

---

# PUG UGLIES PETSHOP

---



CIS 3400: Database Management Systems  
Section: FTRA  
Prof. Bill Ferns  
Fall 2015

## Team Members

Jafor Ahmed, [jaforahmed1042@gmail.com](mailto:jaforahmed1042@gmail.com)

Shobhit Ratan, [shobhit.ratan@baruchmail.cuny.edu](mailto:shobhit.ratan@baruchmail.cuny.edu)

Guan Chen, [gchen2381@gmail.com](mailto:gchen2381@gmail.com)

Adam Ocasio, [adam.ocio@baruchmail.cuny.edu](mailto:adam.ocio@baruchmail.cuny.edu)

Mathew Boccio, [matthew.boccio711@gmail.com](mailto:matthew.boccio711@gmail.com)

DECEMBER 10, 2015

GROUP 2

Group Name: Black Mambas

# TABLE OF CONTENTS

<b>INTRODUCTION</b>	<b>2</b>
<b>CURRENT DATA MANAGEMENT PRACTICES</b>	<b>2</b>
<b>BUSINESS PROCESS PUP PERFORMS</b>	<b>3</b>
<b>PROBLEMS WITH CURRENT SYSTEM</b>	<b>3</b>
<b>HOW WE PLAN TO HELP PUP</b>	<b>4</b>
<b>INFORMATION USED TO IMPLEMENT PROPOSED SOLUTION</b>	<b>5</b>
<b>PUP E-R DIAGRAM DESIGN ASSUMPTIONS</b>	<b>5</b>
<b>E-R DIAGRAM</b>	<b>6</b>
<b>CONVERTING E-R DIAGRAM TO RELATIONS</b>	<b>7</b>
<b>FUNCTIONAL DEPENDENCIES</b>	<b>7</b>
<b>NORMALIZATION</b>	<b>8</b>
<b>ACCESS DATABASE</b>	<b>9</b>
<b>CONCLUSION</b>	<b>28</b>

## **Introduction**

Rafael Parikh and Aida Chin own Pug Uglies Petshop. Their pet shop sells food and other supplies to pet owners. The owners of the pet shop want to automate the recordkeeping process to keep better track of what is selling. They would also like a better inventory system that keeps track of supplies as well as knowing when and what to reorder. Their current system is quite dated, it lacks congruency and consistency. Pug Uglies have multiple repeat customers and want to model a business plan that focuses on being more personal with their customers and create customer loyalty. What we want to do is help them develop a system that can efficiently keep track of their sales and effectively maintain their inventory.

## **Current Data Management Practices**

Many customers that shop at Pug Uglies Petshop are reoccurring customers. Majority of the revenue generated are produced through large volumes of retail sales from pet supplies.

When a sale is made at PUP a clerk must go through binders and manually update the inventory to show what items have been purchased. For each item that is sold PUP keeps descriptive information in other binders.

Keeping track of:

- Stock keeping unit (SKU) #
- Items name
- Item description
- Cost per unit
- Suggested retail price / unit
- Quantity on hand
- Reorder point

Every item has a price stamped on to them. If the price is not on the item the clerk must look up the price in the binder.

## **Business Processes PUP Performs**

Pug Uglies Petshop generally have many repeat customers. Customers typically buy more than one item at a time and they will often buy several units of each item. Listed below is the basic business process:

1. Customer makes a purchase.
2. PUP keeps descriptive information on item sold as a hardcopy.
3. PUP records cost of item, sold item price and quantity on hand.
4. They then determine what items need to be reordered in inventory.

All business processes information is kept as hardcopies in binders.

## **Problems with Current System**

Pug Uglies Petshop currently does not have an efficient system in place that is consistent and automated. Most of their records are kept in hard copy and many records they don't keep track of at all. Most of their book keeping is done manually. Making them susceptible to making errors. Their inventory is unorganized and not segmented into categories. This makes it difficult for PUP to understand what kind of pet supplies they sell more of and need in constant supply.

Listed below are a number problems PUP needs to resolve:

- No record of sales orders
- No record of customers
- No record of customer pets
- No record of purchase history
- Lack of customer relations
- Manual book keeping
- Unorganized inventory system
- Inefficient reorders
- Lack of complete database

## **How we plan to help PUP**

Pug Uglies Petshop wants to build a stronger relationships with their customers. In creating higher customer loyalty we plan to help them maintain a customer database that will insure them better customer service. We want to help create a system, keep intensive records of sales, have a better understanding of their inventory, as well as managing an efficient supply chain. There are multiple areas we believe we can help automate and manage.

Necessary requirements and desirable changes are as listed below:

### ***Necessary requirements***

- Having a complete database with customer relevant information.
- Keeping track of customer sales and purchase history.
- A system that automatically looks up the price of an item.
- Have up to date information of inventory.
- Keep track of which items are moving fast and move slow.
- Accurate reports that informing PUP items to reorder.
- Categorize PUP's inventory for tracking purposes.

### ***Desirable change***

- Build customer loyalty
- Knowing customers pet
  - Name of the pet
  - Type of pet ( e.g., cat, dog, bird)
  - Age of pet

## **Information used to Implement Proposed Solution**

The information we plan to use to implement these changes is as follows:

- Customer name and relevant customer information.
- Information about customer pets (name, type, age etc)

- Inventory categorization by food, toy and grooming categorizes.
- Inventory information such as name, description, cost, quantity and minimum stock levels for reorder.
- Tracking purchase history of customers with sales orders.
- Accurate reporting's for items sold and quantity.

## **PUP E-R Diagram Design Assumptions**

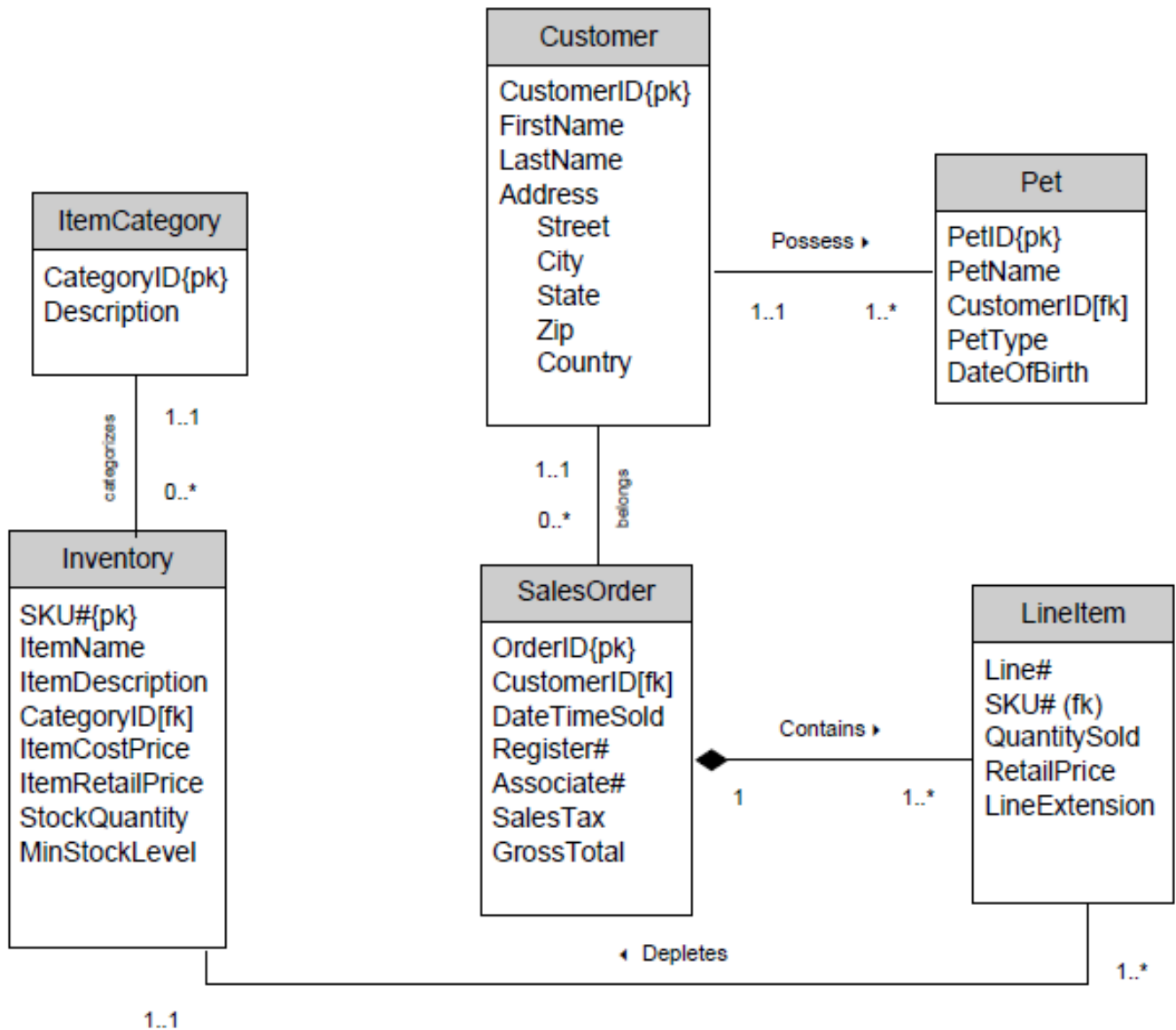
The assumptions for designing UML E-R diagram for Pug Uglies Petshop are as follows:

1. A Customer can have many Pets of the same type or different types. Customer 1..\* Pets
2. A Customer can have many SalesOrders. Customer 1..\* Many
3. LineItem is a weak entity to SalesOrder. To keep track of Quantity sold at what retail price. SalesOrder 1..\* LineItem
4. Inventory can have many SalesOrders . Inventory 1..\* SalesOrder
5. There can be many ItemCategories in Inventory Entity. ItemCategory 1..\* Inventory
6. Primary / Composite keys for various entities are as given below :

Sl	Entity	Primary /Composite Key
1	Customer	CustomerID
2	Inventory	SKU#
3	SalesOrder	OrderID
4	ItemCategory	CategoryID
5	Pet	PetID
6	LineItem(weak entity)	OrderID+Line#

\*Attribute PetType of the 'Pet' entity will be normalized in subsequent stage of design with attributes PetType# and TypeDescription

## Entity Relationship Diagram- Pug Uqlies Petshop



# Converting ERD to Relations

**CUSTOMER** (CustomerID, FirstName, LastName, Address, Street, City, State, Zip, Country)

**SALESORDER** (OrderID, *CustomerID*, DateTimeSold, Register#, Associate#, SalesTax ,GrossTotal)

**LINEITEM** (Line#, OrderID, *SKU#* Description, QuantitySold, RetailPrice, LineExtentison)

**PET** (PetID, PetName, *CustomerID*, PetType, DateOfBirth)

**INVENTORY** (SKU# , ItemName, ItemDescription, *CategoryID*, ItemCostPrice, ItemRetailPrice, StockQuantity, MinStockLevel)

**ITEMCATEGORY** (CategoryID, Description)

## Functional Dependencies

The functional dependencies transcribed below describes the relationship between each attribute to a relation. The following is a collection of functional dependencies for PUP:

CustomerID → FirstName, LastName, Address, Street, City, State, Zip, Country

OrderID → *CustomerID*, DateTimeSold, Register#, Associate#, SalesTax ,GrossTotal

Line#,OrderID → *SKU#*, QuantitySold, RetailPrice, LineExtentison

PetID → PetName, PetType, DateOfBirth, *CustomerID*

SKU# → ItemName, ItemDescription, *CategoryID*, ItemCostPrice, ItemRetailPrice, StockQuantity, MinStockLevel

CategoryID → Description



# Normalization

Normalization is useful to resolve anomalies found in a database. Through normalization PUP can save space and minimize redundant data. It will make their system perform faster by reducing additional table look-ups for information. Normalization will help PUP business processes be more efficient, effective and accurate.

As seen from the dependencies, we observe that there are no partial dependencies or transitive dependencies. Hence the relations in the third normal form (3NF) are as shown below :

**CUSTOMER (3NF)** (Customer ID, FirstName, LastName, Address, Street, City, State, Zip, Country)

**SALESORDER(3NF)** (OrderID, CustomerID, DateTimeSold, Register#, Associate#, SalesTax, GrossTotal)

**LINEITEM (3NF)** (Line#, OrderID, SKU#, QuantitySold, RetailPrice, LineExtentison)

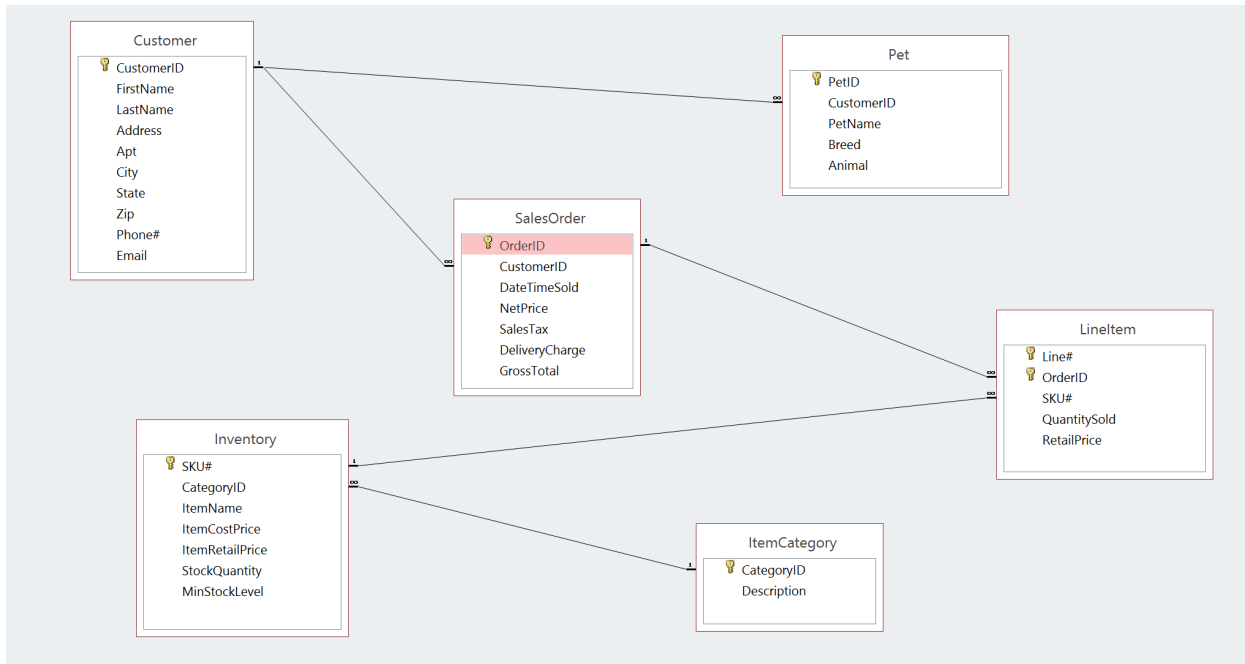
**INVENTORY(3NF)** (SKU#, CategoryID, ItemName, ItemDescription, ItemCostPrice, ItemRetailPrice, StockQuantity, MinStockLevel)

**PET (3NF)** (PetID, CustomerID, PetName, PetType, DateOfBirth)

**ITEMCATEGORY (3NF)** (CategoryID, Description)

# Access Database

## A. Relationship



## B. Customer Table Design View

[illegible]

### Field Properties

General	Lookup
Field Size	5
Format	
Input Mask	
Caption	Customer ID
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Allow Zero Length	Yes
Indexed	Yes (No Duplicates)
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

## C. Customer Table

Customer									
Customer ID	First Name	Last Name	Address	Apt	City	State	Zip	Phone#	Email
A1281	Andrews	Steven	12-48 Avery Ave	Basement	LIC	NY	11355-	(718) 345-1234	sandrews@hotmail.com
A9874	Aminova	Terry	300 South 4th Street	#420	Williamsburg	NY	11121-	(347) 555-5432	T.Aminova@nyc.gov
M1121	Morales	Amanda	456 E. 77th Street	2-Z	New York	NY	10025-	(212) 767-9876	morales@metmuseum.org
P0101	Patel	Vincent	2777 Broadway	101	New York	NY	10028-	(646) 432-1231	V_Patel@verizon.net
T4291	Tsang	Elise	88 South Street	5-A	New York	NY	10012-	(212) 545-4321	ET@aol.com

## D.Pet Table Design View

[illegible]

		Field Properties
General	Lookup	
Field Size	5	
Format		
Input Mask		
Caption	Pet ID	
Default Value		
Validation Rule		
Validation Text		
Required	Yes	
Allow Zero Length	Yes	
Indexed	Yes (No Duplicates)	
Unicode Compression	Yes	
IME Mode	No Control	
IME Sentence Mode	None	
Text Align	General	

### E. Pet Table

Pet				
Pet ID	Customer ID	Pet Name	Breed	Animal
MP11	M1121	Fettucine	Domestic Short Hair	Feline
MP12	M1121	Pesto	Munchkin	Feline
P123	A1281	Lassie	Collie	Canine
P234	A1281	Leo	Siamese	Feline
PD	P0101	Oscar	Dog	Canine
TA12	T4291	Petey	Miniature Poodle	Canine
TA13	T4291	Paulie	Rat Terrier	Canine
TA14	T4291	Francesca	Rat Terrier	Canine

## F. SalesOrder Table Design View

[illegible]

## Field Properties

General	Lookup
Field Size	5
Format	
Input Mask	
Caption	Order ID
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Allow Zero Length	Yes
Indexed	Yes (No Duplicates)
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

## G. SalesOrder Table

SalesOrder						
Order ID	Customer ID	Date Time Sold	Net Price	Sales Tax	Delivery Charge	Gross Total
S0001	T4291	02/10/2015	\$43.90	\$3.79	\$5.00	\$52.69
S0002	M1121	02/13/2015	\$46.45	\$4.01	\$0.00	\$50.46
S0003	P0101	02/14/2015	\$18.00	\$1.55	\$0.00	\$19.55
S0004	T4291	02/14/2015	\$96.00	\$8.28	\$5.00	\$109.28
S0005	M1121	02/21/2015	\$17.75	\$1.53	\$0.00	\$19.28
S0006	P0101	02/25/2005	\$49.95	\$4.31	\$0.00	\$54.26
S0007	A9874	02/25/2015	\$30.95	\$2.67	\$0.00	\$33.62
S0015	M1121	03/01/2015	\$39.50	\$3.41	\$0.00	\$42.91

#### H. Lineltem Table Design View

[illegible]

### Field Properties

General	Lookup
Field Size	5
Format	
Input Mask	
Caption	Line #
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Allow Zero Length	Yes
Indexed	No
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

# I. LineItem Table

LineItem				
Line #	Order ID	SKU #	Quantity Sold	Retail Price
1	S0001	TL2156	2	\$6.95
1	S0002	MC1011	24	\$0.90
1	S0003	FF4324	12	\$1.50
1	S0004	GI1562	2	\$7.00
1	S0005	TL2156	1	\$6.95
1	S0006	TL2156	1	\$6.95
1	S0007	TL2156	1	\$6.95
1	S0015	KK2212	2	\$8.95
2	S0001	FF4324	20	\$1.50
2	S0002	TL2156	1	\$6.95
2	S0004	CC1157	1	\$10.00
2	S0005	MC1011	12	\$0.90
2	S0006	GI1562	1	\$7.00
2	S0007	GI1562	2	\$7.00
2	S0015	MC1011	24	\$0.90
3	S0002	KK2212	2	\$8.95
3	S0004	FF4324	48	\$1.50
3	S0006	FF4324	24	\$1.50
3	S0007	CC1157	1	\$10.00

## J. Inventory Table Design View

[illegible]

### Field Properties

General	Lookup
Field Size	6
Format	
Input Mask	
Caption	SKU #
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Allow Zero Length	Yes
Indexed	Yes (No Duplicates)
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

## K.Inventory Table

Inventory						
SKU #	Category ID	Item Name	Item Cost	Item Retail Price	Quantity in Stock	Minimum Stock Level
CC1157	1	Coat Curry	\$2.00	\$10.00	15	5
FF4324	2	Fido Feast	\$0.50	\$1.50	100	25
GI1562	3	Gnaw-It	\$1.50	\$7.00	20	10
KK2212	3	Krazy Kat	\$2.00	\$8.95	30	10
MC1011	2	MaxCat	\$0.10	\$0.90	100	30
TL2156	1	Trimline	\$1.00	\$6.95	25	10



## L. ItemCategory Table Design View

[illegible]

### Field Properties

General	Lookup
Field Size	5
Format	
Input Mask	
Caption	Category ID
Default Value	
Validation Rule	
Validation Text	
Required	Yes
Allow Zero Length	Yes
Indexed	Yes (No Duplicates)
Unicode Compression	Yes
IME Mode	No Control
IME Sentence Mode	None
Text Align	General

### M. ItemCategory Table

ItemCategory	
Category ID	Description
1	Grooming
2	Food
3	Toys

## N. CustomerInfo Query Design

Customer

\* CustomerID

FirstName

LastName

Address

Apt

City

State

Zip

Phone#

Email

SalesOrder

\* OrderID

CustomerID

DateSold

NetPrice

SalesTax

DeliveryCharge

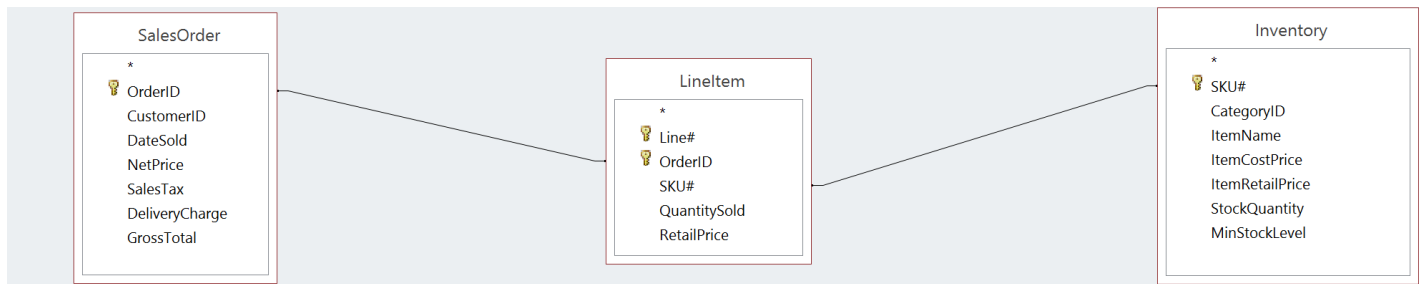
GrossTotal

Field:	FirstName	LastName	OrderID	CustomerID	DateSold	Phone#	Email	GrossTotal
Table:	Customer	Customer	SalesOrder	Customer	SalesOrder	Customer	Customer	SalesOrder
Sort:	Ascending				Ascending			
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:								
or:								

## O. CustomerInfo Query Results

CustomerInfo							
First Name	Last Name	Order ID	Customer ID	Date Sold	Phone#	Email	Gross Total
Aminova	Terry	S0007	A9874	02/25/2015	(347) 555-5432	T.Aminova@nyc.gov	\$33.62
Morales	Amanda	S0002	M1121	02/13/2015	(212) 767-9876	morales@metmuseum.org	\$50.46
Morales	Amanda	S0005	M1121	02/21/2015	(212) 767-9876	morales@metmuseum.org	\$19.28
Morales	Amanda	S0015	M1121	03/01/2015	(212) 767-9876	morales@metmuseum.org	\$42.91
Patel	Vincent	S0006	P0101	02/25/2005	(646) 432-1231	V_Patel@verizon.net	\$54.26
Patel	Vincent	S0003	P0101	02/14/2015	(646) 432-1231	V_Patel@verizon.net	\$19.55
Tsang	Elise	S0001	T4291	02/10/2015	(212) 545-4321	ET@aol.com	\$52.69
Tsang	Elise	S0004	T4291	02/14/2015	(212) 545-4321	ET@aol.com	\$109.28

## P. InventoryLookup Query Design



Field:	ItemName	QuantitySold	SKU#	CategoryID	ItemCostPrice	ItemRetailPrice	OrderID	GrossTotal
Table:	Inventory	Lineltem	Inventory	Inventory	Inventory	Inventory	SalesOrder	SalesOrder
Sort:				Ascending				
Show:	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Criteria:	Like [Type the name of the product:] & "***							
or:								

## Q. InventoryLookup Query Results

InventoryLookup							
Category ID	Item Name	SKU #	Quantity Sold	Order ID	Item Cost	Item Retail Price	Gross Total
1	Trimline	TL2156	1	S0007	\$1.00	\$6.95	\$33.62
1	Trimline	TL2156	1	S0006	\$1.00	\$6.95	\$54.26
1	Trimline	TL2156	1	S0005	\$1.00	\$6.95	\$19.28
1	Trimline	TL2156	2	S0001	\$1.00	\$6.95	\$52.69
1	Trimline	TL2156	1	S0002	\$1.00	\$6.95	\$50.46
1	Coat Curry	CC1157	1	S0007	\$2.00	\$10.00	\$33.62
1	Coat Curry	CC1157	1	S0004	\$2.00	\$10.00	\$109.28
2	MaxCat	MC1011	24	S0015	\$0.10	\$0.90	\$42.91
2	MaxCat	MC1011	12	S0005	\$0.10	\$0.90	\$19.28
2	MaxCat	MC1011	24	S0002	\$0.10	\$0.90	\$50.46
2	Fido Feast	FF4324	12	S0003	\$0.50	\$1.50	\$19.55
2	Fido Feast	FF4324	20	S0001	\$0.50	\$1.50	\$52.69
2	Fido Feast	FF4324	24	S0006	\$0.50	\$1.50	\$54.26
2	Fido Feast	FF4324	48	S0004	\$0.50	\$1.50	\$109.28
3	Krazy Kat	KK2212	2	S0002	\$2.00	\$8.95	\$50.46

InventoryLookup							
Category ID	Item Name	SKU #	Quantity Sold	Order ID	Item Cost	Item Retail Price	Gross Total
3	Gnaw-It	GI1562	2	S0004	\$1.50	\$7.00	\$109.28
3	Gnaw-It	GI1562	1	S0006	\$1.50	\$7.00	\$54.26
3	Krazy Kat	KK2212	2	S0015	\$2.00	\$8.95	\$42.91
3	Gnaw-It	GI1562	2	S0007	\$1.50	\$7.00	\$33.62

InventoryLookup							
Category ID	Item Name	SKU #	Quantity Sold	Order ID	Item Cost	Item Retail Price	Gross Total
1	Trimline	TL2156	1	S0002	\$1.00	\$6.95	\$50.46
1	Trimline	TL2156	1	S0007	\$1.00	\$6.95	\$33.62
1	Trimline	TL2156	1	S0006	\$1.00	\$6.95	\$54.26
1	Trimline	TL2156	1	S0005	\$1.00	\$6.95	\$19.28
1	Trimline	TL2156	2	S0001	\$1.00	\$6.95	\$52.69

## R.SalesOrder Form Design

Form Header

SalesOrder

Select Order

OrderID

Detail

Order ID

OrderID

Customer ID

CustomerID

Date Time Sold

DateTimeSold

Net Price

NetPrice

Sales Tax

SalesTax

Delivery Charge

DeliveryCharge


Gross Total

GrossTotal

Table.LineItem

Form Footer

## S. SalesOrder Form



# Sales Order

Select Order

S0001

Order ID

S0001

Customer ID

T4291

Date Time Sold

02/10/2015

Net Price

\$43.90

Sales Tax

\$3.79

Delivery Charge





\$5.00


Gross Total

\$52.69

Line #	SKU #	Quantity Sold	Retail Price
1	TL2156	2	\$6.95
2	FF4324	20	\$1.50
*			\$0.00

Record: 1 of 2


 No Filter

Search

## T. Customer Multi-Table View

Customer ID	First Name	Last Name	Address	Apt	City	State	Zip	Phone#	Email
A1281	Andrews	Steven	12-48 Avery Ave	Basement	LIC	NY	11355-	(718) 345-1234	sandrews@hotmail.com
	Pet ID	Pet Name	Breed	Animal	Click to Add				
	P123	Lassie	Collie	Canine					
	P234	Leo	Siamese	Feline					
	*								
A9874	Aminova	Terry	300 South 4th Street	#420	Williamsburg	NY	11121-	(347) 555-5432	T.Aminova@nyc.gov
	Pet ID	Pet Name	Breed	Animal	Click to Add				
	*								
M1121	Morales	Amanda	456 E. 77th Street	2-Z	New York	NY	10025-	(212) 767-9876	morales@metmuseum.org
	Pet ID	Pet Name	Breed	Animal	Click to Add				
	MP11	Fettucine	Domestic Short Hair	Feline					
	MP12	Pesto	Munchkin	Feline					
	*								
P0101	Patel	Vincent	2777 Broadway	101	New York	NY	10028-	(646) 432-1231	V_Patel@verizon.net
	Pet ID	Pet Name	Breed	Animal	Click to Add				
	PD	Oscar	Dog	Canine					
	*								
T4291	Tsang	Elise	88 South Street	5-A	New York	NY	10012-	(212) 545-4321	ET@aol.com
	Pet ID	Pet Name	Breed	Animal	Click to Add				
	TA12	Petey	Miniature Poodle	Canine					
	TA13	Paulie	Rat Terrier	Canine					
	TA14	Francesca	Rat Terrier	Canine					
	*								

## U. Totals Report Design View

Report Header									
		Totals						=Date() =Time()	
Page Header									
Customer ID	First Name		Last Name	Order ID	Gross Total	Item Name			
Detail									
CustomerID	FirstName		LastName	OrderID	GrossTotal	ItemName			
Page Footer									
				="Page " & [Page] & " of " & [Pages]					
Report Footer									
					=Sum([GrossTotal])				

# V.Totals Report



Totals

Thursday, December 10, 2015

3:50:07 AM

Customer ID	First Name	Last Name	Order ID	Gross Total	Item Name
A9874	Aminova	Terry	S0007	\$33.62	Trimline
A9874	Aminova	Terry	S0007	\$33.62	Gnaw-It
A9874	Aminova	Terry	S0007	\$33.62	Coat Curry
M1121	Morales	Amanda	S0002	\$50.46	MaxCat
M1121	Morales	Amanda	S0002	\$50.46	Trimline
M1121	Morales	Amanda	S0002	\$50.46	Krazy Kat
M1121	Morales	Amanda	S0005	\$19.28	Trimline
M1121	Morales	Amanda	S0005	\$19.28	MaxCat
M1121	Morales	Amanda	S0015	\$42.91	Krazy Kat
M1121	Morales	Amanda	S0015	\$42.91	MaxCat
P0101	Patel	Vincent	S0003	\$19.55	Fido Feast
P0101	Patel	Vincent	S0006	\$54.26	Trimline
P0101	Patel	Vincent	S0006	\$54.26	Gnaw-It
P0101	Patel	Vincent	S0006	\$54.26	Fido Feast
T4291	Tsang	Elise	S0001	\$52.69	Trimline
T4291	Tsang	Elise	S0001	\$52.69	Fido Feast
T4291	Tsang	Elise	S0004	\$109.28	Gnaw-It
T4291	Tsang	Elise	S0004	\$109.28	Coat Curry
T4291	Tsang	Elise	S0004	\$109.28	Fido Feast
				\$992.17	

## W. Sub Report Design View

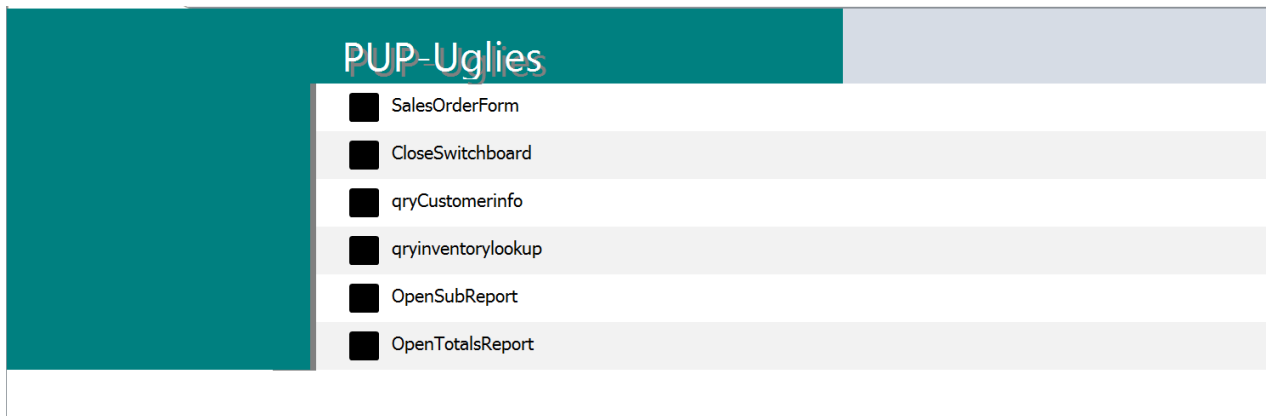
Page Header					
Last Name	Customer ID	Order ID	Gross Total		Item Name
LastName Header					
LastName					
Detail					
	CustomerID	OrderID	GrossTotal		ItemName
LastName Footer					
			=Sum([GrossTotal])		
Page Footer					



## X.Sub Report

Last Name	Customer ID	Order ID	Gross Total	Item Name
Amanda				
	M1121	S0015	\$42.91	MaxCat
	M1121	S0002	\$50.46	MaxCat
	M1121	S0002	\$50.46	Trimline
	M1121	S0002	\$50.46	Krazy Kat
	M1121	S0005	\$19.28	Trimline
	M1121	S0005	\$19.28	MaxCat
	M1121	S0015	\$42.91	Krazy Kat
			\$275.76	
Elise				
	T4291	S0004	\$109.28	Fido Feast
	T4291	S0001	\$52.69	Trimline
	T4291	S0001	\$52.69	Fido Feast
	T4291	S0004	\$109.28	Gnaw-It
	T4291	S0004	\$109.28	Coat Curry
			\$433.22	
Terry				
	A9874	S0007	\$33.62	Trimline
	A9874	S0007	\$33.62	Coat Curry
	A9874	S0007	\$33.62	Gnaw-It
			\$100.86	
Vincent				
	P0101	S0006	\$54.26	Trimline
	P0101	S0006	\$54.26	Gnaw-It
	P0101	S0006	\$54.26	Fido Feast
	P0101	S0003	\$19.55	Fido Feast
			\$182.33	

## Y. Switchboard



## Z. SalesOrderForm Macro Design

### OpenForm

Form Name SalesOrder

View Form

Filter Name

Where Condition

Data Mode

Window Mode Normal

+ Add New Action 

## AA. qryCustomerInfo Macro Design

### OpenQuery

Query Name CustomerInfo

View Datasheet

Data Mode Edit

+ Add New Action 

## BB. qryInventoryLookup Macro Design

### OpenQuery

Query Name InventoryLookup

View Datasheet

Data Mode Edit

+ Add New Action

## CC. TotalsReport Macro Design

### OpenReport

Report Name Totals

View Report

Filter Name

Where Condition

Window Mode Normal

+ Add New Action

## DD. Sub Report Macro Design

### OpenReport

Report Name Sub

View Report

Filter Name

Where Condition

Window Mode Normal

+ Add New Action


## EE. CloseSwitchboard Macro Design

**CloseWindow**

Object Type Form


Object Name Switchboard

Save Prompt

 **SendKeys**

Keystrokes {F11}

Wait No

+ Add New Action 

## FF. CloseSwitchboard VBA Code

Option Compare Database

```
' -----  
' CloseSwitchboard  
' -----  
Function CloseSwitchboard()  
On Error GoTo CloseSwitchboard_Err  
  
    DoCmd.Close acForm, "Switchboard"  
    SendKeys "{F11}", False  
  
CloseSwitchboard_Exit:  
    Exit Function  
  
CloseSwitchboard_Err:  
    MsgBox Error$  
    Resume CloseSwitchboard_Exit  
  
End Function
```

# **Narrative Conclusion**

We enjoyed working for the project and creating a Database System(DBS) that PUP can use to help improve their business model, and do hope to watch as PUP grows into the next PetCo (fingers crossed!). It was a very productive learning experience as it helped all of us to better understand the theoretical concepts and their application in a real time scenario. Regular communication within the team, focused approach for issues at hand and continuous iterations significantly contributed to successful completion of the project. The work division within team members for timely completion of this milestone is as given below.

- Adam was responsible for the narrative and the queries
- Guan completed the switchboard
- Jafor and Mathew completed the total and sub report
- As team leader, Shobhit compiled the full project report. Further, he also created the form along with a sub form for line items, and a combo box at the top so the user can scroll to his/her sales order.

As for the PUP project we found that in addition to Project Management, the ERD and Normalization were most difficult as it required a clear conceptual understating of the Database. Mapping these concepts right was cardinal to successful completion of the project. Further getting a clear understanding of user requirements and logically connecting their processes was also challenging. Implementing normalized relations to relational database in MS Access was probably the easiest part. Developing queries, forms, reports and switchboard were moderately tough.

But for this project, we would not have realized the importance of DBS in efficient business operations and corporate decision making. Using the database we can pinpoint any slow sellers in the pet-shop, and use this information to make informed decisions regarding whether or not to keep that item in stock. We can also use the database to analyze customer preferences, and items purchased for better layout of store inventory, the way we advertise, and who we advertise to. With the use of basic queries on a database we can optimize our profits through many angles. If we had to do this all over again we would have developed a more detailed ERD that also included features such as a reward points card for customers to increase customer loyalty.

We have been able to achieve all the necessary business processes that PUP must perform. While we were able to organize the data for PUP to overcome their current issues and make effective decisions, we have not really extended the power of automated DBS to the customers. We wanted to improve customer loyalty, but gave no solid strategy in doing so; we just organized the data well enough to support future decision making. At this point in time there is no connect between the DBS and customer loyalty. Adding feature like loyalty cards would bridge the gap and complete the loop between PUP and its customers. Besides this handicap, our DBS is capable to address all issues we envisaged to resolve.