

**Inventory Management System**  
**Project**  
**Database Management System**

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## What is Database?

A Database is a container where data can be collected systematically. Managing manipulation of these data are easy.

### Example:

Online Library who has millions of books. In order maintain their data they use database.

### Databases Management system software –

MySQL

Oracle

PostgreSQL

SQLite

Maria DB

## What is SQL –

SQL Stand for – Structured Query Language

Helps to access and manipulate your database.

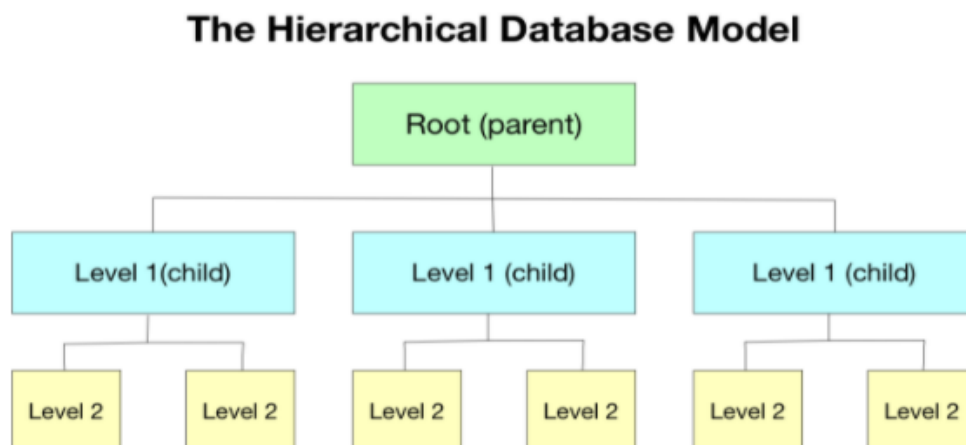
### Types of Databases Management systems –

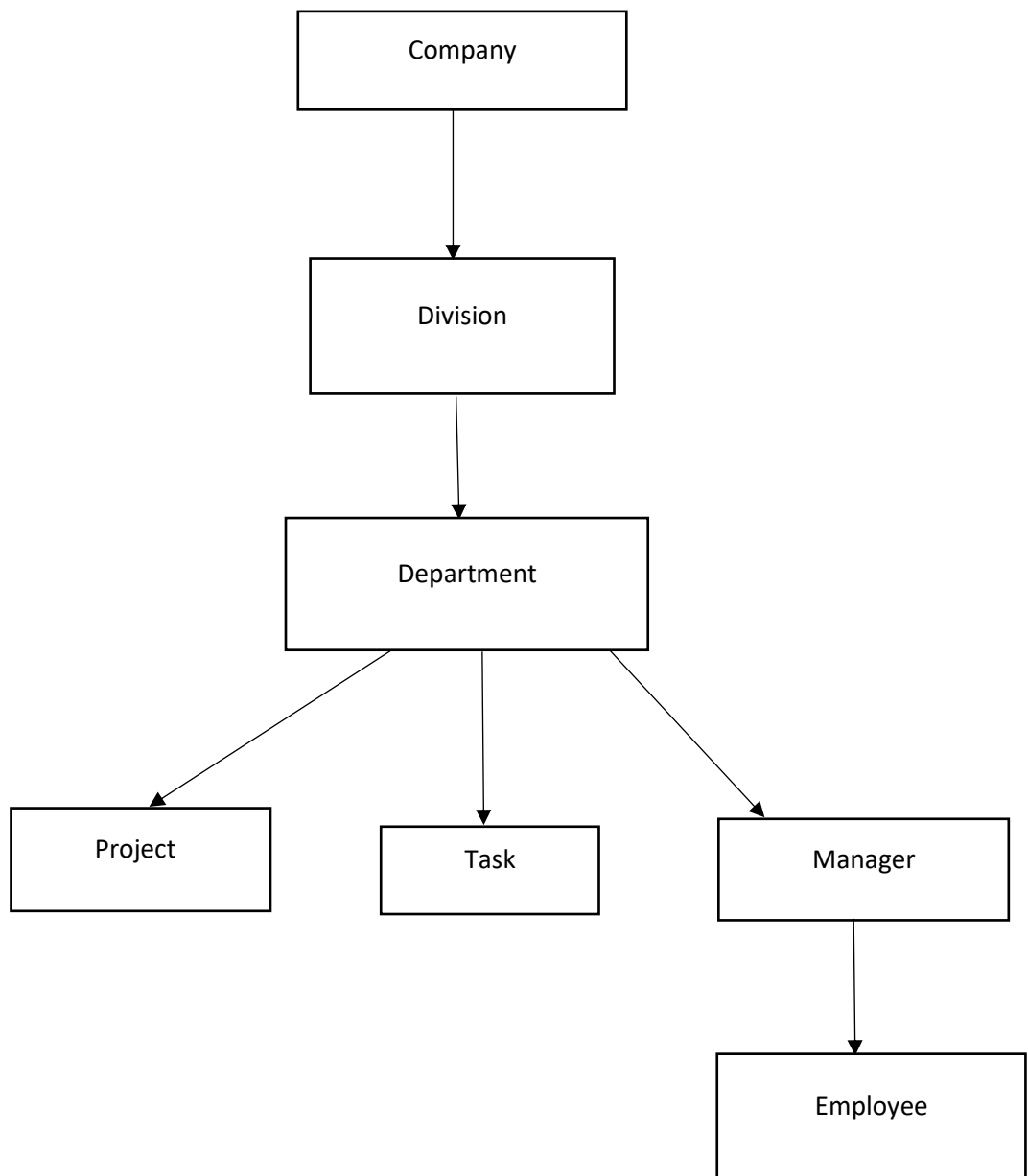
1. Hierarchical Database
2. Network Database
3. Relational Database
4. Object-Oriented Database

### Hierarchical Database –

A hierarchical database is a data model in which data is stored in the form of records and organized into a tree-like structure, or parent-child structure, in which one parent node can have many child nodes connected through links.

### Example –



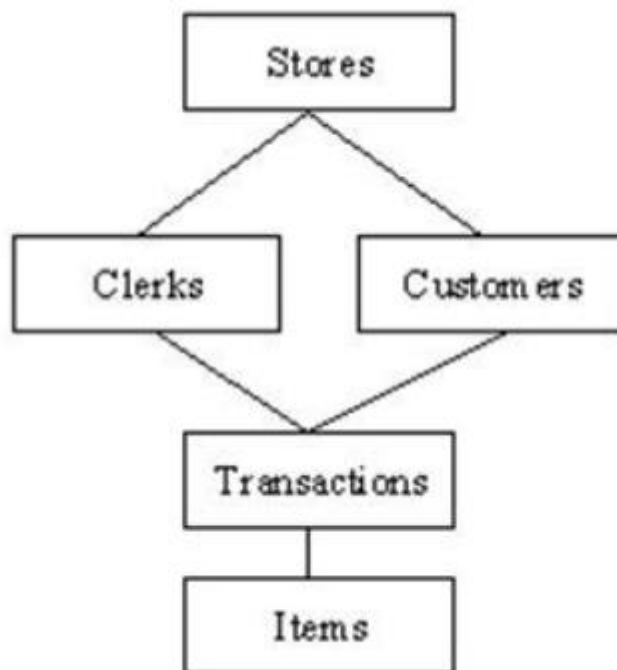


### Network Database –

Network database management systems (Network DBMSs) are based on a network data model that allows each record to have multiple parents and multiple child records. A network database allows flexible relationship model between entities.

All entities are organized in graphical representations.

### Example –



### Relational Database –

A Relational Database management system (RDBMS) is used for the database management system.

This technique is used for identifying the unique rows from table and also help to establish relationship among the tables.

### Types of keys in RDBMS –

1. Primary Key
2. Super Key
3. Candidate Key
4. Alternate Key
5. Composite Key
6. Foreign Key

## Object – Oriented Database –

object-oriented database management system is the data model in which data is stored in form of objects, which are instances of classes. These classes and objects together make an object-oriented data model.

Three major components –

1. Object structure
2. Object classes
3. Object identity

## Objective of the Project –

- This will help us in maintain the exact count of any product.
- To reduces manual workload and paperwork.
- Can reduce duplicate entries.

## Purpose of the Project –

Inventory Management must be designed to meet the dictates of market place and support the company's Strategic Plan.

Inventory Management system provides information to efficiently manage the flow of materials, effectively utilize people and equipment, coordinate internal activities and communicate with customers.

Inventory Management does not make decisions or manage operations, they provide the information to managers

## Technical Feasibility –

In this project only implemented the back end of the system which is designed

On **“SQL Server Management Studio”**.

On this sequence query language, we created 7 tables named:

Table 1: Customer Table

Table 2: Order Table

Table 3: Employee Table

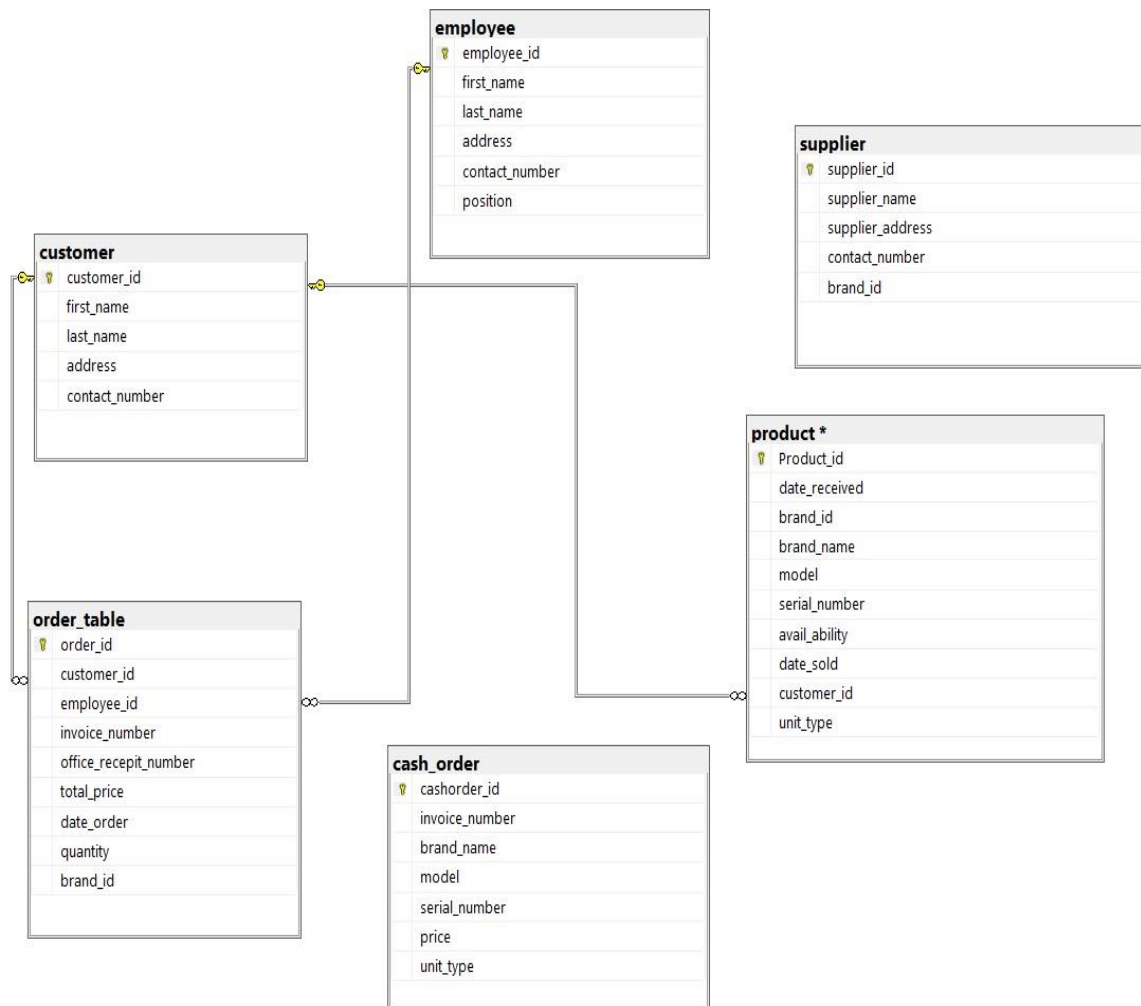
Table4: Cashorder Table

Table5: Chargeorder Table

Table6: Products Table

Table7: Supplier Table

## Entity Relationship Diagram:



## SQL CODE IMPLEMENTATION:

-- Creating a Database

```
CREATE DATABASE InventoryManagementSystem
```

-- To Use the Created Database(InventoryManagementSystem)

```
USE InventoryManagementSystem
```

-- Existing Databases

```
SELECT name FROM master.dbo.sysdatabases
```

-- CREATING A CUSTOMER TABLE

```
CREATE TABLE customer(  
customer_id BIGINT PRIMARY KEY NOT NULL,  
first_name VARCHAR(50) NOT NULL,  
last_name VARCHAR(50) NOT NULL,  
address VARCHAR(200) NOT NULL,  
contact_number VARCHAR(100) UNIQUE NOT NULL)
```

-- INSERTING SOME DATA INTO THE CUSTOMER TABLE

```
INSERT INTO dbo.customer  
VALUES  
('19443','Minna','Amigon','2371 Jerrold Ave','215-874-1229')
```

-- SELECTING THE DATA FROM THE CUSTOMER TABLE

```
SELECT * FROM dbo.customer
```



-- CREATING A EMPLOYEE TABLE

```
CREATE TABLE employee(  
employee_id BIGINT PRIMARY KEY NOT NULL,  
first_name VARCHAR(50) NOT NULL,  
last_name VARCHAR(50) NOT NULL,  
address TEXT NOT NULL,  
contact_number VARCHAR(100) NOT NULL,  
position VARCHAR(50) NOT NULL)
```

-- INSERTING SOME DATA INTO THE EMPLOYEE TABLE

```
INSERT INTO dbo.employee  
VALUES  
(  
'677509','Lois','Walker','6649 N Blue Gum St','303-572-8492','Research Director'),  
(  
'940761','Brenda','Robinson','4 B Blue Ridge Blvd','225-945-4954','Healthcare Representative'),  
(  
'428945','Joe','Robinson','8 W Cerritos Ave #54','219-904-2161','Healthcare Representative'),  
(  
'408351','Diane','Evans','639 Main St','215-793-6791','Developer'),  
(  
'193819','Benjamin','Russell','34 Center St','262-404-2252','Laboratory Technician'),  
(  
'499687','Patrick','Bailey','3 McAuley Dr','319-812-6957','Sales Representative'),  
(  
'539712','Nancy','Baker','7 Eads St','229-336-5117','Human Resources'),  
(  
'153989','Jack','Alexander','37275 St Rt 17m M','702-603-3769','Manufacturing Director'),  
(  
'386158','Melissa','King','25 E 75th St #69','216-605-3731','Research Scientist'),  
(  
'441771','Cheryl','Scott','56 E Morehead St','215-288-9345','Laboratory Technician')
```

-- SELECTING THE DATA FROM THE EMPLOYEE TABLE

```
SELECT * FROM dbo.employee
```

-- CREATING A SUPPLIER TABLE

```
CREATE TABLE supplier(  
supplier_id BIGINT PRIMARY KEY NOT NULL,  
supplier_name VARCHAR(50) NOT NULL,  
supplier_address TEXT NOT NULL,  
contact_number VARCHAR(50) NOT NULL,  
brand_id BIGINT NOT NULL)
```

-- INSERTING SOME DATA INTO THE EMPLOYEE TABLE

```
INSERT INTO dbo.supplier  
VALUES  
(  
'363065','Nancy','47565 W Grand Ave','212-825-1930','726'),  
(  
'226714','Judy','2853 S Central Expy','316-736-6126','955'),  
(  
'491943','Nancy','3305 Nabell Ave #679','236-973-8086','813'),  
(  
'758872','Henry','74 W College St','314-731-7135','943'),  
(  
'917395','ToddHall','2737 Pistorio Rd #9230','240-513-8668','173'),  
(  
'750173','AntonioRoberts','47565 W Grand Ave','205-267-7304','573'),  
(  
'515103','AnnePerez','701 S Harrison Rd','423-837-3338','955'),  
(  
'940922','MelissaButler','18 Fountain St','308-827-9016','110'),  
(  
'883936','DouglasFlores','74989 Brandon St','303-836-4721','459'),  
(  
'447813','AnnColeman','701 S Harrison Rd','319-994-4179','65')
```

-- SELECTING THE DATA FROM THE EMPLOYEE TABLE

```
SELECT * FROM dbo.supplier
```

-- CREATING A ORDER TABLE

```
CREATE TABLE order_table(  
order_id BIGINT PRIMARY KEY NOT NULL,  
customer_id BIGINT REFERENCES dbo.customer(customer_id),  
employee_id BIGINT REFERENCES dbo.employee(employee_id),  
invoice_number BIGINT UNIQUE NOT NULL,  
office_receipt_number BIGINT UNIQUE NOT NULL,  
total_price DOUBLE PRECISION NOT NULL,  
date_order DATE NOT NULL,  
quantity DOUBLE PRECISION NOT NULL,  
brand_id BIGINT NOT NULL)
```

-- INSERTING SOME DATA INTO THE ORDER\_TABLE

```
INSERT INTO dbo.order_table  
VALUES  
(  
'94010','21224','386158','819028031','8400','786.58','2014-10-20','65','435'),  
(  
'91776','44805','408351','860673511','4037','250.02','2014-10-21','75','535'),  
(  
'76708','45011','428945','795490682','2160','1170.81','2015-10-01','85','735'),  
(  
'99501','48116','441771','142278373','5448','700.53','2015-10-02','95','810'),  
(  
'95110','57105','499687','740147912','8846','145.12','2015-10-03','105','910'),  
(  
'94577','70116','539712','898523128','6612','414.70','2016-07-11','115','1005'),  
(  
'46202','95111','677509','347140347','1220','138.4','2016-07-19','125','1115'),  
(  
'82901','99501','940761','686048400','1001','79.24','2017-01-13','145','1325')
```

-- SELECTING THE DATA FROM THE ORDER\_TABLE

```
SELECT * FROM dbo.order_table
```

-- CREATING A CASH\_ORDER TABLE

```
CREATE TABLE cash_order(  
    cashorder_id INT IDENTITY(1,1) PRIMARY KEY NOT NULL,  
    invoice_number BIGINT NOT NULL,  
    brand_name TEXT NOT NULL,  
    model VARCHAR(50) NOT NULL,  
    serial_number VARCHAR(100) NOT NULL,  
    price DOUBLE PRECISION NOT NULL,  
    unit_type TEXT NOT NULL)
```

-- INSERTING SOME DATA INTO THE ORDER\_TABLE

INSERT INTO dbo.cash\_order

VALUES

```
('223359620','OPPO','A53','A53212','10490.20','Credit'),  
('902102267','VIVO','Y20G','Y20267','12891.90','Cash'),  
('3314384481','OPPO','Y21S','Y21990','14590.30','NetBanking'),  
('617667090','SAMSUNG','M31S','M31123','19990.00','Cash'),  
('787399423','SAMSUNG','M325G','M32566','21490.10','Credit'),  
('837559306','APPLE','XR','XR3312','52900.40','NetBanking'),  
('385383069','APPLE','12MINI','121656','56999.00','Credit'),  
('918419539','NOKIA','110 TA-1302 DS','DS3422','1490.20','Cash'),  
('844530045','NOKIA','6310','633221','4090.40','Debit')
```

-- SELECTING THE DATA FROM THE ORDER\_TABLE

SELECT \* FROM cash\_order

-- CREATING A PRODUCT TABLE

```
CREATE TABLE product(  
product_id BIGINT NOT Null,  
date_received DATE NOT NULL,  
brand_id BIGINT NOT NULL,  
brand_name TEXT NOT NULL,  
model VARCHAR(50) NOT NULL,  
serial_number VARCHAR(100) NOT NULL,  
avail_ability TEXT NULL,  
date_sold DATE NOT Null,  
customer_id BIGINT NOT NULL,  
unit_type TEXT NOT NULL)
```

-- Adding the PRIMARY KEY With Different Syntax

```
ALTER TABLE product  
ADD PRIMARY KEY (Product_id)
```

-- Adding the FOREIGN KEY With Different Syntax

```
ALTER TABLE product  
ADD FOREIGN KEY (customer_id) REFERENCES customer(customer_id)
```

-- SELECTING THE DATA FROM THE PRODUCT\_TABLE

```
SELECT * FROM product
```

-- CREATING A CHANGE ORDER TABLE

```
CREATE TABLE change_order(  
changeorder_id BIGINT PRIMARY KEY NOT NULL,  
invoice_number BIGINT NOT NULL,  
brand_name TEXT NOT NULL,  
model VARCHAR(50) NOT NULL,  
unit_type TEXT NOT NULL,  
serial_number VARCHAR(100) NOT NULL,  
price DOUBLE PRECISION NOT NULL,  
down_payment MONEY NULL,  
month_term MONEY NULL,  
monthly_payment MONEY NULL,  
rebate TEXT NULL)
```

-- INSERTING SOME DATA INTO THE CHANGE\_ORDER TABLE

-- Data is Inserted using the Python Programming Language

-- Replacing the NULL with different Value

```
UPDATE change_order  
SET down_payment = '0'  
WHERE down_payment IS NULL
```

-- Changing the DATA TYPE for the COLUMN

```
ALTER TABLE change_order  
ALTER COLUMN brand_name VARCHAR(50)
```

-- Replacing the NULL with Condition

```
UPDATE change_order  
SET month_term = '1'  
WHERE brand_name = 'NOKIA'
```

-- Replacing the NULL with BETWEEN CLAUSE

UPDATE change\_order

SET monthly\_payment = '0'

WHERE price BETWEEN 10000 AND 15000

-- SELECTING THE DATA FROM THE CHANGE\_ORDER TABLE

SELECT \* FROM change\_order

## Database Structure –

Table1 – Customer Table

Field Name	Description	Type	Length
Customer_id	Customer ID Number	BIGINT	-
first_name	Firstname of Customer	VARCHAR	50
Last_name	Lastname of Customer	VARCHAR	50
Address	Address of Customer	VARCHAR	200
Contact_number	Customer Contact Number	VARCHAR	100

Table2 – Order Table

Field Name	Description	Type	Length
order_id	Order ID Number	BIGINT	-
Customer_id	Customer ID Number	BIGINT	-
Employee_id	Employee ID Number	BIGINT	-
Invoice_number	Cash Invoice Number	BIGINT	-
Office_recepit_number	Official Receipt Number	BIGINT	-
Total_price	Total Price of Product Ordered	DOUBLE PRECISION	-
Date_order	Date of Order	DATE	-
quantity	Quantity of Product	DOUBLE PRECISION	-
Brand_id	Brand ID of Product	BIGINT	-

Table3 – Employee Table

Field Name	Description	Type	Length
employee_id	Employee ID Number	BIGINT	-
First_name	Employee First Name	VARCHAR	50
Last_name	Employee Last Name	VARCHAR	50
Address	Employee Address	TEXT	-
Contact_number	Employee Contact Number	VARCHAR	50
Position	Employee Position	VARCHAR	50

Table4 – Cash Order Table

Field Name	Description	Type	Length
cashorder_id	Cash Order ID Number	BIGINT	-
Invoice_number	Cash Invoice Number	BIGINT	-
Brand_name	Product Brand	TEXT	-
Model	Product Model	VARCHAR	50
Serial_number	Product Serial Number	VARCHAR	50
Price	Price of Product	DOUBLE PRECISION	-
Unit_type	Type of product unit sold	TEXT	-



Table5 – Charge Order Table

Field Name	Description	Type	Length
changeorder_id	Change Order ID Number	BIGINT	-
Invoice_number	Cash Invoice Number	BIGINT	-
Brand_name	Brand of Product	TEXT	-
Unit_type	Type of product unit sold	TEXT	-
Serial_number	Serial Number of Product	BIGINT	-
price	Price of Product	DOUBLE PRECISION	-
Down_payment	Required Down Payment of Product	MONEY	-
Month_term	Number of Months Term of Product	MONEY	-
Monthly_repayment	Monthly Payment of Customer	MONEY	-
Rebate	Product Rebate	TEXT	-

Table6 – Products Table

Field Name	Description	Type	Length
Product_id	Product ID Number	BIGINT	-
Date_Received	Date Received of Product	DATE	-
Brand_Id	Brand ID Number of Product	BIGINT	-
Brand_Name	Brand Name of Product	TEXT	-
Model	Model of Product	VARCHAR	50
Serial_Number	Serial Number of Product	VARCHAR	100
Avail_ability	Quantity of Product Available	TEXT	-
Date_Sold	Date of Product Sold	DATE	-
Customer_Id	Customer ID Number	BIGINT	-
Unit Type	Type of product unit sold	TEXT	-

Table7 –Supplier Table

Field Name	Description	Type	Length
supplier_id	Supplier ID number	BIGINT	-
supplier_name	Name of the Supplier	VARCHAR	50
Supplier_address	Address of Supplier	TEXT	-
Contact_number	Supplier Contact Number	VARCHAR	50
Brand_id	Brand Id Number of Product	BIGINT	-

## Conclusion –

This project is designed to meet the requirements of a Inventory Management System. It has been developed by using the '**SQL Server Management Studio**' and complete back end software in which we can update the stock, modify stock, we can forecast the stock, generate invoice.. For designing the system used data flow diagram and Entity Relation Ship diagram.

## References –

<https://itsourcecode.com/free-projects/database-design-projects/database-design-project-for-inventory-management-system/>