MSIS 618 – Database Management

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**Executive Summary**

This report's objective is to showcase the findings from a database management system project completed for Whole Foods. The project attempts to fix the difference between the product descriptions on the packaging and the website for Whole Foods. The firm can guarantee that the web descriptions fully represent the actual product details by putting in place a database system, which will increase consumer satisfaction and lessen uncertainty.

The planned database system's main goals are to:

* Store product information, such as site descriptions, package descriptions, classifications, prices, and supplier information.
* In order to ensure that web descriptions and package descriptions for each product are consistent.
* In order to provide employees a way to manage and update product information.
* To assist with inventory management and product quantity tracking across numerous store locations.
* The database system's possible applications include:
* Providing customers with accurate product information so they may make informed purchasing decisions.
* Internal processes are being streamlined by providing employees with a unified platform for managing and updating product details.
* Inventory management is made easier, and proper stock levels are maintained at each business location.

**Project Description**

Whole Foods, a major grocery store chain, was chosen for this project. The project's goal is to address the difference between the site description and the product packaging description of Whole Foods' items. Customers may become confused as a result of this mismatch, which may influence their purchasing decisions.

The project's goal is to create a database system that stores and manages product information such as online descriptions, package descriptions, classifications, prices, and supplier information. The database will ensure that the web descriptions accurately represent the actual product features by providing a platform for staff to update and maintain the information.

The database system's intended users are Whole Foods staff who are in charge of handling product information and inventories across numerous shop locationsThe firm hopes to overcome the problem of inconsistent product descriptions and boost customer satisfaction by installing the database system.

The project's milestones include:

* Gathering and analyzing requirements
* Design of a database, includes the building of an entity-relationship diagram (ERD).
* Database design normalization
* Database implementation with MySQL
* SQL script generation for table creation and data insertion
* Database system testing and validation
* Project process documentation, including hours worked, lessons learned, and project management tasks.

**Database Design: ER Diagram**

The entity-relationship diagram (ERD) for the database design is as follows:

A screenshot of a computer

Description automatically generated with low confidence

The entities and their connections are shown in the ERD. Warehouse, Employee, Supplier, Product, Inventory, StoreLocation, Product\_has\_StoreLocation, and StoreLocation\_has\_Supplier are among the entities included in the design. Each entity has unique characteristics, identification codes, and connections to other entities.

The design was created with the goal of capturing the data required to manage product descriptions, inventory, and supplier connections. The entities are organized in a way that suits the needs of the organization and promotes consistency and integrity of data.

**Normalization**

Based on the ERD, the abstract form of the relations (tables) is as follows:

Warehouse (WarehouseID, Name, Address)

Employee (EmployeeID, Name, Email, Phone, Role, Warehouse\_WarehouseID)

Supplier (SupplierID, Name, Address, PhoneNumber, Email)

Product (ProductID, ProductName, WebDescription, Category, Price, PackagingDescription, Supplier\_SupplierID)

Inventory (InventoryID, Quantity, Product\_ProductID, Product\_Supplier\_SupplierID)

StoreLocation (StoreID, Name, Address, Inventory\_InventoryID)

Product\_has\_StoreLocation (Product\_ProductID, StoreLocation\_StoreID)

**Database Implementation**

The database system was implemented using MySQL, a popular and reliable relational database management system. The database design, based on the entity-relationship diagram (ERD) discussed earlier, was translated into a set of tables with appropriate attributes, primary keys, and foreign keys.

The following tables were created:

1. Warehouse: Stores information about the different warehouses of Whole Foods, including the warehouse ID, name, and address.

2. Employee: Stores employee details such as employee ID, name, email, phone number, role, and the warehouse they are associated with. An index was added to optimize the retrieval of employee records.

3. Supplier: Stores information about the suppliers Whole Foods works with, including the supplier ID, name, address, phone number, and email.

4. Product: Stores product information, including the product ID, product name, web description, category, price, packaging description, and the supplier ID associated with the product.

5. Inventory: Stores inventory information, including the inventory ID, quantity, product ID, and the supplier ID associated with the product. An index was added to optimize the retrieval of inventory records.

6. StoreLocation: Stores information about the different store locations of Whole Foods, including the store ID, name, address, and the inventory ID associated with the store.

7. Product\_has\_StoreLocation: Represents the relationship between products and store locations. It stores the product ID and store ID for each product available at a specific store location.

8. StoreLocation\_has\_Supplier: Represents the relationship between store locations and suppliers. It stores the store ID and supplier ID for each supplier associated with a specific store location.

SQL scripts were used to implement the database, describe the relationships between the tables, and insert test data. The Employee and Inventory tables now have better query performance thanks to the use of indexes.

Within Whole Foods, the database system serves as the framework for managing supplier relationships, inventory control, and product information. The tables' integrity and consistency of data are guaranteed, allowing staff to update and maintain accurate product details. The system also makes inventory management easier by keeping track of product amounts in various shop locations.

To make sure the database system is accurate and functional, testing and validation were done. Data retrieval and updating queries were run, and the outcomes were compared to what was anticipated.

**Stored Procedures**

'UpdateProductDescription' and 'Find\_Warehouses\_For\_a\_Given\_Product' are two stored procedures that have been added to the database system to improve functionality.

UpdateProductDescription

The web description of a product is updated by the stored method 'UpdateProductDescription'. It accepts the new web description ('NewWebDescription') and the product ID ('product\_Id') as input parameters. The result of the update process is indicated via the output parameter'message' in the stored procedure as well.

Find\_Warehouses\_For\_a\_Given\_Product

The stored method 'Find\_Warehouses\_For\_a\_Given\_Product' returns the warehouses connected to a specified product. The output parameter 'warehousename\_address' returns the name and address of the warehouses after receiving the product ID ('product\_Id') as an input parameter.

These stored procedures give quick ways to change product descriptions and locate related warehouses while ensuring data consistency.

In conclusion, Whole Foods' product management and inventory tracking system's database installation offers a reliable and effective solution to the issue of the difference between site descriptions and packaging descriptions. The database system makes it easier for staff to maintain product information, guarantees uniformity among various product descriptions, and streamlines inventory control across numerous shop locations.