

Programme Name: \_\_\_\_\_\_\_\_**BCS HONS**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Course Code: \_\_**CSC 1403**\_\_\_\_\_\_\_\_

Course Name: \_\_\_\_\_\_\_\_**Database concept**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Individual Project**

Date of Submission: \_\_\_\_\_\_**9/24/2020**\_\_\_\_\_\_\_\_\_\_\_\_\_

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Semester**: Second Semester**

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4. **Introduction**

Inventory management is one of the essential problems in almost every company. Before computer age and integration, solutions were used as inventory management tools. If there is no automated system available, these solutions may cause a lot of paperwork usually lead to mistakes as the workload increases since it deals with more than hundreds of medications. The company needs to use a new technology to keep track of all its transactions and day-to-day operations to achieve its business goals by introducing a computer-based Designing and Implementing such a system is possible but there is preliminary work studying the operational environment and needs of the company, identifying the requirements, determining software tools, designing database and developing the user interface application.

**Objectives**

The proposed system should achieve the following goals:

• Add/update customers and medicine suppliers with their full information. • Add/update system users and inventory employees.

• Add/update medicines with their scientific names, manufacturing company, manufacturing and expiry dates, batch numbers and the available quantities from each batch.

• Prepare sale and purchase invoices.

• Generate reports.

• Track customer payments.

• Detect expired medicines in order to be disposed.

• Manage returned medicines from customers in case of damage or overstock.

1. **REQUIREMENT ANALYSIS**

Requirement Collection and Analysis During this phase, the database designers meet potential system users to understand and document their data requirements. The result of this step is a briefly written set of users’ requirements . Knowing the requirements and needs of the system is vital to its success. Important inventory documents are collected and analyzed, including sale and purchase invoices, customers and suppliers’ records, employees' records, medicines’ records and customer payments. The collected requirements associated with this system include:

1. Drugs have expiration dates after which they may no longer be used. After a specific amount of time, the chemical structures of medications may change to reduce their strength or change it into a completely different product. Medications must be dragged off the shelf when this date approaches, because it is unsafe to distribute drugs after the expiration date has passed. It is important to consider expiration dates when ordering medications.
2. When preparing a sell invoice, it is important to use older medications before newer medications to ensure that products with shorter expiration dates are used before those that will last longer and minimize the number of expiring products.

3. Outdated products should be pulled off of the shelves at steady intervals to reduce the chance of expired medications getting to a patient.

4. Pharmacies can return medications that has been ordered in surplus or is moving slowly off of the shelves. In general, if a package has been unlocked or damaged and does not expire for at least 12 months, a company can accept the medication for return.

5. If any medications are received damaged or expired, or if the pharmacy accidentally ordered a product it does not need, it may be desirable for return to the company.

6. After the order is received and put away, bills must be paid according to the accounting steps of the company. They often need to be entered into the computer system on the same day they are received or as soon as possible after receipt.

7. The manufacturer’s recommendations should be followed when storing medications. Many medications are able to be stored at room temperature 20-22 °C. Drugs should not be stored above or below this temperature range unless authorized by the manufacturer.

8. Some drugs require refrigeration to preserve the stability of the medication. In general, refrigerated medications need to be stored between 2 - 8 °C. 9. Because frozen drugs are especially vulnerable to damage, care must be taken when handling these products. Frozen medications should be stored below -15 °C. There are very few medications that require storage in the freezer; those that do include the chickenpox and some premixed IV medications in the hospital setting that may be dissolved prior to use.

**3. Database Design**

* **Employee**

|  |
| --- |
| **Employee** |
| ID |
| Name |
| Address |
| Contact |
| Role |
| Salary |

* **Customer**

|  |
| --- |
| Customer |
| Name |
| Contact |
| Address |
| Email |

* **Sale\_Invoice**

|  |
| --- |
| Sale\_InvoiceID(PK) |
| Date |
| TotalAmount |
| Payment Type |
| Discount |
| Payed Amount |
| RemainingAmount |

* **Purchase\_Invoice**

|  |
| --- |
| Purchase\_InvoiceID(PK) |
| Date |
| TotalAmount |
| Payment Type |
| Discount |
| Payed Amount |
| RemainingAmount |

* **Supplier**

|  |
| --- |
| Supplier |
| SupplierID |
| CompanyName |
| Contact |
| Adresss |

* Drug

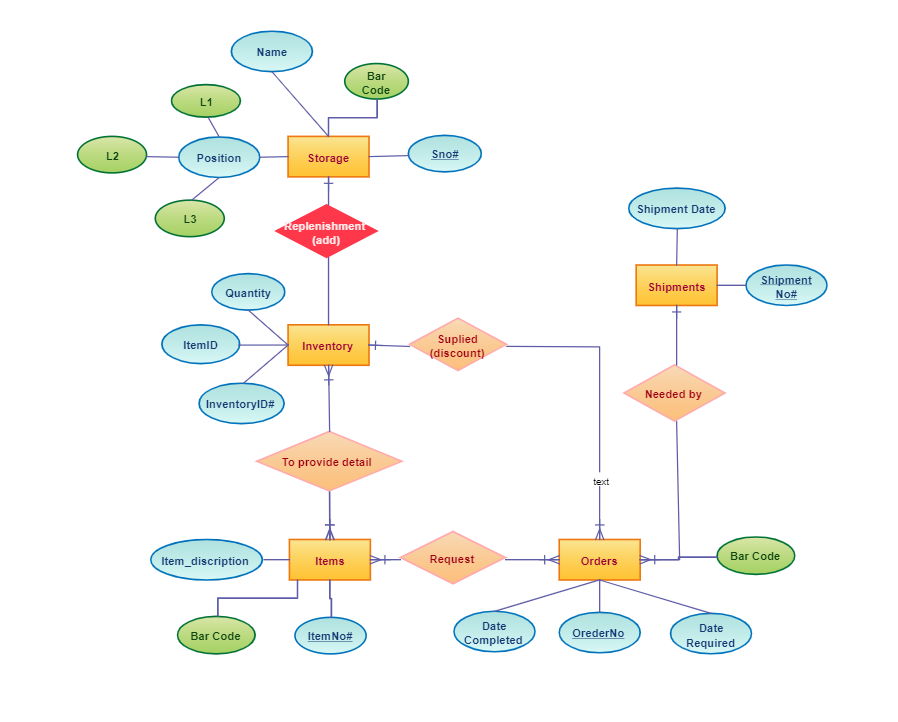
|  |
| --- |
| Drug |
| Drugname |
| ScientificName |
| DrugCategory |
| No\_of\_unit\_in\_Package |
| Manufacturer |
| UnitPrice |
| StorageLOcation |

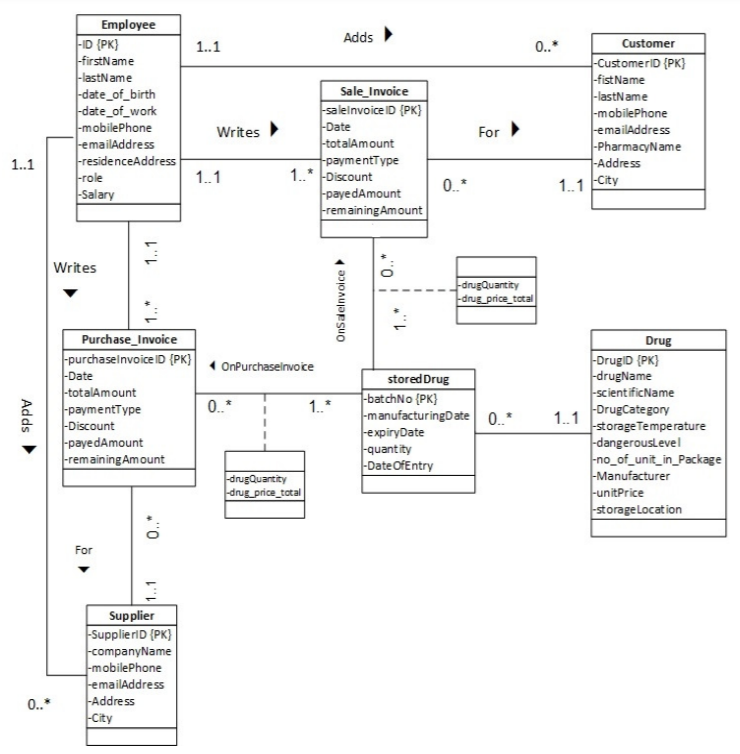
* StoredDrug

|  |
| --- |
| StoredDrug |
| Batchno |
| ManufacturingDate |
| ExpiryDate |
| DateofEntry |

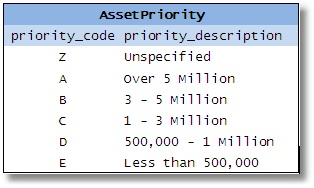
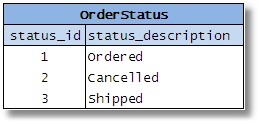
**E-R diagram**

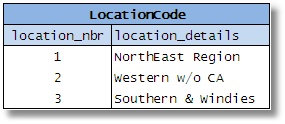
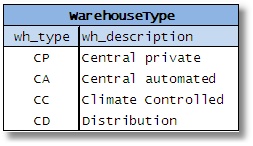
An Entity–relationship model (ER model) describes the structure of a database with the help of a diagram, which is known as Entity Relationship Diagram (ER Diagram). An ER model is a design or blueprint of a database that can later be implemented as a database. The main components of E-R model are: entity set and relationship set. **ENTITY RELATIONAL (ER) MODEL** is a high-level conceptual data model diagram. ER modeling helps you to analyze data requirements systematically to produce a well-designed database. The Entity-Relation model represents real-world entities and the relationship between them. It is considered a best practice to complete ER modeling before implementing your database.

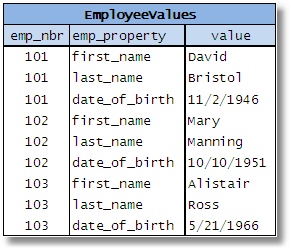
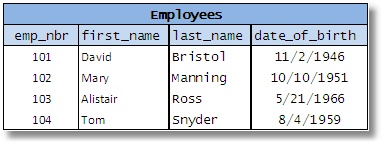
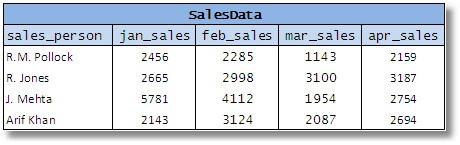
**Fig: ER diagram of Inventory Management System**

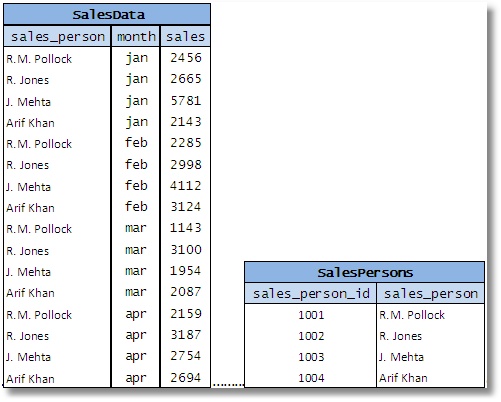


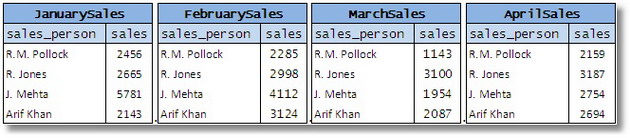
SQl code for the database







6. **Problem faced while creating database**

Designing E-R diagram.

Unclear registrations.

Unmanaged entries

Showing relation between entities.