

**Deliverable 2: Pixie Dust Enterprises**  
**Document for Logical and Physical Design**

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Database Systems

CS 122 A

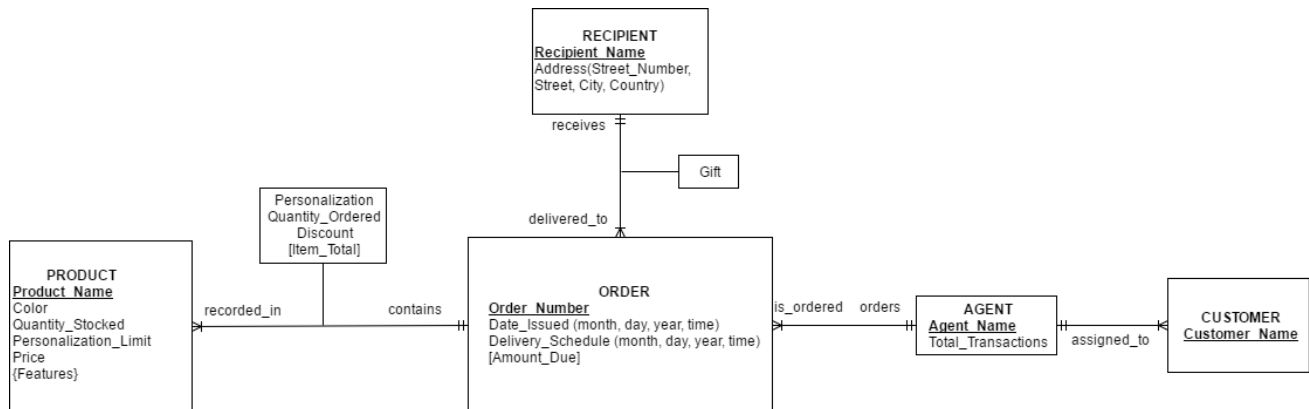
3/31/2017

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## 1.0 Logical Database Design

### 1.1 Final Conceptual ERD



### 1.2 Final Data Dictionary

System Title: Pixie Dust Date: 3/31/2017

Analyzed by: Jude Bautista, Jayce Ching, Gabriel de Jesus, Kemp Po, Patricia Nicole Uy

Entity/Relationship Name	Product Entity
Entity/Relationship Description	The product is bought through an order.

Attribute Name	Description	Primary Key?	Default Value	Possible Values	Can be null?
Product Name	The name of the product	True	Pixie Dust Item	Flipper, Filer, Keeper, Slinger, Shifter, Wrapper, Doodler, Scribbler, or future names.	No
Color	The color of the product	False	Black	Red, orange, yellow, green, blue, purple, pink, black, or future colors.	No
Quantity Stocked	Amount of product currently in stock	False	99	An integer between 1 and 99, inclusive.	No

Personalization Limit	Max number of letters that can be added to product's design	False	10	An integer limit greater than 0	No
Price	Cost to purchase the product	False	100	Any amount greater than Php 0	No
Features	Physical characteristics of the product	False	A sleek looking product	Multiple descriptions	No

Entity/Relationship Name	Product-Order Relationship
Entity/Relationship Description	The order records products that the customer buys.

Attribute Name	Description	Primary Key?	Default Value	Possible Values	Can be null?
Personalization	Customer's customization of product	False	Null	Any word, limit depends on product	Yes
Quantity Ordered	Quantity of a product ordered	False	0	1..99	No
Discount	Percent discount of a product ordered	False	0%	0..99%	No
[Item Total]	A product's total price	False	Derived from Quantity Ordered multiplied by Product Price	Any amount greater than Php 0	No

Entity/Relationship Name	Order-Recipient Relationship
Entity/Relationship Description	The recipient receives the order.

Attribute Name	Description	Primary Key?	Default Value	Possible Values	Can be null?
Gift	Specifies if the order is a gift to the recipient or not	False	False	True or False	No

Entity/Relationship Name	Order Entity
Entity/Relationship Description	It is the compiled order of the customer, containing all products ordered.

Attribute Name	Description	Primary Key?	Default Value	Possible Values	Can be null?
Order Number	The identification number of the order	True	Auto-incremented value greater than previous	Any integer value greater than 0	No
Date Issued	Date when the order was finalized	False	System generated date and time when order is finalized by agent	Month/Day/Year combinations + time	No
Delivery Schedule	Date when the order is	False	System generated	Month/Day/Year date combinations + time	No

	sent to customer		date and time when order is shipped out		
[Amount Due]	Total amount derived from item totals	False	Derived form all Item Totals.	Any amount greater than Php 0	No

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Entity/Relationship Name	Recipient Entity
Entity/Relationship Description	The recipient is the person the order is delivered to.

Attribute Name	Description	Primary Key?	Default Value	Possible Values	Can be null?
Recipient Name	The name of the recipient/s	True	Name entered during check out	Name of customer or authorized recipients	No
Address	Address of the recipient/s Requires street number, street, city and country	False	Address entered during check out	The address of the customer or of the authorized recipients.	No

Entity/Relationship Name	Agent Entity
Entity/Relationship Description	The agent issues orders for the customer.

Attribute Name	Description	Primary Key?	Default Value	Possible Values	Can be null?
Agent Name	The name of the agent	True	Agent name	Other agent names if the customer is reassigned	No

Entity/Relationship Name	Customer Entity
Entity/Relationship Description	The customer makes orders and interacts with the agent.

Attribute Name	Description	Primary Key?	Default Value	Possible Values	Can be null?
Customer Name	The name of the customer	True	Name entered during sign up	Other names if changed by the customer	No

### 1.3 Transformation of ERD to Logical Model

#### oNF

ORDER(Order\_Number, Issue\_Month, Issue\_Date, Issue\_Year, Issue\_Time, Delivery\_Month, Delivery\_Date, Delivery\_Year, Delivery\_Time, [Amount\_Due])

CONTENT(Order\_Number, Product\_Name, Personalization, Quantity\_Ordered, Discount, [Item\_Total] )

DELIVERY(Recipient\_Name, Order\_Number, Gift )

AGENT(Agent\_Name, Total\_Transactions)

CUSTOMER(Customer\_Name)

RECIPIENT(Recipient\_Name, Street\_Number, Street, City, Country)

PRODUCT(Product\_Name, Color, Quantity\_Stocked, Personalization\_Limit, Price, {Features})

#### 1NF

ORDER(Order Number, Issue\_Month, Issue\_Date, Issue\_Year, Issue\_Time, Delivery\_Month, Delivery\_Date, Delivery\_Year, Delivery\_Time, [Amount\_Due])

CONTENT(Order Number, Product Name, Personalization, Quantity\_Ordered, Discount, [Item\_Total] )

DELIVERY(Recipient Name, Order Number, Gift )

AGENT(Agent Name, Total\_Transactions)

CUSTOMER(Customer Name)

RECIPIENT(Recipient Name, Street\_Number, Street, City, Country)

PRODUCT(Product Name, Color, Quantity\_Stocked, Personalization\_Limit, Price, Features)

#### FDs:

Recipient\_Name, Order\_Number -> Gift

Order\_Number, Product\_Name -> Personalization, Quantity\_Ordered, Discount, Item\_Total

#### PFDs:

Order\_Number -> Issue\_Month, Issue\_Date, Issue\_Year, Issue\_Time, Delivery\_Month, Delivery\_Date, Delivery\_Year, Delivery\_Time, Amount\_Due

Agent\_Name -> Total\_Transactions



Recipient\_Name -> Street\_Number, Street, City, Country

Product\_Name -> Color, Quantity\_Stocked, Personalization\_Limit, Price, Features

## 2NF

ORDER(Order\_Number, Issue\_Month, Issue\_Date, Issue\_Year, Issue\_Time, Delivery\_Month, Delivery\_Date, Delivery\_Year, Delivery\_Time, [Amount\_Due], *Agent\_Name*, *Recipient\_Name*)

CONTENT(Order\_Number, Product\_Name, Personalization, Quantity\_Ordered, Discount, [Item\_Total] )

DELIVERY(Recipient\_Name, Order\_Number, Gift )

AGENT(Agent\_Name, Total\_Transactions, *Customer\_Name*)

CUSTOMER(Customer\_Name)

RECIPIENT(Recipient\_Name, Street\_Number, Street, City, Country)

PRODUCT(Product\_Name, Color, Quantity\_Stocked, Personalization\_Limit, Price)

FEATURE(Product\_Name, Feature)

## 3NF

ORDER(Order\_Number, Issue\_Month, Issue\_Date, Issue\_Year, Issue\_Time, Delivery\_Month, Delivery\_Date, Delivery\_Year, Delivery\_Time, *Agent\_Name*, *Recipient\_Name*)

CONTENT(Order\_Number, Product\_Name, Personalization, Quantity\_Ordered, Discount)

DELIVERY(Recipient\_Name, Order\_Number, Gift )

AGENT(Agent\_Name, Total\_Transactions, *Customer\_Name*)

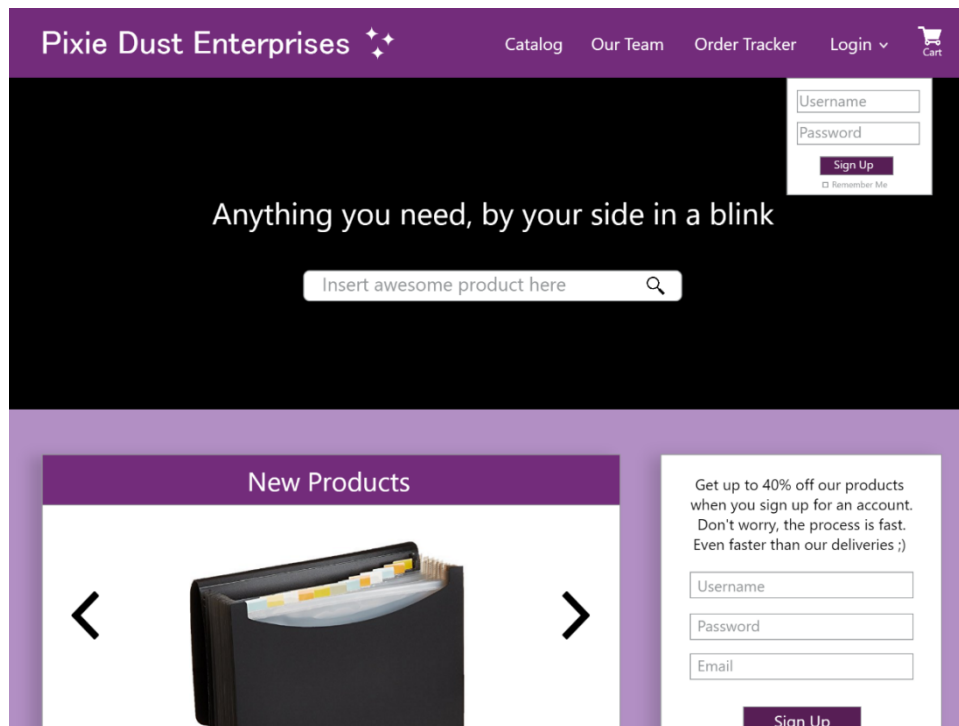
CUSTOMER(Customer\_Name)

RECIPIENT(Recipient\_Name, Street\_Number, Street, City, Country)

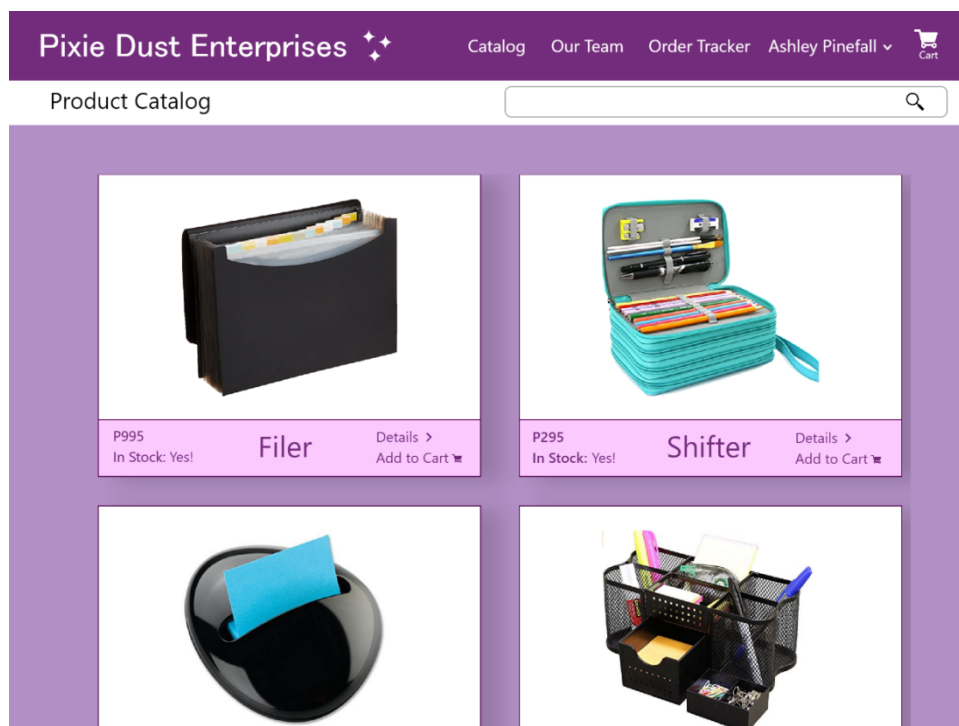
PRODUCT(Product\_Name, Color, Quantity\_Stocked, Personalization\_Limit, Price)

FEATURE(Product\_Name, Feature)

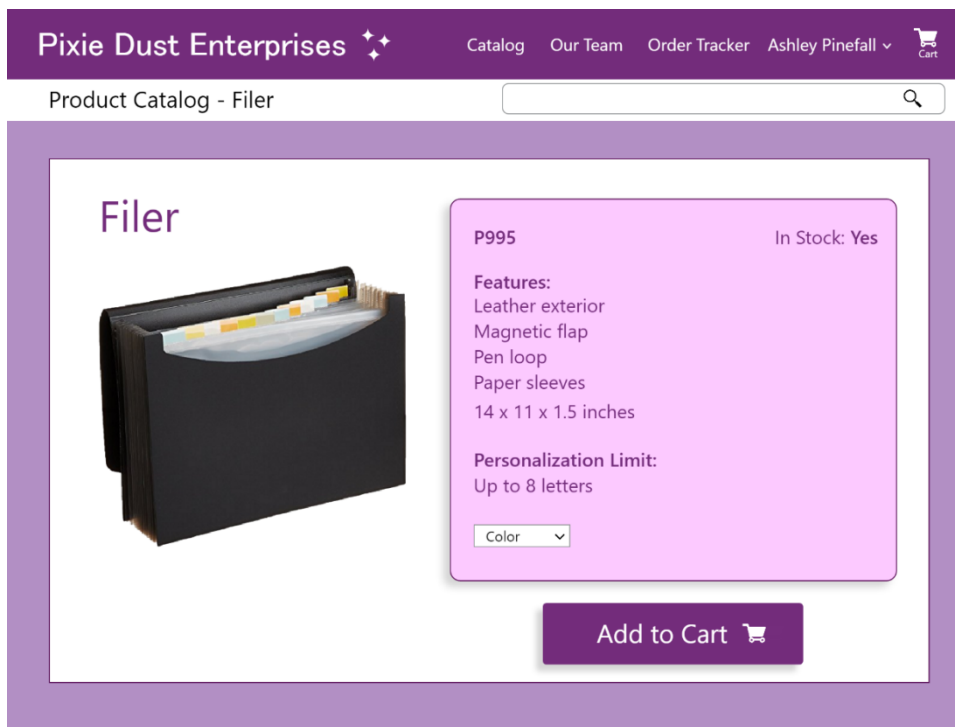
## 1.4 Proposed Screens and Reports



**Screen 1.** The home page. A customer can login or sign up, and an agent can login. Catalog, Our Team and Order Tracker are pages derived from values stored in the database.



**Screen 2.** The Product Catalog screen shows all the products available.



**Screen 3.** The general format for a product's screen. Includes information that comes from the database such as features, personalization limit, and price.

The screenshot shows an admin interface for editing the product catalog. The header is purple with the company name 'Pixie Dust Enterprises' and navigation links: 'Catalog', 'Our Team', 'Order Tracker', 'Admin', and a 'Cart' icon. Below the header, there are two buttons: 'Edit Product Catalog' and 'Add Product'. A search bar is also present. The main content is a table with the following columns: Name, Price, Stock, Features, Personalization Limit, Color, and Delete Item.

Name	Price	Stock	Features	Personalization Limit	Color	Delete Item
Filer	P995	25	Edit	Up to 8 letters	Black	✖
Filer	P995	55	Edit	Up to 8 letters	Red	✖
Filer	P995	20	Edit	Up to 8 letters	Yellow	✖
Filer	P995	40	Edit	Up to 8 letters	Orange	✖
Filer	P995	60	Edit	Up to 8 letters	Green	✖
Filer	P995	20	Edit	Up to 8 letters	Blue	✖
Filer	P995	35	Edit	Up to 8 letters	Purple	✖
Filer	P995	25	Edit	Up to 8 letters	Pink	✖
Shifter	P295	35	Edit	Up to 8 letters	Black	✖
Shifter	P295	50	Edit	Up to 8 letters	Red	✖
Shifter	P295	95	Edit	Up to 8 letters	Yellow	✖
Shifter	P295	85	Edit	Up to 8 letters	Orange	✖
Shifter	P295	70	Edit	Up to 8 letters	Green	✖
Shifter	P295	35	Edit	Up to 8 letters	Blue	✖


**Screen 4.** Admins can edit the database through screens like this. From here, they can edit, add, and remove products.

<div> <div>Pixie Dust Enterprises</div> <div> <a href="#">Catalog</a> <a href="#">Our Team</a> <a href="#">Order Tracker</a> <a href="#">Admin</a> </div> </div>							
Delivery Schedule							
Order Num	Customer	Recipient	Address	Issue Date	Delivery Date	Cancel	
15113	Ashley Pinefall	Ashley Pinefall	30 Lanshire..	3/23/2016	3/24/2016	✖	
15114	Ashley Pinefall	Ashley Pinefall	30 Lanshire..	3/23/2016	3/24/2016	✖	
15115	Drake Wyverly	Bev Wyverly	Wyverly Pl..	3/24/2016	3/24/2016	✖	
15116	John Soap	Price Tavish	Keep Cod..	3/25/2016	3/26/2016	✖	
15117	Ashley Pinefall	Ashley Pinefall	30 Lanshire..	3/25/2016	3/25/2016	✖	
15118	Drake Wyverly	Bev Wyverly	Wyverly Pl..	3/25/2016	3/26/2016	✖	
15119	John Soap	John Soap	Keep Cod..	3/27/2016	3/28/2016	✖	
15120	Gina Mac	Gina Mac	12 SSB Dr..	3/27/2016	3/28/2016	✖	
15121	John Soap	Price Tavish	Keep Cod..	3/27/2016	3/27/2016	✖	
15122	Mull Neven	Mull Neven	January Ave..	3/29/2016	3/29/2016	✖	
15123	Mull Neven	Mull Neven	January Ave..	4/01/2016	4/03/2016	✖	
15124	Gina Mac	Gina Mac	12 SSB Dr..	4/01/2016	4/02/2016	✖	
15125	Gina Mac	Gina Mac	12 SSB Dr..	4/01/2016	4/02/2016	✖	
15126	Ashley Pinefall	Ashley Pinefall	30 Lanshire..	4/01/2016	4/01/2016	✖	

**Screen 5.** The Delivery Schedule screen. The values are derived from customer checkout info.

<div> <div>Pixie Dust Enterprises</div> <div> <a href="#">Catalog</a> <a href="#">Our Team</a> <a href="#">Order Tracker</a> <a href="#">Admin</a> </div> </div>							
Agent List & Transactions							
Add Agent							
Agent Name	Issue Date	Agent	Customer	Order Num	Total		
Axis Snowdrop	4/01/2016	Axis Snowdrop	Ashley Pinefall	15126	13,950.25		
Nelly Khitsu	4/01/2016	Axis Snowdrop	Gina Mac	15125	3,024		
Kat Sudon	4/01/2016	Axis Snowdrop	Gina Mac	15124	27,405		
Minnie Appois	4/01/2016	Kat Sudon	Mull Neven	15123	33,210		
Phoebe Roary	3/29/2016	Kat Sudon	Mull Neven	15122	43,205		
	3/27/2016	Minnie Appois	John Soap	15121	10,250		
	3/27/2016	Axis Snowdrop	Gina Mac	15120	5,205		
	3/27/2016	Minnie Appois	John Soap	15119	19,305.5		
	3/25/2016	Minnie Appois	Drake Wyverly	15118	15,235		
	3/25/2016	Axis Snowdrop	Ashley Pinefall	15117	27,405		
	3/25/2016	Minnie Appois	John Soap	15116	29,025		
	3/24/2016	Minnie Appois	Drake Wyverly	15115	48,506.25		
	3/23/2016	Axis Snowdrop	Ashley Pinefall	15114	23,382		

**Screen 6.** The agent list screen. An admin may add agents that apply to work for Pixie Dust Enterprises.

**Pixie Dust Enterprises**
[Catalog](#)
[Our Team](#)
[Order Tracker](#)
[Ashley Pinefall](#)


**Check Out**
[< Back to Catalog](#)

Customer Name

Delivery Address


Recipient

☒ Not Gift
☐ Gift

Amount Due: P23,382.5
Order No: 15114

Item	Description	Qty	SRP	Discount	Total
Filer	Blue No Personalization	10	9,950	0%	9,950
Filer	Black No Personalization	15	14,925	10%	13,432.5

**Screen 7.** The check out screen. Once a customer enters their info, its autocompleted next time for convenience. Values are derived from products added to cart.

**Pixie Dust Enterprises**
[Catalog](#)
[Our Team](#)
[Order Tracker](#)
[Admin](#)


**Inventory - March 31 2017**
[See Past Inventory](#)

Item Name	Red	Orange	Yellow	Green	Blue	Purple	Pink	Black
Filer	25	40	20	60	20	35	25	55
Shifter	50	85	95	70	35	25	50	35
Wrapper	15	90	20	10	20	50	50	10
Noter	20	15	35	40	30	25	50	94
Holder	15	90	20	95	70	35	35	25

**Screen 8.** The inventory screen. The values update automatically when orders are finalized.

Pixie Dust Enterprises ✨
Catalog
Our Team
Order Tracker
Login
Cart

Want to work with us? We also want to work with you

Send your resume to [work@pixie.com](mailto:work@pixie.com)

### Job Benefits and Perks

**Unlimited Paid Time Off**  
We believe trust is essential for a good work environment, and that our employees know how to use their time wisely.

**Gym membership**  
Just because you have to work doesn't mean you can't stay fit.

**Outside events**  
Parties, sports gatherings, and more. Work stays in the office, but that doesn't mean we can't be a family.

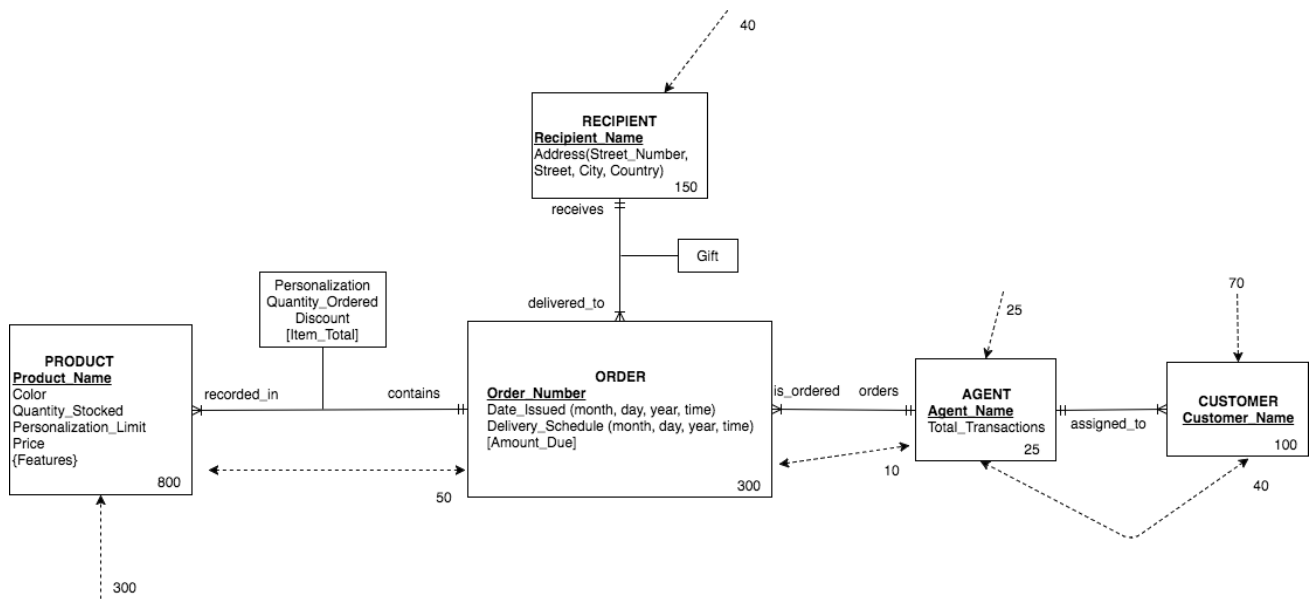
**Screen 9.** The jobs screen for anyone who wants to be an agent for Pixie Dust Enterprises.

Customer Orders						
Customer Name	Order Number	Item Name	Quantity	Discount	Description	Item Total
Ashley Pinefall	15114	Filer	10	0%	Blue, No Personalization	9,950
Ashley Pinefall	15114	Filer	15	10%	Black, No Personalization	13,432.5
Drake Wyverly	15115	Filer	5	0%	Green, 'Bev' Personalization	4,975
Drake Wyverly	15115	Filer	5	0%	Blue, 'Bev' Personalization	4,975
Drake Wyverly	15115	Filer	5	0%	Red, 'Bev' Personalization	4,975
Drake Wyverly	15115	Filer	10	0%	Pink, 'Bev' Personalization	9,950
Drake Wyverly	15115	Filer	20	5%	Black, 'Bev' Personalization	18,905
Drake Wyverly	15115	Filer	5	5%	Orange, 'Bev' Personalization	4,726.25
John Soap	15116	Shifter	10	0%	Red, No Personalization	2,950
John Soap	15116	Shifter	25	0%	Black, No Personalization	7,375
John Soap	15116	Shifter	30	0%	Orange, No Personalization	8,850
John Soap	15116	Shifter	10	0%	Yellow, No Personalization	2,950
John Soap	15116	Wrapper	5	0%	Black, No Personalization	1,725
John Soap	15116	Wrapper	5	0%	Red, No Personalization	1,725
John Soap	15116	Wrapper	10	0%	Green, No Personalization	3,450

**Screen 10.** The customer orders screen, lists all of the products a customer has in their orders. Values are derived from product catalog and checkout info.

## 2.0 Physical Database Design

### 2.1 Data Volume and Usage Analysis



### Usage Analysis

- 300 products accessed per hour
- 50 orders accessed from the 300 product accesses
- 10 agents accessed from these 50 order accesses
- 40 customers accessed from these 50 order accesses
- 40 recipients accessed per hour
- 50 orders accessed from the 40 recipients accessed

### 2.2 Indexes

Index Key	Category	Found In
Order_Number	Primary Key	ORDER
Agent_Name	Foreign Key	ORDER
Recipient_Name	Foreign Key	ORDER
Issue_Date	Clustering	ORDER
Delivery_Date	Clustering	ORDER
Order_Number	Foreign Key	CONTENT
Product_Name	Foreign Key	CONTENT
Recipient_Name	Foreign Key	DELIVERY
Order_Number	Foreign Key	DELIVERY
Gift	Clustering	DELIVERY
Agent_Name	Primary Key	AGENT
Customer_Name	Foreign Key	AGENT

Customer_Name	Primary Key	CUSTOMER
Recipient_Name	Primary Key	RECIPIENT
Product_Name	Primary Key	PRODUCT
Color	Clustering	PRODUCT
Price	Clustering	PRODUCT
Product_Name	Foreign Key	FEATURE

### 2.3 Integrity Constraints

<b>Key</b>	<b>Primary Key In:</b>	<b>Foreign Key In:</b>	<b>Contingency:</b>
Agent_Name	AGENT	ORDER	Nullify
Recipient_Name	RECIPIENT	ORDER	Cascade
Customer_Name	CUSTOMER	AGENT	Nullify



### **3.0 Appendix**

Date: 3/28/2017

Time: 11am-12pm, 7pm – 10pm

Attendance: Complete

#### Minutes

- Discussed revision of ERD
- Discussed normalization of ERD
- Discussed data dictionary revisions
- Finalized ERD changes

Date: 3/30/2017

Time: 11am-12pm, 7pm – 10pm

Attendance: Complete

#### Minutes

- Finalized normalization of ERD
- Discussed physical implementation of database
- Finalized data dictionary revisions
- Finalized screens and reports