Art Museum Management System

Project Deliverable 2

CS4347.0U1

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Project Deliverable 1

Project Overview

The database we chose to create was an Art Museum Management System. We chose to design this database because art was a shared passion of ours. We believe that through this database, we can provide a solution to the problem faced by museums all across the world. A single museum hosts hundreds, if not thousands, of items separated by multiple exhibitions. All of these items have to be catalogued and tracked. While this database is specifically built for an art museum, it can be used for all museums which collect items and hold exhibits.

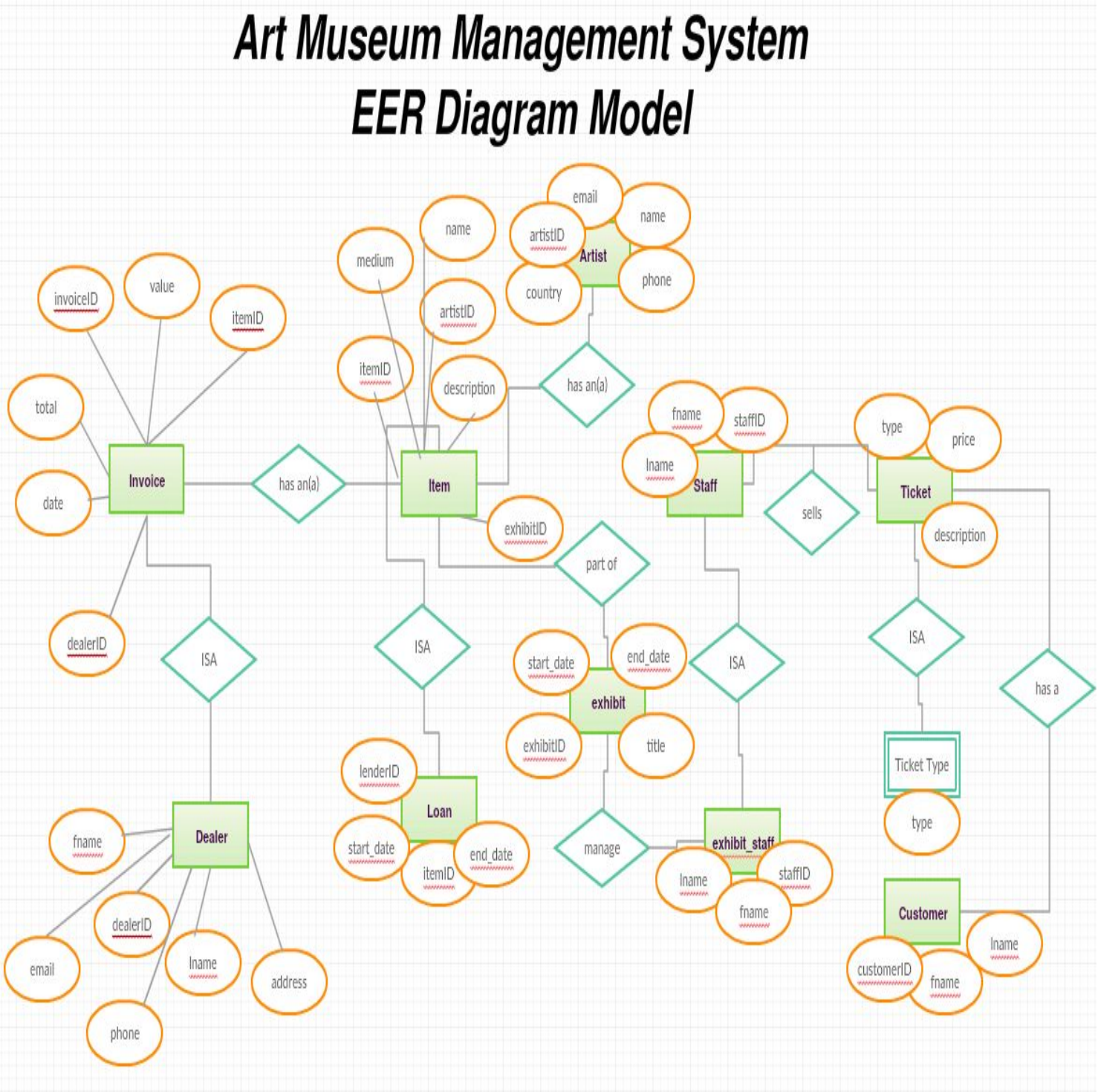
Comparison with Other Applications

There are many applications that museums use nowadays to catalogue and keep track of their assets. Each one of them are built for different purposes. Because we are creating a museum database, this would fall under a Digital Asset Management System or DAMs for short. Many companies make similar database systems; however, they tend to make their software as multipurpose as possible. Some of the DAM platforms meant for museums are software created by NetX and GallerySystems. According to NetX, their goal is to “enable museums to centralize, search and manage their digital assets using comprehensive collection information [1].” One of the advantages of NetX is that it offers greater areas of control, as compared to our database. It also allows IIIF(International Image Interoperability Framework) Integrations, our database will not. The other system that is comparable to our own database system is GallerySystems. One of the draws would be the barcode manager which makes cataloguing the database easy. According to their web site, “Gallery Systems offers an array of museum software solutions featuring collections management software, cataloguing, web publishing, conservation documentation, digital asset management, barcoding and database auditing. Our museum software solutions will help you to perform your many responsibilities efficiently and easily. Expertly manage your collections and share them with your community [2].” While both software provide solutions to the problem of a Museum database, Our database system aims to target art museums specifically. This allows us to create better specialized features instead of the generic ones that the aforementioned software offer.

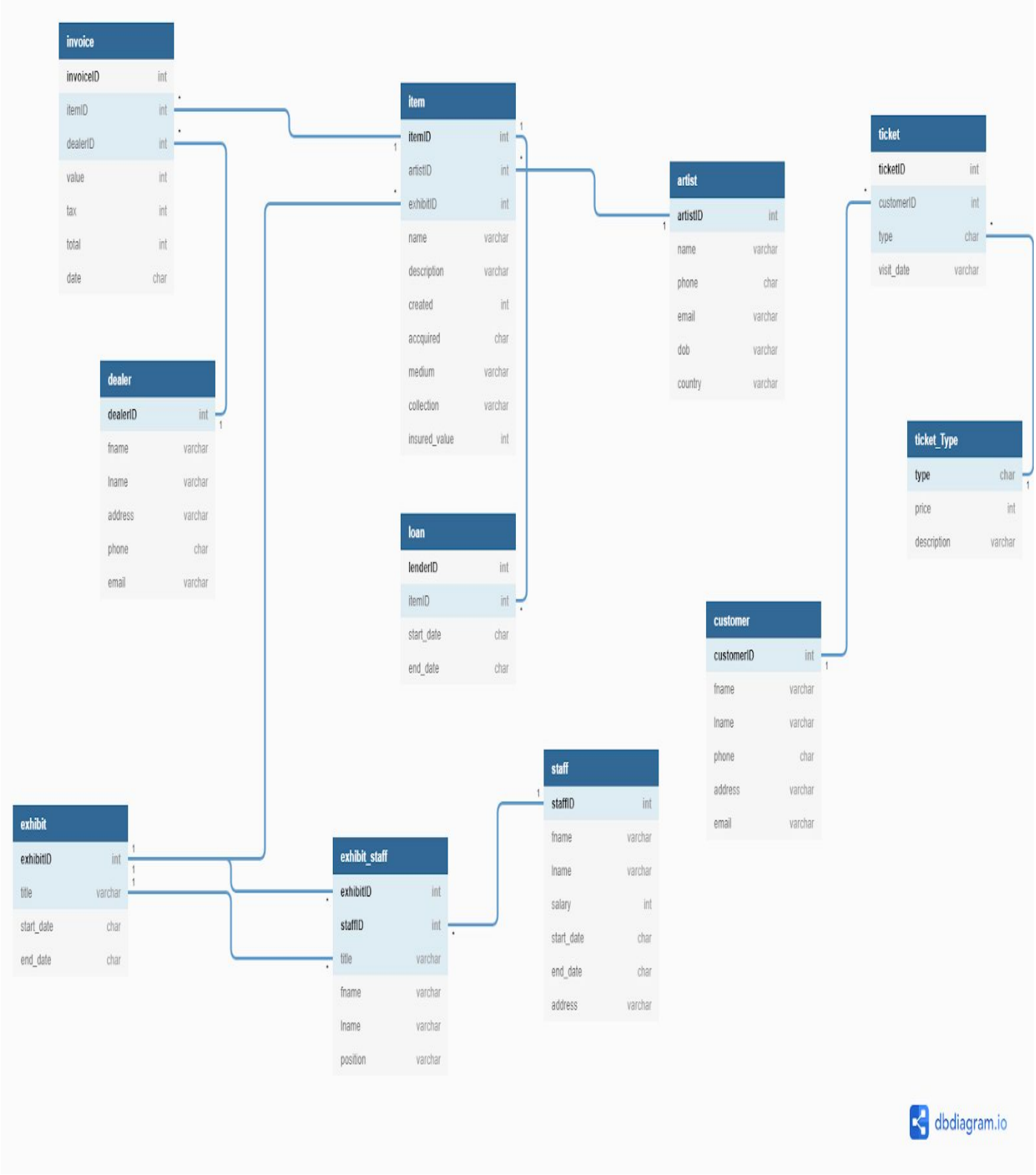
Delegation of Tasks - Updated

Names	Tasks
Katherine Thompson	Gather data to input into database into Excel document
Joel Francis	Research, Introduction, Comparison and Background Details
Narayana Yenukonda and Kaushik Nadimpalli	Create EER Diagram
Narayana Yenukonda and Kaushik Nadimpalli	Create Schema Diagram
Madeline Wilson	Write and run table creation SQL file
Katherine Thompson and Madeline Wilson	Normalize tables to 3NF
Joel Francis	Update EER Diagram after Normalization
Kaushik Nadimpalli	Create dependency diagram for each table
Narayana Yenukonda	Code user interface (java) - Insert, Delete, Modify
Madeline Wilson	Create view SQL files

EER Diagram

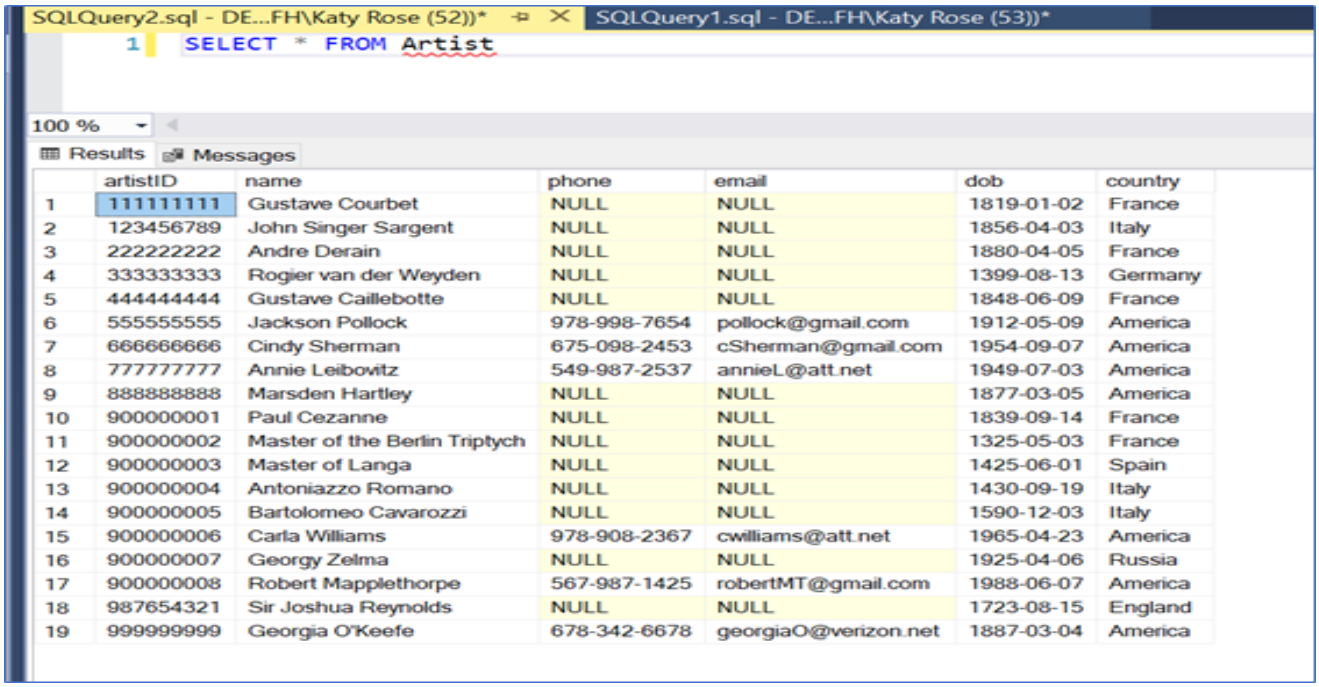

Art Museum Management System
EER Diagram Model
email
name
artistID
Artist
country
phone
name
medium
artistID
itemID
description
has an(a)
invoiceID
value
itemID
total
date
Invoice
has an(a)
Item
exhibitID
part of
fname
staffID
lname
Staff
sells
type
price
Ticket
description
dealerID
ISA
ISA
ISA
ISA
start_date
end_date
exhibit
exhibitID
title
has a
Ticket Type
type
lenderID
Loan
start_date
end_date
itemID
manage
exhibit_staff
lname
staffID
fname
Dealer
fname
dealerID
email
lname
address
phone
Customer
customerID
fname
lname

Schema Diagram



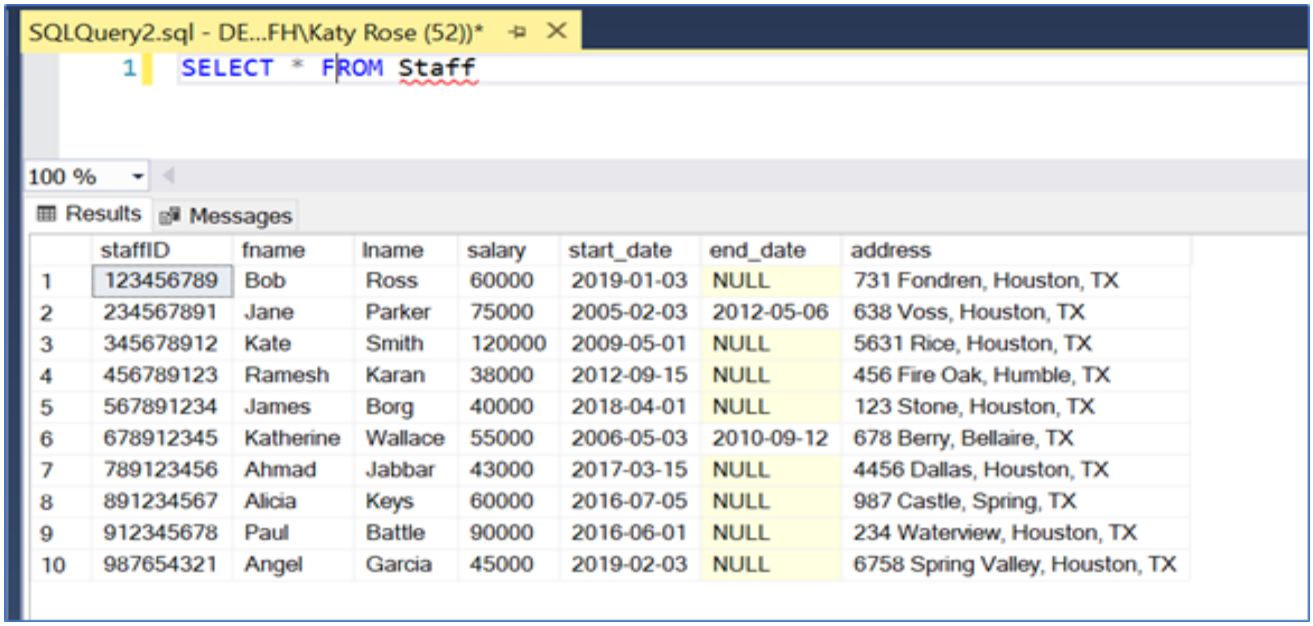
Screenshots

Artist Table:



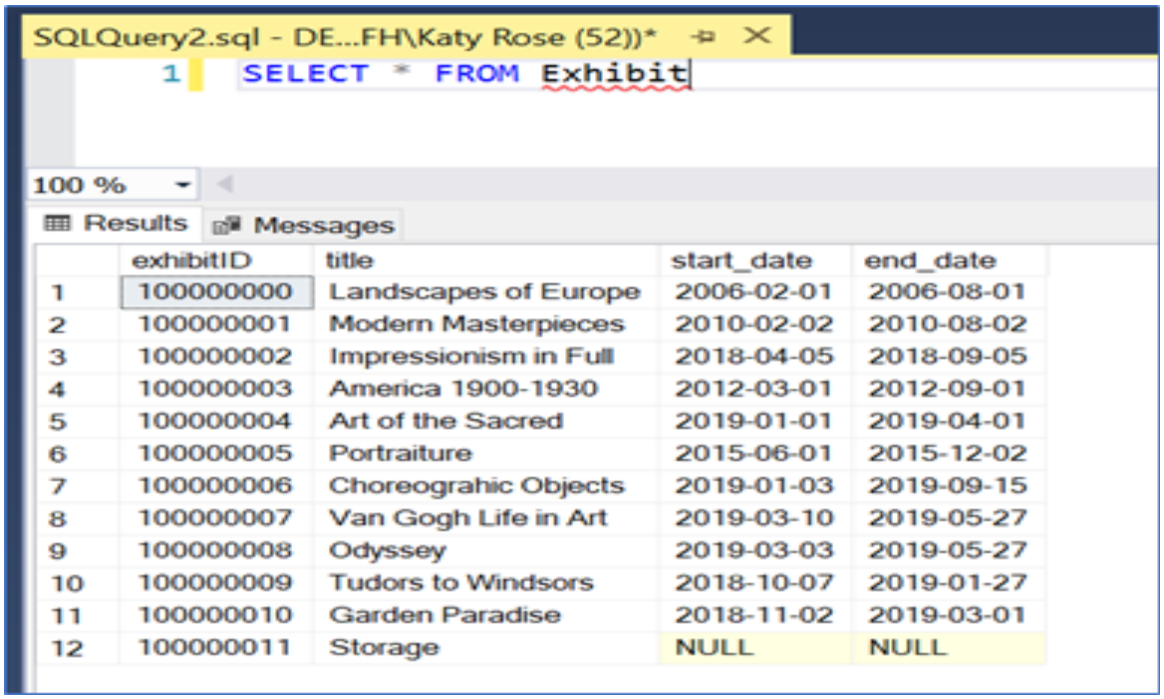
	artistID	name	phone	email	dob	country
1	111111111	Gustave Courbet	NULL	NULL	1819-01-02	France
2	123456789	John Singer Sargent	NULL	NULL	1856-04-03	Italy
3	222222222	Andre Derain	NULL	NULL	1880-04-05	France
4	333333333	Rogier van der Weyden	NULL	NULL	1399-08-13	Germany
5	444444444	Gustave Caillebotte	NULL	NULL	1848-06-09	France
6	555555555	Jackson Pollock	978-998-7654	pollock@gmail.com	1912-05-09	America
7	666666666	Cindy Sherman	675-098-2453	cSherman@gmail.com	1954-09-07	America
8	777777777	Annie Leibovitz	549-987-2537	annieL@att.net	1949-07-03	America
9	888888888	Marsden Hartley	NULL	NULL	1877-03-05	America
10	900000001	Paul Cezanne	NULL	NULL	1839-09-14	France
11	900000002	Master of the Berlin Triptych	NULL	NULL	1325-05-03	France
12	900000003	Master of Langa	NULL	NULL	1425-06-01	Spain
13	900000004	Antoniazzo Romano	NULL	NULL	1430-09-19	Italy
14	900000005	Bartolomeo Cavarozzi	NULL	NULL	1590-12-03	Italy
15	900000006	Carla Williams	978-908-2367	cwilliams@att.net	1965-04-23	America
16	900000007	Georgy Zelma	NULL	NULL	1925-04-06	Russia
17	900000008	Robert Mapplethorpe	567-987-1425	robertMT@gmail.com	1988-06-07	America
18	987654321	Sir Joshua Reynolds	NULL	NULL	1723-08-15	England
19	999999999	Georgia O'Keefe	678-342-6678	georgiaO@verizon.net	1887-03-04	America

Staff Table:



	staffID	fname	lname	salary	start_date	end_date	address
1	123456789	Bob	Ross	60000	2019-01-03	NULL	731 Fondren, Houston, TX
2	234567891	Jane	Parker	75000	2005-02-03	2012-05-06	638 Voss, Houston, TX
3	345678912	Kate	Smith	120000	2009-05-01	NULL	5631 Rice, Houston, TX
4	456789123	Ramesh	Karan	38000	2012-09-15	NULL	456 Fire Oak, Humble, TX
5	567891234	James	Borg	40000	2018-04-01	NULL	123 Stone, Houston, TX
6	678912345	Katherine	Wallace	55000	2006-05-03	2010-09-12	678 Berry, Bellaire, TX
7	789123456	Ahmad	Jabbar	43000	2017-03-15	NULL	4456 Dallas, Houston, TX
8	891234567	Alicia	Keys	60000	2016-07-05	NULL	987 Castle, Spring, TX
9	912345678	Paul	Battle	90000	2016-06-01	NULL	234 Waterview, Houston, TX
10	987654321	Angel	Garcia	45000	2019-02-03	NULL	6758 Spring Valley, Houston, TX

Exhibit Table:



SQLQuery2.sql - DE...FH\Katy Rose (52))*

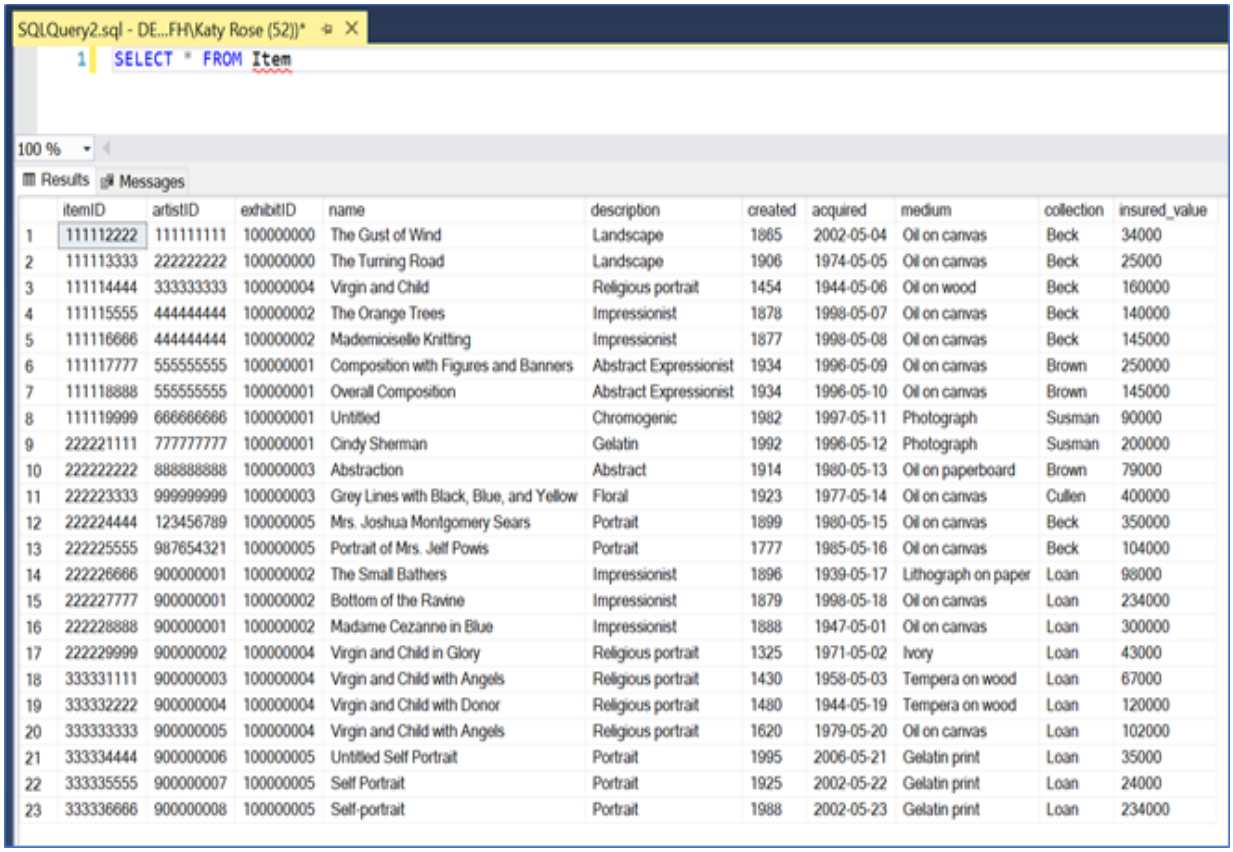
```
SELECT * FROM Exhibit
```

100 %

Results | Messages

	exhibitID	title	start_date	end_date
1	100000000	Landscapes of Europe	2006-02-01	2006-08-01
2	100000001	Modern Masterpieces	2010-02-02	2010-08-02
3	100000002	Impressionism in Full	2018-04-05	2018-09-05
4	100000003	America 1900-1930	2012-03-01	2012-09-01
5	100000004	Art of the Sacred	2019-01-01	2019-04-01
6	100000005	Portraiture	2015-06-01	2015-12-02
7	100000006	Choreograhic Objects	2019-01-03	2019-09-15
8	100000007	Van Gogh Life in Art	2019-03-10	2019-05-27
9	100000008	Odyssey	2019-03-03	2019-05-27
10	100000009	Tudors to Windsors	2018-10-07	2019-01-27
11	100000010	Garden Paradise	2018-11-02	2019-03-01
12	100000011	Storage	NULL	NULL

Item Table:



SQLQuery2.sql - DE...FH\Katy Rose (52))*

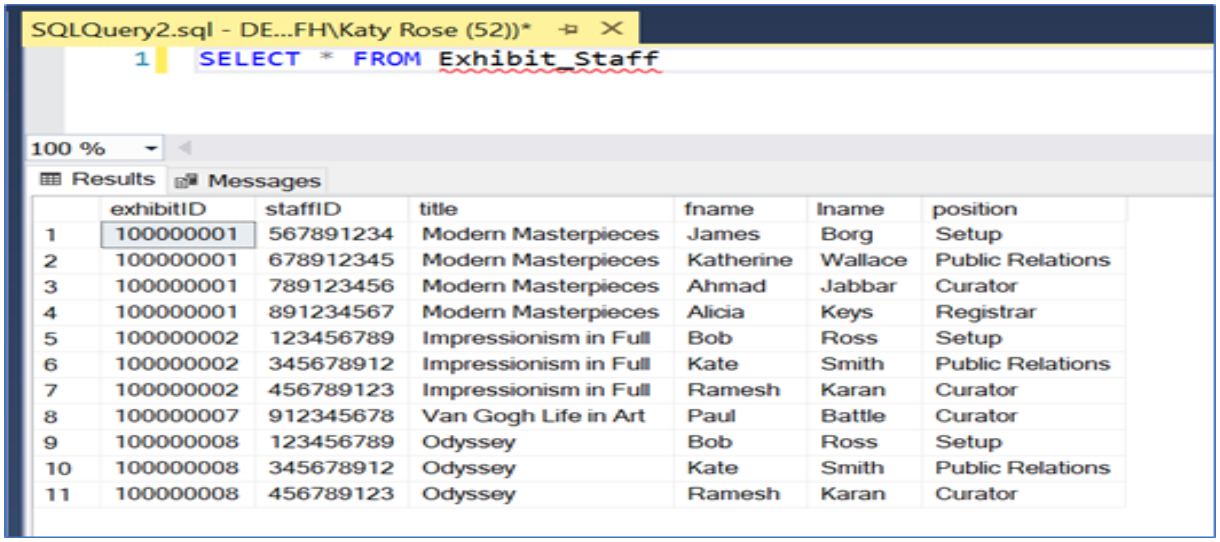
```
SELECT * FROM Item
```

100 %

Results | Messages

	itemID	artistID	exhibitID	name	description	created	acquired	medium	collection	insured_value
1	111112222	111111111	100000000	The Gust of Wind	Landscape	1865	2002-05-04	Oil on canvas	Beck	34000
2	111113333	222222222	100000000	The Turning Road	Landscape	1906	1974-05-05	Oil on canvas	Beck	25000
3	111114444	333333333	100000004	Virgin and Child	Religious portrait	1454	1944-05-06	Oil on wood	Beck	160000
4	111115555	444444444	100000002	The Orange Trees	Impressionist	1878	1998-05-07	Oil on canvas	Beck	140000
5	111116666	444444444	100000002	Mademoiselle Knitting	Impressionist	1877	1998-05-08	Oil on canvas	Beck	145000
6	111117777	555555555	100000001	Composition with Figures and Banners	Abstract Expressionist	1934	1996-05-09	Oil on canvas	Brown	250000
7	111118888	555555555	100000001	Overall Composition	Abstract Expressionist	1934	1996-05-10	Oil on canvas	Brown	145000
8	111119999	666666666	100000001	Untitled	Chromogenic	1982	1997-05-11	Photograph	Susman	90000
9	222221111	777777777	100000001	Cindy Sherman	Gelatin	1992	1996-05-12	Photograph	Susman	200000
10	222222222	888888888	100000003	Abstraction	Abstract	1914	1980-05-13	Oil on paperboard	Brown	79000
11	222223333	999999999	100000003	Grey Lines with Black, Blue, and Yellow	Floral	1923	1977-05-14	Oil on canvas	Cullen	400000
12	222224444	123456789	100000005	Mrs. Joshua Montgomery Sears	Portrait	1899	1980-05-15	Oil on canvas	Beck	350000
13	222225555	987654321	100000005	Portrait of Mrs. Jeff Powis	Portrait	1777	1985-05-16	Oil on canvas	Beck	104000
14	222226666	900000001	100000002	The Small Bathers	Impressionist	1896	1939-05-17	Lithograph on paper	Loan	98000
15	222227777	900000001	100000002	Bottom of the Ravine	Impressionist	1879	1998-05-18	Oil on canvas	Loan	234000
16	222228888	900000001	100000002	Madame Cezanne in Blue	Impressionist	1888	1947-05-01	Oil on canvas	Loan	300000
17	222229999	900000002	100000004	Virgin and Child in Glory	Religious portrait	1325	1971-05-02	Ivory	Loan	43000
18	333331111	900000003	100000004	Virgin and Child with Angels	Religious portrait	1430	1958-05-03	Tempera on wood	Loan	67000
19	333332222	900000004	100000004	Virgin and Child with Donor	Religious portrait	1480	1944-05-19	Tempera on wood	Loan	120000
20	333333333	900000005	100000004	Virgin and Child with Angels	Religious portrait	1620	1979-05-20	Oil on canvas	Loan	102000
21	333334444	900000006	100000005	Untitled Self Portrait	Portrait	1995	2006-05-21	Gelatin print	Loan	35000
22	333335555	900000007	100000005	Self Portrait	Portrait	1925	2002-05-22	Gelatin print	Loan	24000
23	333336666	900000008	100000005	Self-portrait	Portrait	1988	2002-05-23	Gelatin print	Loan	234000

Exhibit Staff Table:



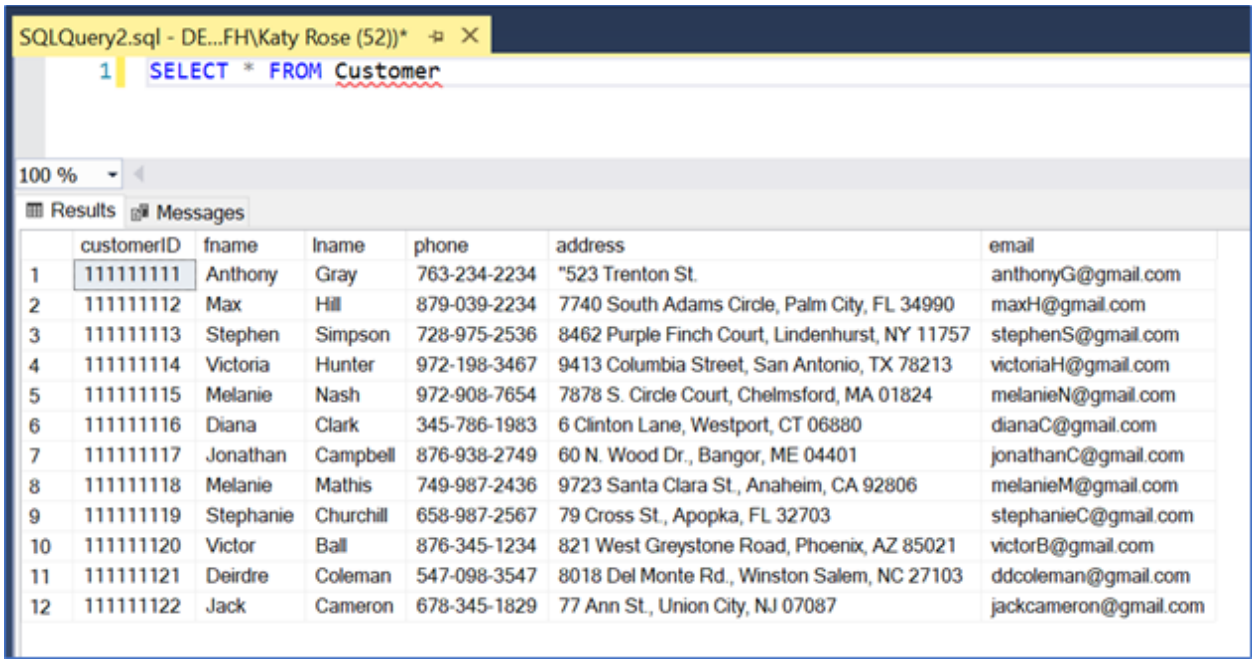
```
SQLQuery2.sql - DE...FH\Katy Rose (52))*
1  SELECT * FROM Exhibit_Staff
```

100 %

Results | Messages

	exhibitID	staffID	title	fname	lname	position
1	100000001	567891234	Modern Masterpieces	James	Borg	Setup
2	100000001	678912345	Modern Masterpieces	Katherine	Wallace	Public Relations
3	100000001	789123456	Modern Masterpieces	Ahmad	Jabbar	Curator
4	100000001	891234567	Modern Masterpieces	Alicia	Keys	Registrar
5	100000002	123456789	Impressionism in Full	Bob	Ross	Setup
6	100000002	345678912	Impressionism in Full	Kate	Smith	Public Relations
7	100000002	456789123	Impressionism in Full	Ramesh	Karan	Curator
8	100000007	912345678	Van Gogh Life in Art	Paul	Battle	Curator
9	100000008	123456789	Odyssey	Bob	Ross	Setup
10	100000008	345678912	Odyssey	Kate	Smith	Public Relations
11	100000008	456789123	Odyssey	Ramesh	Karan	Curator

Customer Table:



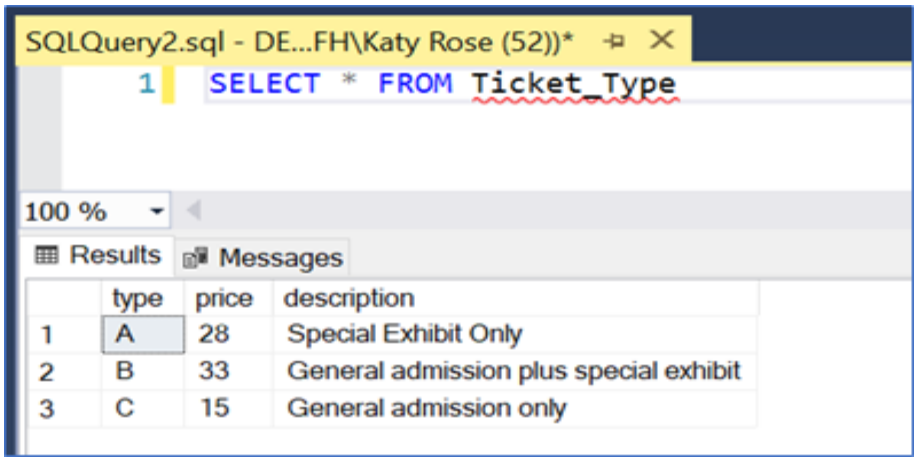
```
SQLQuery2.sql - DE...FH\Katy Rose (52))*
1  SELECT * FROM Customer
```

100 %

Results | Messages

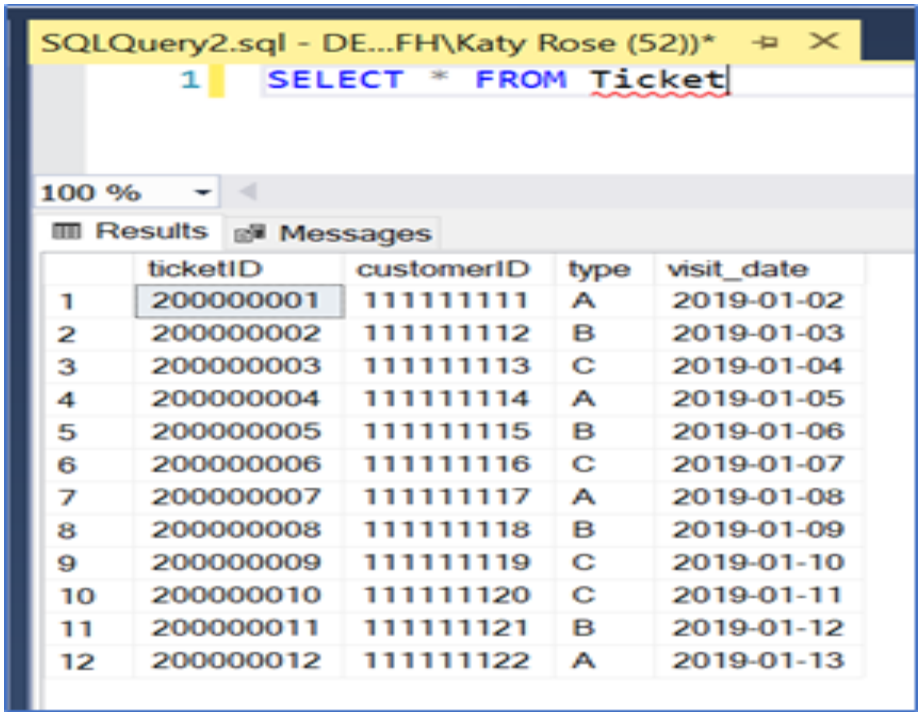
	customerID	fname	lname	phone	address	email
1	111111111	Anthony	Gray	763-234-2234	"523 Trenton St.	anthonyG@gmail.com
2	111111112	Max	Hill	879-039-2234	7740 South Adams Circle, Palm City, FL 34990	maxH@gmail.com
3	111111113	Stephen	Simpson	728-975-2536	8462 Purple Finch Court, Lindenhurst, NY 11757	stephenS@gmail.com
4	111111114	Victoria	Hunter	972-198-3467	9413 Columbia Street, San Antonio, TX 78213	victoriaH@gmail.com
5	111111115	Melanie	Nash	972-908-7654	7878 S. Circle Court, Chelmsford, MA 01824	melanieN@gmail.com
6	111111116	Diana	Clark	345-786-1983	6 Clinton Lane, Westport, CT 06880	dianaC@gmail.com
7	111111117	Jonathan	Campbell	876-938-2749	60 N. Wood Dr., Bangor, ME 04401	jonathanC@gmail.com
8	111111118	Melanie	Mathis	749-987-2436	9723 Santa Clara St., Anaheim, CA 92806	melanieM@gmail.com
9	111111119	Stephanie	Churchill	658-987-2567	79 Cross St., Apopka, FL 32703	stephanieC@gmail.com
10	111111120	Victor	Ball	876-345-1234	821 West Greystone Road, Phoenix, AZ 85021	victorB@gmail.com
11	111111121	Deirdre	Coleman	547-098-3547	8018 Del Monte Rd., Winston Salem, NC 27103	ddcoleman@gmail.com
12	111111122	Jack	Cameron	678-345-1829	77 Ann St., Union City, NJ 07087	jackcameron@gmail.com

Ticket Type Table:



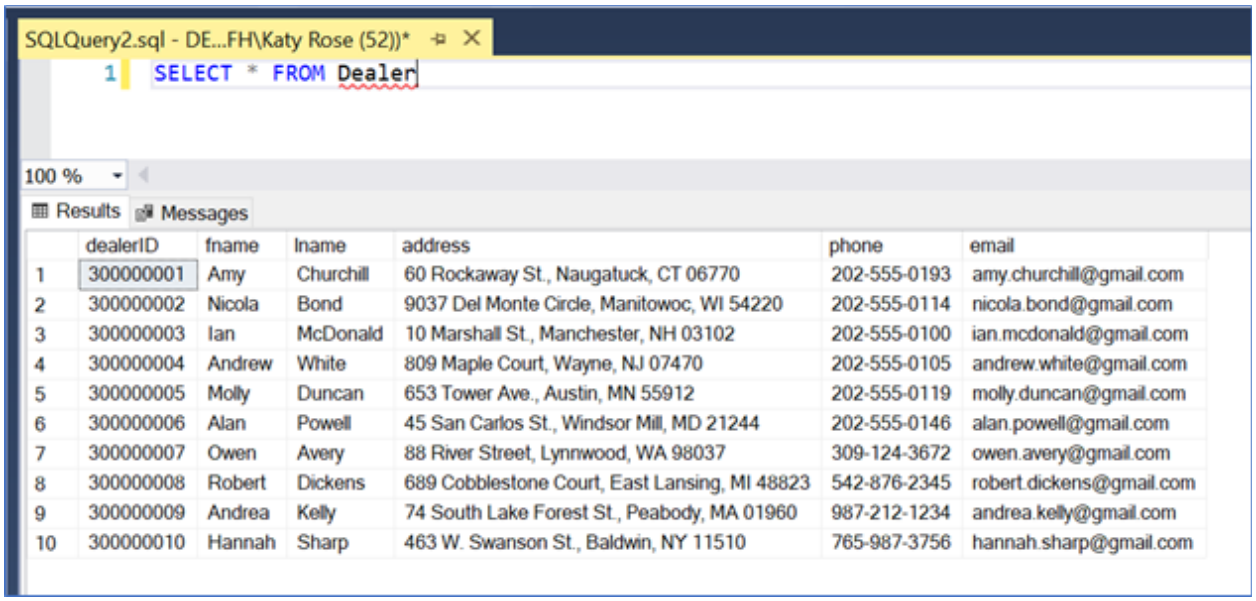
	type	price	description
1	A	28	Special Exhibit Only
2	B	33	General admission plus special exhibit
3	C	15	General admission only

Ticket Table:



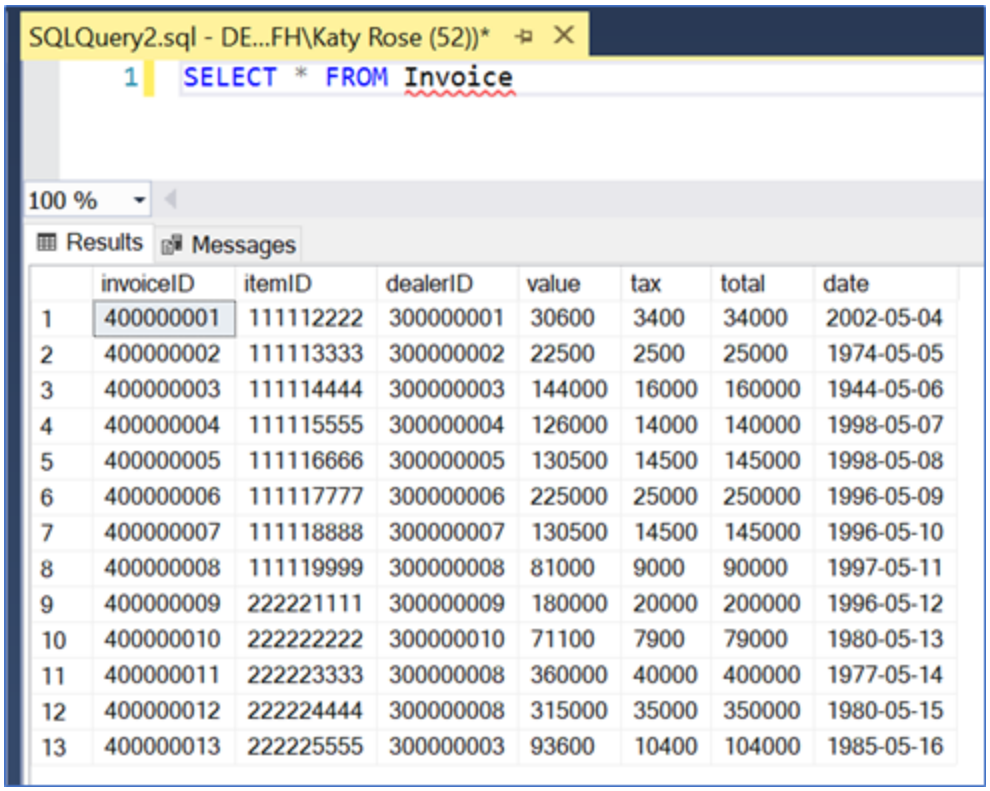
	ticketID	customerID	type	visit_date
1	200000001	111111111	A	2019-01-02
2	200000002	111111112	B	2019-01-03
3	200000003	111111113	C	2019-01-04
4	200000004	111111114	A	2019-01-05
5	200000005	111111115	B	2019-01-06
6	200000006	111111116	C	2019-01-07
7	200000007	111111117	A	2019-01-08
8	200000008	111111118	B	2019-01-09
9	200000009	111111119	C	2019-01-10
10	200000010	111111120	C	2019-01-11
11	200000011	111111121	B	2019-01-12
12	200000012	111111122	A	2019-01-13

Dealer Table:



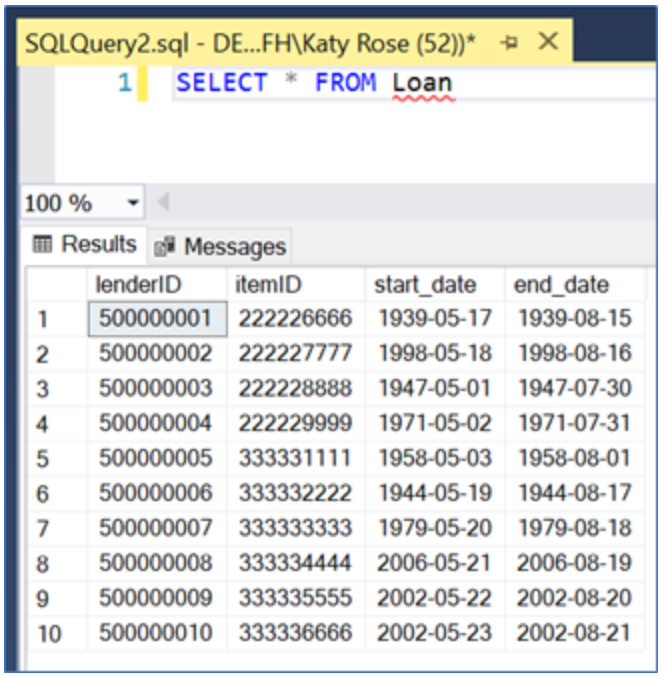
	dealerID	fname	lname	address	phone	email
1	300000001	Amy	Churchill	60 Rockaway St., Naugatuck, CT 06770	202-555-0193	amy.churchill@gmail.com
2	300000002	Nicola	Bond	9037 Del Monte Circle, Manitowoc, WI 54220	202-555-0114	nicola.bond@gmail.com
3	300000003	Ian	McDonald	10 Marshall St., Manchester, NH 03102	202-555-0100	ian.mcdonald@gmail.com
4	300000004	Andrew	White	809 Maple Court, Wayne, NJ 07470	202-555-0105	andrew.white@gmail.com
5	300000005	Molly	Duncan	653 Tower Ave., Austin, MN 55912	202-555-0119	molly.duncan@gmail.com
6	300000006	Alan	Powell	45 San Carlos St., Windsor Mill, MD 21244	202-555-0146	alan.powell@gmail.com
7	300000007	Owen	Avery	88 River Street, Lynnwood, WA 98037	309-124-3672	owen.avery@gmail.com
8	300000008	Robert	Dickens	689 Cobblestone Court, East Lansing, MI 48823	542-876-2345	robert.dickens@gmail.com
9	300000009	Andrea	Kelly	74 South Lake Forest St., Peabody, MA 01960	987-212-1234	andrea.kelly@gmail.com
10	300000010	Hannah	Sharp	463 W. Swanson St., Baldwin, NY 11510	765-987-3756	hannah.sharp@gmail.com

Invoice Table:



	invoiceID	itemID	dealerID	value	tax	total	date
1	400000001	111112222	300000001	30600	3400	34000	2002-05-04
2	400000002	111113333	300000002	22500	2500	25000	1974-05-05
3	400000003	111114444	300000003	144000	16000	160000	1944-05-06
4	400000004	111115555	300000004	126000	14000	140000	1998-05-07
5	400000005	111116666	300000005	130500	14500	145000	1998-05-08
6	400000006	111117777	300000006	225000	25000	250000	1996-05-09
7	400000007	111118888	300000007	130500	14500	145000	1996-05-10
8	400000008	111119999	300000008	81000	9000	90000	1997-05-11
9	400000009	222221111	300000009	180000	20000	200000	1996-05-12
10	400000010	222222222	300000010	71100	7900	79000	1980-05-13
11	400000011	222223333	300000008	360000	40000	400000	1977-05-14
12	400000012	222224444	300000008	315000	35000	350000	1980-05-15
13	400000013	222225555	300000003	93600	10400	104000	1985-05-16

Loan Table:



	lenderID	itemID	start_date	end_date
1	500000001	222226666	1939-05-17	1939-08-15
2	500000002	222227777	1998-05-18	1998-08-16
3	500000003	222228888	1947-05-01	1947-07-30
4	500000004	222229999	1971-05-02	1971-07-31
5	500000005	333331111	1958-05-03	1958-08-01
6	500000006	333332222	1944-05-19	1944-08-17
7	500000007	333333333	1979-05-20	1979-08-18
8	500000008	333334444	2006-05-21	2006-08-19
9	500000009	333335555	2002-05-22	2002-08-20
10	500000010	333336666	2002-05-23	2002-08-21

References:

[1] NetX, “Museums Digital Asset Management Software,” *netx digital asset management*. [Online]. Available: https://www.netx.net/museums/. [Accessed: 01-Jul-2019].

[2] “Museum Software Solutions,” *Gallery Systems*. [Online]. Available: https://www.gallerysystems.com/. [Accessed: 01-Jul-2019].

Project Deliverable 2

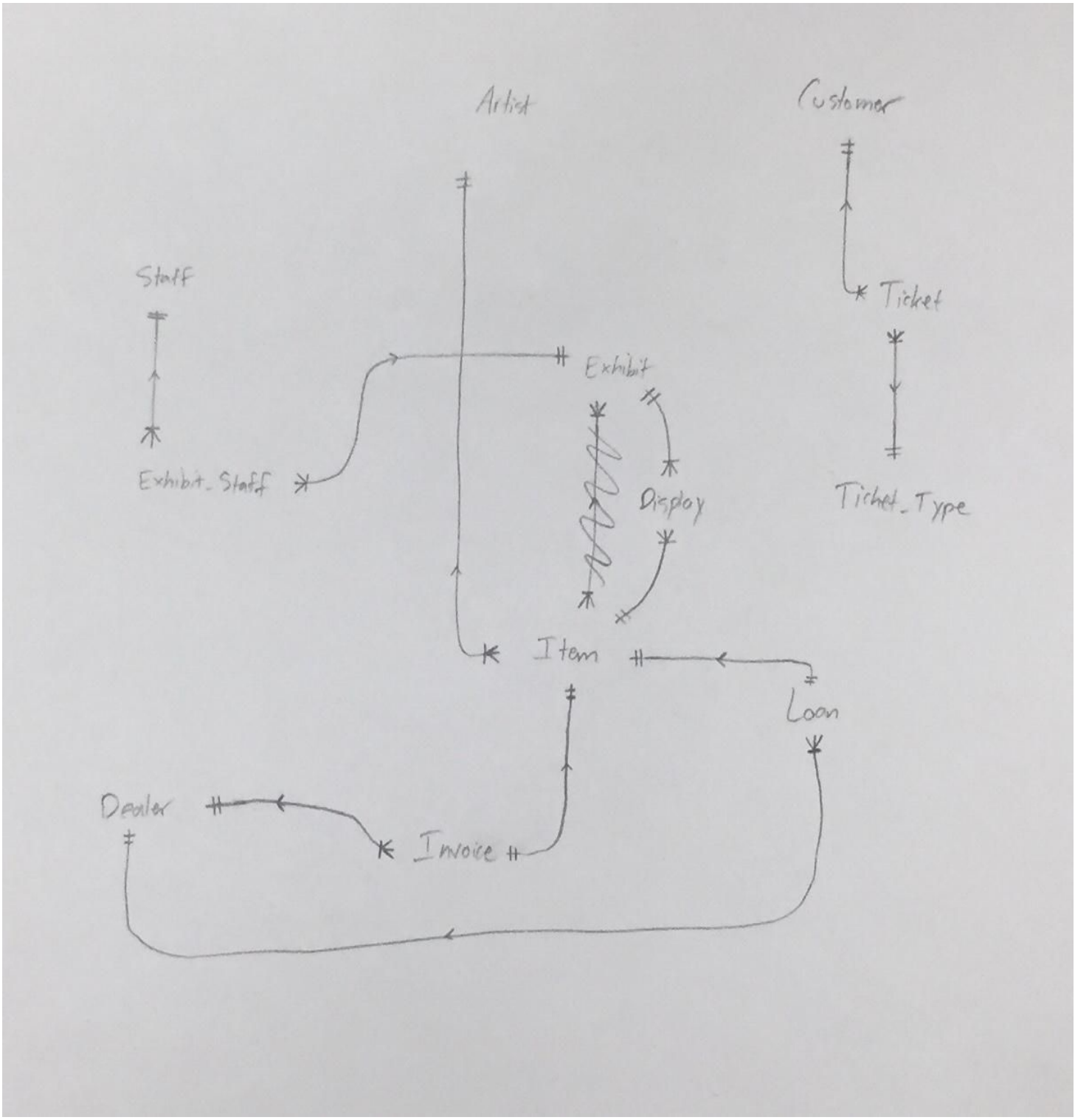
Normalization

Most of our tables are already normalized and in 3NF form. They follow the main principles of each form: contain atomic values within each attribute, eliminate partial dependencies, and eliminate transitive dependencies. The only issue was with the relationship between Item and Exhibit tables.

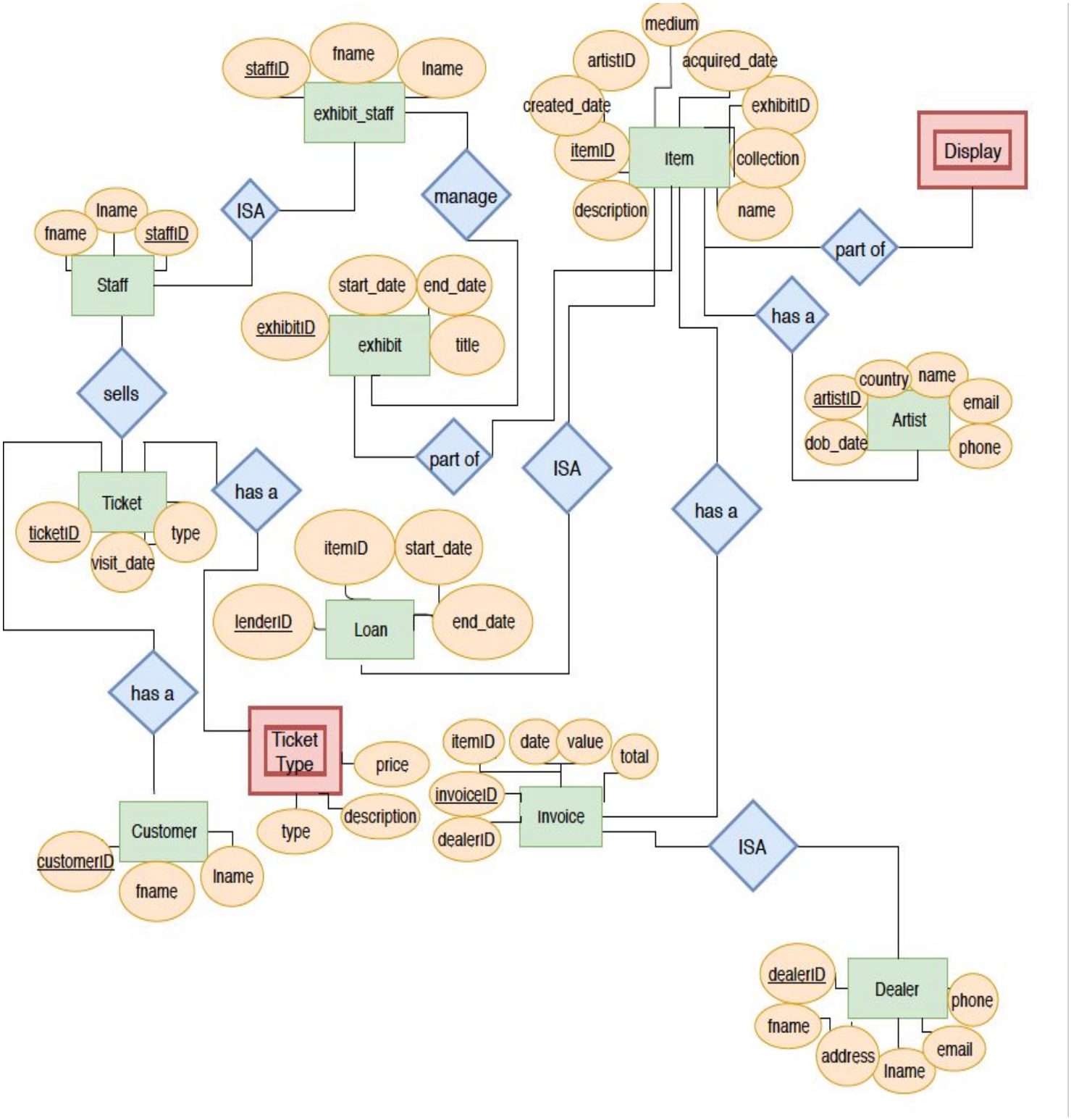
We needed to normalize the Item and Exhibit tables because items can be part of multiple exhibits and exhibits have multiple items. There is an issue of atomic values here which is a problem that has to be fixed in order to make sure the tables are in 1NF form. Since this is a many-to-many relationship, we had to add another table, Display. This table references itemID and exhibitID, indicating which items are part of which exhibits. This takes care of the many-to-many relationship as well as the normalization issue that is present within these 2 tables. After this change, all the tables are in the required 3NF form.

An example schema - which shows the addition of the new Display table - is shown below as well as the new updated EER diagram.

Table Relationship Schema - with the Addition of new Display Table

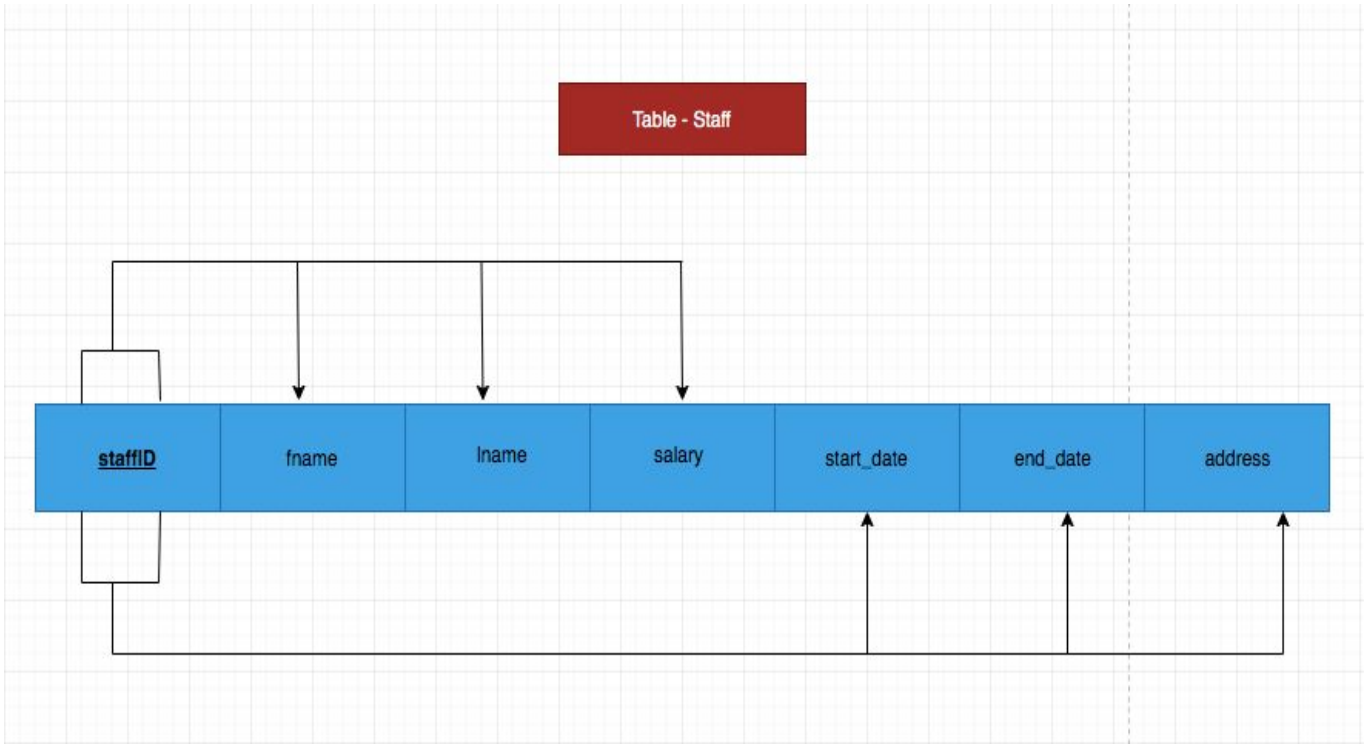


Updated EER Diagram



Dependency Diagrams

Staff Table - 3NF form



Artist Table

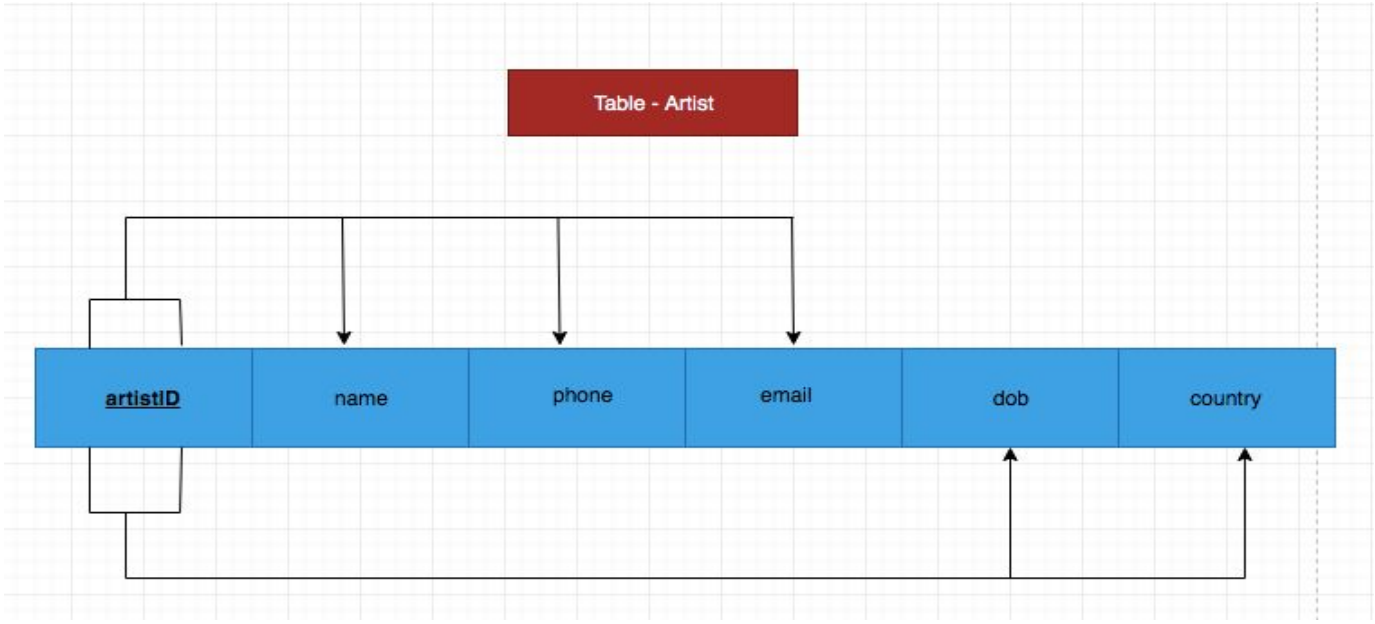
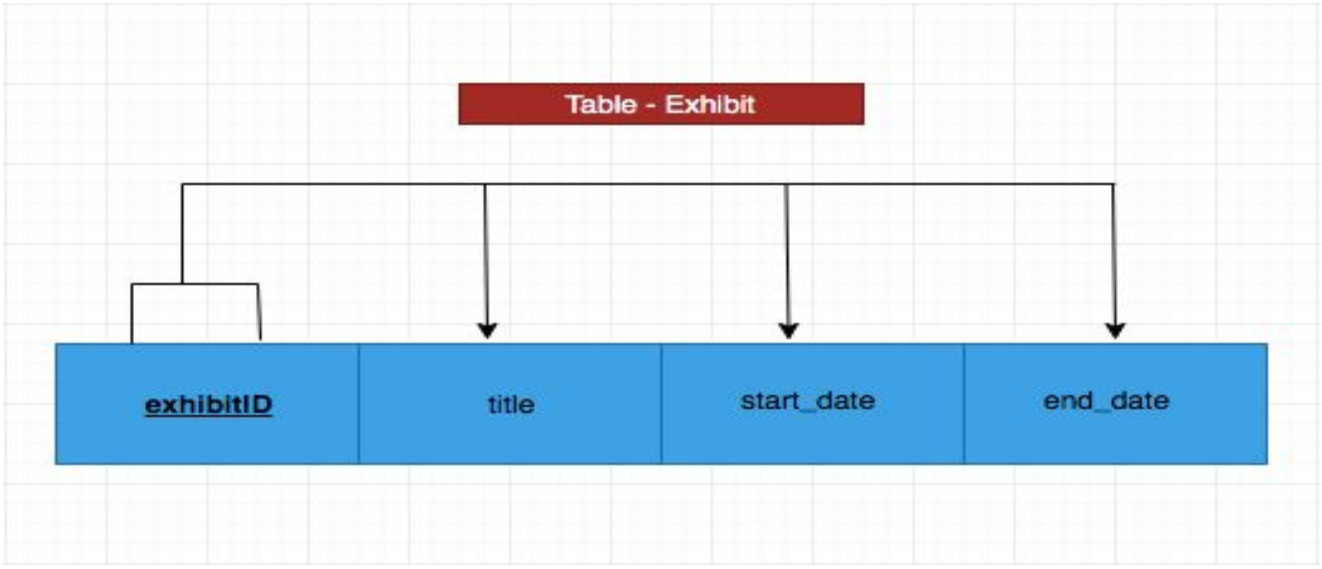
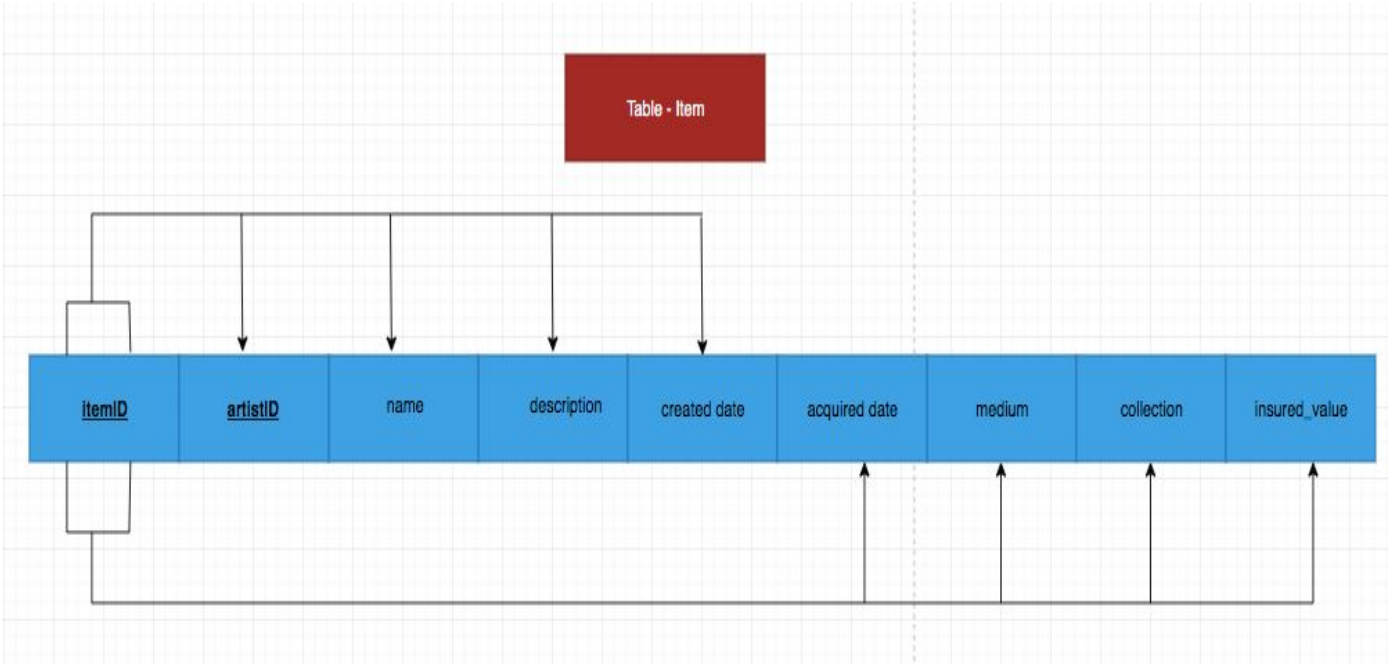


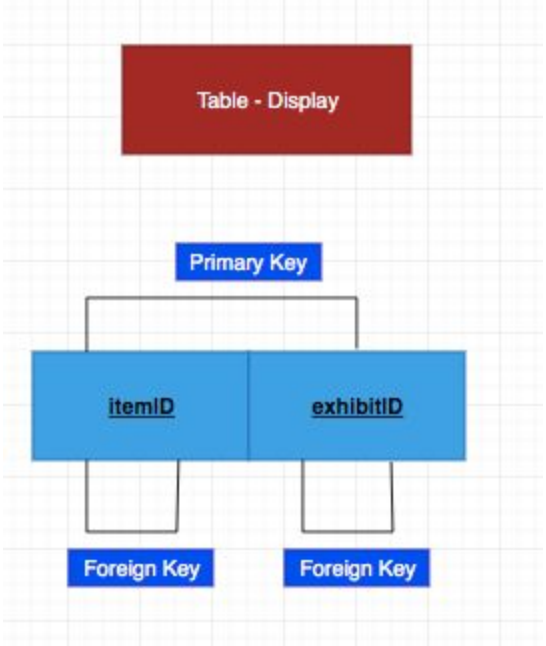
Exhibit Table



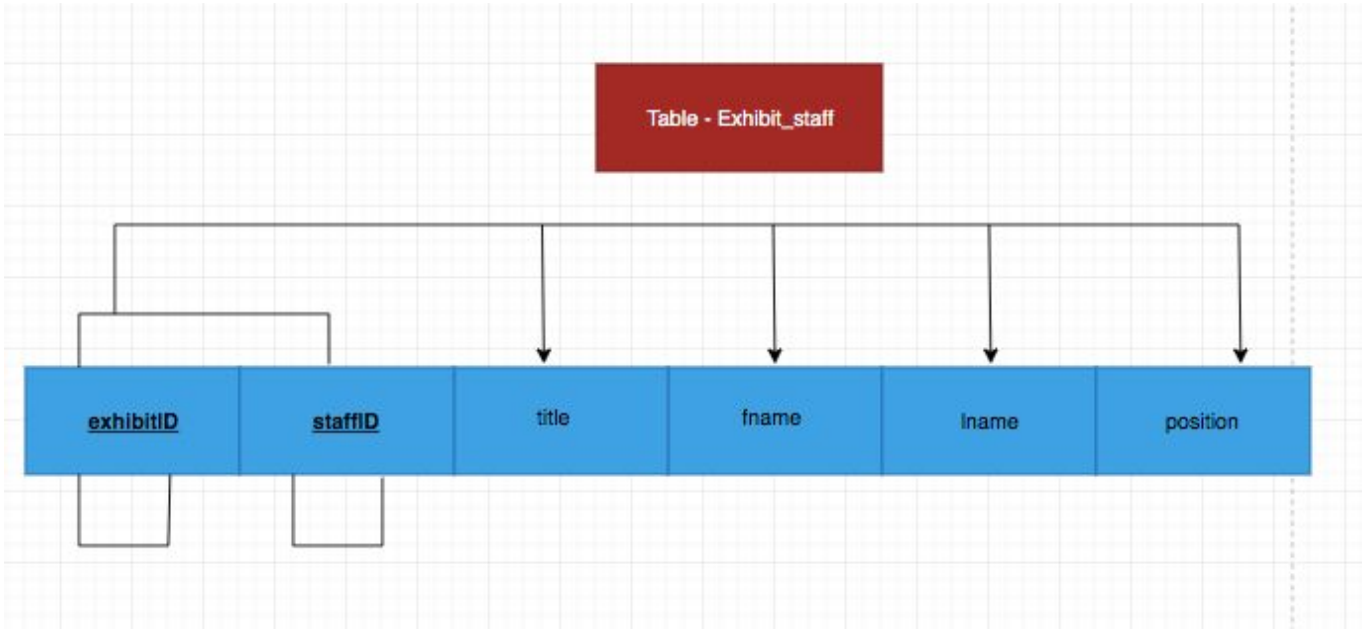
Item Table



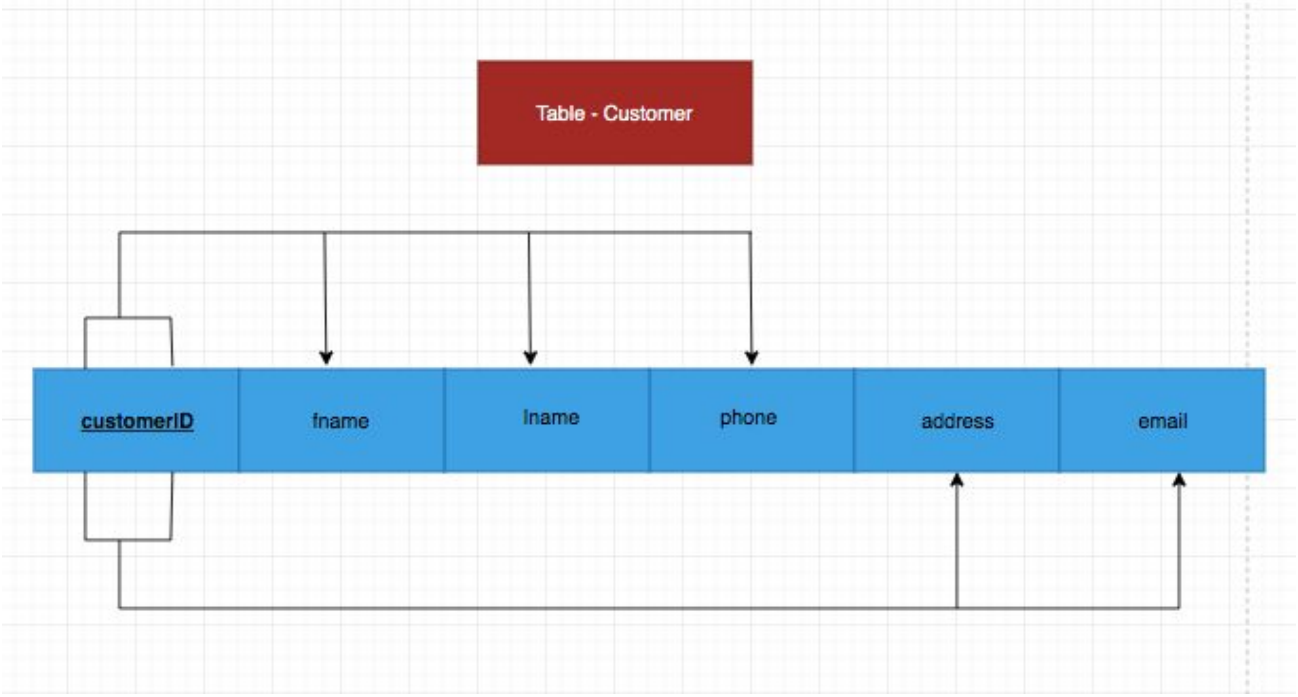
Display Table



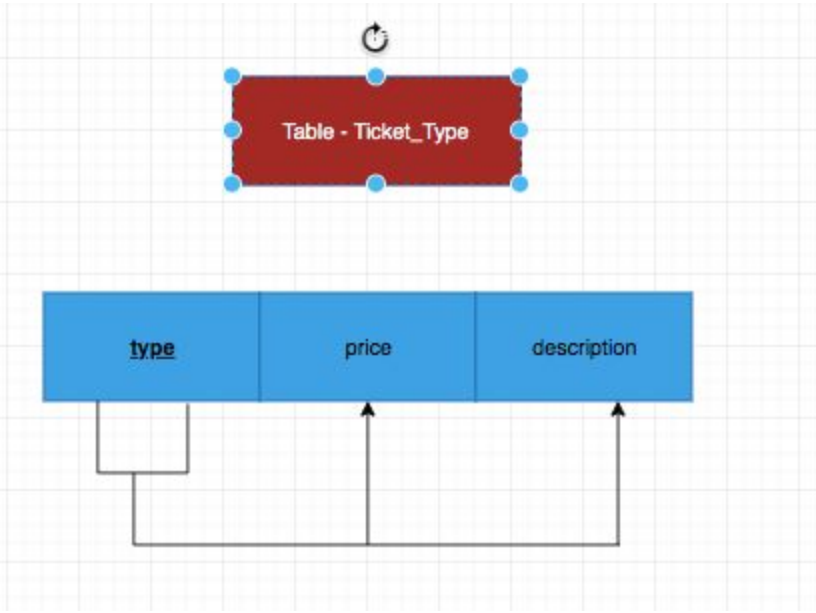
Exhibit_Staff Table



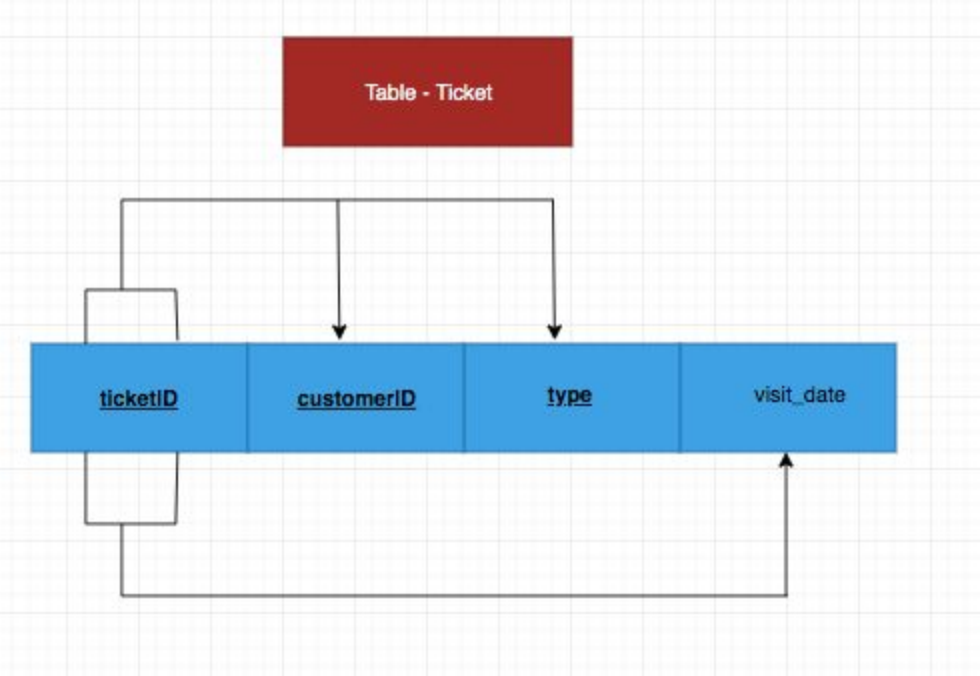
Customer Table



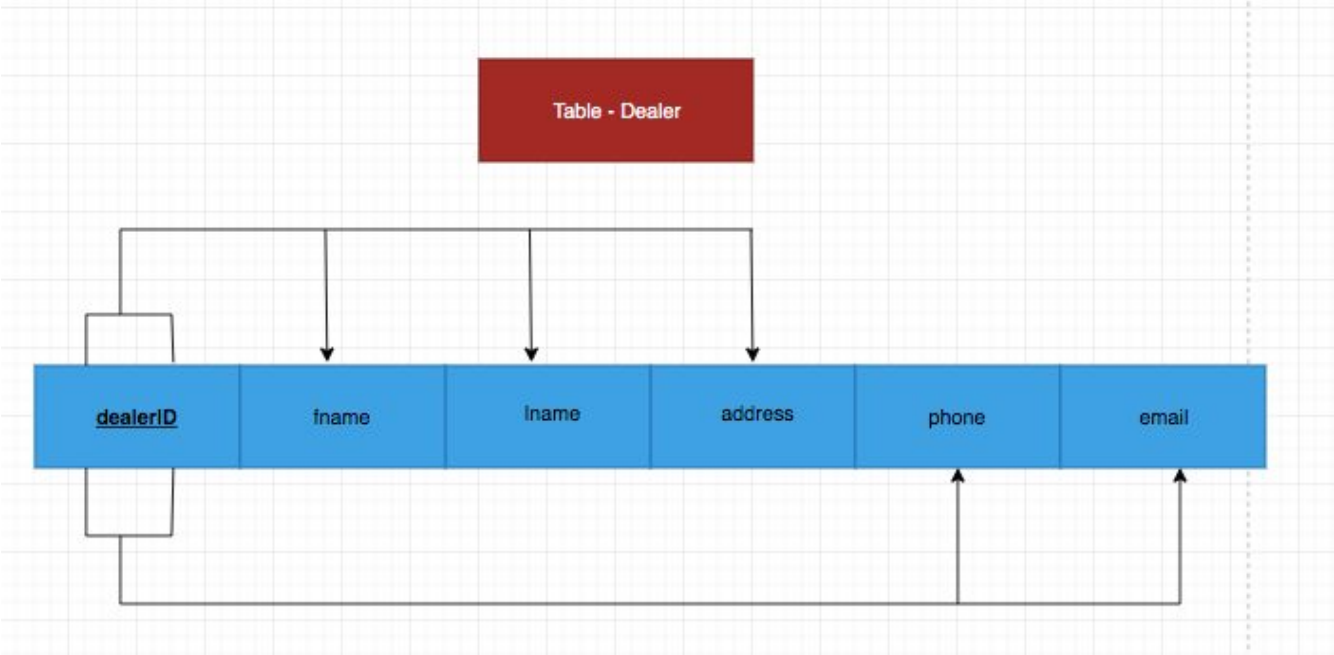
Ticket_Type Table



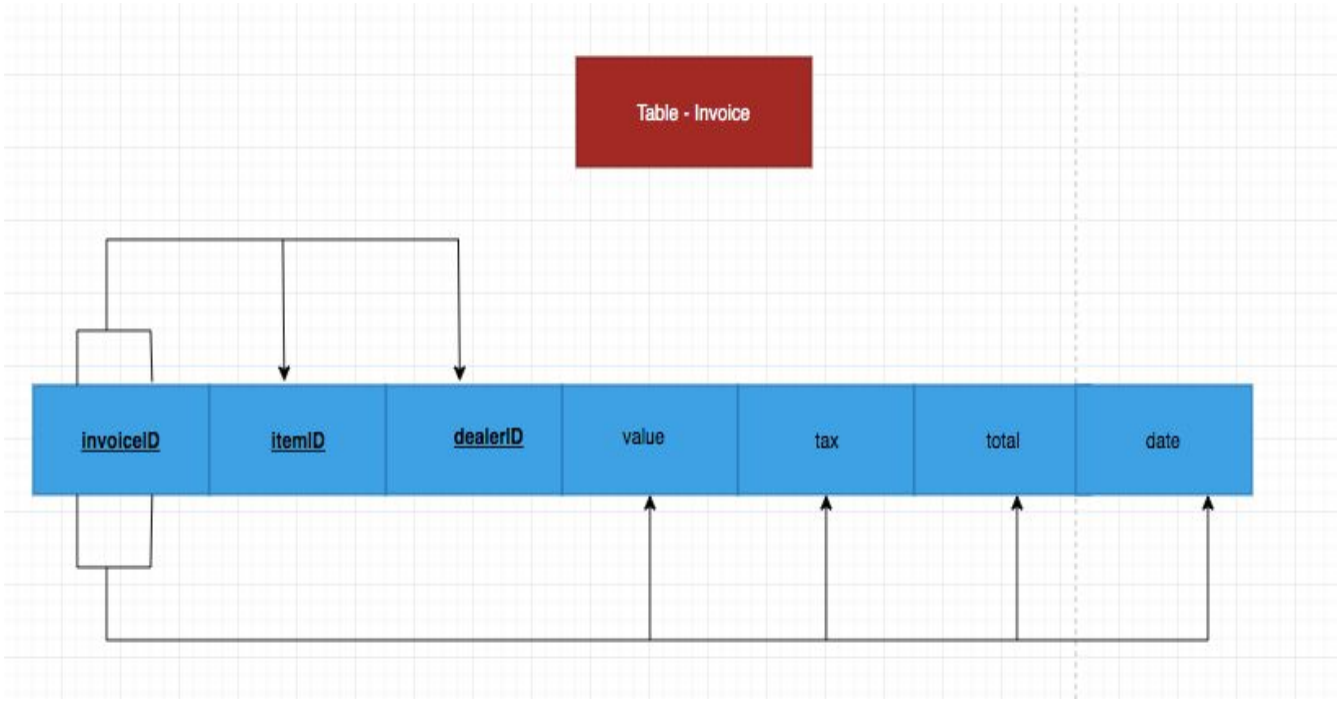
Ticket Table



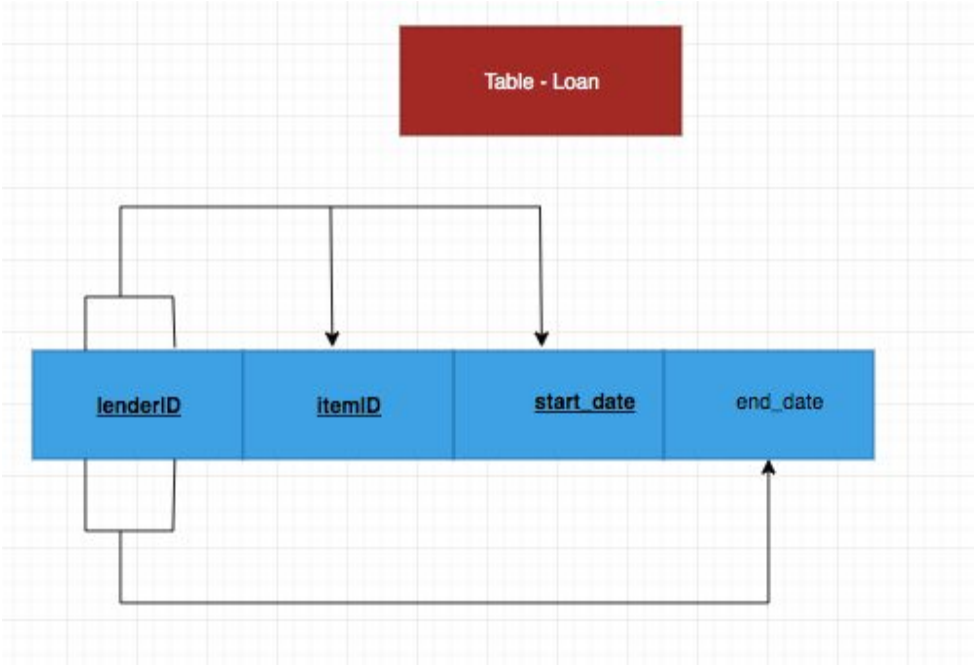
Dealer Table



Invoice Table



Loan Table



CREATE VIEW

Use minimum one CREATE VIEW statement in your database to implement a view based on your specific database design. Please indicate what this view is for.

- The following view is called Impressionist_Pieces. It pulls all the impressionist art pieces from the Item table and displays the name, year created, date acquired, medium, the collection it belongs to, and the insured value.

```
SELECT * FROM Impressionist_Pieces
```

90 %

Results Messages

	Name	Year	Acquired	Medium	Collection	Insured_Value
1	Bottom of the Ravine	1879-01-01	1998-05-18	Oil on canvas	Loan	234000
2	Madame Cezanne in Blue	1888-01-01	1947-05-01	Oil on canvas	Loan	300000
3	Mademioiselle Knitting	1877-01-01	1998-05-08	Oil on canvas	Beck	145000
4	The Orange Trees	1878-01-01	1998-05-07	Oil on canvas	Beck	140000
5	The Small Bathers	1896-01-01	1939-05-17	Lithograph on paper	Loan	98000

- Our second view is called Art_Of_The_Sacred. It pulls all the pieces that are part of the "Art of the Sacred" exhibit and displays the name, description, year created, data acquired, medium, the collection it belongs to, and the insured value. This view makes it easy to check which pieces are currently being displayed as part of the "Art of the Sacred" exhibit.

```
SELECT * FROM Art_Of_The_Sacred
```

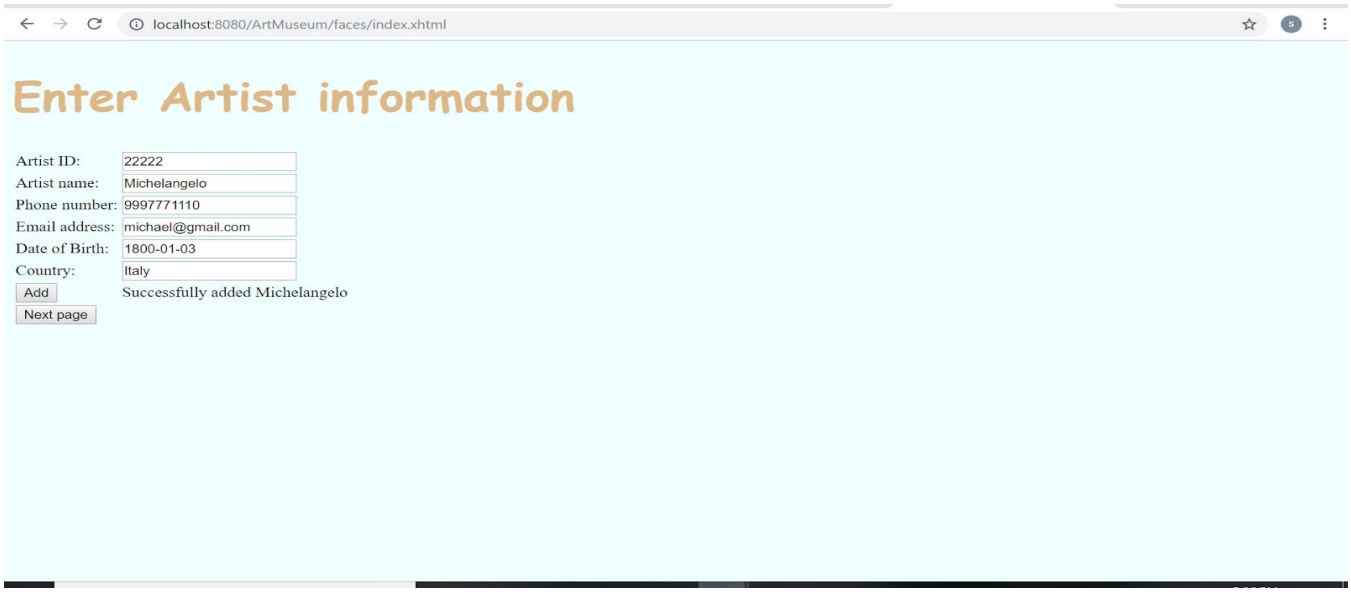
90 %

Results Messages

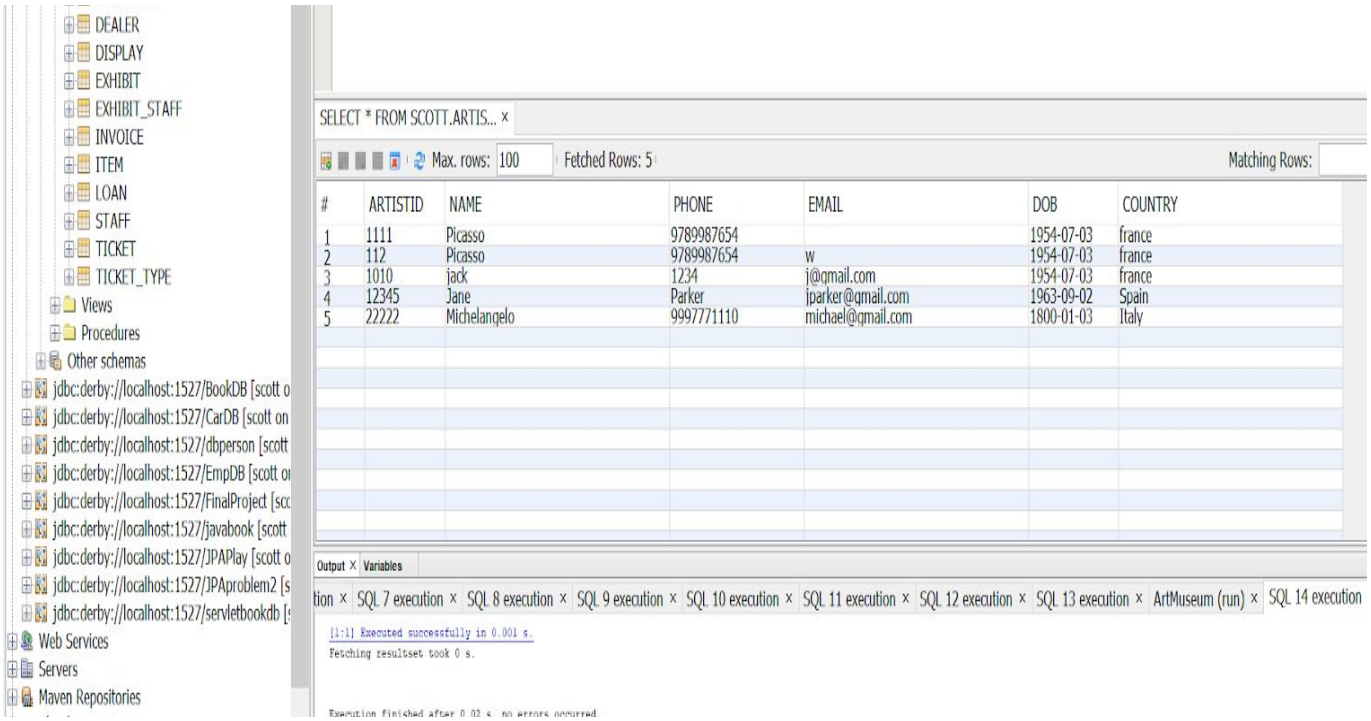
	Name	Description	Year	Acquired	Medium	Collection	Insured_Value
1	Virgin and Child	Religious portrait	1454-01-01	1944-05-06	Oil on wood	Beck	160000
2	Virgin and Child in Glory	Religious portrait	1325-01-01	1971-05-02	Ivory	Loan	43000
3	Virgin and Child with Angels	Religious portrait	1430-01-01	1958-05-03	Tempera on wood	Loan	67000
4	Virgin and Child with Angels	Religious portrait	1620-01-01	1979-05-20	Oil on canvas	Loan	102000
5	Virgin and Child with Donor	Religious portrait	1480-01-01	1944-05-19	Tempera on wood	Loan	120000

Insert, Modify, and Delete Program

Insert operation:

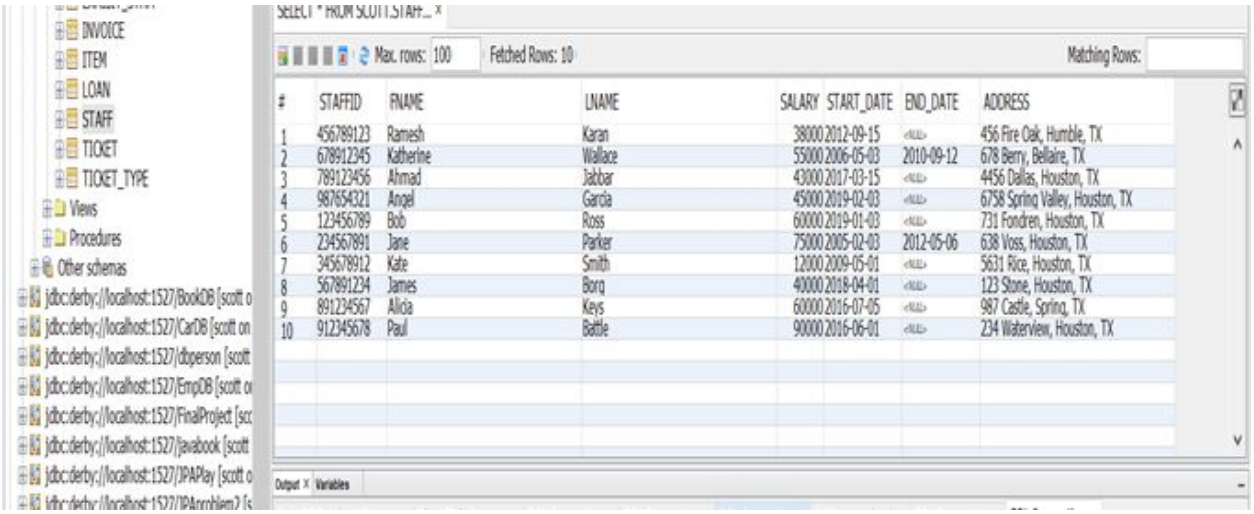


Artist added in the database



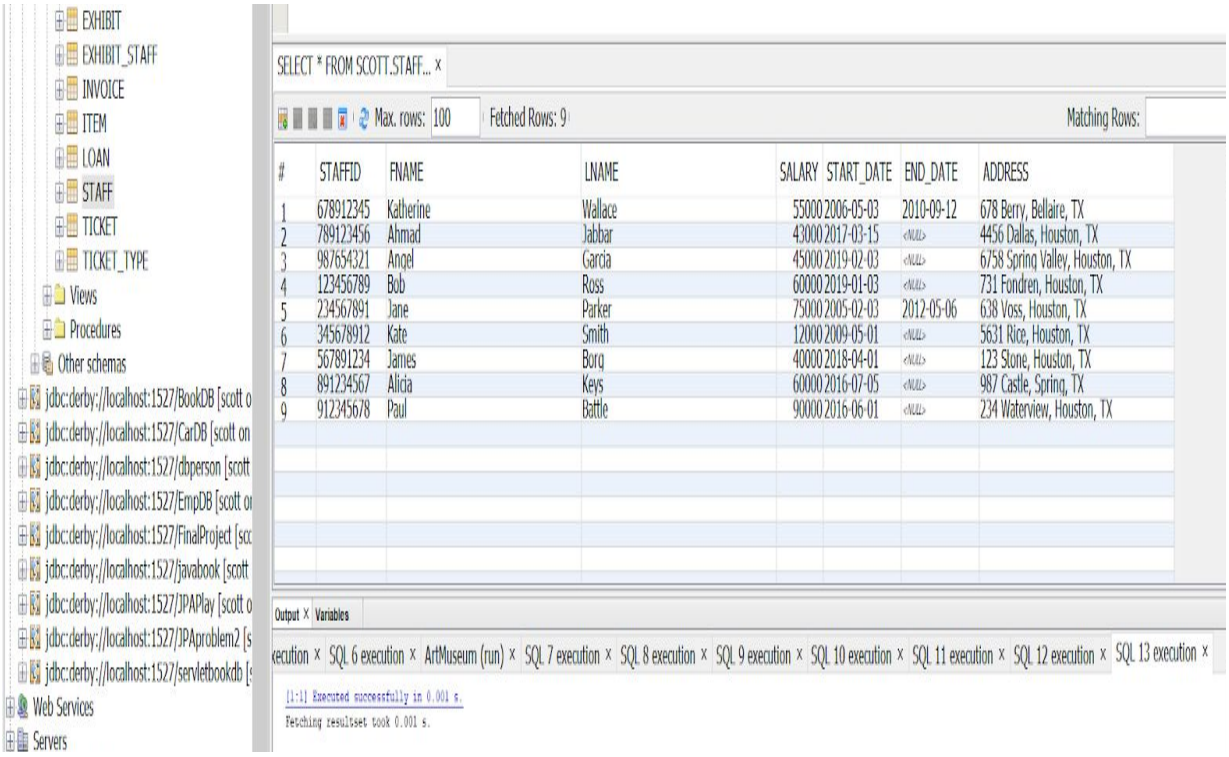
Delete Operation:

Before Delete in the database

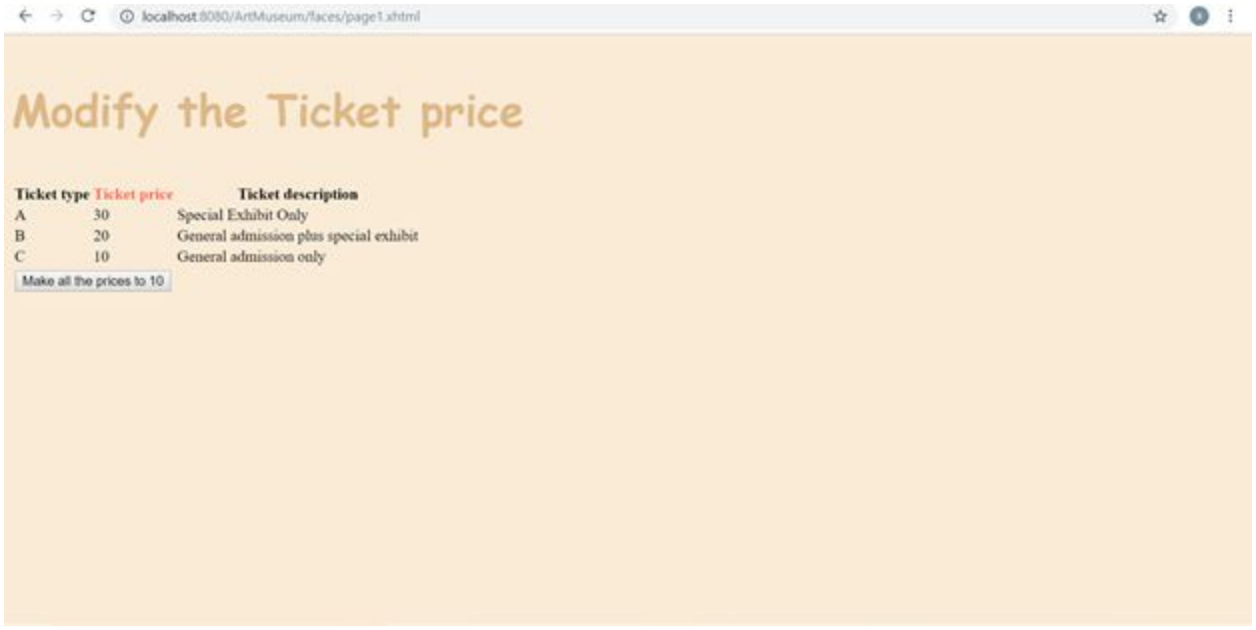


Removed first employee

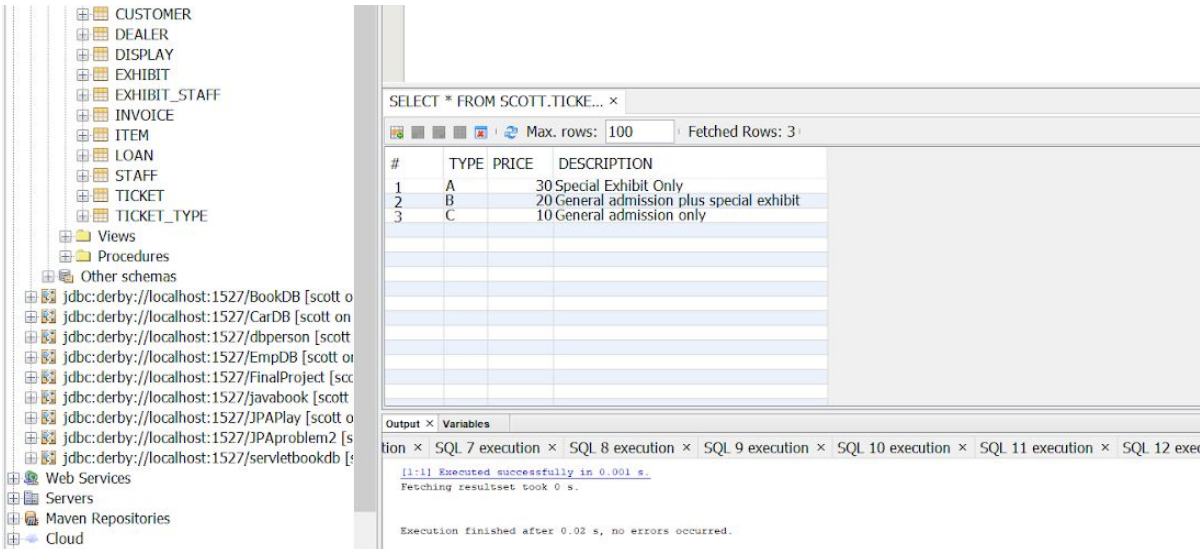
After delete operation



Modify operation

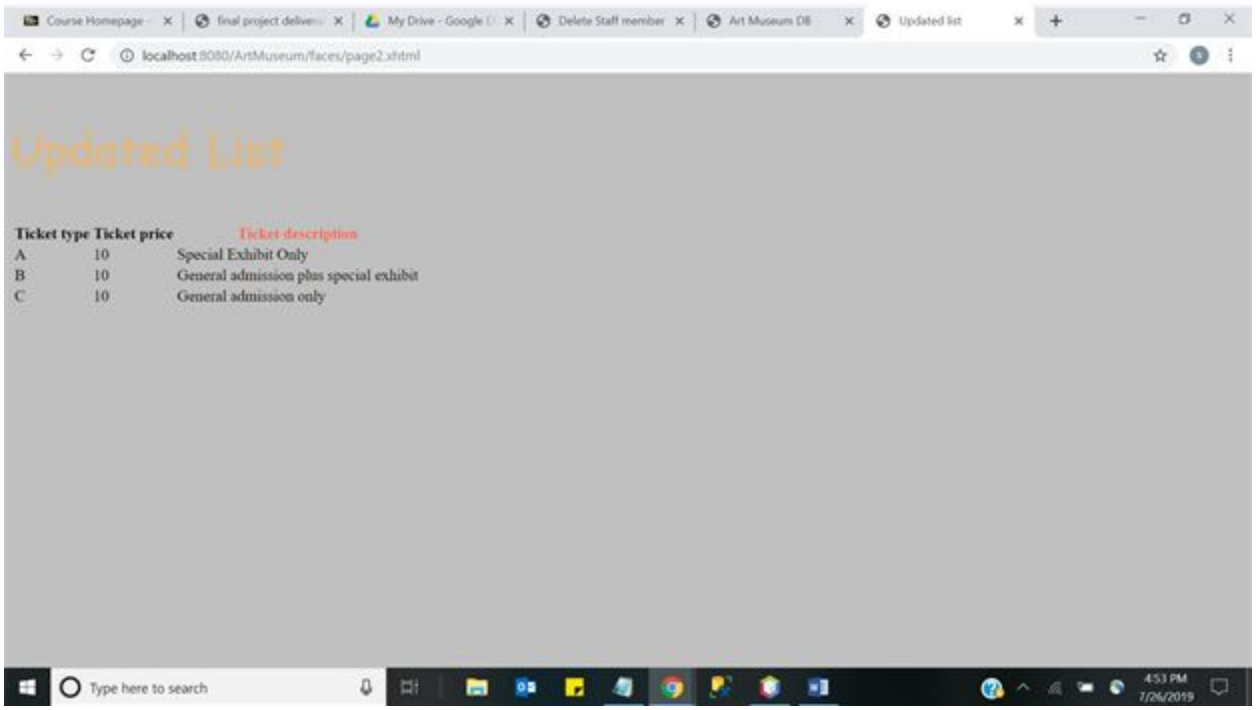


Before the operation



Modify the all ticket prices to 10 dollars

Updated list



After the operation