**DBMS Final Project**

**By**

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**Executive Summary**

After volunteering at [Urban and Off-Campus Support Services (U-ACCESS)](https://www.umb.edu/life_on_campus/uaccess/food_pantry) for 50 days and then working as a part-time student employee at U-ACCESS I got a clear idea of what we do here and how we help students. I believe we do some great work here and to make our organization more efficient and help more people I have come up with this project.

The main objective of this project is to streamline the whole inventory system and the way we do inventories at U-ACCESS. Sometimes it can be confusing to the staff about what inventory we have, where do we have and how much inventory we have at the time.

The current system is not of much help here as it is confusing and takes more time to find the information necessary and the current system is not properly organized. With the implementation of this project we can easily manage our inventory system and easily answer the questions such as Where is this item (For example rice), how much quantity we have and when is the item expiring in seconds and all necessary information is Infront of you to take further action.

Other objectives include solving the issue of date of expiry being a food service organization it is very important to make sure our food is not wasted and it is reaching the people in need on time before its expiry to solve this we have a specify entry for date of expiry which records all the items date of expiry so that we can easily find out what items are going to expire in next two months and take necessary action.

Using this database system we can save lot of time, resource and reduce the wastage of resource especially food all this together will help us to run the organization more efficiently and help more people who are in need.

**Project description**

For this project I have chosen Urban and Off-Campus Support Services (U-ACCESS) which is a student support organization at University of Massachusetts Boston. Their primary goal is helping students to meet their basic needs so they can achieve academic success.

U-ACCESS offers student a wide range of services such as Meals and snacks, SNAP Application Assistance, Financial counseling, and Tax preparation services. Among other the important service U-ACCESS provide is the Food pantry service through which the student client will be provided with necessary food items such as Rice, Lentils, Canned chicken, beans, and other items.

The important part of running the food pantry is the inventory management as there are items being donated from time to time to U-ACCESS by its donors but without proper inventory management it will be very difficult to manage the huge quantities of inventory considering the constrains in storage as the inventory cannot be stored at one single location instead, they are stored at lockers in multiple floors across the building.

So, it is a time taking process and confusing as well to keep track of where is what, how much of that particular item we have in stock and when are they going to expiry.

The main task of this database project is to rationalize the Inventory process and to put in place a simple yet powerful inventory management system which can help the organization to run more efficiently and help more students in need. Sometimes due to this there can wastage in food items as the food can expire but this project aims to solve this problem as well so that the wastage of food can be avoided, and it can be put to good use.

This project also aims to solve the issue of storage space as mentioned earlier there is a storage space constrain at U-ACCESS the lockers are spread over 3 different floors in the budling which makes it hard to keep a track of what’s in the locker but using this project the staff can easily see if locker is filled with stuff or if it is empty which will help in the optimization of space leading to more storage space.

The targeted users for this project are the staff at U-ACCESS as they are the ones who takes care of the whole process. The other important targeted user is the director of U-ACCESS as the director will be able to now access the whole inventory and check it in no time.

**ER Diagram**

**A picture containing text, diagram, font, parallel

Description automatically generated**

**Inventory comes to U-ACCESS which by done by staff so staff has access to all the inventory.**

**Students place the orders and each students gets only one order.**

**Staff has access to all the storage which are lockers which are at different locations.**

**Staff fulfils the order each employee does at least one order to multiple orders.**

**Order contains the details of student ordered items and it is completed by the staff.**

**Normalization**

The Abstract values for the entity tables are

Inventory-> (ItemID(PK), ItemName, Category, Quantity, StockArrivalDate, Weight, DateOfExpiry, DonatedBy, Staff\_EmployeeID)

Storage-> (LockerID(PK), LockerName, LockerLocation, StoredItems, Staaf\_EmployyeID)

Inventory\_has\_Storage -> (Inventory\_ItemID, Storage\_LockerID)

Staff-> (EmployeeID(PK), EmployeeName, EmployeeType, WorkSchedule, PhoneNumber, EmailID)

Order-> (OrderID(PK), OrderDate, OrderItems, NumberOfBags, StudentClients\_StudentID, Staff\_EmployeeID)

StudentClients-> (StudentID(PK), StudentName, PhoneNumber, EmailID)

**Database Implementation**

As I have hands on experience at U-ACCESSS and have clear knowledge about how things work at the organization. I was able to come with data very similar to the operations at U-ACCESS as privacy and confidentiality is one of our core principles I have never used the names and details of our actual student client.

Instead, I have created the dummy names which are fictional characters from various TV series and YouTube channel names. In that way I was able to fill in the quality data very similar to real life data but without affecting the privacy of any of the parties involved.

SQL Queries and their Importance

**QUERY 1**

select Inventory.ItemName, Inventory.Quantity, Inventory.DateOfExpiry, Storage.LockerName

from Inventory, Storage, Inventory\_has\_Storage

where Inventory\_has\_Storage.Inventory\_ItemID = ItemID

and Inventory\_has\_Storage.Storage\_LockerID = LockerID;

This Query shows where the Item is located, quantity and when it is going to expiry with this the staff know when the item is expiring and where is it located so they can take the necessary. It let the organization use it resources to the optimum.

**QUERY 2**

SELECT ItemName, DateOfExpiry FROM Inventory

WHERE DateOfExpiry > 2023-12-02

ORDER BY DateOfExpiry;

This Query Is useful to know which item is going to expiry before any given date like 2 months from now with this the director can take an action like giving more quantity or donating the items to sister organizations.

**Query 3**

SELECT ItemName, Quantity

FROM Inventory

WHERE Quantity > 100

ORDER BY Quantity;

This Query Is useful to know which item has more quantity beyond a certain number this gives an idea to the director to what to order and what not to. Hence saving the money from ordering unnecessary stuff. These money can be used elsewhere to help people in other ways in the organization.

**QUERY 4**

SELECT LockerID, LockerName, LockerLocation

FROM Storage

WHERE StoredItems = 'Null';

This Query will show where there is empty space in the lockers which helps in space optimization and increasing the efficiency. Storage is of a main concern as the storage space is limited.

**Query 5**

SELECT OrderID, OrderDate, StudentName

FROM mydb.Order, StudentClients

where StudentClients\_StudentID = StudentID;

This query provides information about the student Order which makes it easier in tracking down the student if there is any issue with the order. There are cases where students come back and ask about issues in their order.

**Query 6**

SELECT ItemName, Staff\_EmployeeID, EmployeeName

FROM Inventory,staff

where Staff\_EmployeeID = EmployeeID;

This query gives the information to director about who inventoried the Items when they arrived so the director know who is responsible for a particular inventory. This holds the staff responsible for their actions there by improving the efficiency.

**Query 7**

SELECT MAX(Quantity),ItemName

From Inventory

group by ItemName

order by MAX(Quantity) desc;

This query gives the list of items which have the maximum quantity which make the staff know which item they have the most.

**Query 8**

SELECT ItemName, Category

From Inventory

WHERE Category = 'Food';

This query can be used to sort the Items we have. So that the director has an idea about what category products we have more and hat we have less so that the director can acquire and reduce the items in those particular category. Overall helps in making the necessary items available for the students

**Query 9**

UPDATE Staff

SET Employeetype = 'Fulltime'

WHERE EmployeeName = 'Bts';

This helps the director or any other Supervisor to change the employee type.

**Stored Procedure**

DELIMITER //

CREATE PROCEDURE ProductExpiry ()

BEGIN

SELECT ItemName, DateofExpiry

FROM Inventory

ORDER By DateOfExpiry;

END //

DELIMITER ;END

This stored procedure will enable the director to quickly get the Items which are going to expire in the expiry order. This will enable the director to take necessary action Immediately. Food wastage is of a great concern this stored procedure will help to reduce it.

**Conclusion:**

Implementing this system will increase the efficiency of the whole organization and saves resources at the same time will aid in helping out more people in need which is the whole purpose and goal of U-ACCESS.