Warehouse Management System

CMPT 308N

Section 200

The Big Boyz Team

Marist College

School Of Computer Science and Mathematics

Submitted to:
Dr. Reza Sadeghi

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Progress Report: The Big Boyz Warehouse Management System

Team Name

The Big Boys

Team Members:

Ricky Junior Isheja   Rickyjunior.isheja1@marist.edu

Saeed Abdilahi   Saeed.abdilahi1@marist.edu

Descartes Tuyishime   descartes.tuyishime1@marist.edu (Team Leader)

Introduction of the group members

- My name is Saeed Abdilahi, and I am from Somaliland. I am Junior, studying computer science. The way I selected my current teammates was by asking them if we could be in a group team.
- My name is Ricky Junior Isheja, I am an international student from Rwanda, and I am a sophomore majoring in computer science, my general passions are coding, basketball, and soccer. I chose my teammates on the basis that we all believe in hard work, and we are all willing to invest in the necessary efforts to finish this project together and succeed in the course.
- My name is Descartes Tuyishime, and I am an international student from Rwanda. I am a senior, majoring in Computer Science and Data Analytics. I am interested in the use of machine learning to improve agricultural and medical field. I selected my team based on flexibility, motivation, and responsibility. I admire people who are flexible and motivated to do what needs to be done. I trust my team members to be responsible enough to take this course and project seriously.

Group Project Selected: Project 4 (Warehouse Management System)

The Big boys warehouse management system is a system that will help people to know, manage and maintain materials kept in the warehouse. The System will be managing details like the number of

products, their store time, the price and the weight of the products, The system will also help the user to search a specific product. The system will make easier the accounting processes of the user's business which might in the overall increase the profit. The objective of the big boys is to make a warehouse management system by the end of this course that can help an admin user to enter the food types, books, carts and any products, the store time in the warehouse, the pick out time, see the prices and search a product. And we shall also create a user's page for the user to buy and check out products.

Review the related work

❖ **Amazon Warehouse**

Amazon Warehouse works by label and packaging item and order that came through electronic orders that people who connect with Amazon made. The processes that the packages are labeled and boxed are physically by using human hands.

❖ **Target Warehouse**

Target Warehouses uses similar processes of packaging and distribution and then delivering to the right destination, the same as Amazon. However, the only difference is the brand of the item or product and its price sector

❖ **Apple Warehouse**

Apple Warehouse is the same as the other two warehouses above, but the difference is that apple mainly focuses on electronics whereas the two provide multiple products. All in all, Apple, Amazon, and Target use the same warehouse management system. All of these are held by humans.

Advantages of our Warehouse Management System

- Reduced Operating & Processing Expenses
- Reduced Mispacks
- Improved Customer Relations

Disadvantages of our Warehouse Management System

- Requires Expert Knowledge
- Requires Tight Security
- High Initial Investment

Merits Of our Project

1. Our Warehouse Management System (WMS) will lead to a drastic change in operating expenses since it reduces the manpower and other resources that are needed to manage and control the products that are in the warehouse.
2. The Labor will be better allocated with our system since most of the work is done by the system so the labor will have time to do their work in a more effective way while also being efficient.
3. WMS will increase the overall customer satisfaction, since the Service provided will be faster and easier for both the seller and the buyer, which will also increase the customers loyalty to the business thus increased profitability on the businesses side.
4. WMS will facilitate and help to manage the inventory that comes in and gets out (2), which overall will facilitate the accounting process at the end of the fiscal year.
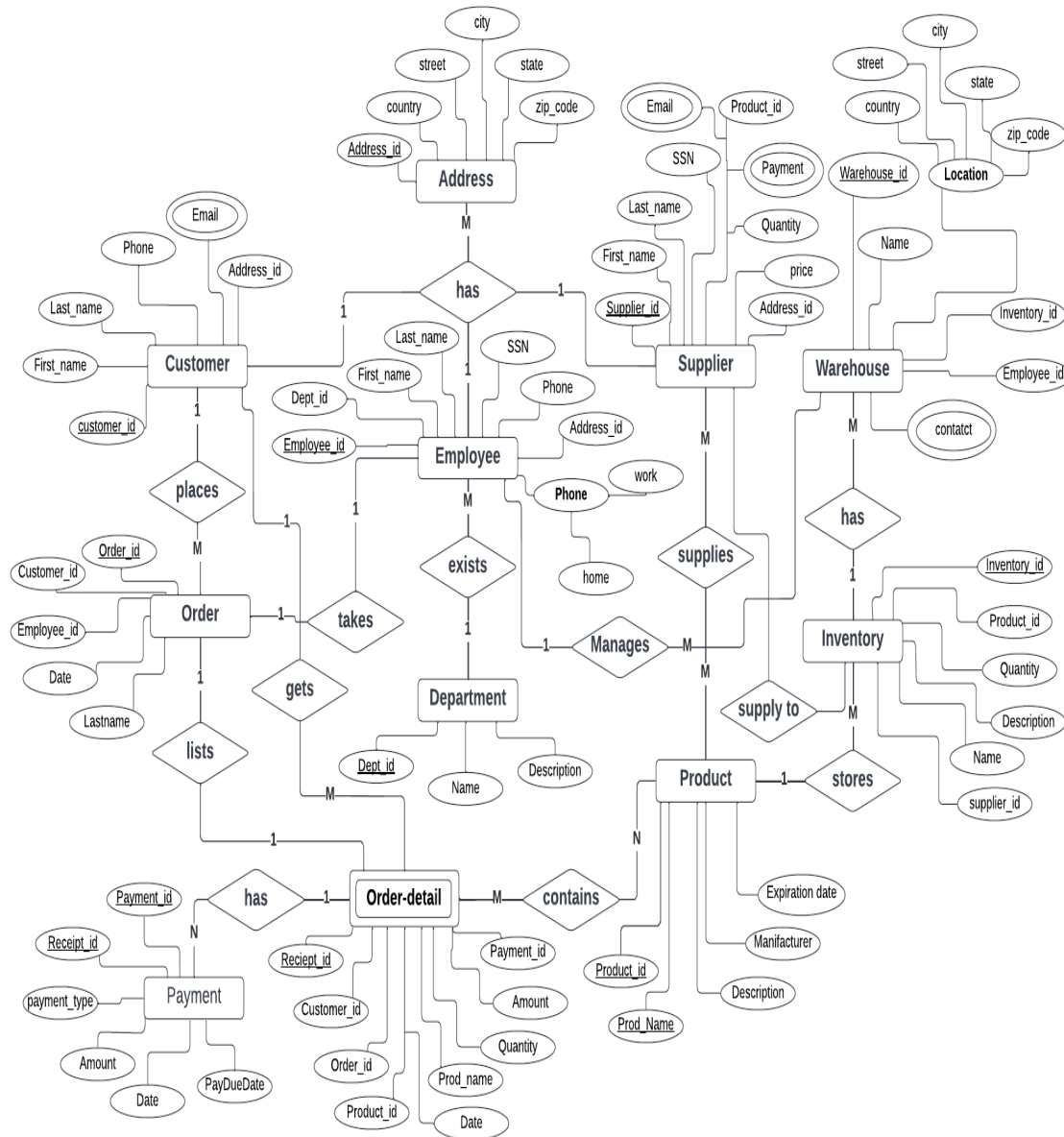
Entity Relationship Diagram (ER Diagram)

Our Warehouse Management System (WMS) consists of 11 entities. Below are the business rules that determined the entities in our WMS (Check out figure 1 below.).

A warehouse has a unique identification, a name, location, an inventory, a manager, and contacts for communications. A warehouse has one or more inventories, and an inventory belongs to one and only one warehouse. An inventory has a unique identification, name, product identification, product name, quantity, and product description, supplier identification. Inventory contains stores products, and products has unique identification, product name, description, weight, manufacturer, and expiration date. A warehouse is managed by an employee, and an employee has employee unique identification, department identification, first name, last name, Social Security number, Address identification, and phone number. Each employee belongs to a certain department, and a department has department unique identification, name, and Description. Each product is supplied by a supplier, and a supplier has unique identification, first name, last name, social security number, email, product identification, payment, quantity, and Address identification. Our WMS has customers, and a customer is represented by customer unique identification, first name, last name, email, and address identification. Customer, Employee, and Supplier all have address, and the Address has address unique identification, country, street, city, state, zip code. A Customer can place an order, and an order is taken by the employee. An order has a unique identification, customer identification, employee identification, and date. Each order has an order detail, and an order detail contains products. Each order detail list receipt unique identification, customer identification, order identification, product identification, date, product name, quantity, amount, and payment identification.

Each detail has payment, and each payment consists of unique payment identification, payment type, amount, date, and pay due date. To

## Figure 1: The Big Boyz Warehouse Management System ER Diagram

Designed using Lucid.app.

Enhanced Entity Relationship Diagram (EER diagram)

As described above, our warehouse management system is composed of 11 entities which are: Warehouse, inventory, supplier, product, employee, department, customer, address, order, order detail, and payment (Check figure 2).

A warehouse has many inventories, and an inventory belongs to one warehouse. A warehouse entity has warehouse identification (warehouse_id) as the primary key and has foreign keys inventory identification (inventory_id), and employee identification (employee_id) from inventory and employee respectively. The inventory stores may products, and a product is in an inventory. The suppliers supply products to one to more inventory. The inventory entity has primary key in inventory identification (inventory_id), and it has foreign keys in product identification (product_id), product name (product_name), and supplier identification(supplier_id). Supplier entity has supplier identification as a primary key, and it has foreign keys in product identification (product_id) and address identification (address_id). Product entity has product identification (product_id) and product name (product_name) as a composite primary key. Employee entity has employee identification (employee_id) as a primary key. Department entity has department identification (dept_id) as a primary key. Customer entity has customer identification (customer_id) as a primary key. Address entity has address identification (address_id) as a primary key. Order entity has order identification (order_id) as a primary key. Order detail has receipt identification (receipt_id) and payment identification (payment_id) as composite primary keys. Every order detail has payment, and every payment corresponds to one and only one order detail. Payment entity has payment identification (payment_id) as a primary key.

Figure 2: The Big Boyz Warehouse Management System EER Diagram
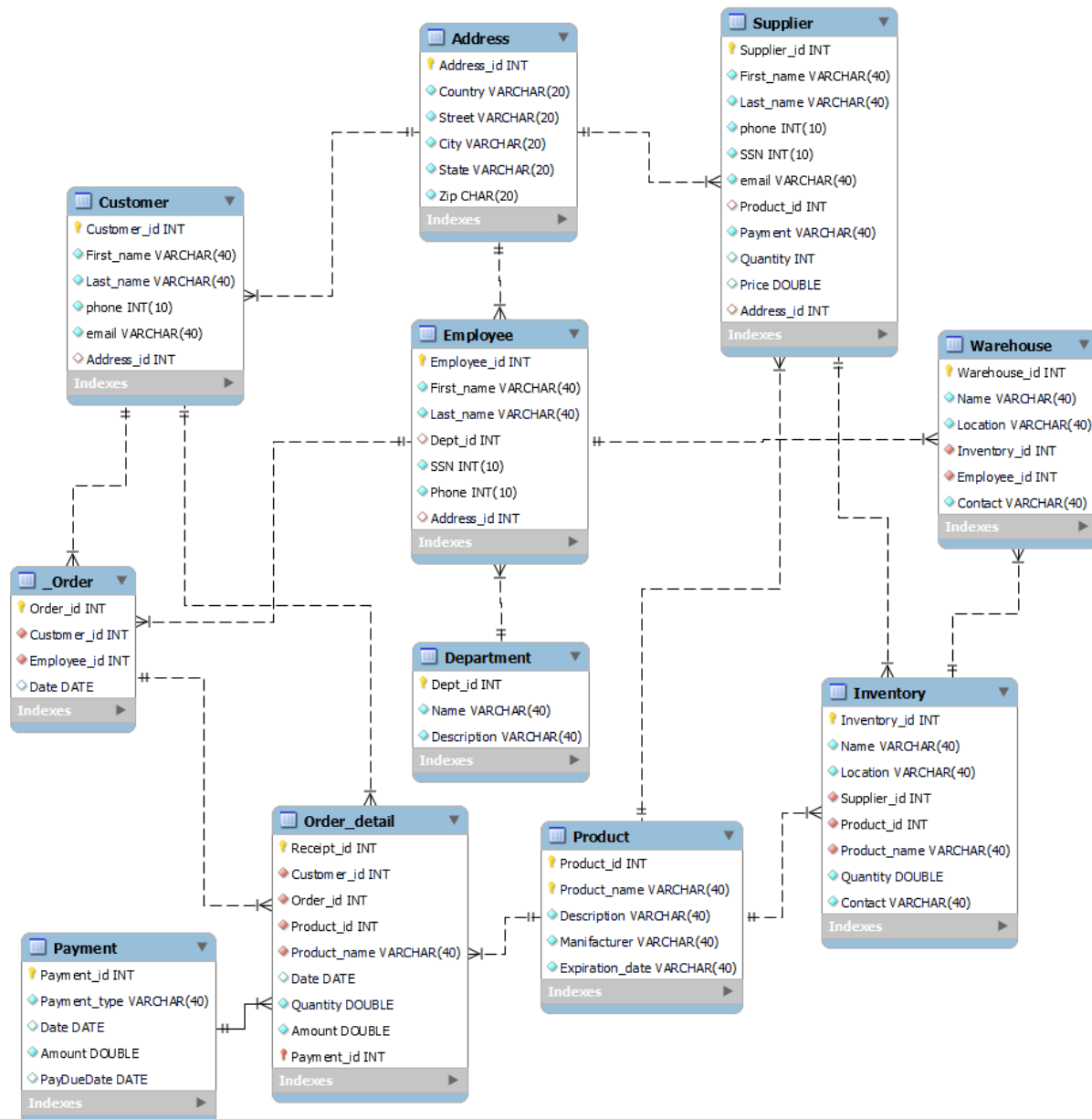
Database Development

```
drop database Warehouze;
create database if not exists Warehouze;
show databases;
use Warehouze;
```

/* Here we just created a database called ware house but we first checked if there is no other database with the same name /*

```
CREATE TABLE Address (
  Address_id INT AUTO_INCREMENT,
  Country varchar(20) NOT NULL,
  Street varchar(20) NOT NULL ,
  City varchar(20) NOT NULL ,
  State varchar(20) NOT NULL ,
  Zip char(20) NOT NULL,
  PRIMARY KEY (Address_id)
);
```

/* Here we just created a table called address with 5 attributes namely address id (primary key), Country, street, city, state and zip. This table is used to record the addresses of three tables the customer, the supplier and the employee and it will have address_id as foreign key in all of the three tables. */

```
CREATE TABLE Customer (
  Customer_id INT AUTO_INCREMENT,
  First_name varchar(40) NOT NULL,
  Last_name varchar(40) NOT NULL ,
  phone int(10) NOT NULL ,
  email varchar(40) NOT NULL ,
  Address_id INT,
  PRIMARY KEY (Customer_id),
  FOREIGN KEY (Address_id) REFERENCES Address(Address_id)
);
```

/* Here we jus created table customer which will be recording customer details. It has 6 attributes including Customer_id (Primary key), first_name, Last_name, phone, email and address_id (foreign key) from address table. This table will have 3 main connections with the order details table, the order table and the adrerss table. /*

```
CREATE TABLE Department (
  Dept_id INT AUTO_INCREMENT,
  Name varchar(40) NOT NULL,
  Description varchar(40) NOT NULL ,
  PRIMARY KEY (Dept_id)
);
```

/* Here we just created the table of Department, this table will be recording the various departments we have in our Warehouse management company. It has 3 main attributes namely dept_id(Primary key), name and description. This table is directly related to the employee table /*

```
CREATE TABLE Employee (
  Employee_id INT AUTO_INCREMENT,
  First_name varchar(40) NOT NULL,
  Last_name varchar(40) NOT NULL,
  Dept_id INT,
  SSN int(10) NOT NULL ,
  Phone int(10) NOT NULL ,
  Address_id INT,
  PRIMARY KEY (Employee_id),
  FOREIGN KEY (Address_id) REFERENCES Address(Address_id),
  FOREIGN KEY (Dept_id) REFERENCES Department(Dept_id)
);
```

* Here we just created a table called employee and its in charge of keeping data of our employees. It ha 7 attributes, employee_id (primary_key), first_name, Last_name, dept_id (foreign key), ssn, phone, address_id (foreign_key). This table is related directly to 4 tables, the warehouse table, the address table, the department table and the order table. /*

```
CREATE TABLE Product (
  Product_id INT AUTO_INCREMENT,
  Product_name varchar(40) NOT NULL,
  Description varchar(40) NOT NULL ,
  Manifacturer varchar(40) NOT NULL ,
  Expiration_date varchar(40) NOT NULL ,
  PRIMARY KEY (Product_id, Product_name )
);
select * from Product;
```

/* Here we just created the product table, this table records a specific product that is being taken into the inventory or out of the inventory. It has 5 attributes, the product_id (Primary key), product_name, description, Manifacturer and expiration date. This table is related to three other tables, the order_detail,

```
CREATE TABLE Supplier (
  Supplier_id INT AUTO_INCREMENT,
  First_name varchar(40) NOT NULL,
  Last_name varchar(40) NOT NULL ,
  phone int(10) NOT NULL ,
  SSN int(10) NOT NULL ,
  email varchar(40) NOT NULL ,
  Product_id INT,
  Payment varchar(40) NOT NULL,
  Quantity INT,
  Price DOUBLE,
```

```
 Address_id INT,
 PRIMARY KEY (Supplier_id),
 FOREIGN KEY (Address_id) REFERENCES Address(Address_id),
 FOREIGN KEY (Product_id) REFERENCES Product(Product_id)
);
```

/* Here we just created a table called supplier which deals with the suppliers i9nformations and the information of what they supplied. It has 11 attributes, supplier_id (Primary Key), first_name, last_name, phone, ssn, email, Product_id (Foreign Key), Payment, quantity, price, address (Foreign Key). This table is directly connected to three tables, Address, Product and inventory. /*

```
CREATE TABLE _Order (
 Order_id INT AUTO_INCREMENT,
 Customer_id INT NOT NULL,
 Employee_id INT NOT NULL ,
 Date date DEFAULT NULL,
 PRIMARY KEY (Order_id),
 FOREIGN KEY (Customer_id) REFERENCES Customer(Customer_id),
 FOREIGN KEY (Employee_id) REFERENCES Employee(Employee_id)
);
```

/* Here we jus created a table of order, it handles the order information and saves it. This table has 4 attributes, Order_id (Primary_Key) , customer_id (Foreign_Key), Employee_Id (Foreign Key) and the date. This table is directly related to the customer table, the order detail table and the employee table. /*

```
CREATE TABLE Payment (
 Payment_id INT AUTO_INCREMENT,
 Payment_type varchar(40) NOT NULL,
 Date date DEFAULT NULL,
 Amount double NOT NULL,
 PayDueDate date DEFAULT NULL,
 PRIMARY KEY (Payment_id)
);
```

/* the payment table that we just created records the payment details related to the customer and the order detail. It has five attributes, Payment_id(Primary Key), payment_type, date, amount and paydueDate. This table is related to order detail table. /*

```
CREATE TABLE Order_detail (
 Receipt_id INT AUTO_INCREMENT,
 Customer_id INT NOT NULL,
 Order_id INT NOT NULL,
 Product_id INT NOT NULL,
 Product_name varchar(40) NOT NULL,
 Date date DEFAULT NULL,
 Quantity double NOT NULL,
 Amount double NOT NULL,
 Payment_id INT NOT NULL,
 FOREIGN KEY (Product_id, Product_name) REFERENCES Product(Product_id, Product_name),
```

```
  FOREIGN KEY (Customer_id) REFERENCES Customer(Address_id),
  FOREIGN KEY (Order_id) REFERENCES _Order(Order_id),
  FOREIGN KEY (Payment_id) REFERENCES Payment(Payment_id),
  PRIMARY KEY (Receipt_id, Payment_id)
);
```

/* The order deatil table is a table that records information of the order that has been made. It has nine attributes, Receipt_id (Primary Key), customer_id (Foreign_key), Order_id(Foreign Key), Product_id (Foreign_key), Product_name(Foreign_key), date, quantity,amount, payment_id(Primary Key). This table is directly related to Customer table, Payment table, order table, product table. /*

```
CREATE TABLE Inventory (
  Inventory_id INT AUTO_INCREMENT,
  Name varchar(40) NOT NULL,
  Location varchar(40) NOT NULL ,
  Supplier_id INT NOT NULL ,
  Product_id INT NOT NULL ,
  Product_name varchar(40) NOT NULL ,
  Quantity double NOT NULL,
  Contact varchar(40) NOT NULL ,
  PRIMARY KEY (Inventory_id),
  FOREIGN KEY (Supplier_id) REFERENCES Supplier(Supplier_id),
  FOREIGN KEY (Product_id, Product_name) REFERENCES Product(Product_id, Product_name)
);
```
/* Here we just created a table called inventory, it will hold details of the products that are in the inventory. This table has eight attributes, Inventory_id(Primary_key), name,location, supplier_id (Foreign_key), product_id(Foreign Key), Product_name(Foreign_Key), quantity, contact. This table is related to the supplier table, the warehouse supplier and the products table. /*

```
CREATE TABLE Warehouse (
  Warehouse_id INT AUTO_INCREMENT,
  Name varchar(40) NOT NULL,
  Location varchar(40) NOT NULL ,
  Inventory_id INT NOT NULL ,
  Employee_id INT NOT NULL ,
  Contact varchar(40) NOT NULL ,
  PRIMARY KEY (Warehouse_id),
  FOREIGN KEY (Employee_id) REFERENCES Employee(Employee_id),
  FOREIGN KEY (Inventory_id) REFERENCES Inventory(Inventory_id)
);
```

/* We just created a table called Warehouse, this table is of recording what enters and gets out of our warehouse. It has six attributes, warehouse_id (Primary_key), name, location, Inventory (Foreign Key), Employee(Foreign Key), Contact. This table is connected directly to the employee table and to the inventory. /*

Reference

https://wdgcorp.com/request-more-information/?gclid=EAIaIQobChMI7q_xi5DM-gIVEr3ICh0r2gvBEAAYBCAAEgI8OfD_BwE

https://www.netsuite.com/portal/resource/articles/erp/warehouse-management.shtml

GitHub Resources

https://github.com/The-Big-Boys-Inc/Warehouse-Management-System.git

ER Diagram

https://lucid.app/lucidchart/0cd5589d-adbc-4fc7-8cde-2a64a2257a23/edit?viewport_loc=45%2C179%2C1897%2C1057%2C0_0&invitationId=inv_89f1f654-3612-447c-b252-7a72f98b60e0#