Whiting School of Engineering
Department of Computer Science
Johns Hopkins University

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Principles of Database Systems

Database Project:
Design of a Database for a Record Shop

Darrell Nabors

Professor:
Dar-Ning Kung, Ph.D.

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1. INTRODUCTION

1.1. SCOPE AND PURPOSE

The purpose of this document is to illustrate the different phases that went into designing a database project for a retail record store. The scope of this project includes the basic design of a database that will used in the assistance of managing the basic operations of a record store.

1.2. PROJECT OBJECTIVE

The goal of this project is to design and implement a database, using a relational and SQL-based DBMS, that captures all informational aspects of a record store. The will encompass the typical operations of a record store, including maintaining inventory, supporting the ordering process, gathering customer information, and customer service.

2. SYSTEM REQUIREMENTS

2.1. Hardware

System: Apple MacBook Pro
Processor: 2.4 GHz Intel Core 2 Duo
Memory: 2GB 1067 MHz DDR3

2.2. Software

Mac OS X, version 10.6.5
MySQL Community Server Edition, version 5.1.53
MySQL Workbench, version 5.2.28, revision 6725

2. SYSTEM REQUIREMENTS

2.3 FUNCTIONAL REQUIREMENTS

- Track the current inventory of records using the Universal Product Code(UPC)
- Add or edit records by record store employees
- Place of one or more selected items in the customer's shopping cart
- Enable customers to view items in their shopping carts
- Login for existing customers or register new customers who decide to place an order
- Gather information from the customer needed to complete the order (e.g., payment and delivery methods, etc.)
- Issue an order confirmation for each order
- Keep track of shipments and charges by shipping invoice
- Enable the staffs to generate ordering statistics for internal research, including monthly, quarter and annual sales
- Enables the staffs to pull out the order with customer's last name
- Acquire of information for establishing a customer profile (name, address, phone, etc.) when customers create a customer account
- Collect customer's credit card information either at the time they establish their account, or when placing their order
- Allow customers to update their own account information (name, address, phone, credit card, etc.)
- Collect customer's comments by providing a form with a multiple choice section (unsatisfied, fair, good or excellent)
- Generate reports:
    - Annual, Monthly, and Quarterly Sales Report
    - Artist, Label, and Album Information
    - Reorder Report
    - Customer Expenditure Report
    - Customer/Number of Orders
    - Albums Returned within the past 30 days
    - Unsatisfied Customers Information

3. DATABASE DESIGN DESCRIPTION

3.1. DESIGN RATIONALE

In designing the Entity-Relationship Model for the record store, two major things had to be taken into consideration. The first thing was the process of the release of an album and how it travels to the shelves at the record store. The second point was the process of the transaction of purchasing the record. Research was done to determine the best model that would resemble the operations of a record store. Models that was found to closely resemble the operations of a record store were the models for online bookstores. These basic principles were implemented in the designing the ER model for a record store.

In tracking the albums in the record store, it was decided to use the Universal Product Code (UPC). In retail operations, many of the world's items are tracked by their UPC code. This was also observed in retail record shops across the country. Therefore, the UPC code will be the primary key for identifying and tracking the albums (in the Album table).

The tables that were chosen for the database (listed in section 3.2.1) were chosen for the fact that those basic tables are used in many online retail databases.

The primary keys for the tables (Artist, Label, Customer, Order, Payment Method, Employee and other) are used to reference each other within the database. Initially, the data type for the primary keys were integers. However, in trying to insert data into the primary key fields, a problem was encountered in which the maximum for the integer value was reached. The maximum value for the 2147483647. However, most of the UPC codes will have a numeric value higher than the max value allowed by the DBMS. Therefore, all of the data variables that are numeric but are not used in any calculations are of the character type. This change in the design will be reflected in section 4.1 (data dictionary).

3. DATABASE DESIGN DESCRIPTION

3.2. Entity Relationship Model

3.2.1 List of Entities

Entity	Description
CUSTOMER	contains customer information
ALBUM	holds information on recording being sold
LABEL	contains information on record label of album
ARTIST	information on recording artist
DISTRIBUTOR	information on distributor (warehouse)
EMPLOYEE	information on store employees
ORDER	information on customer order
PAYMENT METHOD	holds credit card information on customer
PAYMENT	information on the actual payment of an order
INVOICE	information on an order invoice
WISH LIST	holds albums for customers for possible purchase
SHIPPING	holds shipping information for store
ORDER_ALBUM	holds the album being ordered by customer

3. DATABASE DESIGN DESCRIPTION

3.2. Entity Relationship Model

3.2.2 Relationships

The following are the relationships that take place between the entities in the ER diagram.

Entity	Relationships	Entity	Cardinality	Type
Customer	creates	Order	1:M	identifying
Customer	creates	Wish List	1:1	non-identifying
Customer	creates	Payment Method	1:M	non-identifying
Wish Lists	holds	Albums	M:M	identifying
Label	releases	Album	1:M	non-identifying
Distributors	sell	Albums	M:M	identifying
Artist	records	Album	1:M	non-identifying
Employee	processes	Order	1:M	non-identifying
Orders	contain	Albums	M:M	identifying
Payment Method	is used for	Payments	1:M	non-identifying
Payment	is applied to	Order	1:1	non-identifying

3. DATABASE DESIGN DESCRIPTION

3.2. Entity Relationship Model

3.2.3 Entity Relationship Diagram

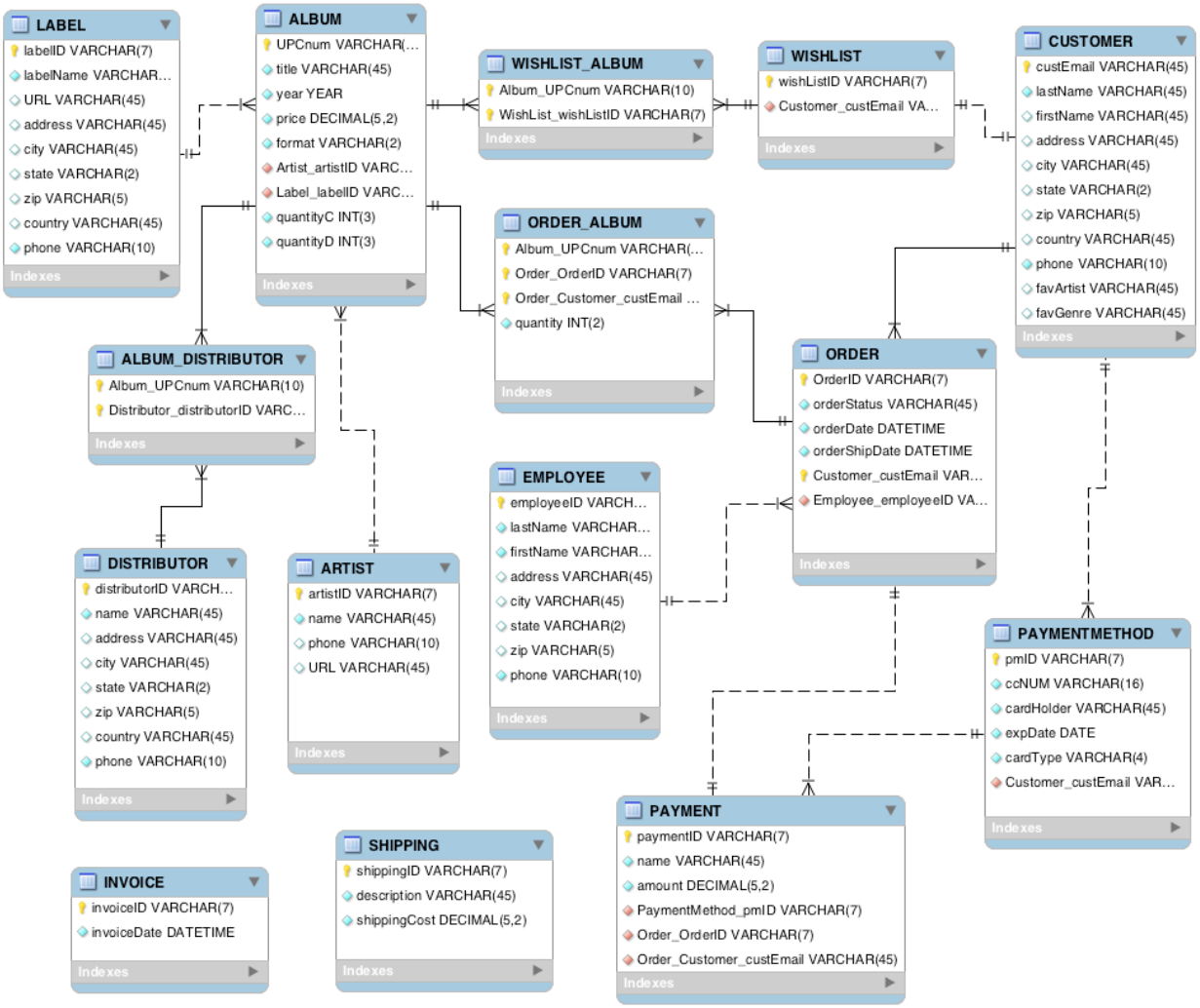


Figure 3.1 ER Diagram for a Record Shop

3. DATABASE DESIGN DESCRIPTION

3.3. Relational Model

3.3.1 Database Dictionary

TABLE	Field Name	Data Type/Size	Key/Value
CUSTOMER	custEmail	VARCHAR(45)	PK/ NOT NULL
	lastName	VARCHAR(45)	NOT NULL
	firstName	VARCHAR(45)	
	address	VARCHAR(45)	
	city	VARCHAR(45)	
	state	VARCHAR(2)	
	zip	INT(5)	
	country	VARCHAR(45)	
	phone	INT(10)	
	favArtist	VARCHAR(45)	
	favGenre	VARCHAR(45)	
ALBUM	UPCnum	INT(10)	PK/ NOT NULL
	title	VARCHAR(45)	NOT NULL
	year	YEAR	NOT NULL
	price	DECIMAL(2)	NOT NULL
	format	VARCHAR(2)	NOT NULL
	quantityC	INT(3)	NOT NULL
	quantityD	INT(3)	NOT NULL
	artistID	INT(7)	FK/NOT NULL
	labelID	INT(7)	FK/NOT NULL
LABEL	labelID	INT(7)	PK/ NOT NULL
	labelName	VARCHAR(45)	NOT NULL
	URL	VARCHAR(45)	
	city	VARCHAR(45)	
	state	INT(5)	
	zip	VARCHAR(2)	
	country	VARCHAR(45)	
	phone	INT(10)	
ARTIST	artistID	INT(7)	PK/ NOT NULL
	name	VARCHAR(45)	NOT NULL
	phone	INT(5)	
	URL	VARCHAR(45)	

3. DATABASE DESIGN DESCRIPTION

3.3. Relational Model

3.3.1 Database Dictionary

TABLE	Field Name	Data Type/Size	Key/Value
DISTRIBUTOR	distributorID	INT(7)	PK/ NOT NULL
	name	VARCHAR(45)	
	city	VARCHAR(45)	
	state	VARCHAR(2)	
	zip	INT(5)	
	country	VARCHAR(45)	
	phone	INT(10)	NOT NULL
EMPLOYEE	employeeID	INT(7)	PK/ NOT NULL
	lastName	VARCHAR(45)	NOT NULL
	firstName	VARCHAR(45)	NOT NULL
	address	VARCHAR(45)	
	city	VARCHAR(45)	
	state	VARCHAR(2)	
	zip	INT(5)	
	phone	INT(10)	NOT NULL
ORDER	OrderID	INT(7)	PK/ NOT NULL
	orderStatus	VARCHAR(20)	NOT NULL
	orderDate	DATETIME	NOT NULL
	orderShipDate	DATETIME	
	custEmail	VARCHAR(45)	PK/NOT NULL
	employeeID	INT(7)	FK/NOT NULL
PAYMENT METHOD	pmID	INT(7)	PK/ NOT NULL
	ccNUM	INT(16)	NOT NULL
	cardHolder	VARCHAR(45)	NOT NULL
	expDate	DATE	NOT NULL
	cardType	VARCHAR(4)	NOT NULL
	custEmail	VARCHAR(45)	NOT NULL
PAYMENT	paymentID	INT(7)	PK/ NOT NULL
	name	VARCHAR(45)	NOT NULL
	amount	DECIMAL(2)	NOT NULL
	pmID	INT(5)	FK/NOT NULL
	OrderID	INT(7)	FK/NOT NULL
	custEmail	VARCHAR(45)	FK/NOT NULL

3. DATABASE DESIGN DESCRIPTION

3.3. Relational Model

3.3.1 Database Dictionary

TABLE	Field Name	Data Type/Size	Key/Value
INVOICE	invoiceID	INT(7)	PK/ NOT NULL
	invoiceDate	DATETIME	NOT NULL
WISHLIST	basketID	INT(7)	PK/ NOT NULL
	CustEmail	VARCHAR(45)	FK/NOT NULL
SHIPPING	shippingID	INT(7)	PK/ NOT NULL
	description	VARCHAR(45)	NOT NULL
	shippingCost	DEMICAL(2)	NOT NULL
ALBUM_DISTRIBUTOR	UPCnum	INT(10)	PK/ NOT NULL
	distributorID	INT(7)	PK/ NOT NULL
WISHLIST_ALBUM	UPCnum	INT(10)	PK/ NOT NULL
	cartID	INT(7)	PK/ NOT NULL
ORDER_ALBUM	UPCnum	INT(5)	PK/ NOT NULL
	OrderID	INT(5)	PK/ NOT NULL
	custEmail	VARCHAR(45)	PK/ NOT NULL
	quantity	INT(2)	NOT NULL

3. DATABASE DESIGN DESCRIPTION

3.4. Using MySQL and Sequel Pro

In creating the database for the record store, MySQL, MySQL Workbench and Sequel Pro were implemented.

MySQL Workbench was used in designing the ER diagram for the database as well as entering the test data and running queries against the data. MySQL proved to be a great tool in implementing a database. The tool makes running queries very simple. It has a great user interface that is also simple to use. MySQL was also great in allowing the user to add, edit and update the data seamlessly by implementing a “worksheet” in which the user can enter data without worrying about the syntax of an SQL command.

The only drawback of using MySQL Workbench was in the error messages. For example, if there is a limit on a datatype, it will set the value of the data being entered in a particular field. to the datatype’s limit. An error may be encountered when trying to enter data in that particular field if that data is at the maximum value. Usually if this occurs, the system will generate an error message that states there is a duplicate message. Therefore, the error messages do not always reflect what need to be corrected.

Sequel Pro was used very little in the implementation of this project. It was used for a few queries. However, it was determined that MySQL Workbench handled the queries better. So, the use of Sequel Pro was terminated.

4. IMPLEMENTATION DESCRIPTION

The following pages are the actual data definitions that were implemented in the database as well as the sample queries that were used to test the database. For readability, another copy of the data dictionary was included with this report (dbDictionary.xls).

4.1. Database Dictionary

TABLE	Field Name	Data Type/Size	Key/Value	DESCRIPTION
CUSTOMER	custEmail	VARCHAR(45)	PK/ NOT NULL	PRIMARY KEY - a unique identifier for the cus
	lastName	VARCHAR(45)	NOT NULL	the surname of the customer
	firstName	VARCHAR(45)		the first name of the customer
	address	VARCHAR(45)		the street address of the customer
	city	VARCHAR(45)		the residing city of the customer
	state	VARCHAR(2)		the residing state of the customer (2 letter abb
	zip	VARCHAR(5)		the customer's zip code
	country	VARCHAR(45)		the residing country of the customer
	phone	VARCHAR(10)		the phone contact information of the custome
	favArtist	VARCHAR(45)		the customer has a choice to list his favorite a
	favGenre	VARCHAR(45)		the customer has a choice to list his favorite g
ALBUM	UPCnum	VARCHAR(10)	PK/ NOT NULL	PRIMARY KEY - the universal product code/ v
	title	VARCHAR(45)	NOT NULL	the title of the album
	year	YEAR	NOT NULL	the year the album was released
	price	DECIMAL(5,2)	NOT NULL	retail price of the album
	format	VARCHAR(2)	NOT NULL	the media format of the album (LP, CD, etc)
	quantityC	INT(3)	NOT NULL	quantity of the particular album in stock
	quantityD	INT(3)	NOT NULL	quantity of the particular album in the distribut
	artistID	VARCHAR(7)	FK/NOT NULL	FOREIGN KEY - a unique identifier for the albu
	labelID	VARCHAR(7)	FK/NOT NULL	FOREIGN KEY - a unique identifier for the albu
LABEL	labelID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - the unique identifier for a rec
	labelName	VARCHAR(45)	NOT NULL	the name of the record label
	URL	VARCHAR(45)		the web address of the record label on the int
	city	VARCHAR(45)		the city in which the record label is based
	state	VARCHAR(5)		the state in which the record label is based
	zip	VARCHAR(2)		the zip code in which the record label is based
	country	VARCHAR(45)		the country in which the record label is based
	phone	VARCHAR(10)		the phone contact for the label
ARTIST	artistID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - the unique identifier for an ar
	name	VARCHAR(45)	NOT NULL	the name of the artist
	phone	VARCHAR(5)		the phone contact for the artist
	URL	VARCHAR(45)		the web address of the artist on the internet

4. IMPLEMENTATION DESCRIPTION

4.1. Database Dictionary

TABLE	Field Name	Data Type/Size	Key/Value	DESCRIPTION
DISTRIBUTOR	distributorID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - the unique identifier
	name	VARCHAR(45)		the name of the distributor
	city	VARCHAR(45)		the city in which the distributor is bas
	state	VARCHAR(2)		the state in which the distributor is ba
	zip	VARCHAR(5)		the zip code in which the distributor is
	country	VARCHAR(45)		the country in which the distributor is
	phone	VARCHAR(10)	NOT NULL	the phone contact for the distributor
EMPLOYEE	employeeID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - the unique identifier
	lastName	VARCHAR(45)	NOT NULL	the surname of an employee
	firstName	VARCHAR(45)	NOT NULL	the first name of an employee
	address	VARCHAR(45)		the street address of an employee
	city	VARCHAR(45)		the residing city of the customer
	state	VARCHAR(2)		the residing state of the customer (2 l
	zip	VARCHAR(5)		the zip code in which an employee re
	phone	VARCHAR(10)	NOT NULL	the phone contact information of an e
ORDER	OrderID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - a unique identifier fo
	orderStatus	VARCHAR(20)	NOT NULL	the stats of an order (SHIPPED, PRO
	orderDate	DATETIME	NOT NULL	the date on which the customer place
	orderShipDate	DATETIME		the date on which the order was ship
	custEmail	VARCHAR(45)	PK/NOT NULL	PRIMARY KEY - a unique identifier fo
	employeeID	VARCHAR(7)	FK/NOT NULL	FOREIGN KEY - a unique identifier fo
PAYMENTMETHOI	pmID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - a unique identifier fo
	ccNUM	VARCHAR(16)	NOT NULL	the customer's credit card number
	cardHolder	VARCHAR(45)	NOT NULL	the name to which the credit card is i
	expDate	DATE	NOT NULL	the expiration date of the credit card
	cardType	VARCHAR(4)	NOT NULL	the type of credit card being used (M
	custEmail	VARCHAR(45)	NOT NULL	FOREIGN KEY - a unique identifier fo
PAYMENT	paymentID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - a unique identifier fo
	name	VARCHAR(45)	NOT NULL	the name of the customer who issue
	amount	DECIMAL(5,2)	NOT NULL	the amount issued for payment of an
	pmID	VARCHAR(5)	FK/NOT NULL	FOREIGN KEY - a unique identifier fo
	OrderID	VARCHAR(7)	FK/NOT NULL	FOREIGN KEY - a unique identifier fo
	custEmail	VARCHAR(45)	FK/NOT NULL	FOREIGN KEY - a unique identifier fo

4. IMPLEMENTATION DESCRIPTION

4.1. Database Dictionary

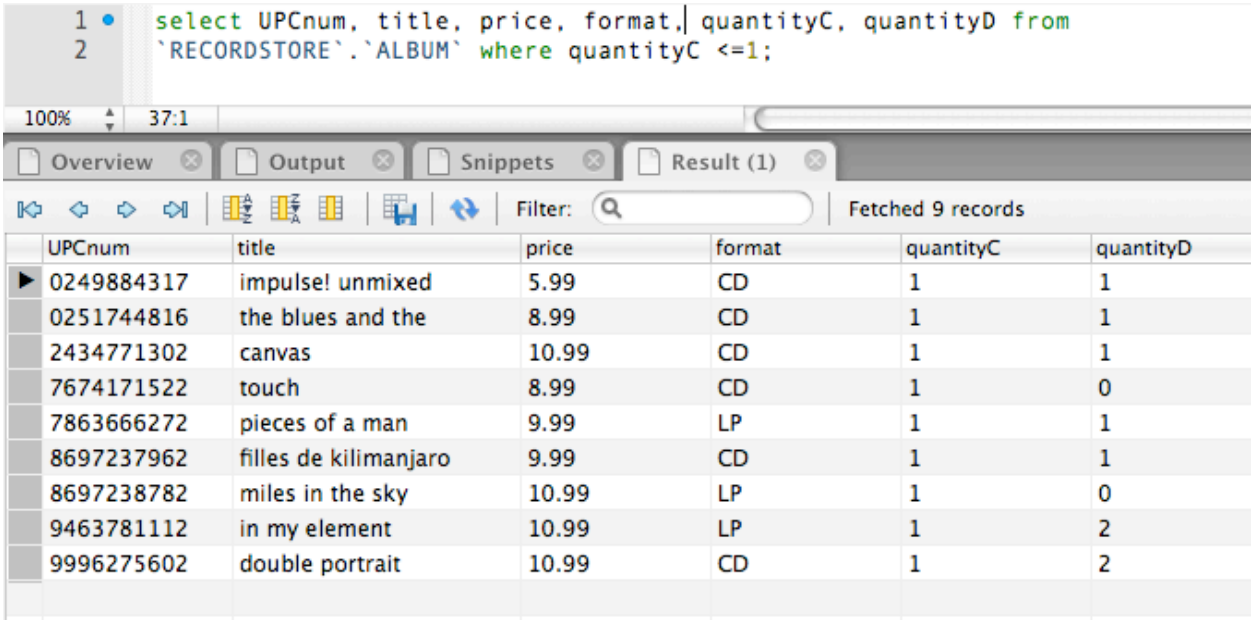
TABLE	Field Name	Data Type/Size	Key/Value	DESCRIPTION
INVOICE	invoiceID	VARCHAR(7)	PK/ NOT NULL	the identification number for the
	invoiceDate	DATETIME	NOT NULL	The date and time that the part
WISHLIST	basketID	VARCHAR(7)	PK/ NOT NULL	PRIMARY KEY - a unique ident
	CustEmail	VARCHAR(45)	FK/NOT NULL	FOREIGN KEY - a unique ident
SHIPPING	shippingID	VARCHAR(7)	PK/ NOT NULL	
	description	VARCHAR(45)	NOT NULL	describes the shipping method
	shippingCost	DEMICAL(5,2)	NOT NULL	the cost of the shipping metho
ALBUM_DISTRIBUTOR	UPCnum	VARCHAR(10)	PK/ NOT NULL	“this is part of an intersection e
	distributorID	VARCHAR(7)	PK/ NOT NULL	to show a many-to-many relati
WISHLIST_ALBUM	UPCnum	VARCHAR(10)	PK/ NOT NULL	“this is part of an intersection e
	cartID	VARCHAR(7)	PK/ NOT NULL	to show a many-to-many relati
ORDER_ALBUM	UPCnum	VARCHAR5)	PK/ NOT NULL	“this is part of an intersection e
	OrderID	VARCHAR(5)	PK/ NOT NULL	to show a many-to-many relati
	custEmail	VARCHAR(45)	PK/ NOT NULL	album to be ordered”
	quantity	INT(2)	NOT NULL	quantity of the album ordered

4. IMPLEMENTATION DESCRIPTION

4.2. Queries of Sample Data

The following queries represent simulations of some basic operations that may take place in gathering data for a record store. The SQL commands for the queries appear at the top of the figures.

4.2.1. Checking Inventory



```
1  select UPCnum, title, price, format, quantityC, quantityD from
2  `RECORDSTORE`.`ALBUM` where quantityC <=1;
```

100% 37:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 9 records

UPCnum	title	price	format	quantityC	quantityD
0249884317	impulse! unmixed	5.99	CD	1	1
0251744816	the blues and the	8.99	CD	1	1
2434771302	canvas	10.99	CD	1	1
7674171522	touch	8.99	CD	1	0
7863666272	pieces of a man	9.99	LP	1	1
8697237962	filles de kilimanjaro	9.99	CD	1	1
8697238782	miles in the sky	10.99	LP	1	0
9463781112	in my element	10.99	LP	1	2
9996275602	double portrait	10.99	CD	1	2

Figure 4.1 Inventory Query

4. IMPLEMENTATION DESCRIPTION

4.2.2. Checking Titles for a Particular Artist

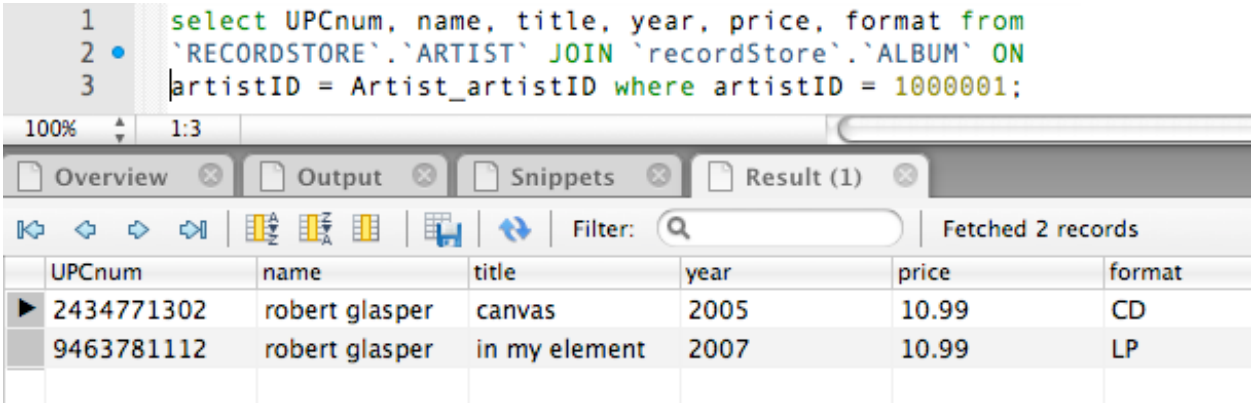


Figure 4.2 Artist Query

4.2.3. List of Sales for 2nd Half of Year

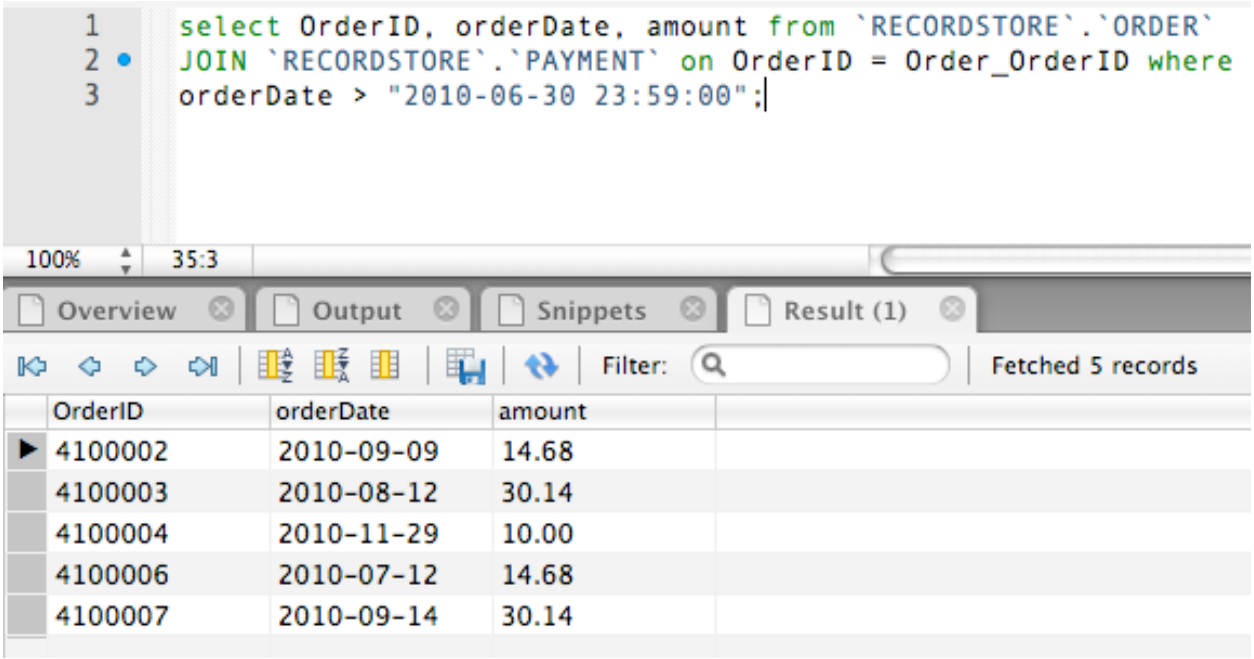


Figure 4.3 Second Half of Year Revenue

4. IMPLEMENTATION DESCRIPTION

4.2.4. Checking a Customer's Wish List

```
1  select UPCnum, title, price, firstName, lastName, Customer_custEmail
2  from  `recordStore`.`ALBUM`
3  JOIN `RECORDSTORE`.`WISHLIST_ALBUM` ON Album_UPCnum = UPCnum JOIN
4  `RECORDSTORE`.`WISHLIST` ON WishList_wishListID = wishListID JOIN
5  `RECORDSTORE`.`CUSTOMER` ON Customer_custEmail = custEmail
6  WHERE custEmail = "darrell@illsound" AND price < 12.50;
7
8
```

100% 56:6

Overview | Output | Snippets | Result (1)

Filter: Fetched 2 records

UPCnum	title	price	firstName	lastName	Customer_custEm
0252732676	new amerykah	11.99	darrell	nabors	darrell@illsound
7863666272	pieces of a man	9.99	darrell	nabors	darrell@illsound

Figure 4.4 Checking Wish List

4.2.5. Checking sales for a single customer

```
1  select UPCnum, title, quantity, amount, Order_Customer_custEmail
2  from  `RECORDSTORE`.`PAYMENT`
3  NATURAL JOIN `RECORDSTORE`.`ORDER_ALBUM`
4          JOIN  `RECORDSTORE`.`ALBUM` ON
5          Album_UPCnum = UPCnum
6  where Order_Customer_custEmail = "tammy@truenotez" ;
7
```

100% 51:6

Overview | Output | Snippets | Result (1)

Filter: Fetched 2 records

UPCnum	title	quantity	amount	Order_Customer_
0252732676	new amerykah	1	14.68	tammy@truenot
0252735401	distant relatives	2	30.14	tammy@truenot

Figure 4.5 Query for Single Customer Sales

5. CRUD Matrix

Included in this section are the entities and functions that help construct the CRUD Matrix.

5.1. Entity Types

Entity	Description
E1	CUSTOMER : information for customer
E2	ALBUM : information on recording being sold
E3	LABEL : information on record label of recording
E4	ARTIST : information on recording artist
E5	DISTRIBUTOR : information on distributor (warehouse)
E6	EMPLOYEE : information on store employees
E7	ORDER : information on customer order
E8	PAYMENTMETHOD : holds credit card information on customer
E9	PAYMENT : information on the actual payment of an order
E10	INVOICE : information on an order invoice
E11	WISHLIST : holds albums for customers for possible purchase
E12	SHIPPING : holds shipping information for store
E13	ORDER_ALBUM : holds the album being ordered by customer

5. CRUD Matrix

5.2. Functions

Function	Description
F1	Create/Update/Delete/Retrieve a customer record
F2	Create/Update/Delete/Retrieve an album
F3	Create/Update/Delete/Retrieve a record label
F4	Create/Update/Delete/Retrieve an artist
F5	Create/Update/Delete/Retrieve a distributor
F6	Create/Update/Delete/Retrieve an employee
F7	Create/Update/Retrieve an Order
F8	Create/Retrieve an Invoice
F9	Accept Payment
F10	Retrieve/Update information about shipping options
F11	Create/Update/Retrieve/Delete customer's method of payment
F12	Create/Retrieve payment information
F13	Create/Update/Delete/Retrieve a customer's wish list

5. CRUD Matrix

5.3. CRUD Matrix

	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10	E11	E12	E13
F1	CR UD												
F2		CR UD											
F3			CR UD										
F4				CR UD									
F5					CR UD								
F6						CR UD							
F7	R	R				R	CR U	R	CR	C		R	R
F8	R	R				R	R		R	R		R	R
F9	R						R	R	C	C		R	
F10												RU	
F11								CR UD					
F12									CR				
F13											CR UD		

6. Conclusion

Overall, the implementation of the the database for Illsound Record Store was successful. The data in the tables satisfies all of the data type constraints placed on them. Successful queries were able to be executed to display various reports for items such and inventory and quarterly sales.

Some of the problems encountered involved limits on certain numeric data types. These errors were corrected by researching the data types and implementing the necessary changes.

MySQL proved to be a valuable tool in designing and implementing the database. The only problem encountered were the cryptic error messages during implementation.

Finally, the database project was a fantastic way to gain further education on the design and implementation of a database.

APPENDICIES

A. Test Data

Album Data

```
1 • select *  from `recordStore`.`ALBUM`;
```

100% 16:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 16 records

UPCnum	title	year	price	format	Artist_artistID	Label_labelID	quantityC	quantityD
0249884317	impulse! unmixed	2005	5.99	CD	1000005	3000009	1	1
0251744816	the blues and the abstract truth	1961	8.99	CD	1000013	3000009	1	1
0252709460	how i got over	2010	11.99	CD	1000014	3000002	3	5
0252732676	new amerykah 2: ankh	2010	11.99	CD	1000009	3000005	2	2
0252735401	distant relatives	2010	12.99	LP	1000006	3000002	2	3
2434771302	canvas	2005	10.99	CD	1000001	3000004	1	1
7674171522	touch	1975	8.99	CD	1000003	3000003	1	0
7863666272	pieces of a man	1971	9.99	LP	1000010	3000001	1	1
8697237962	filles de kilimanjaro	1969	9.99	CD	1000002	3000008	1	1
8697238782	miles in the sky	1968	10.99	LP	1000002	3000008	1	0
8697370822	wake up!	2010	12.99	LP	1000011	3000008	3	3
8807231526	psychedelic blues	2009	12.99	CD	1000004	3000010	2	5
9362498367	revolutions per minute	2010	12.99	CD	1000007	3000007	2	5
9463781112	in my element	2007	10.99	LP	1000001	3000004	1	2
9996275602	double portrait	2010	10.99	CD	1000012	3000004	1	2
9996879429	only built 4 cuban linx 2	2009	12.99	LP	1000008	3000006	2	4

APPENDICIES

A. Test Data

Artist Data

```
1  select * from `recordStore`.`ARTIST`;
```

100% 38:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 14 reco

artistID	name	phone	URL
1000001	robert glasper	NULL	www.facebook.com/rglasper
1000002	miles davis	NULL	www.milesdavis.com
1000003	john klemmer	6215469870	www.mca.com
1000004	poncho sanchez	4562159863	www.facebook.com/poncho
1000005	various artists	NULL	www.impulse.com
1000006	nas + damian	NULL	www.defjam.com
1000007	reflection	NULL	www.yearoftheblacksmith.com
1000008	raekwon	2125698752	www.myspace.com/chefraekwon
1000009	erykah badu	5032698654	www.erykahbadu.com
1000010	gil scott-heron	NULL	www.facebook.com/gilscott
1000011	john legend +	NULL	www.columbia.com
1000012	bill charlap +	2125163255	www.facebook.com/billrenee
1000013	oliver nelson	NULL	www.bluenote.com
1000014	the roots	NULL	www.theroots.com

APPENDICIES

A. Test Data

Customer Data

```
1 • select * from `recordStore`.`CUSTOMER`;
```

100% 38:1

Overview | Output | Snippets | Result (1) | Filter: | Fetched 8 records

custEmail	lastName	firstName	address	city	state	zip	country	phone	favArtist	favGenre
bunny@gmail	stevenson	bunny	784 pebble	rochester	MN	55901	USA	5072540546	taylor swift	pop
darrell@illsound	nabors	darrell	927 beat ave	towson	MD	21204	USA	4431656698	krs-one	hiphop
lars@hotmail	lightening	gage	9871 tinseltown	los angeles	CA	90106	USA	2132669821	metallica	rock
monica@comca	lynette	monica	123 rock street	nashville	TN	37209	USA	6159182256	eric clapton	rock
panther@mac	bronson	peter	15 oak lane	eden prairie	MN	55102	USA	6122548663	yanni	classical
sunshine@comc	simpson	darlene	623 chester	atlanta	GA	45098	USA	4042199632	yolanda adams	gospel
suzy@bellsouth	granite	susan	167 fort lee	mount juliet	TN	37217	USA	6153265488	brooks and	country
tammy@truenot	battle	tamara	245 lincoln	brooklyn	NY	10055	USA	7182389712	mos def	hiphop

Label Data

```
1 • select * from `recordStore`.`LABEL`;
```

100% 35:1

Overview | Output | Snippets | Result (1) | Filter: | Fetched 10 records

labelID	labelName	URL	address	city	state	zip	country	phone
3000001	rca	www.rca.com	645 madison	new york	NY	10020	USA	2125062147
3000002	def jam	www.defjam.com	123 57th	new york	NY	10019	USA	2124568587
3000003	mca	www.mcarecords.com	714 sunshine	universal city	CA	90154	USA	1234567890
3000004	blue note	www.bluenote.com	111 birdland	new york	NY	10011	USA	2122561111
3000005	motown	www.motownrecords.com	135 west 57th	new york	NY	10019	USA	2121117777
3000006	ice h2o	www.myspace.com/chefraekwon	NULL	new york	NY	10020	USA	2129568224
3000007	blacksmith	www.yearoftheblacksmith.com	NULL	new york	NY	10020	USA	2129854217
3000008	columbia	www.columbia.com	550 madison	new york	NY	10022	USA	2126789621
3000009	impulse	www.impulse.com	100 universal	universal city	CA	90154	USA	2147483647
3000010	concord music	www.concordmusicgroup.com	100 north	beverly hills	CA	90210	USA	1236547890

APPENDICIES

A. Test Data

Employee Data

```
1 • select * from `recordStore`.`EMPLOYEE`;
```

100% 38:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 4 records

employeeID	lastName	firstName	address	city	state	zip	phone
2229999	nabors	darrell	811 una	nashville	TN	37218	6153061720
5556687	rowell	arlo	145 belmont	nashville	TN	37209	6152165877
7777777	born	jabril	123 oak	nashville	TN	37206	6159625487
9753168	williamson	terrance	746 cleveland	nashville	TN	37206	6156582344

Order Data

```
1 • select * from `recordStore`.`ORDER`;
```

100% 15:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 7 records

OrderID	orderStatus	orderDate	orderShipDate	Customer_custEmail	Employee_employeeID
4100001	shipped	2010-05-12	2010-05-19	darrell@illsound	5556687
4100002	processing	2010-09-09	2010-09-12	darrell@illsound	7777777
4100003	shipped	2010-08-12	2010-08-24	panther@mac	2229999
4100004	processing	2010-11-29	2010-12-03	suzy@bellsouth	5556687
4100005	shipped	2010-03-12	2010-03-15	lars@hotmail	2229999
4100006	shipped	2010-07-12	2010-07-19	tammy@truenotez	2229999
4100007	processing	2010-09-14	2010-09-20	tammy@truenotez	7777777

APPENDICIES

A. Test Data

Payment Method Data

```
1 • select * from `recordStore`.`PAYMENTMETHOD`;
```

100% 43:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 5 records

pmID	ccNUM	cardHolder	expDate	cardType	Customer_custEmail
4700001	3333444466668888	darrell nabors	2015-05-31	amex	darrell@illsound
4700002	5546167588453396	peter bronson	2012-12-31	mc	panther@mac
4700003	4265998723669854	susan granite	2011-07-31	visa	suzy@bellsouth
4700004	2236985541228796	gage lightening	2011-03-31	disc	lars@hotmail
4700005	3333056812121159	tamare battle	2012-03-31	amex	tammy@truenotez

Payment Data

```
1 • select * from `recordStore`.`PAYMENT`;
```

100% 37:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 7 records

paymentID	name	amount	PaymentMethod_pmID	Order_OrderID	Order_Customer_custEm
4400001	darrell nabors	12.47	4700001	4100001	darrell@illsound
4400002	darrell nabors	14.68	4700001	4100002	darrell@illsound
4400003	peter bronson	30.14	4700002	4100003	panther@mac
4400004	susan granite	10.00	4700003	4100004	suzy@bellsouth
4400005	gage lightening	13.46	4700004	4100005	lars@hotmail
4400006	tamara battle	14.68	4700005	4100006	tammy@truenotez
4400007	tamara battle	30.14	4700005	4100007	tammy@truenotez

APPENDICIES

A. Test Data

Shipping Data

```
1 • select * from `recordStore`.`SHIPPING`;
```

100% 38:1

Overview | Output | Snippets | Result (1

Filter:

shippingID	description	shippingCost
8800001	ground	3.95
8800002	priority	6.95
8800003	two-day	9.95
8800004	next-day air	16.95

WIsh List Data

```
1 • select * from `recordStore`.`WISHLIST`;
```

100% 38:1

Overview | Output | Snippets | Result (1

Filter:

wishListID	Customer_custEmail
2600001	darrell@illsound
2600003	lars@hotmail
2600002	monica@comcast
2600005	panther@mac
2600004	tammy@truenotez

APPENDICIES

A. Test Data

Order_Album Data

```
1 • select * from `recordStore`.`ORDER_ALBUM`;
```

100% 41:1

Overview | Output | Snippets | Result (1)

Filter:

Album_UPCnum	Order_OrderID	Order_Customer_custEmail	quantity
0252709460	4100004	suzy@bellsouth	1
0252732676	4100006	tammy@truenotez	1
0252735401	4100007	tammy@truenotez	2
2434771302	4100003	panther@mac	1
8697238782	4100003	panther@mac	1
8697370822	4100005	lars@hotmail	1
9362498367	4100002	darrell@illsound	1
9463781112	4100001	darrell@illsound	1

WishList_Album Data

```
1 • SELECT * FROM `recordStore`.`WISHLIST_ALBUM`;
```

100% 15:1

Overview | Output | Snippets | Result (1)

Filter:

Album_UPCnum	WishList_wishListID
0252732676	2600001
0252735401	2600001
7863666272	2600001
9996879429	2600001

APPENDICIES

A. Test Data

Distributor Data

```
1 • select * from `recordStore`.`DISTRIBUTOR`;
```

100% 41:1

Overview | Output | Snippets | Result (1)

Filter: Fetched 6 records

distributorID	name	address	city	state	zip	country	phone
5000001	warehouse records	1616 sunnydale	los angeles	CA	90154	USA	2138958742
5000002	b&g distribution	1241 eight	nashville	TN	37205	USA	6156985422
5000003	bmg music	50 madison	new york	NY	10019	USA	2122051670
5000004	sunnyside sounds	19 music row	nashville	TN	37207	USA	2019116599
5000005	warner brothers	5 warner blvd	los angeles	CA	90164	USA	2036583211
5000006	wonka's music factory	16 chapel	nashville	TN	37209	USA	6156518874

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