Syracuse University Campus store Inventory management system

IST 659- Final Project

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Project Overview

The project focuses on developing an inventory management system for the University Campus Store that will help streamline operations, reduce costs, and improve customer satisfaction.

Following are the functionalities to be achieved by the following system-

1. Accurate Inventory Tracking: An inventory management system allows for accurate tracking of inventory levels in real-time, which helps to prevent stockouts and overstocking. This ensures that the store always has the right products in stock and improves customer satisfaction.
2. Reduced Costs: An inventory management system can help reduce costs by optimizing inventory levels, reducing excess inventory, and preventing overstocking. This can lead to a reduction in storage and handling costs, as well as a reduction in inventory carrying costs.
3. Automated Processes: An inventory management system automates many of the manual processes involved in inventory management, such as purchase order creation, receipt of goods, and stock level updates. This saves time and reduces the risk of errors, improving operational efficiency.
4. Customizable Reporting and Analytics: An inventory management system provides customizable reporting and analytics that allow store managers to make data-driven decisions about inventory management. This can help identify trends, forecast demand, and optimize inventory levels.

Specifications

- Entity Relationship Data Requirements/Business Rules
- Conceptual Data Model
- Logical Data Model
- SQL script*
- User Stories
- user stories
- Triggers/Procedures
- User Interface Design

*submitted as sql file

Entity Relationship Data Requirements

A	B	C	D	E	F	G	H	I	J	K	L	M
Entities and Attributes						Relationships						
Entity	Attribute	Proper	Data Type	Description,Key	Relationship	Entity	Rule	Min	Max	Entity		
Products	ProductID	U	int	unique ID of the product,PK	Product-OrderDetails	**Product**	contains	1	M	**OrderDetails**		
	ProductName	R	varchar	name of the product		**OrderDetails**	based on	M	M	**Product**		
	QuantityInStock	R	int	quantity of product								
	ReorderLevel	R	int	level of Reordering the Product	OrderDetails-Orders	**OrderDetails**	attributed to	1	1	**Orders**		
	UnitPrice	R	decimal	Price per Unit of the Product		**Orders**	have	1	M	**OrderDetails**		
Supplies	SupplierID	U	int	unique ID of the Supplier,PK	Orders-Customers	**Orders**	placed by	M	M	**Customers**		
	SupplierName	RC	varchar	name of the supplier		**Customers**	make	1	1	**Orders**		
	ContactName	R	varchar	Contact name of the supplier								
	ContactTitle	R	varchar	Contact Title of the supplier	Orders-Suppliers	**Orders**	provided by	M	M	**Suppliers**		
	Address	R	varchar	Address of the supplier		**Suppliers**	supply with	1	M	**Orders**		
	City	R	varchar	City in the Address of the supplier								
	Country	R	varchar	Country in the Address of the supplier								
Customers	CustomerID	U	int	unique ID of the Customer,PK								
	CompanyName	RC	varchar	name of the Customer								
	ContactName	R	varchar	Contact name of the Customer								
	ContactTitle	R	varchar	Contact Title of the Customer								
	Address	R	varchar	Address of the Customer								
	City	R	varchar	City in the Address of the Customer								
	Country	R	varchar	Country in the Address of the Customer								
Orders	OrderID	U	int	unique ID of the Order,PK								
	CustomerID	RC	int	unique ID of the Customer,FK								
	OrderDate	R	datetime	Date of the order being Placed								
	RequiredDate	R	datetime	Date when the order is required by the Customer								
	ShippedDate	R	datetime	Date when the order is shipped								
	ShipVia	R	varchar	Medium of the shipping of the order								
Order details	OrderDetailID	U	int	uniqueID of the order details,PK								
	OrderID	RC	int	unique ID of the product,FK								
	ProductID	RC	int	unique ID of the product,FK								
	Quanitity	R	int	Quantity of Order Details in number								
	UnitPrice	R	decimal	Price per Unit of the Order								

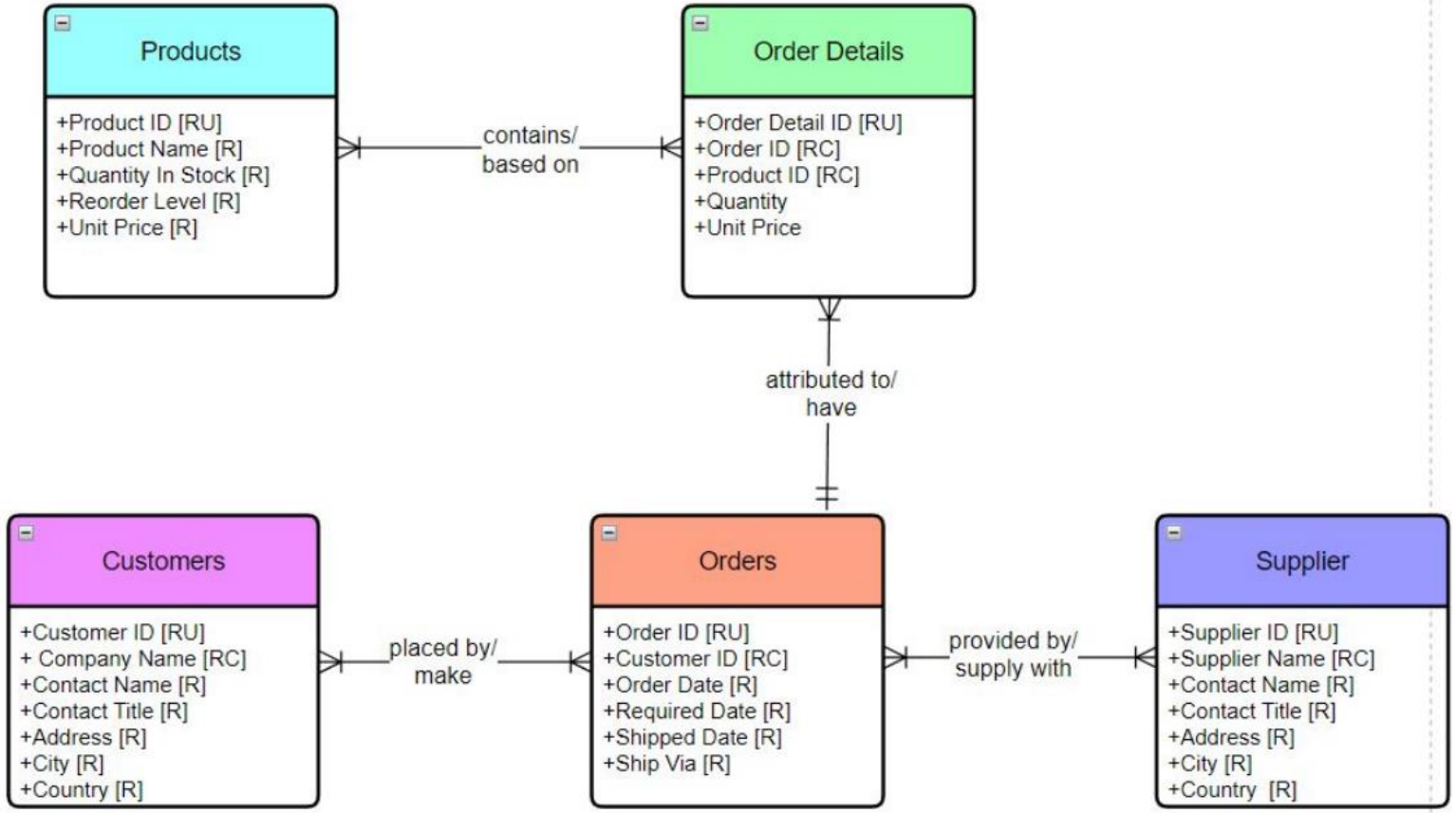
Key for the excel sheet:
U stands for Unique Constraint
R stands for Relational
RC: Referential Constraint

int:integer

PK: Primary Key
FK: Foreign Key

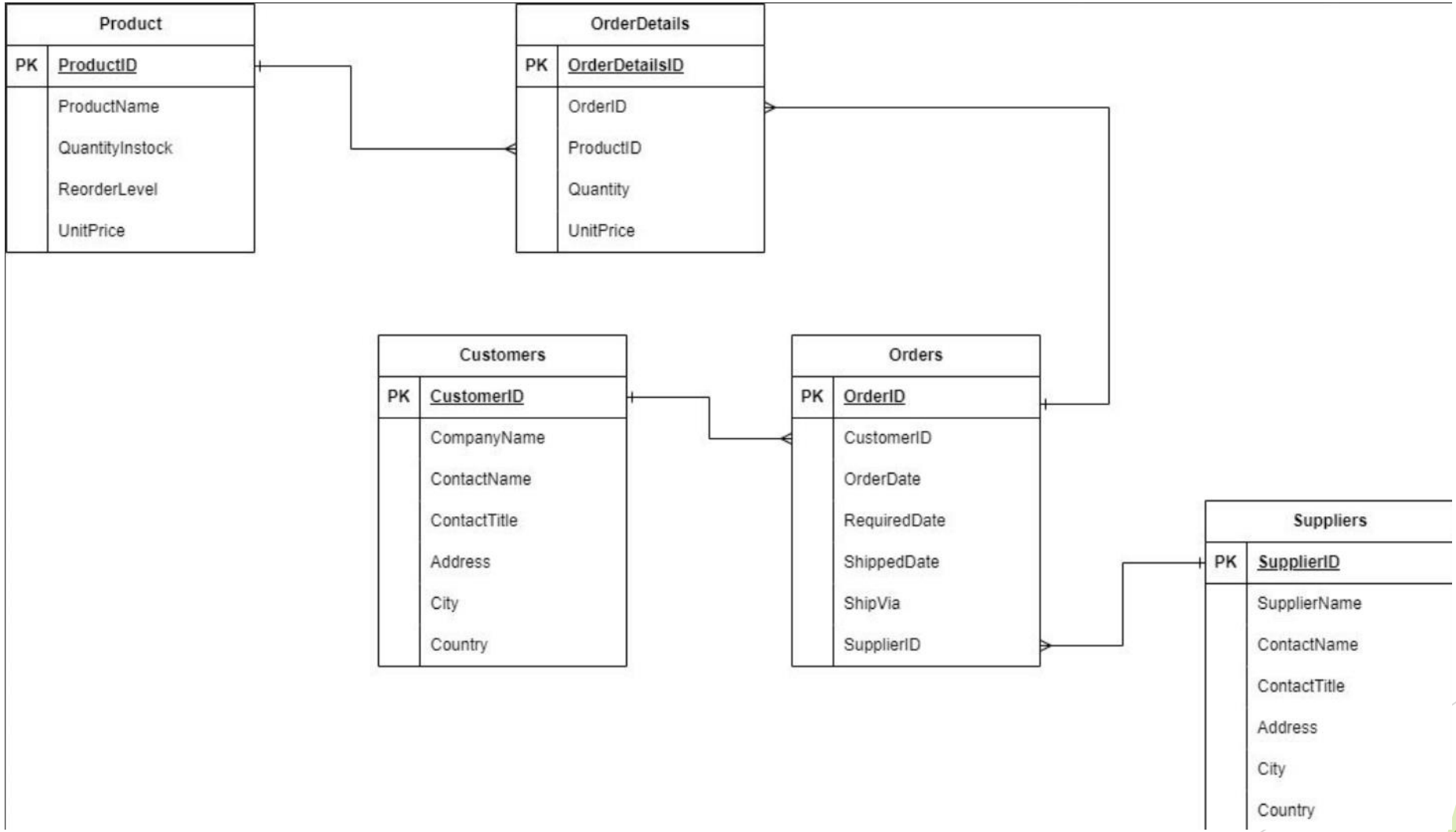
M:Many

Conceptual Data Model



Conceptual Model

Logical Data Model



As an Employee I would Like to check Product Sales by Supplier: Calculate the total sales for each supplier.

```
SELECT s.name AS supplier_name, SUM(od.quantity) AS total_sales
FROM suppliers s
JOIN products p ON s.supplier_id = p.supplier_id
JOIN order_details od ON p.product_id = od.product_id
GROUP BY s.name
ORDER BY total_sales DESC;
```

Results Messages

	supplier_name	total_sales
1	Alex Corp	23
2	Xylon Ltd	19

As an Employee I would Like to check the Customer Lifetime Value: We can calculate the lifetime value of each customer. This can help us identify our most valuable customers and tailor our marketing efforts accordingly.

```
SELECT c.name AS customer_name, SUM(o.total_price) AS
lifetime_value
FROM customers c
JOIN orders o ON c.customer_id = o.customer_id
GROUP BY c.name
ORDER BY lifetime_value DESC;
```

Results Messages

	customer_name	lifetime_value
1	Bob Johnson	252.49
2	John Doe	223.49
3	Samantha Lee	206.00
4	Jane Smith	148.00

Top Customers by Category: We can identify our top customers for each product category

```
SELECT c.name AS customer_name, p.description, SUM(od.quantity) AS
total_units_ordered
FROM customers c
JOIN orders o ON c.customer_id = o.customer_id
JOIN order_details od ON o.order_id = od.order_id
JOIN products p ON od.product_id = p.product_id
GROUP BY p.description, c.name
HAVING SUM(od.quantity) > 10
ORDER BY p.description ASC, total_units_ordered DESC;
```

Results | Messages

	customer_name	description	total_units_ordered
1	Jane Smith	Accessories	2
2	Bob Johnson	Accessories	1
3	Samantha Lee	Accessories	1
4	Samantha Lee	Clothing	3
5	Bob Johnson	Clothing	3
6	Jane Smith	Clothing	3
7	Bob Johnson	Electronics	4
8	John Doe	Electronics	2
9	Samantha Lee	Electronics	1
10	Bob Johnson	Food	2
11	John Doe	Footwear	2
12	Samantha Lee	Footwear	1
13	John Doe	Stationary	6
14	Jane Smith	Stationary	6
15	Bob Johnson	Stationary	5

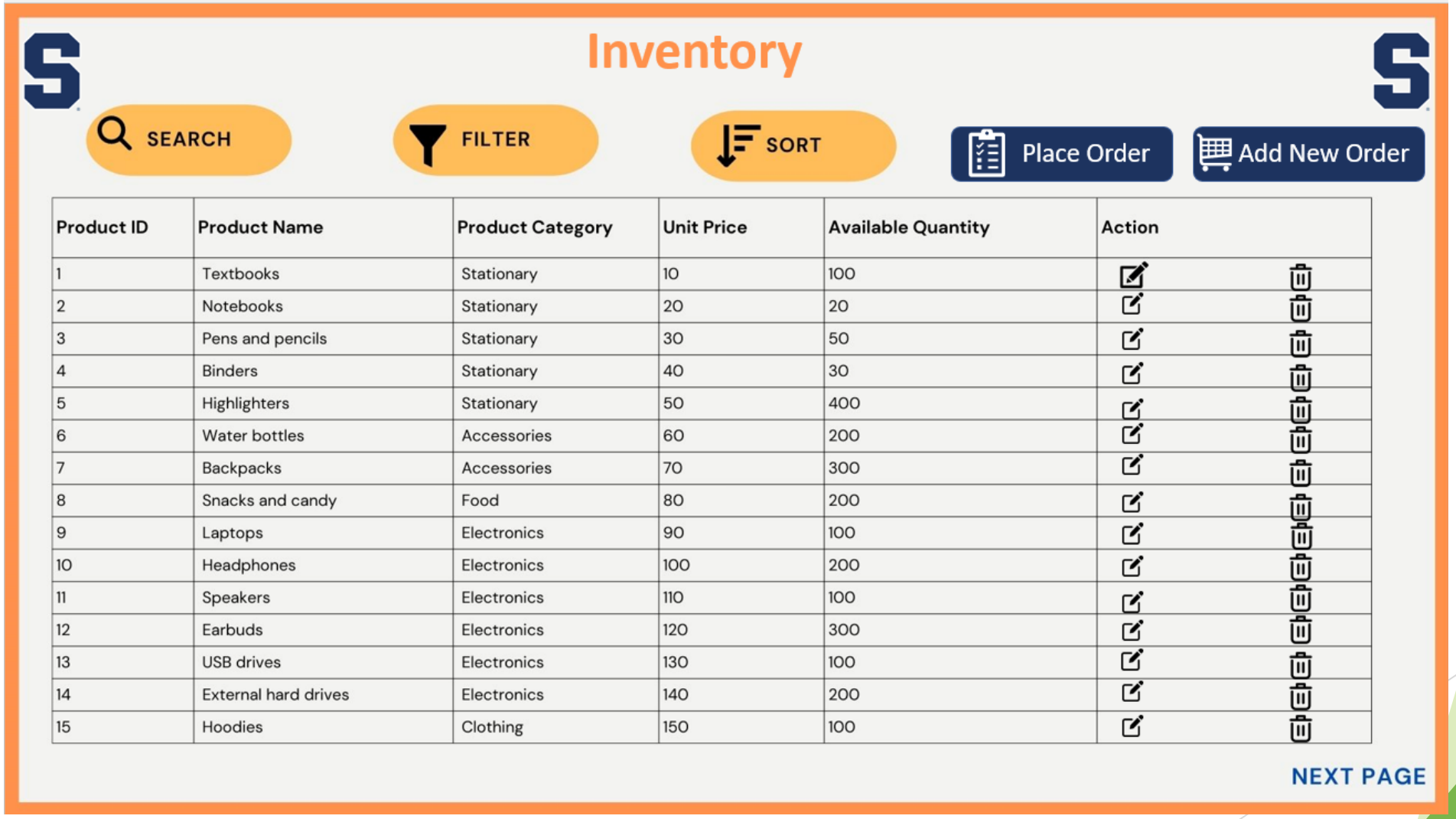
Monthly Sales Trends: This can help us identify seasonal trends and adjust our inventory and marketing strategies accordingly.

```
SELECT o.order_date as date1, SUM(od.quantity * p.price) AS total_sales
FROM orders o
JOIN order_details od ON o.order_id = od.order_id
JOIN products p ON od.product_id = p.product_id
GROUP BY o.order_date
ORDER BY date1
```

Results | Messages

	date1	total_sales
1	2022-03-15	130.00
2	2022-03-16	290.00
3	2022-03-17	260.00
4	2022-03-18	750.00
5	2022-03-19	490.00
6	2022-03-20	210.00
7	2022-03-21	320.00
8	2022-03-22	940.00
9	2022-03-23	130.00
10	2022-03-24	650.00

Logical Design of UI



Product ID	Product Name	Product Category	Unit Price	Available Quantity	Action
1	Textbooks	Stationary	10	100	
2	Notebooks	Stationary	20	20	
3	Pens and pencils	Stationary	30	50	
4	Binders	Stationary	40	30	
5	Highlighters	Stationary	50	400	
6	Water bottles	Accessories	60	200	
7	Backpacks	Accessories	70	300	
8	Snacks and candy	Food	80	200	
9	Laptops	Electronics	90	100	
10	Headphones	Electronics	100	200	
11	Speakers	Electronics	110	100	
12	Earbuds	Electronics	120	300	
13	USB drives	Electronics	130	100	
14	External hard drives	Electronics	140	200	
15	Hoodies	Clothing	150	100	

Suppliers

SEARCH FILTER SORT

Supplier ID	Supplier Name	Supplier Email ID	Supplier Contact Number	Select Supplier
1	Alex Corp	alex@gmail.com	123-456-7890	Select Supplier
2	Xylon Ltd	xylon@gmail.com	234-567-8901	Select Supplier
3	Enterprise Inc	enterprise@gmail.com	345-678-9012	Select Supplier
4	Global Supplies	global@gmail.com	456-789-0123	Select Supplier
5	Jack Co	jack@gmail.com	567-890-1234	Select Supplier
5	More Enterprises	more@gmail.com	678-901-2345	Select Supplier
7	Priceless Solutions	priceless@gmail.com	456-789-0123	Select Supplier
8	Standard Industries	standard@gmail.com	567-890-1234	Select Supplier
9	Wellness Manufacturing	wellness@gmail.com	678-901-2345	Select Supplier
10	Zeus Services	zeus@gmail.com	315-956-8930’	Select Supplier

NEXT PAGE

Customers

SEARCH FILTER SORT

Customer ID	Customer Name	Address	City	Phone	Select
1001	John Doe	123 Main St.	Anytown USA	555-1234	Select
1002	Jane Smith	456 Elm St.	Anytown USA	555-5678	Select
1003	Bob Johnson	789 Oak St.	Anytown USA	555-9012	Select
1004	Samantha Lee	321 Maple St.	Anytown USA	555-3456	Select
1005	David Wilson	567 Pine St.	Anytown USA	555-7890	Select
1006	Emily Brown	890 Cedar St.	Anytown USA	555-2345	Select
1007	Mike Davis	432 Birch St.	Anytown USA	555-6789	Select
1008	Maria Hernandez	765 Walnut St.	Anytown USA	555-0123	Select
1009	Alex Turner	234 Spruce St.	Anytown USA	555-4567	Select
1010	Lisa Kim	876 Chestnut St.	Anytown USA	555-8901	Select
1011	William Jackson	543 Cherry St.	Anytown USA	555-2345	Select
1012	Avery Garcia	987 Cedar St.	Anytown USA	555-6789	Select
1013	Victoria Nguyen	210 Pine St.	Anytown USA	555-0123	Select
1014	Daniel Brown	876 Oak St.	Anytown USA	555-4567	Select
1015	Sophia Wilson	543 Birch St.	Anytown USA	555-8901	Select
1016	Ethan Davis	210 Walnut St.	Anytown USA	555-2345	Select
1017	Mia Hernandez	987 Spruce St.	Anytown USA	555-6789	Select
1018	Oliver Kim	432 Chestnut St.	Anytown USA	555-0123	Select
1019	Emma Turner	765 Cherry St.	Anytown USA	555-4567	Select
1020	Noah Jackson	210 Cedar St.	Anytown USA	555-8901;	Select

NEXT PAGE

THANK YOU