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Supermarket Management System

DBMS Project

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1. Abstract

Now a day's without Super market we can't live one day. Everyday there are so many people are buying commodity from supermarket. And supermarket manager are buying products from supplier. In a supermarket there are so many department and employee. From a supermarket thousands of products are selling every day. Thousands of data they are getting every day so if there is no management system they will not be able to run their supermarket. So in this project I create a supermarket database management system, which is able to:

1. Store data, update data, delete data,
2. Get the employees of a department;
3. Get the inventory of a commodity;
4. Get the supplier information of a commodity;
5. Get the sales Department of a commodity
6. It can save the details of each sale;
7. It can query customer information.

2. Introduction

E.F Codd invented the relational database in 1970. A database is an application that allows storing and retrieving data very rapidly. A relational database is a collection of data items organized in formally-described tables from which data can be accessed or reassembled in many different ways. Relational Database is a set of tables referred to as relation with data category described in columns similar to spreadsheets. Each row contains a unique instance of data for the corresponding data category. While creating a relational database domain of possible values along with constraints are applied to the data. It is the relation between the tables that makes it a 'relation' table. They require few assumptions about how data will be extracted from the database. As a result, the same database can be viewed in many different ways.

Mostly all the relational databases use Structured Query Language (SQL) to access and modify the data stored in the database. Originally it was based upon relational calculus and relational algebra and is subdivided into elements such as clauses, predicates, queries and statements.

Some of the benefits of the database designed according to the relational model are:

- ❖ Most of the information is stored in the database and not in the application, so the database is self documenting.
- ❖ It is easy to add, update or delete data.
- ❖ It gives benefits of data summarization, retrieval and reporting.
- ❖ The database is structured in a tabular form with highly related tables; the nature of the database is predictable.
- ❖ Also, any changes required to make in the schema of the database is quite simple.

3. Entities

- ❖ Department
- ❖ Employee
- ❖ Commodity
- ❖ Supplier
- ❖ Customer

3.1 Attributes

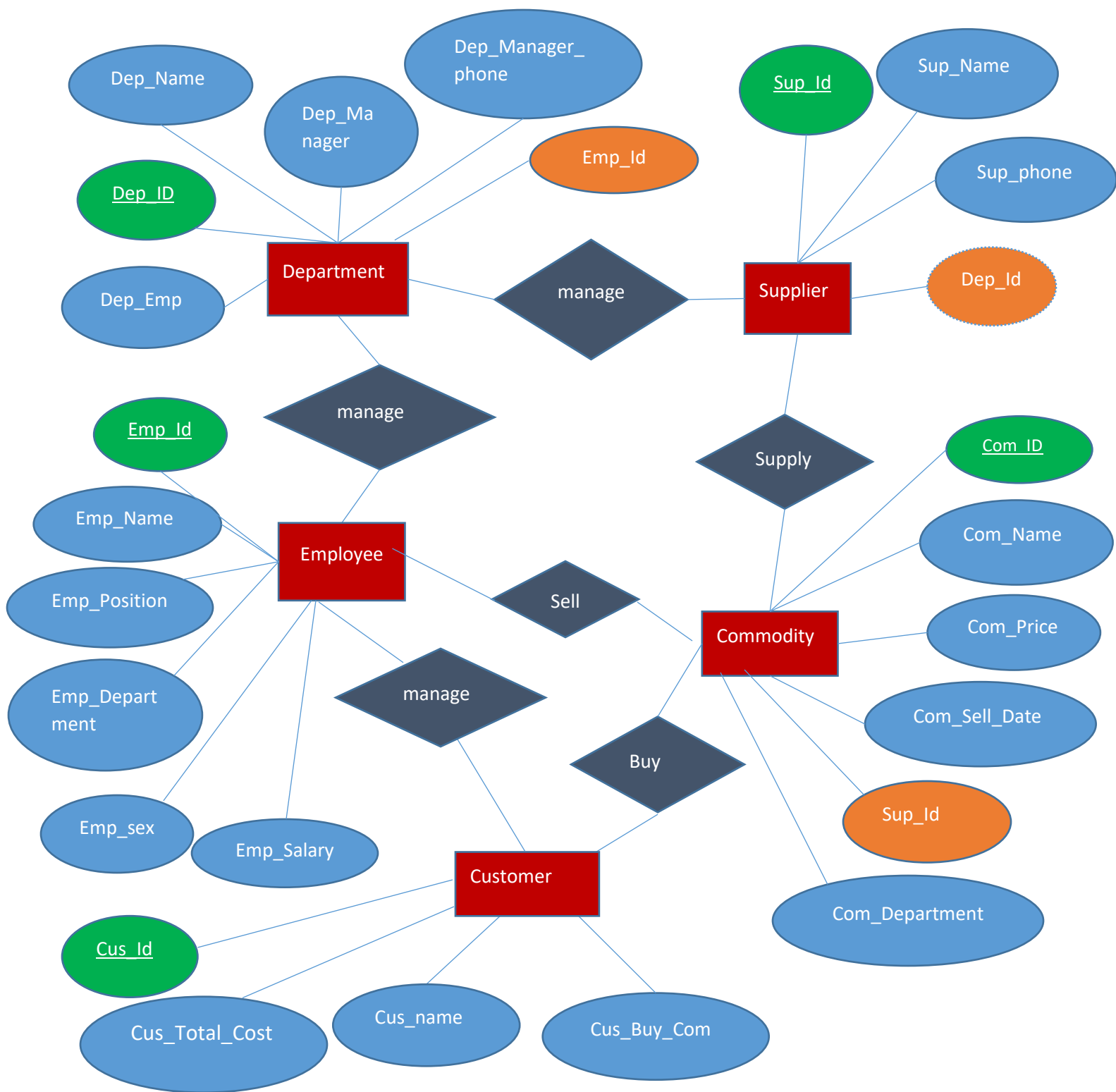
- ❖ Department
 - Dep_Id (primary Key)
 - Dep_Name
 - Dep_Manager
 - Dep_Manager_Phone
 - Dep_Employee
 - Mgr_Id (Foreign Key).
- ❖ Employee
 - Emp_Id (primary key)
 - Emp_Name
 - Emp_Position
 - Emp_Department
 - Emp_Sex
 - Emp_Salary
- ❖ Commodity
 - Com_Id
 - Com_Name
 - Com_Price/KG
 - Com_Sell_Date
 - Com_Department
 - Sup_Id (Foreign Key)
- ❖ Supplier
 - Sup_Id
 - Sup_Name
 - Sup_Phone
 - Dep_Id (Foreign Key)
- ❖ Customer
 - Cus_Id
 - Cus_Name
 - Cus_Buy_Com
 - Cus_Total_Cost

RELATIONSHIP – CARDINALITY

1. Department manage Employee	(1 – M)
2. Department manage Supplier	(1 – 1)
3. Employee manage Customer	(N – M)
4. Employee sells commodity	(1 – M)
5. Customer Buys Commodity	(N – N)
6. Supplier supplies Commodity	(1 – N)

4. E-R Diagram

E-R diagram in the next page because here is not enough space.



5. SQL Statement

Data types and its description:

- 1. Integer:** one optional sign character (+ or -) followed by at least one digit (0-9). Leading and trailing blanks are ignored. No other character is allowed.
- 2. Varchar:** It is used to store alpha numeric characters. In this data type we can set the maximum number of characters up to 8000 ranges by defaults SQL server will set the size to 50 characters range.
- 3. Date:** The DATE data type accepts date values. No parameters are required when declaring a DATE data type.
- 4. Time:** The TIME data type accepts time values. No parameters are required when declaring a TIME data type.

5.1. Statement for Creating and Updating Table

```
1  --Start coding.
2  --Create database table
3  CREATE TABLE department (
4      Dep_Id int primary Key,
5      Dep_Name varchar(30),
6      Dep_Manager varchar(30),
7      Mgr_Id int,
8      Dep_Manager_Phone int(11),
9      Dep_Employee int
10 );
11
12
13
14
15
16
17
18
19
20
21
22
23
24
--
14  CREATE TABLE employee (
15      Emp_Id int primary Key,
16      Emp_Name varchar(30),
17      Emp_Position varchar(30),
18      Emp_Department varchar(30),
19      Emp_Sex Varchar(1),
20      Emp_salary int(6)
21  );
22
23
24
```

```
25  ALTER TABLE department
26  ADD FOREIGN KEY(Mgr_Id)
27  REFERENCES employee(Emp_Id)
28  ON DELETE SET NULL;
29
30  UPDATE department
31  SET Mgr_Id = 1
32  WHERE Dep_Id = 1;
33
34  UPDATE department
35  SET Mgr_Id = 2
36  WHERE Dep_Id = 2;
37
38  UPDATE department
39  SET Mgr_Id = 3
40  WHERE Dep_Id = 3;
41
42  UPDATE department
43  SET Mgr_Id = 4
44  WHERE Dep_Id = 4;
45
```

```

46 CREATE TABLE supplier (
47
48     Sup_Id int primary Key,
49     Sup_Name varchar(30),
50     Sup_Phone int(11),
51     Dep_Id int,
52     FOREIGN KEY(Dep_Id) REFERENCES department(Dep_Id) ON DELETE SET NULL
53
54 );
--
56 CREATE TABLE commodity (
57
58     Com_Id int primary Key,
59     Com_Name varchar(30),
60     Com_Price int(3),
61     Com_Sell_Date date,
62     Com_Department varchar(30),
63     Sup_Id int,
64     FOREIGN KEY(Sup_Id) REFERENCES supplier(Sup_Id) ON DELETE SET NULL
65
66 );
67
68
69 CREATE TABLE customer (
70
71     Cus_Id int primary Key,
72     Cus_Name varchar(30),
73     Cus_Buy_Com Varchar(30),
74     Cus_Total_Cost int
75
76 );

```

5.2. Statement for Inserting Value in the Table

```

93
94 INSERT INTO department VALUES(1, 'Sells Department', 'Tareq', NULL , 01992939391 , 5 );
95 INSERT INTO department VALUES(2, 'Buys Department', 'Jon', NULL , 01992934334 , 3 );
96 INSERT INTO department VALUES(3, 'Store Department', 'Von', NULL , 01892939383 , 1 );
97 INSERT INTO department VALUES(4, 'Mangement Department', 'Dane', NULL , 01982939376 , 1 );
98
99 INSERT INTO employee VALUES(1, 'Tareq', 'Managen' , 'Sells Department' , 'M', 10500);
100 INSERT INTO employee VALUES(2, 'Jon', 'Manager' , 'Buys Department' , 'M', 8500);
101 INSERT INTO employee VALUES(3, 'Von', 'Manager' , 'Store Department' , 'M', 9500);
102 INSERT INTO employee VALUES(4, 'Dane', 'Manager' , 'Management Department' , 'M', 9000);
103 INSERT INTO employee VALUES(5, 'Yu', 'Assistant Manager' , 'Sells Department' , 'F', 6000);
104 INSERT INTO employee VALUES(6, 'Shu', 'Worker' , 'Sells Department' , 'M', 5000);
105 INSERT INTO employee VALUES(7, 'Lin', 'Worker' , 'Sells Department' , 'F', 5000);
106 INSERT INTO employee VALUES(8, 'Lu', 'Worker' , 'Sells Department' , 'F', 5000);
107 INSERT INTO employee VALUES(9, 'Xiao', 'Worker' , 'Buys Department' , 'M', 5500);
108 INSERT INTO employee VALUES(10, 'Jon', 'Assistant Manager' , 'Buys Department' , 'M', 6000);
109

```



```

110 INSERT INTO supplier VALUES(101, 'Robinson', 01234456123, 3);
111 INSERT INTO supplier VALUES(102, 'Tommy', 01534457890, 1);
112 INSERT INTO supplier VALUES(103, 'Dobson', 01894456189, 1);
113 INSERT INTO supplier VALUES(104, 'Dowsan', 01674756189, 2);
114 INSERT INTO supplier VALUES(105, 'Rock', 01345446123, 3);
115
116 INSERT INTO commodity VALUES(1001, 'Rice', 5, '2021-12-31', "Grocery", 101 );
117 INSERT INTO commodity VALUES(1002, 'Flour', 4, '2021-12-31', "Grocery", 101 );
118 INSERT INTO commodity VALUES(1003, 'Oil', 12, '2021-12-31', "Grocery", 101 );
119 INSERT INTO commodity VALUES(1004, 'Fish', 9, '2021-12-31', "Fish and Sea Food", 104 );
120 INSERT INTO commodity VALUES(1005, 'Beef', 100, '2021-12-30', "Meat", 104 );
121 INSERT INTO commodity VALUES(1006, 'Chicken', 25, '2021-12-30', "Meat", 104 );
122 INSERT INTO commodity VALUES(1007, 'Mango', 16, '2021-12-30', "Fruits", 102 );
123 INSERT INTO commodity VALUES(1008, 'Beef', 100, '2021-12-30', "Meat", 104 );
124 INSERT INTO commodity VALUES(1009, 'Rice', 5, '2021-12-30', "Grocery", 101 );
125 INSERT INTO commodity VALUES(1010, 'Egg', 13, '2021-12-30', "Grocery", 105 );
126
127 INSERT INTO customer VALUES(11, 'Rock', "Rice, Flour", 20);
128 INSERT INTO customer VALUES(12, 'Rock', 'Beef, Flour', 125);
129 INSERT INTO customer VALUES(13, 'Danny', 'Mango, Egg', 34);
130 INSERT INTO customer VALUES(14, 'tonny', 'Rice, Fish', 50);
131 INSERT INTO customer VALUES(15, 'jon', 'Oil, Egg', 50);
132
133

```

5.3. Statement for getting all the table information one by one

```

/b
77 --Find Table Information
78 SELECT * FROM department;
79 SELECT * FROM employee;
80 SELECT * FROM supplier;
81 SELECT * FROM commodity;
82 SELECT * FROM customer;
83

```


DEPARTMENT TABLE


 **Success**
(4 rows) 0.1 s

Explore SQL **Data** Chart Export 

Dep_Id	Dep_Name	Dep_Manager	Mgr_Id	Dep_Manager_Phone	Dep_Employee
1	Sells Department	Tareq	1	1992939391	5
2	Buys Department	Jon	2	1992934334	3
3	Store Department	Von	3	1892939383	1
4	Mangement Department	Dane	4	1982939376	1


EMPLOYEE TABLE

 **Success**
(10 rows) 0.2 s

Explore SQL **Data** Chart Export 

Emp_Id	Emp_Name	Emp_Position	Emp_Department	Emp_Sex	Emp_salary
1	Tareq	Manager	Sells Department	M	10500
2	Jon	Manager	Buys Department	M	8500
3	Von	Manager	Store Department	M	9500
4	Dane	Manager	Management Department	M	9000
5	Yu	Assistant Manager	Sells Department	F	6000
6	Shu	Worker	Sells Department	M	5000
7	Lin	Worker	Sells Department	F	5000
8	Lu	Worker	Sells Department	F	5000
9	Xiao	Worker	Buys Department	M	5500

SUPPLIER TABLE

 **Success**
(5 rows) 0.2 s

Explore SQL

Sup_Id	Sup_Name	Sup_Phone	Dep_Id
101	Robinson	1234456123	3
102	Tommy	1534457890	1
103	Dobson	1894456189	1
104	Dowsan	1674756189	2
105	Rock	1345446123	3

COMMODITY TABLE

Success
(10 rows) 0.1 s

Explore SQL Data Chart Export

	Com_Id	Com_Name	Com_Price	Com_Sell_Date	Com_Department	Sup_Id
↕	1001	Rice	5	2021-12-31	Grocery	101
	1002	Flour	4	2021-12-31	Grocery	101
	1003	Oil	12	2021-12-31	Grocery	101
	1004	Fish	9	2021-12-31	Fish and Sea Food	104
	1005	Beef	100	2021-12-30	Meat	104
	1006	Chicken	25	2021-12-30	Meat	104
	1007	Mango	16	2021-12-30	Fruits	102
	1008	Beef	100	2021-12-30	Meat	104
	1009	Rice	5	2021-12-30	Grocery	101

CUSTOMER TABLE

Success
(5 rows) 0.1 s

Explore SQL Data C

	Cus_Id	Cus_Name	Cus_Buy_Com	Cus_Total_Cost
	11	Rock	Rice, Flour	20
	12	Rock	Beef, Flour	125
	13	Danny	Mango, Egg	34
	14	tonny	Rice, Fish	50
	15	jon	Oil, Egg	50

5.4 Some Basic Queries

5.4.1. Find all Employees at Sells department

```
134
135 -- Find all employees at Sells department
136 SELECT *
137 FROM employee
138 WHERE Emp_Department = 'Sells Department';
139
```

Emp_Id	Emp_Name	Emp_Position	Emp_Department	Emp_Sex	Emp_salary
1	Tareq	Manager	Sells Department	M	10500
5	Yu	Assistant Manager	Sells Department	F	6000
6	Shu	Worker	Sells Department	M	5000
7	Lin	Worker	Sells Department	F	5000
8	Lu	Worker	Sells Department	F	5000

5.4.2. Find all Employees ordered by salary

```
-- Find all employees ordered by salary
SELECT *
from employee
ORDER BY Emp_salary ASC;
```

Supermarket database, Jan 1, 2022

Success (10 rows) 0.3 s 11:15 AM

Explore SQL Data Chart Export

Emp_Id	Emp_Name	Emp_Position	Emp_Department	Emp_Sex	Emp_salary
6	Shu	Worker	Sells Department	M	5000
7	Lin	Worker	Sells Department	F	5000
8	Lu	Worker	Sells Department	F	5000
9	Xiao	Worker	Buys Department	M	5500
5	Yu	Assistant Manager	Sells Department	F	6000
10	Jon	Assistant Manager	Buys Department	M	6000
2	Jon	Manager	Buys Department	M	8500
4	Dane	Manager	Management Department	M	9000
3	Von	Manager	Store Department	M	9500
1	Tareq	Manager	Sells Department	M	10500

5.4.3. Find all employees ordered by sex

```
139
140 -- Find all employees ordered by sex
141 SELECT *
142 from employee
143 ORDER BY Emp_Sex;
144
145
146
```

11:20:17 AM x 11:19:58 AM x 11:15:08 AM x 10:43:12 AM x 10:42:32 AM x 10:42:09 AM

Success
(10 rows) 0.2 s

Explore SQL Data Chart Export

Emp_Id	Emp_Name	Emp_Position	Emp_Department	Emp_Sex	Emp_salary
5	Yu	Assistant Manager	Sells Department	F	6000
7	Lin	Worker	Sells Department	F	5000
8	Lu	Worker	Sells Department	F	5000
1	Tareq	Manager	Sells Department	M	10500
2	Jon	Manager	Buys Department	M	8500
3	Von	Manager	Store Department	M	9500
4	Dane	Manager	Management Department	M	9000
6	Shu	Worker	Sells Department	M	5000
9	Xiao	Worker	Buys Department	M	5500

5.4.4. Count Employee based on sex

```

153
154 -- Find out how many males and females
155 SELECT COUNT(Emp_sex), Emp_sex
156 FROM employee
157 GROUP BY Emp_sex
158

```

COUNT(Emp_sex)	Emp_sex
3	F
7	M

5.4.5. Find the sum of all Employee's salaries

```

149
150 -- Find the sum of all employee's salaries
151 SELECT SUM(Emp_salary)
152 FROM employee;
153

```

Success
(1 rows) 0.3 s

SUM(Emp_salary)
70000

5.4.6 Find all the commodity at Grocery department

```
153
154 --Find all the commodity at Grocery
155 SELECT *
156 FROM commodity
157 WHERE Com_Department = 'Grocery';
158
159
---
```

	Com_Id	Com_Name	Com_Price	Com_Sell_Date	Com_Department	Sup_Id
	1001	Rice	5	2021-12-31	Grocery	101
	1002	Flour	4	2021-12-31	Grocery	101
	1003	Oil	12	2021-12-31	Grocery	101
	1009	Rice	5	2021-12-30	Grocery	101
	1010	Egg	13	2021-12-30	Grocery	105

5.4.6 Find a commodity information by Supplier Id

```
158
159 --Find a commodity at information
160 SELECT *
161 FROM commodity
162 WHERE Sup_Id = 102;
163
```

	Com_Id	Com_Name	Com_Price	Com_Sell_Date	Com_Department	Sup_Id
	1007	Mango	16	2021-12-30	Fruits	102

5.4.7 Find the supplier information of a Commodity

```
164 --Find the supplier information of a commodity
165 SELECT *
166 FROM supplier
167 WHERE Sup_Id = 102;
```

	Sup_Id	Sup_Name	Sup_Phone	Dep_Id
	102	Tommy	1534457890	1

5.4.8 Find all the Suppliers who are supply product at department 1

```
169 --Find all the suppliers who are supply product at department 1
170 SELECT *
171 FROM supplier
172 WHERE Dep_Id = 1;
```

Sup_Id	Sup_Name	Sup_Phone	Dep_Id
102	Tommy	1534457890	1
103	Dobson	1894456189	1

5.4.9 Find customer information

```
174 --Find customer information
175 SELECT *
176 FROM customer
177 WHERE Cus_Name = 'Rock';
178
```

 Success
(2 rows) 0.2 s

Explore


SQL

Data

Cus_Id	Cus_Name	Cus_Buy_Com	Cus_Total_Cost
11	Rock	Rice, Flour	20
12	Rock	Beef, Flour	125

5.4.10 Find customer who have bought Rice and Fish

```
178
179 --Find customer who buyed Rice and Fish
180 SELECT *
181 FROM customer
182 WHERE Cus_Buy_Com = 'Rice, Fish';
183
```

Cus_Id	Cus_Name	Cus_Buy_Com	Cus_Total_Cost
 14	tonny	Rice, Fish	50

6. Conclusion

A database is a collection of data that is typically stored electronically. A database is often created to make it simple to store and retrieve data. It reduces data redundancy and improves consistency by reducing update mistakes. Costs of data entry, storage, and retrieval are reduced. Improved data security, among other things

7. References

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