	32
3	52 Smith Avenue	Brooklyn	NY	10320	The Little Prince	Antoine De Saint-Exupery	50
4	120 James Lane	Brooklyn	NY	11233	Cat in the Hat	Dr. Seuss	30

Query: Distributors Book Order Details
Description: A query that demonstrates distributor companies and the collection of books that are demanded by the distributor.

```
SELECT Distributor.DistributorID, Distributor.StreetAddress, Distributor.City,
Distributor.State, Distributor.ZipCode, Books.Title, Books.Author,
DistributorOrderDetails.QuantityOrdered
FROM Books INNER JOIN (Distributor INNER JOIN DistributorOrderDetails ON
Distributor.DistributorID = DistributorOrderDetails.DistributorOrderDetailsID) ON
Books.BookID = DistributorOrderDetails.BookID;
```



Quantity Ordered for Each Book

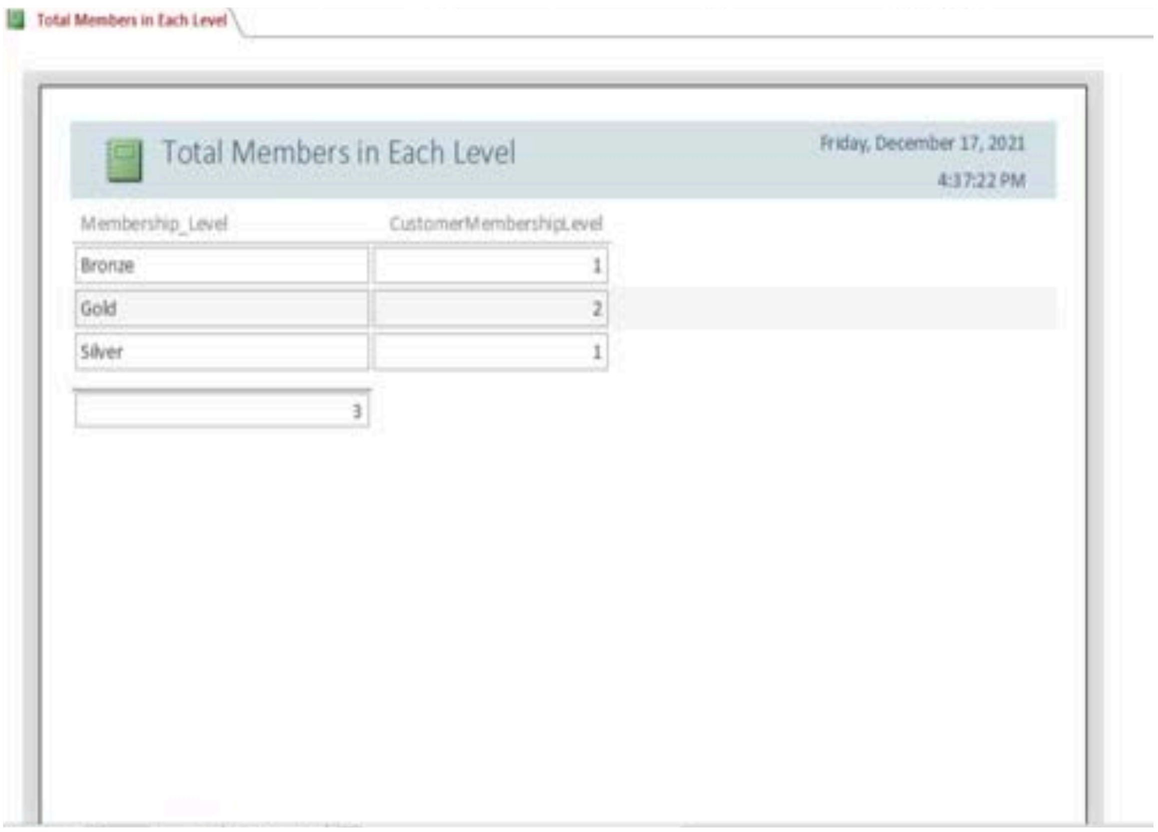
Title	QuantityOrdered
Cat in the Hat	30
Harry Potter and the F	40
Of Mice and Men	32
The Little Prince	50

Query: Quantity Ordered for Each Book
Description: A query that shows the quantity order of each book which helps record the popularity of the book

```
SELECT Books.Title, DistributorOrderDetails.QuantityOrdered
FROM Books INNER JOIN DistributorOrderDetails ON Books.BookID =
DistributorOrderDetails.BookID
GROUP BY Books.Title, DistributorOrderDetails.QuantityOrdered;
```

VII. REPORTS

Report of Total Members in each Membership Level



Total Members in Each Level

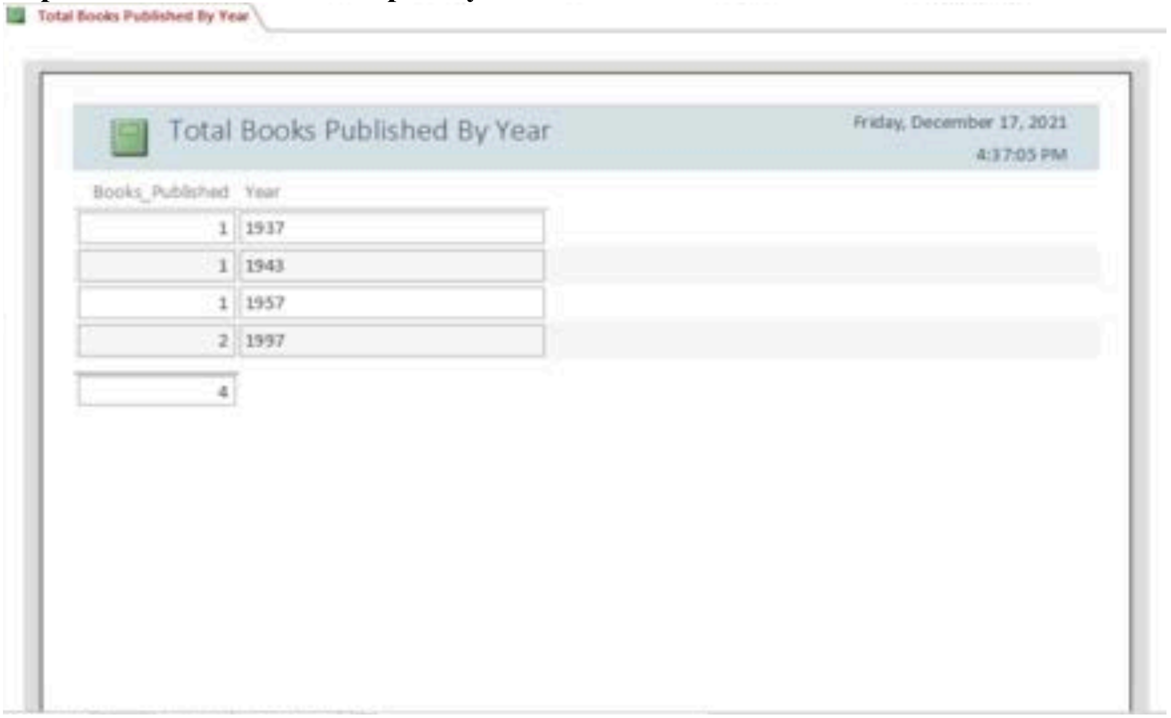
Total Members in Each Level

Friday, December 17, 2021

4:37:22 PM

Membership_Level	CustomerMembershipLevel
Bronze	1
Gold	2
Silver	1
3	

Report of Total Books Grouped By Year



Total Books Published By Year

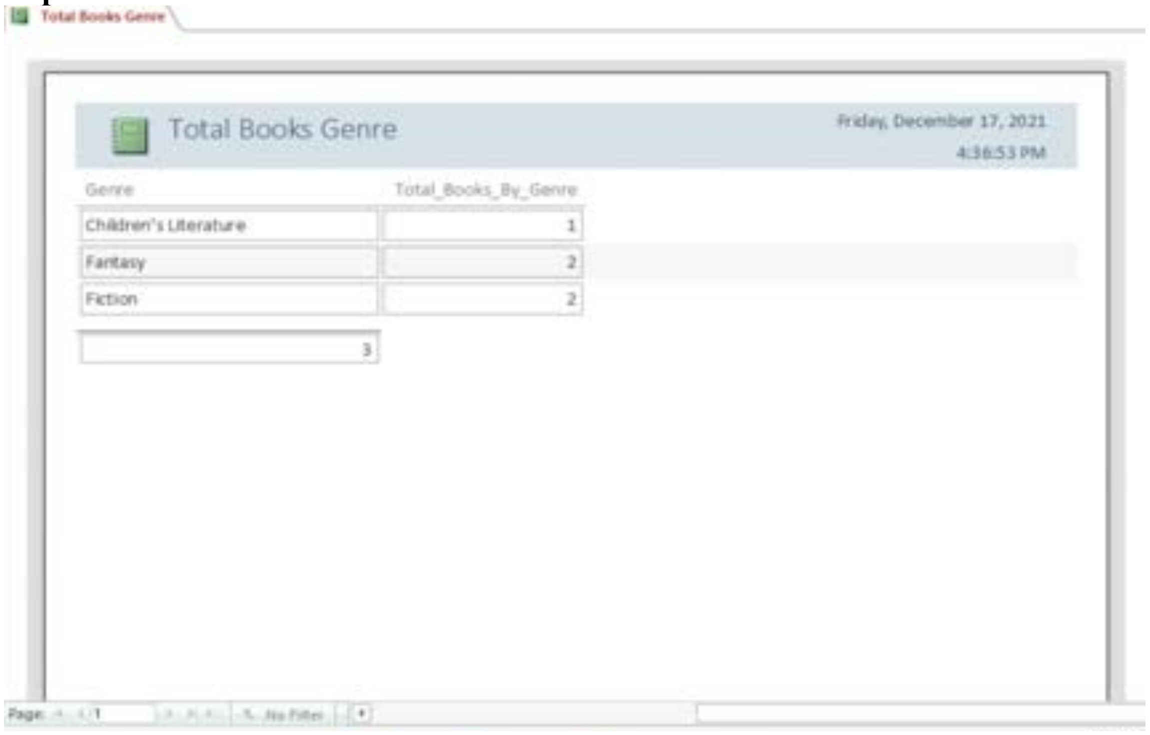
Total Books Published By Year

Friday, December 17, 2021

4:37:05 PM

Books_Published	Year
1	1937
1	1943
1	1957
2	1997
4	

Report of Total Books Genre

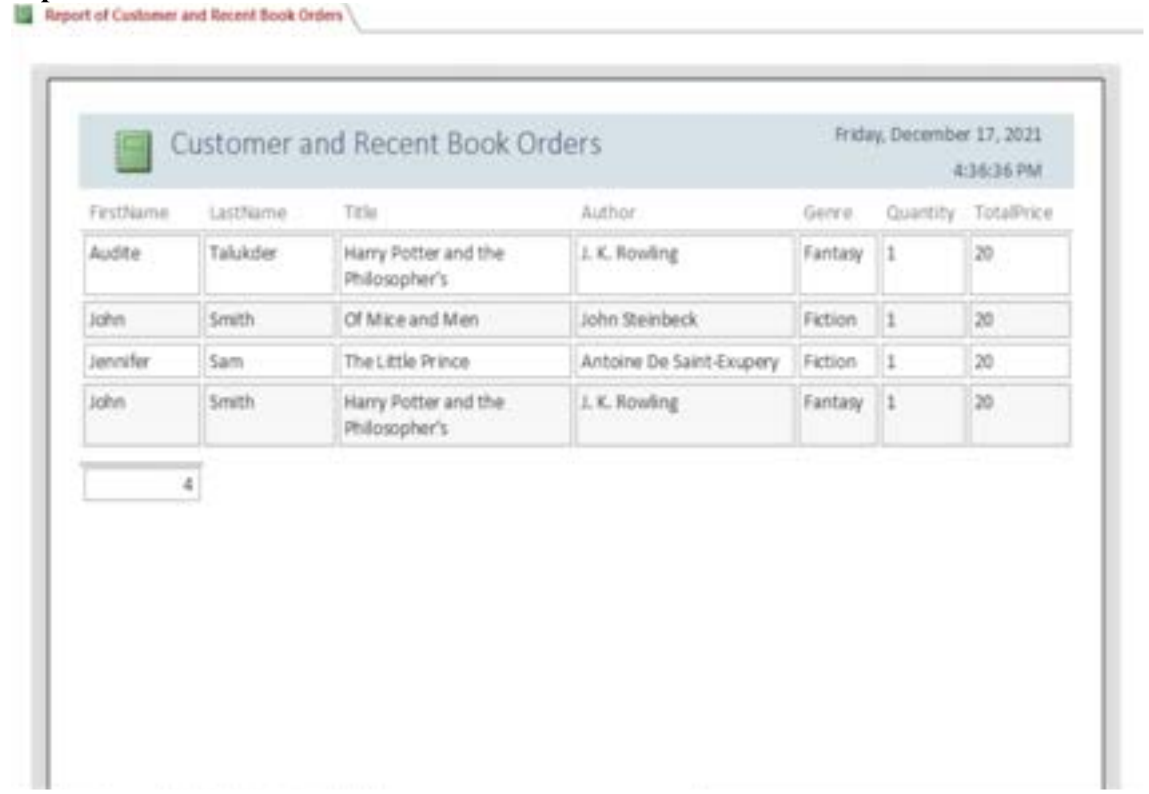


Total Books Genre

Friday, December 17, 2021
4:36:53 PM

Genre	Total_Books_By_Genre
Children's Literature	1
Fantasy	2
Fiction	2
3	

Report of Customer's Recent Orders

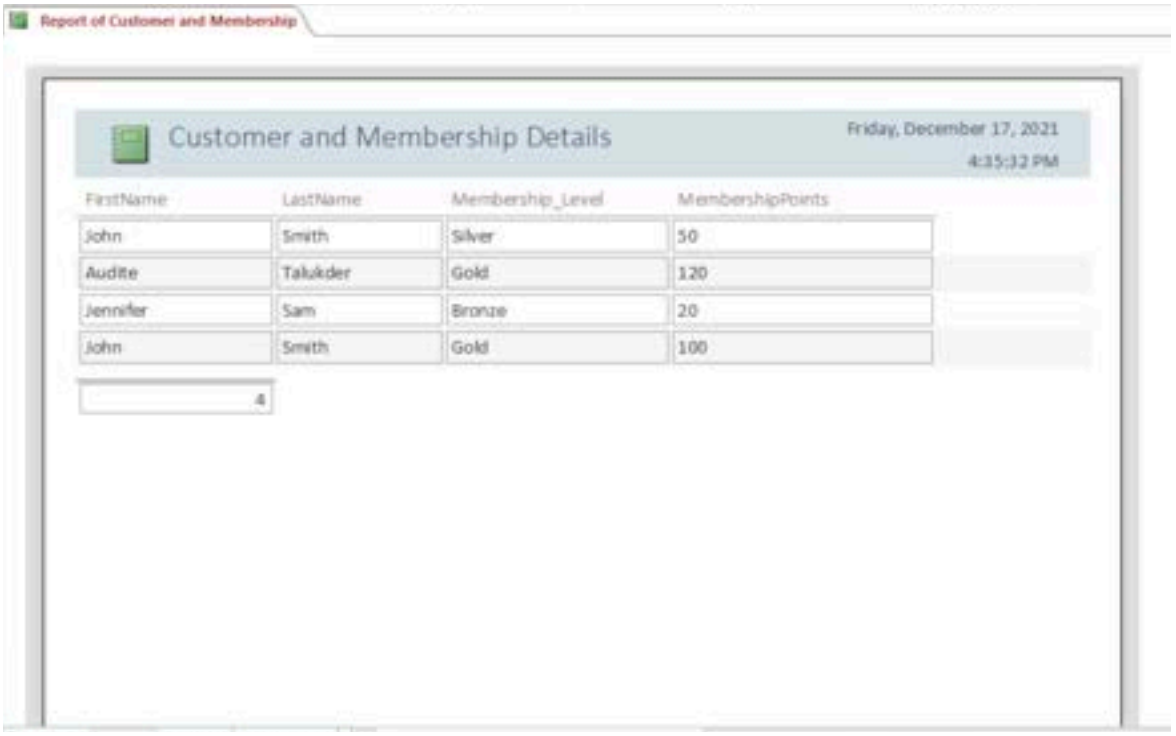


Customer and Recent Book Orders

Friday, December 17, 2021
4:36:36 PM

FirstName	LastName	Title	Author	Genre	Quantity	TotalPrice
Audite	Talukder	Harry Potter and the Philosopher's	J. K. Rowling	Fantasy	1	20
John	Smith	Of Mice and Men	John Steinbeck	Fiction	1	20
Jennifer	Sam	The Little Prince	Antoine De Saint-Exupery	Fiction	1	20
John	Smith	Harry Potter and the Philosopher's	J. K. Rowling	Fantasy	1	20
4						

Report of Customer's Membership Details



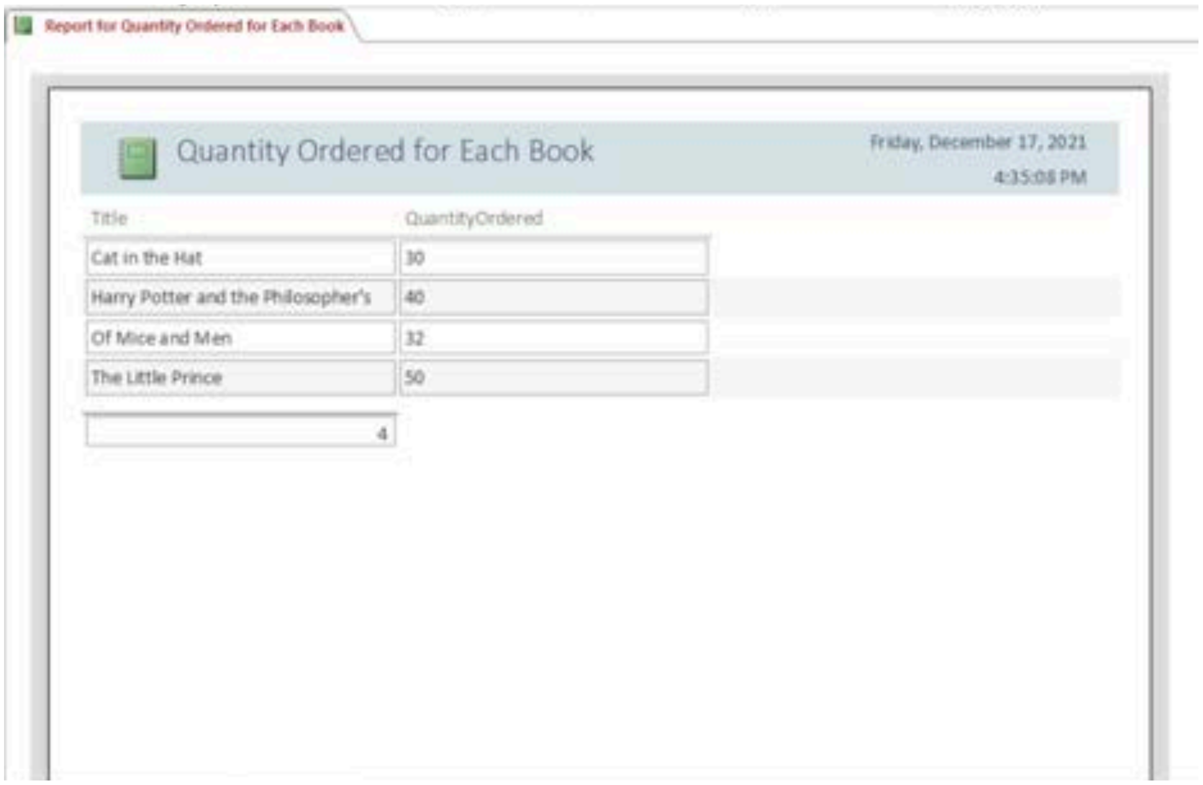
Customer and Membership Details

Friday, December 17, 2021
4:35:32 PM

FirstName	LastName	Membership_Level	MembershipPoints
John	Smith	Silver	50
Audite	Talukder	Gold	120
Jennifer	Sam	Bronze	20
John	Smith	Gold	100

4

Report of Quantity Ordered for Each Book



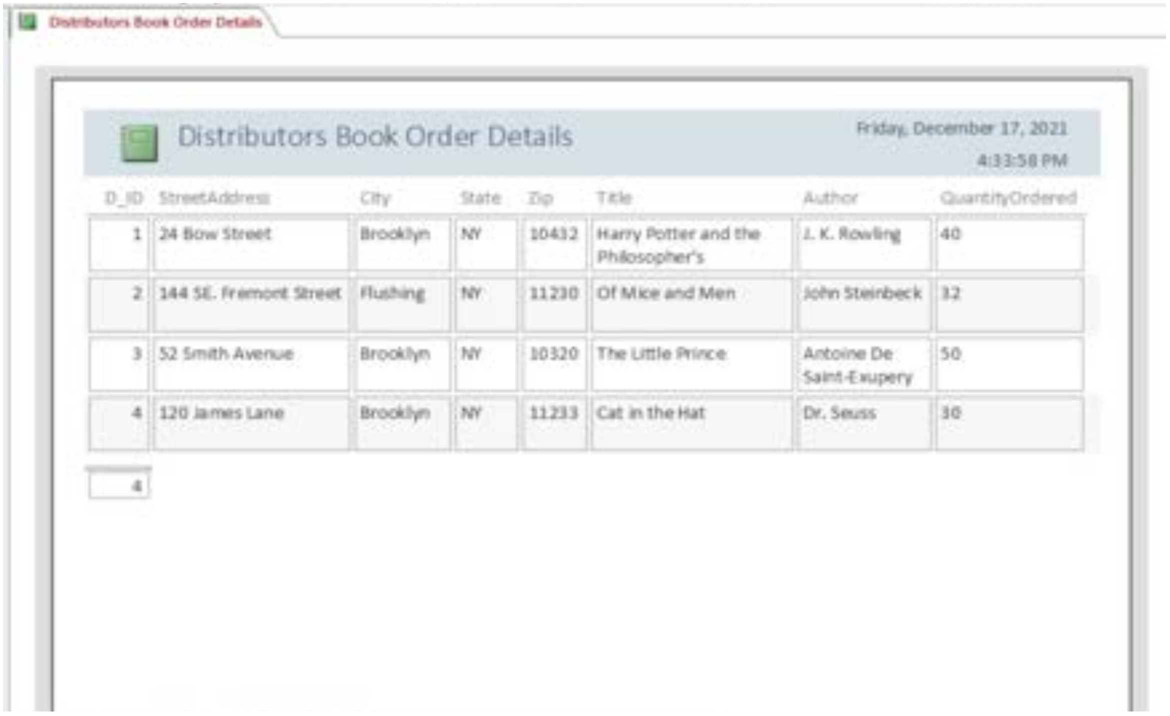
Quantity Ordered for Each Book

Friday, December 17, 2021
4:35:08 PM

Title	QuantityOrdered
Cat in the Hat	30
Harry Potter and the Philosopher's	40
Of Mice and Men	32
The Little Prince	50

4

Report of Distributor's Book Transaction Details



Distributors Book Order Details

Distributors Book Order Details

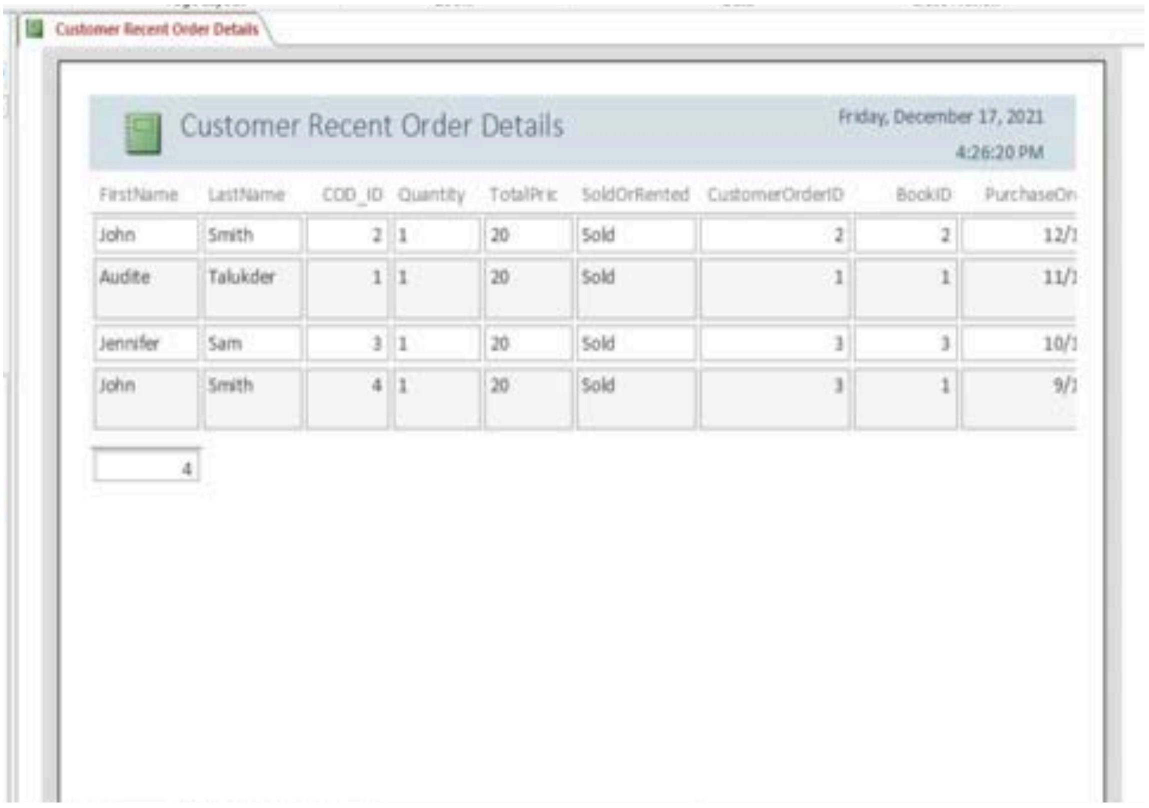
Friday, December 17, 2021

4:33:58 PM

D_ID	StreetAddress	City	State	Zip	Title	Author	QuantityOrdered
1	24 Bow Street	Brooklyn	NY	10432	Harry Potter and the Philosopher's	J. K. Rowling	40
2	144 SE. Fremont Street	Flushing	NY	11230	Of Mice and Men	John Steinbeck	32
3	52 Smith Avenue	Brooklyn	NY	10320	The Little Prince	Antoine De Saint-Exupery	50
4	120 James Lane	Brooklyn	NY	11233	Cat in the Hat	Dr. Seuss	30

4

Report of Customer's Recent Orders



Customer Recent Order Details

Customer Recent Order Details

Friday, December 17, 2021

4:26:20 PM

FirstName	LastName	COD_ID	Quantity	TotalPric	SoldOrRented	CustomerOrderID	BookID	PurchaseOn
John	Smith	2	1	20	Sold	2	2	12/1
Audite	Talukder	1	1	20	Sold	1	1	11/1
Jennifer	Sam	3	1	20	Sold	3	3	10/1
John	Smith	4	1	20	Sold	3	1	9/1

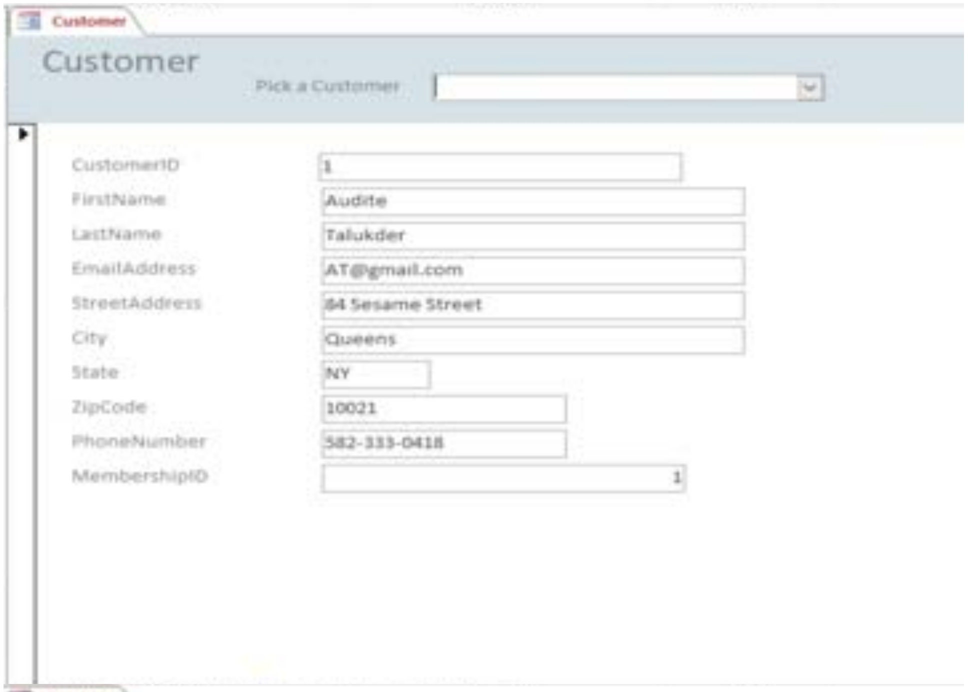
4

VIII. FORMS

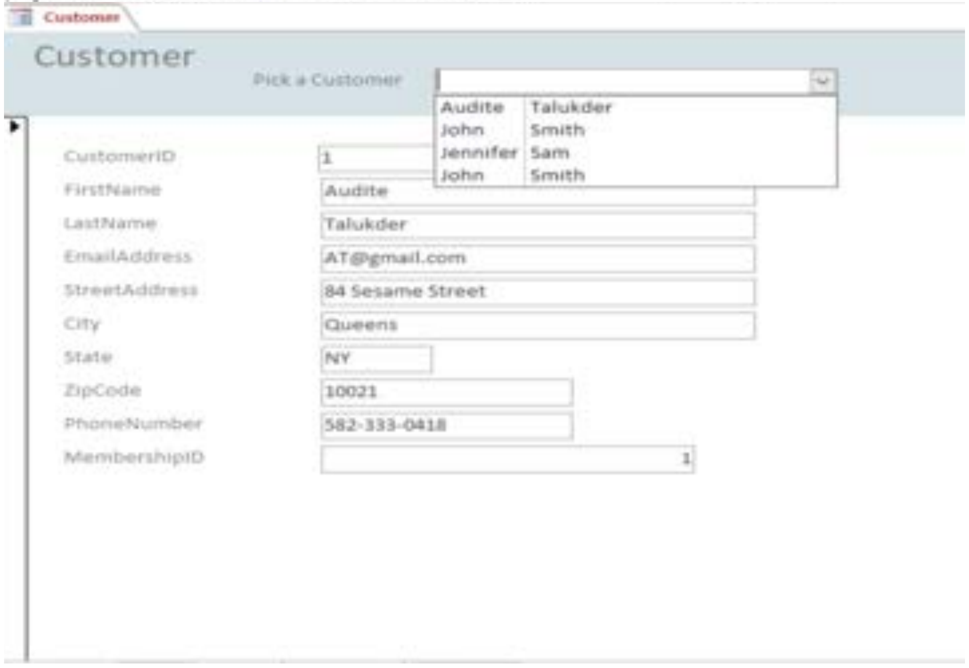
I. SINGLE TABLE FORMS

C

CUSTOMERS



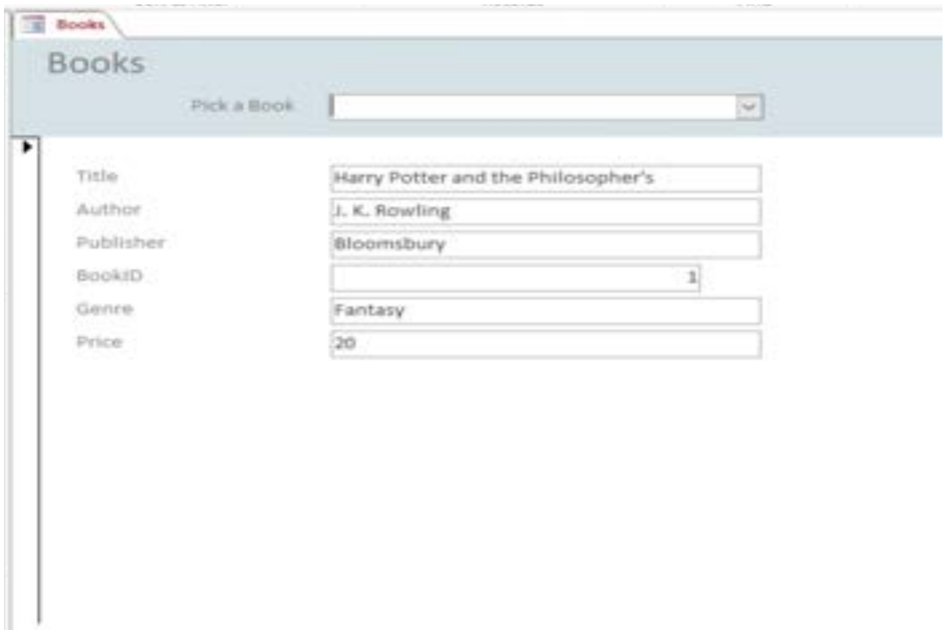
CustomerID	1
FirstName	Audite
LastName	Talukder
EmailAddress	AT@gmail.com
StreetAddress	84 Sesame Street
City	Queens
State	NY
ZipCode	10021
PhoneNumber	582-333-0418
MembershipID	1



Audite	Talukder
John	Smith
Jennifer	Sam
John	Smith

CustomerID	1
FirstName	Audite
LastName	Talukder
EmailAddress	AT@gmail.com
StreetAddress	84 Sesame Street
City	Queens
State	NY
ZipCode	10021
PhoneNumber	582-333-0418
MembershipID	1

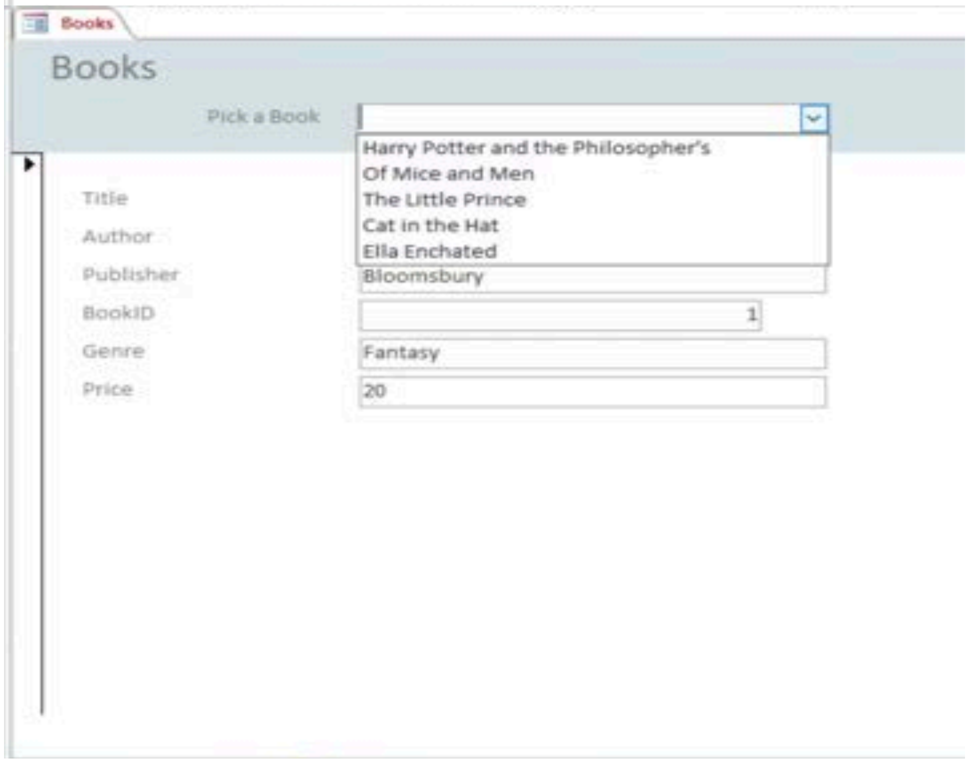
BOOKS



Books

Pick a Book

Title	Harry Potter and the Philosopher's
Author	J. K. Rowling
Publisher	Bloomsbury
BookID	1
Genre	Fantasy
Price	20



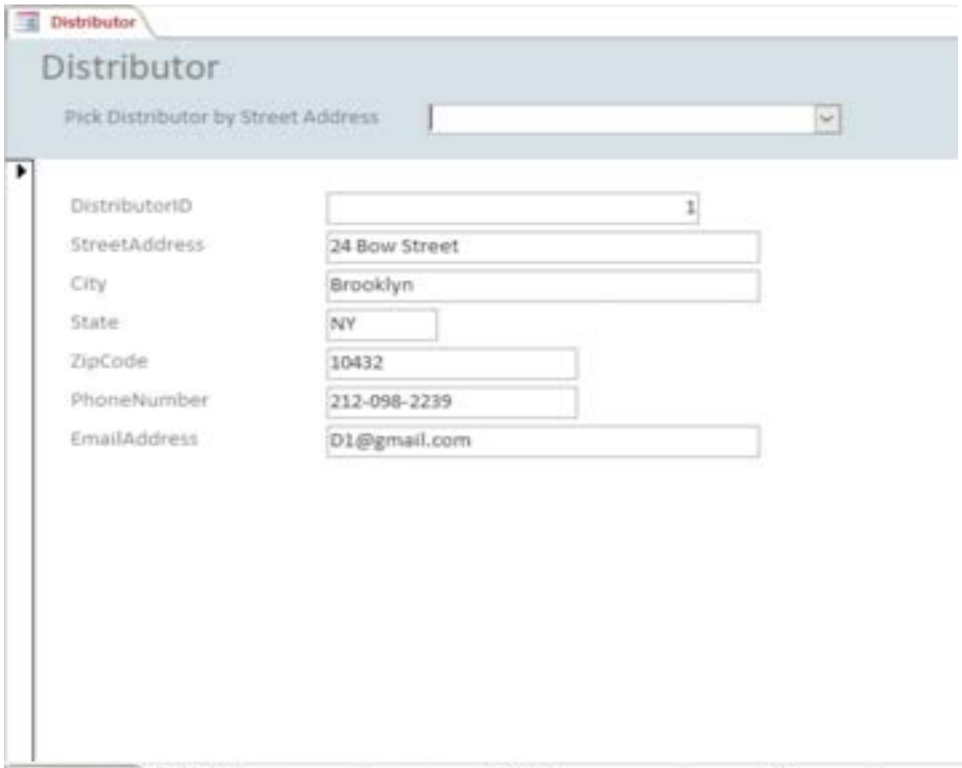
Books

Pick a Book

Harry Potter and the Philosopher's
Of Mice and Men
The Little Prince
Cat in the Hat
Ella Enchated

Title	
Author	
Publisher	Bloomsbury
BookID	1
Genre	Fantasy
Price	20

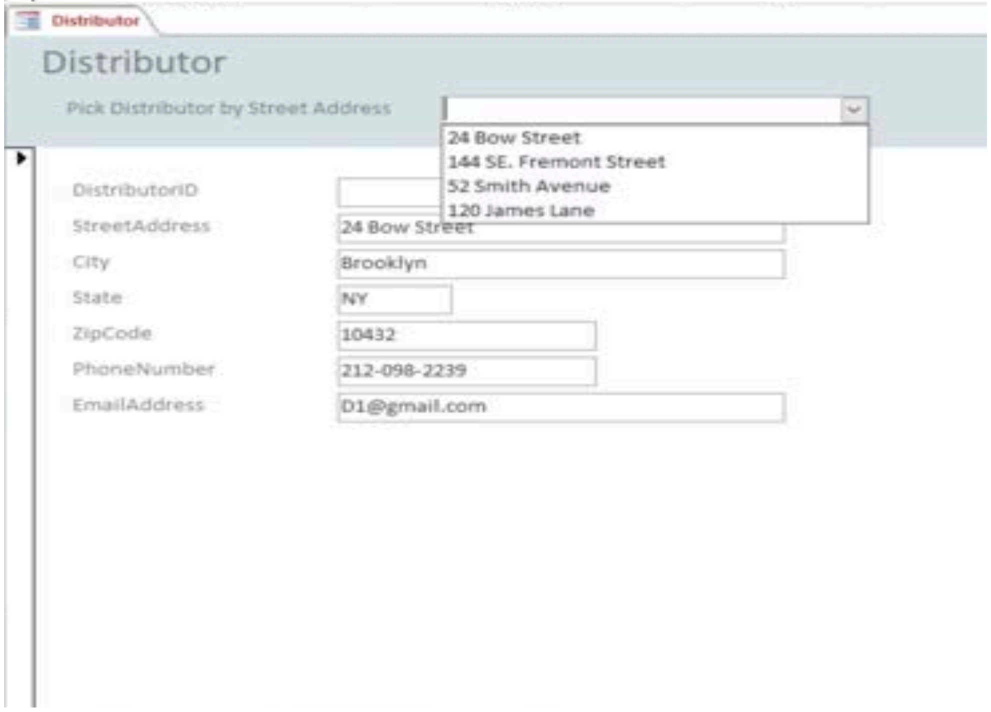
DISTRIBUTORS



Distributor

Pick Distributor by Street Address

DistributorID	1
StreetAddress	24 Bow Street
City	Brooklyn
State	NY
ZipCode	10432
PhoneNumber	212-098-2239
EmailAddress	D1@gmail.com



Distributor

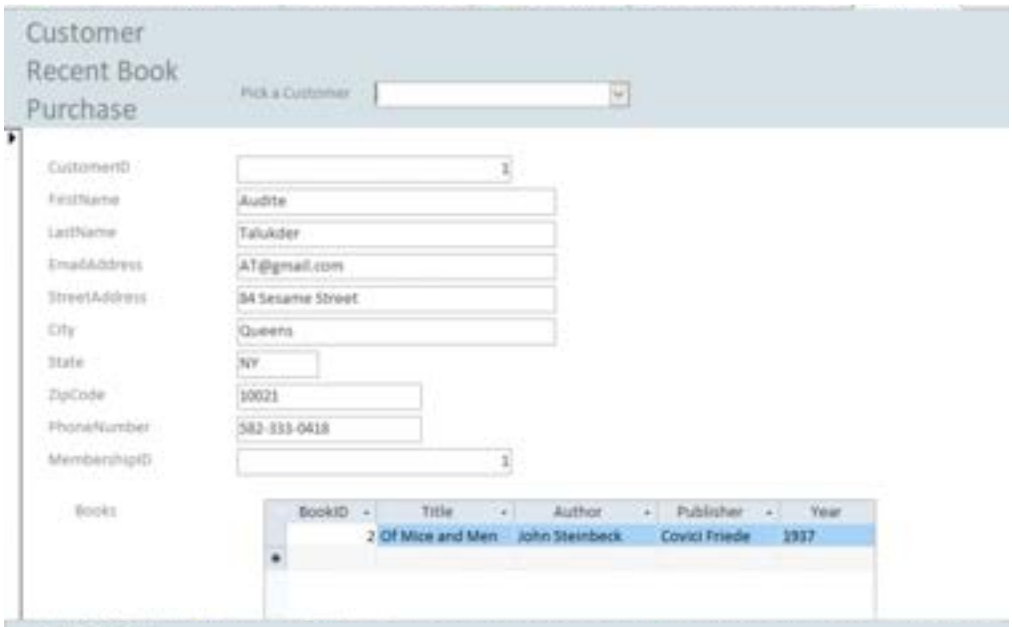
Pick Distributor by Street Address

24 Bow Street
144 SE. Fremont Street
52 Smith Avenue
120 James Lane

DistributorID	
StreetAddress	24 Bow Street
City	Brooklyn
State	NY
ZipCode	10432
PhoneNumber	212-098-2239
EmailAddress	D1@gmail.com

II. MASTER DETAIL

CUSTOMER’S RECENT BOOK PURCHASE



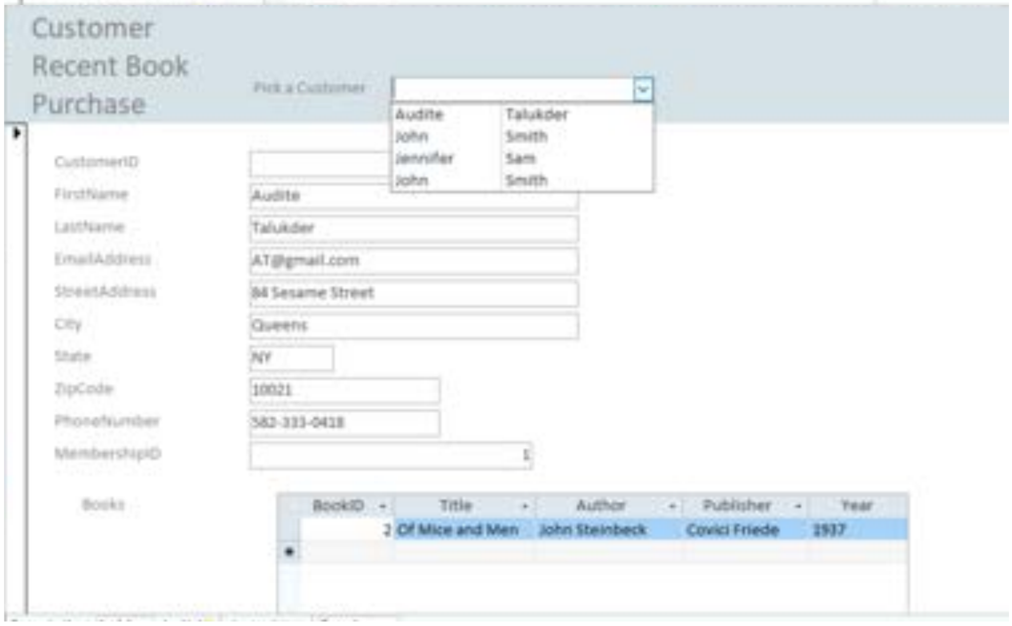
Customer Recent Book Purchase

Pick a Customer

CustomerID	1
FirstName	Audite
LastName	Talukder
EmailAddress	AT@gmail.com
StreetAddress	84 Sesame Street
City	Queens
State	NY
ZipCode	10021
PhoneNumber	582-333-0418
MembershipID	1

Books

BookID	Title	Author	Publisher	Year
2	Of Mice and Men	John Steinbeck	Covici Friede	1937



Customer Recent Book Purchase

Pick a Customer

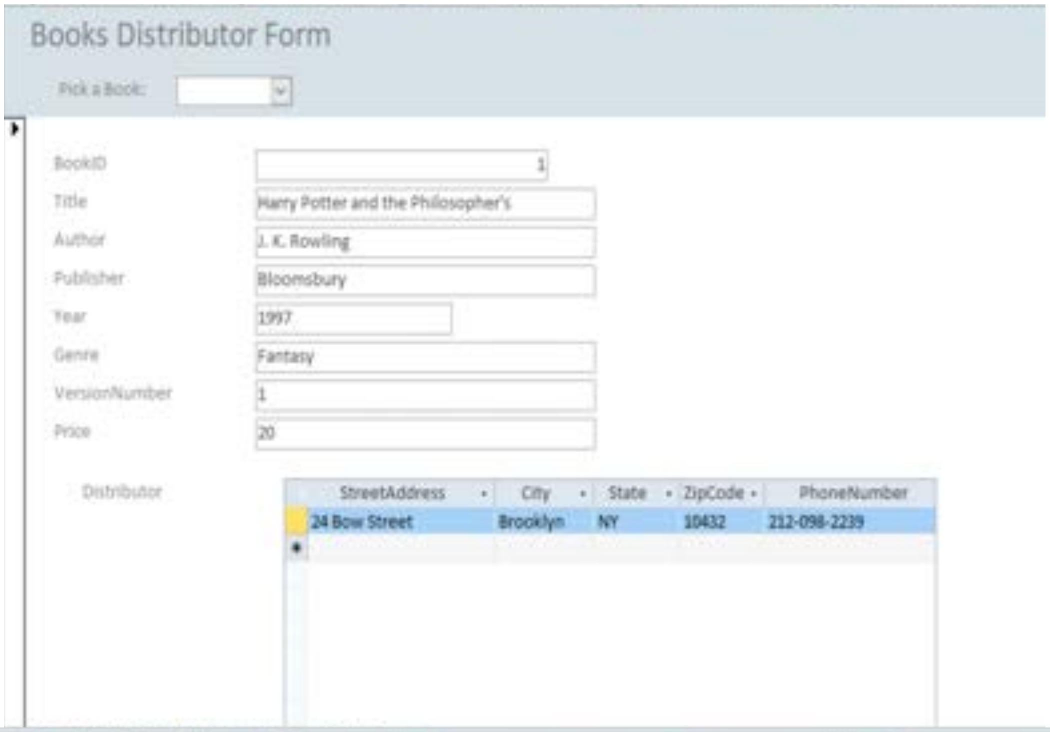
Audite	Talukder
John	Smith
Jennifer	Sam
John	Smith

CustomerID	
FirstName	Audite
LastName	Talukder
EmailAddress	AT@gmail.com
StreetAddress	84 Sesame Street
City	Queens
State	NY
ZipCode	10021
PhoneNumber	582-333-0418
MembershipID	1

Books

BookID	Title	Author	Publisher	Year
2	Of Mice and Men	John Steinbeck	Covici Friede	1937

FORM OF EACH BOOK'S DISTRIBUTOR



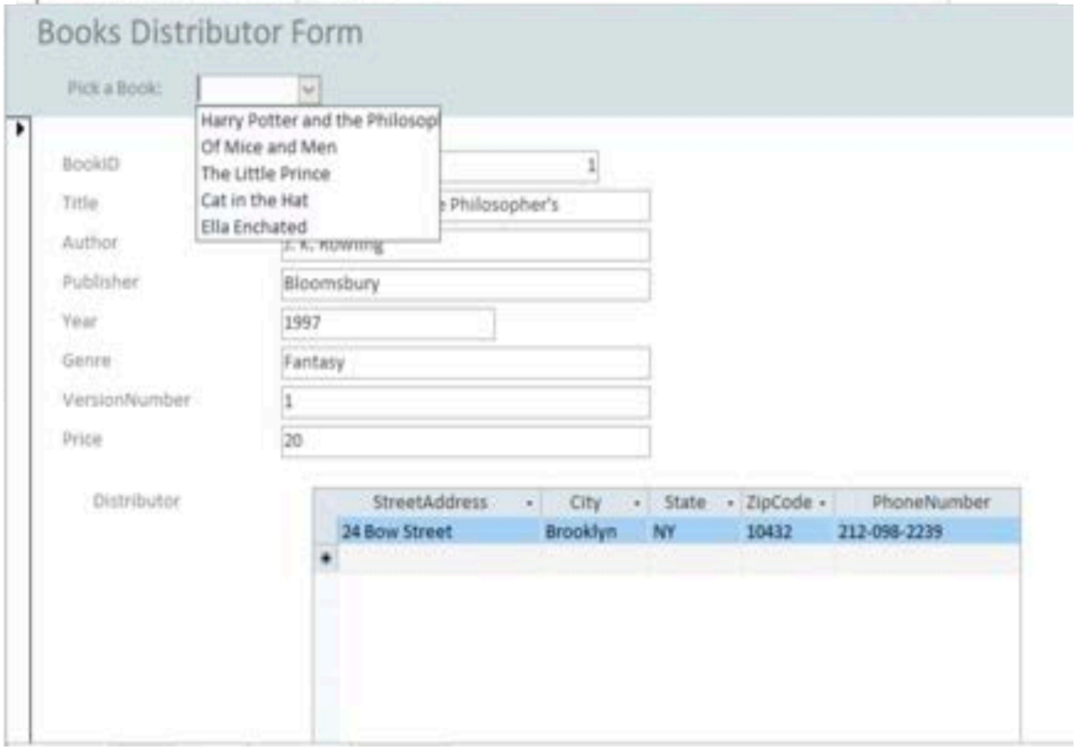
Books Distributor Form

Pick a Book:

BookID	1
Title	Harry Potter and the Philosopher's
Author	J. K. Rowling
Publisher	Bloomsbury
Year	1997
Genre	Fantasy
VersionNumber	1
Price	20

Distributor

StreetAddress	City	State	ZipCode	PhoneNumber
24 Bow Street	Brooklyn	NY	10432	212-098-2239



Books Distributor Form

Pick a Book:

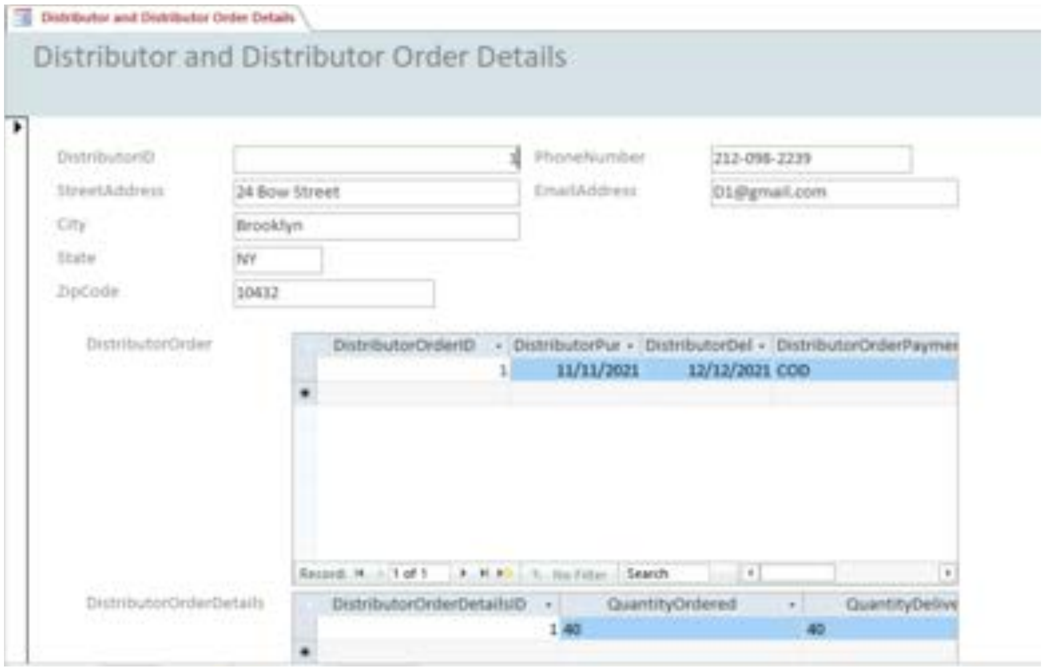
Harry Potter and the Philosop
Of Mice and Men
The Little Prince
Cat in the Hat
Ella Enchated

BookID	1
Title	Philosopher's
Author	J. K. Rowling
Publisher	Bloomsbury
Year	1997
Genre	Fantasy
VersionNumber	1
Price	20

Distributor

StreetAddress	City	State	ZipCode	PhoneNumber
24 Bow Street	Brooklyn	NY	10432	212-098-2239

FORM DISTRIBUTOR AND DISTIRBUTOR ORDER DETAIL



Distributor and Distributor Order Details

DistributorID	1	PhoneNumber	212-098-2239
StreetAddress	24 Bow Street	EmailAddress	D1@gmail.com
City	Brooklyn		
State	NY		
ZipCode	10432		

DistributorOrder

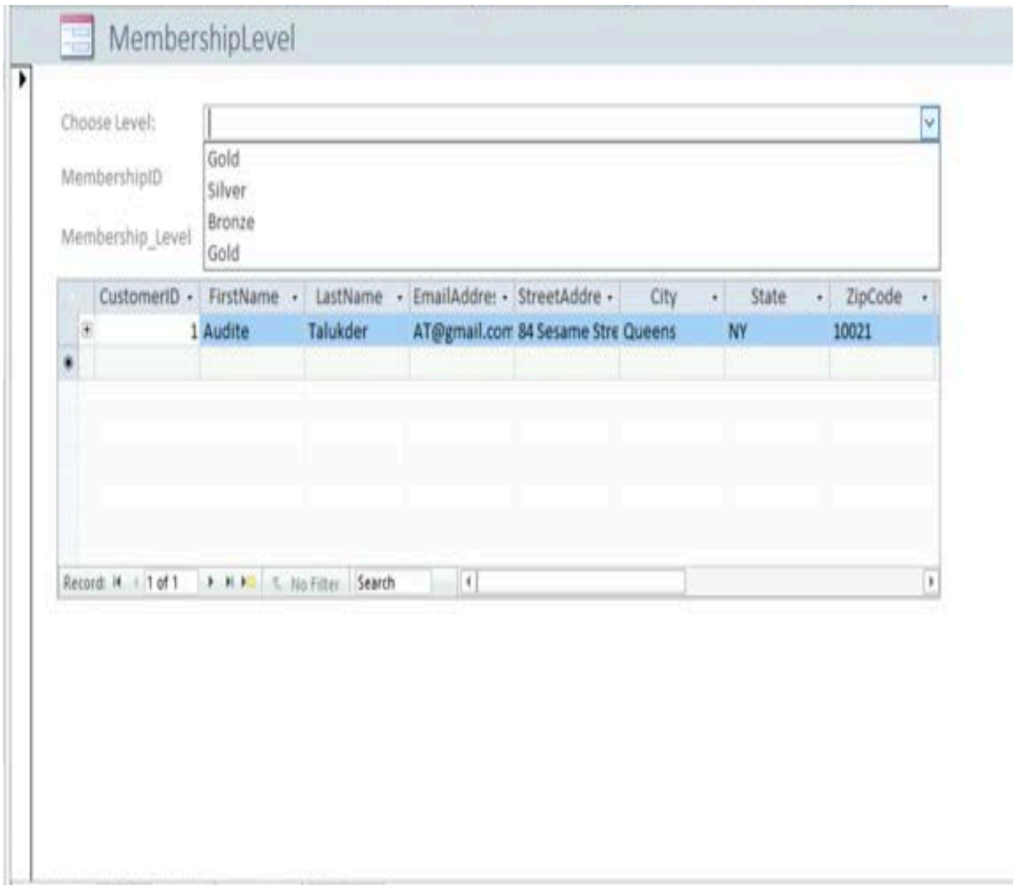
DistributorOrderID	DistributorPur	DistributorDel	DistributorOrderPaymer
1	11/11/2021	12/12/2021	COD

Record: 1 of 1 No Filter Search

DistributorOrderDetails

DistributorOrderDetailsID	QuantityOrdered	QuantityDelive
1	40	40

FORM OF MEMBERSHIP LEVEL LOOK-UP



MembershipLevel

Choose Level:

MembershipID

Membership_Level

CustomerID	FirstName	LastName	EmailAddre:	StreetAddre	City	State	ZipCode
1	Audite	Talukder	AT@gmail.com	84 Sesame Stre	Queens	NY	10021

Record: 1 of 1 No Filter Search

IX. CONCLUSION

This project consisted of enhancing the database management system of a small bookstore, with increasing business and data. To build a well established database, documentation as well as programming were done through Microsoft services, like Word and Access; the software and services used throughout the establishment of this database for communication and team work were done through email as well as WhatsApp.

This project gave a thorough experience in understanding the development cycle and process from beginning to end of a database management system within a business. The duration of this project took course throughout the four months of this semester- at times it was difficult to understand the connectivity within the milestones of the development cycle but in the end, everything came together. From building a business scenario, to creating diagrams to blueprint the database, as well as documenting the relations (primary key, foreign key), normalizing and finally programming the SQL queries in an actual database management system such as MS Access gave a full fledged fundamental understanding of the procedure, progression, and methodology of developing a successful database. We believe this database is a more relevant and efficient method to store data for the bookstore: aside from recording valuable information like customer details and order details, this database is able to generate reports and tables to help visualize popularity in books, favoritism and activity for members within the bookstore, regulating transactions from not only the customers, but the distributing companies as well. Many started with little to no background in SQL and database management system, but with a little knowledge we came a long way.