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“JNANA SANGAMA”, BELAGAVI - 590 018



A MINI PROJECT REPORT  
on

“GROCERY DELIVERY DATABASE ”

*Submitted by*

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*In partial fulfillment of the requirements for the V semester*

DBMS LABORATORY WITH MINI PROJECT

of

BACHELOR OF ENGINEERING

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*Under the Guidance of*

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2020 - 21

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**CERTIFICATE**

This is to certify that the **Mini Project** entitled “**GROCERY DELIVERY DATABASE**” has been carried out by **Amaan Mohammad (4SF18IS010)** and **Student Name 2 (4SF18IS008)**, the bonafide students of Sahyadri College of Engineering & Management in partial fulfillment of the requirements for the V semester **DBMS Laboratory with Mini Project (18CSL58)** of **Bachelor of Engineering in Information Science & Engineering** of Visvesvaraya Technological University, Belagavi during the year 2020 - 21. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The mini project report has been approved as it satisfies the academic requirements in respect of mini project work.

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Examiner's Name

Signature with Date

1. ....

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**DECLARATION**

We hereby declare that the entire work embodied in this Mini Project Report titled **“Grocery Delivery Database”** has been carried out by us at Sahyadri College of Engineering and Management, Mangaluru under the supervision of **Mr. Rithesh Pakkala P.** as the part of the V semester **DBMS Laboratory with Mini Project (18CSL58)** of **Bachelor of Engineering in Information Science & Engineering**. This report has not been submitted to this or any other University.

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# Abstract

Helpy Hands is a startup where we specialize in groceries and essentials delivery to the customers doorstep. In this project we have highlighted the behind the scenes process. To improve the experience of both the customer, seller and the delivery agent our comprehensive database specializes in quick real-time updation of Customer details , Shop stocks and delivery agent availability and tracking. All these elements work seamlessly from when the order is placed from the customer side right through the Shop's inventory and the order tracking of the customer.

# Acknowledgement

It is with great satisfaction and euphoria that we are submitting the Mini Project Report on “**Grocery Delivery Database**”. We have completed it as a part of the V semester **DBMS Laboratory with Mini Project (18CSL58)** of **Bachelor of Engineering in Information Science & Engineering** of Visvesvaraya Technological University, Belagavi.

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# Chapter 1

## Introduction

When the entire world was reeling from the effects of Covid-19 and lockdown, it was a tough time for all of us to be locked inside our homes. There arose a problem of people having difficulties in shopping for food, essentials and medicines. Therefore we founded a start-up where it enabled anyone to order essentials or medicines from the shop of their choice and have it delivered to their home. This discouraged people from stepping outside which helped curb the spread of virus considerably.

### 1.1 Database Management System

With the widespread use of computer technology and network technology, the development of database technology has become an important part of advanced information technology. The core of the supermarket management system is how to use and operate database, so the database design is critical. This system uses the Oracle10g database which is a relational database management system of Oracle. It is a product that always has been a leading position in the field of database. The Oracle database system is the world popular relational database management system which is easy to use, strong function and suitable for all kinds of large, medium and small, microcomputer environment. It can realize data sharing and the facilities don't need to have the powerful data storage and processing capabilities so that to reduce the hardware cost of supermarket. Many enterprises have their own database, and store a large number of key data in it, which shows the importance of the database.

Every table in the database is broken up into smaller entities called fields. The fields in the Customers table consist of CstID, CstName, CstPhoneNo, CstEmail. A field is a column in a table that is designed to maintain specific information about every record



in the table. A record, also called a row, is each individual entry that exists in a table. A record is a horizontal entity in a table. A column is a vertical entity in a table that contains all information associated with a specific field in a table. In addition to tables, a database can also contain other objects including views, stored procedures, indexes and constraints, along with a transaction log.

## 1.2 Structured Query Language

SQL is a domain specific language used in programming and designed for managing data held in a database management system. SQL consists of a data definition language, data manipulation language and data control language. The scope of SQL includes data insert, query update and delete, schema creation and modification and data access control. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications which may run either on the same computer or on another computer across a network. The main mode of retrieving data from a SQL Server database is querying for it. The query declaratively specifies what is to be retrieved. It is processed by the query processor, which figures out the sequence of steps that will be necessary to retrieve the requested data. The sequence of actions necessary to execute a query is called a query plan. There might be multiple ways to process the same query. Stored procedures can accept values sent by the client as input parameters, and send back results as output parameters. They can call defined functions, and other stored procedures, including the same stored procedure.

## 1.3 Stored Procedure

A stored procedure is a prepared SQL code that you can save, so the code can be reused over and over again. So if you have an SQL query that you write over and over again, save it as a stored procedure, and then just call it to execute it. We can also pass parameters to a stored procedure, so that the stored procedure can act based on the parameter value(s) that is passed. A stored procedure is nothing more than prepared SQL code that you save so you can reuse the code over and over again. So if you think about a query that you write over and over again, instead of having to write that query each time you would save it as a stored procedure and then just call the stored procedure to execute the SQL code that you saved as part of the stored procedure. In addition to running the same SQL code

over and over again you also have the ability to pass parameters to the stored procedure, so depending on what the need is the stored procedure can act accordingly based on the parameter values that were passed.

## 1.4 Trigger

A SQL trigger is a set of SQL statements stored in the database catalog. A SQL trigger is executed or fired whenever an event associated with a table occurs e.g., insert, update or delete. A SQL trigger is a special type of stored procedure. It is special because it is not called directly like a stored procedure. The main difference between a trigger and a stored procedure is that a trigger is called automatically when a data modification event is made against a table whereas a stored procedure must be called explicitly.

## 1.5 Normalisation

Database Normalization is a technique of organizing the data in the database. Normalization is a systematic approach of decomposing tables to eliminate data redundancy (repetition) and undesirable characteristics like Insertion, Update and Deletion Anomalies. It is a multi-step process that puts data into tabular form, removing duplicated data from the relation tables.

Normalization is used for mainly two purposes:

1. Eliminating redundant (useless) data.
2. Ensuring data dependencies make sense i.e data is logically stored.

## 1.6 Application

This project enables customers to buy anything and everything from the comfort of their homes. Groceries, essentials and pretty much everything can be home delivered from nearby shops. Helps save fuel and money whilst also helping customers save time. This is especially useful during the time of pandemics. It encourages people to stay home and limits the spread of virus.

# Chapter 2

## Hardware and Software Details

### 2.1 Hardware Details

- Processor : Any Processor more than 500 MHz
- RAM : 2GB
- Hard Disk : 5GB
- Input Device : Standard Keyboard and Mouse
- Output Device : Monitor

### 2.2 Software Details

- Database : MySql
- Programming Language : Python
- IDE : Visual Studio Code
- Operating System : Windows 10

# Chapter 3

## System Design

### 3.1 Entity Relation Diagram(ERD)

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. These entities can have attributes that define its properties. By defining the entities, their attributes, and showing the relationships between them, an ER diagram illustrates the logical structure of databases.

#### **ERD Entity Symbols:**

Entities are objects or concepts that represent important data. Entities are typically nouns such as product, customer, location, or promotion. An entity is represented as rectangle in an ER diagram. There are three types of entities commonly used in entity relationship diagrams.

#### **Cardinality Ratios:**

Cardinality refers to the maximum number of times an instance in one entity can relate to instances of another entity.

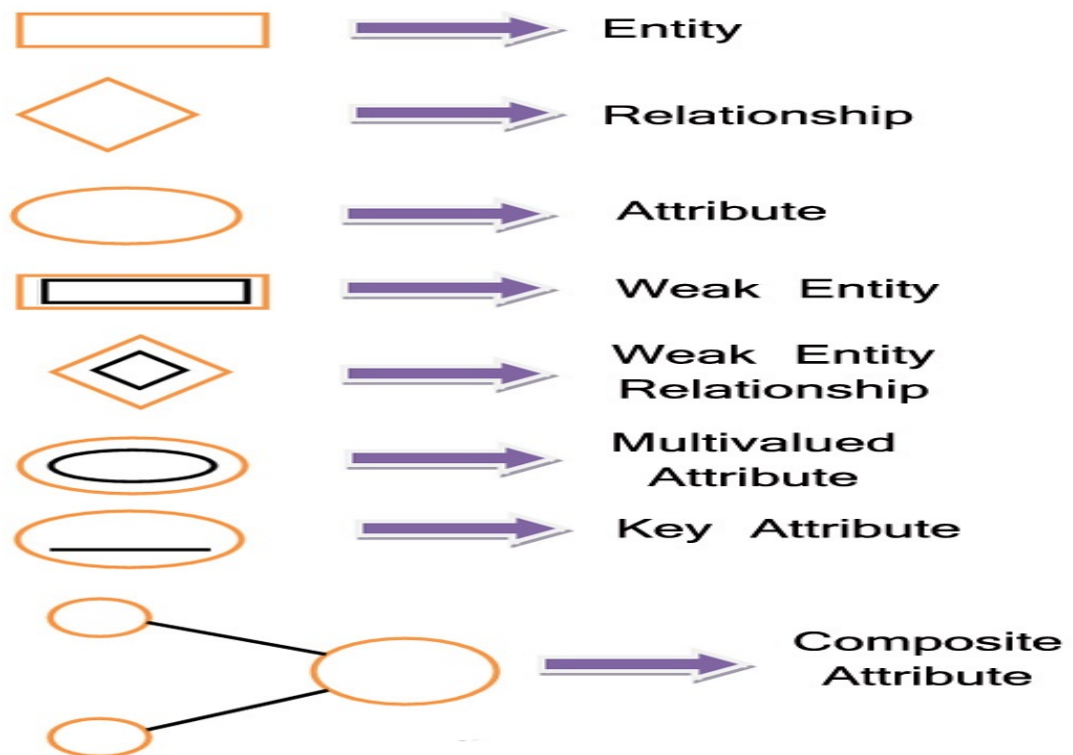


Figure 3.1: ER Diagram Symbols

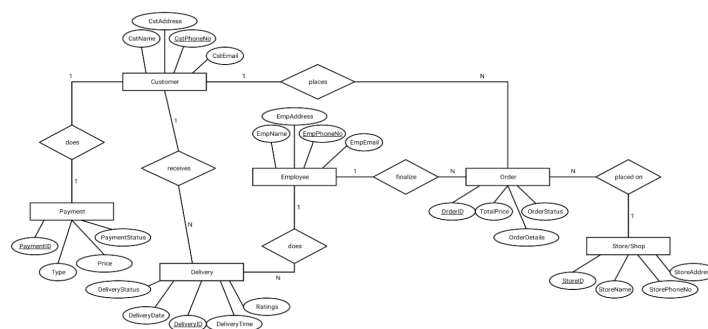


Figure 3.2: ER Diagram Cardinality Ratios

## 3.2 Mapping From ER Diagram to Schema Diagram

**1.Mapping of Regular Entities:**This step involves mapping all the regular entity types to tabular format by identifying their primary keys.

**2.Mapping of 1:1 Relation:**In this step foreign keys are assigned using foreign key approach.The primary key of the participating relation R or S is added as primary key to second entity types by looking at the participating constraints.

**3.Mapping of 1:N Relation:**Foreign key approach is used to add one sided primary key to the n sided entity at foreign key.

**4.Mapping of M:N Relation:**Here we use the cross reference approach where the relationship is converted to a new relation within attributes on primary keys of both participating relation.

**5.Mapping of Weak Entity:**When mapping weak entity types along with other attributes the partial key and primary key of parent entity together will form their primary key of the new relation.

**6.Mapping of N-ary Relation:**For mapping N array relationship we create a new relation with a relationship name in its attribute and primary keys of all participating entity types.

**7.Mapping of Multivalued Relation:**For multivalued attributes a separate relation has to be created along with primary key of parent relation.

In our database we have the following mappings:

**Step – 1 : Mapping of Regular Entities.**

For each regular (strong) entity type  $E$  in the ER schema, create a relation  $R$  that includes all the simple attributes of  $E$ . Include only the simple component attributes of a composite attribute. Choose one of the key attributes of  $E$  as primary key for  $R$ . If the chosen key of  $E$  is composite, the set of simple attributes that form it will together form the primary key of  $R$ .

**Step – 2 : Mapping of binary 1:1 Relation Types.**

The Payment and the Customer entities are participating in the 1:1 relation type. Since Payment has a total participation in the relation we include the primary key of Customer entity as the foreign key in Payment entity.

**Step – 3 : Mapping of binary 1:N Relation Types.**

The Customer and the Order entities are participating in the 1:N relation type. Since Order is on one the  $n$ th side of the relation we include the primary key of Customer entity as the Foreign key in Order entity.

The Employee and the Order entities are participating in the 1:N relation type. Since Order is on one the  $n$ th side of the relation we include the primary key of Employee entity as the Foreign key in Order entity.

The Store and the Order entities are participating in the 1:N relation type. Since Order is on one the  $n$ th side of the relation we include the primary key of Store entity as the Foreign key in Order entity.

The Employee and the Delivery entities are participating in the 1:N relation type. Since Delivery is on one the  $n$ th side of the relation we include the primary key of Employee entity as the Foreign key in Delivery entity.

**Step – 4 : Mapping of binary M:N Relation Types.**

For each binary M:N relationship type  $R$ , create a new relation  $S$  to represent  $R$ . Include as foreign key attributes in  $S$  the primary keys of the relations that represent the participating entity types; their combination will form the primary key of  $S$ . Also include any simple attributes of the M:N relationship type (or simple components of composite attributes) as attributes of  $S$ . Notice that we cannot represent an M:N relationship type by a single foreign key attribute in one of the participating relations — as we did for 1:1 or 1:N relationship types — because of the M:N cardinality ratio.

### 3.3 Schema Diagram

A Schema is a pictorial representation of the relationship between the database tables in the database that is created. The database schema of a database system is its structure described in a formal language supported by the database management system (DBMS). The term "schema" refers to the organization of data as a blueprint of how the database is constructed (divided into database tables in the case of relational databases). The formal definition of a database schema is a set of formulas (sentences) called integrity constraints imposed on a database. These integrity constraints ensure compatibility between parts of the schema. All constraints are expressible in the same language. A database can be considered a structure in realization of the database language. The states of a created conceptual schema are transformed into an explicit mapping, the database schema. This describes how real-world entities are modelled in the database.



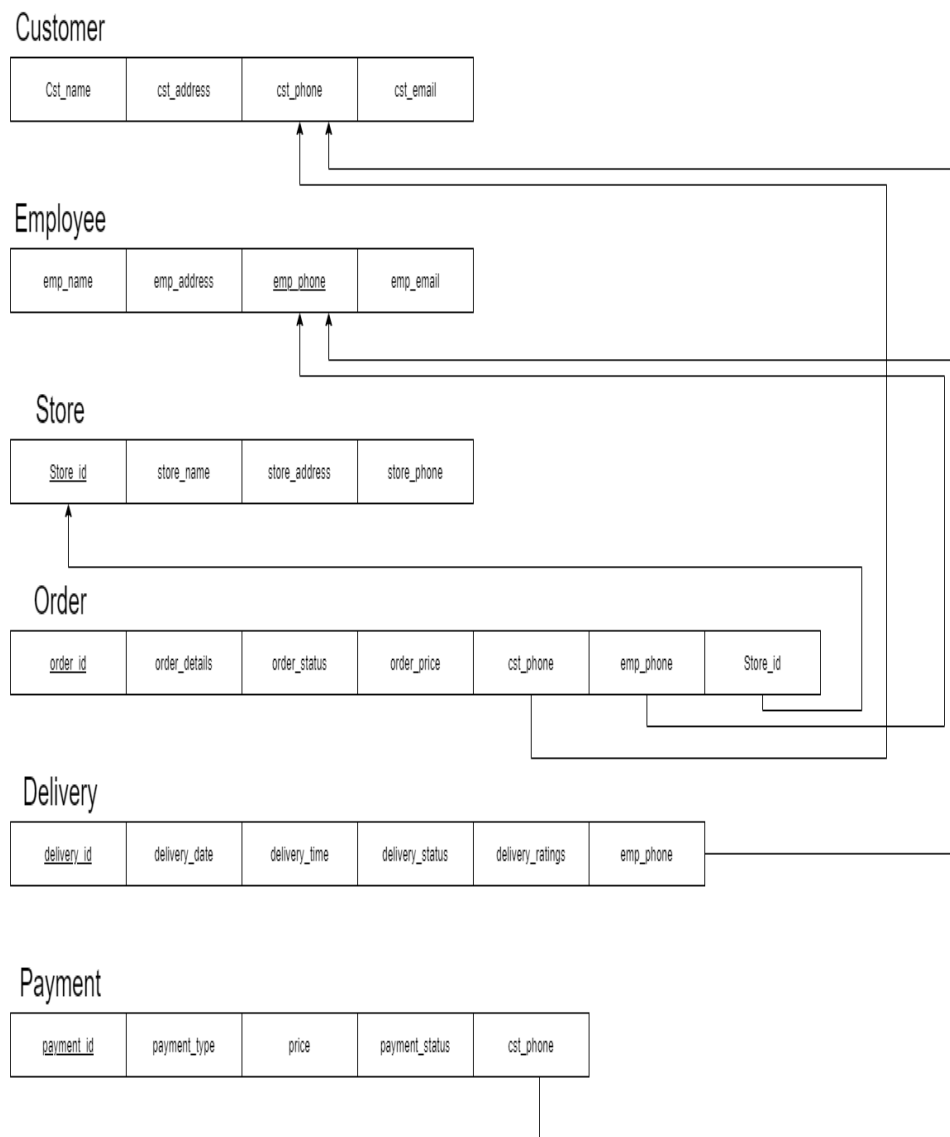


Figure 3.3: Schema Diagram Of Grocery Delivery Database

# Chapter 4

## Implementation

### 4.1 Table Structure

CUSTOMER

SQL ▾ < 1 / 1 > 1 - 4 of 4					
cid	name	type	notnull	dflt_value	pk
0	cst_name	TEXT	0	NULL	0
1	cst_address	TEXT	0	NULL	0
2	cst_phone	TEXT	0	NULL	1
3	cst_email	TEXT	0	NULL	0

EMPLOYEE

SQL ▾ < 1 / 1 > 1 - 4 of 4					
cid	name	type	notnull	dflt_value	pk
0	emp_name	TEXT	0	NULL	0
1	emp_address	TEXT	0	NULL	0
2	emp_phone	TEXT	0	NULL	1
3	emp_email	TEXT	0	NULL	0

## STORE

SQL ▾ < 1 / 1 > 1 - 4 of 4					
cid	name	type	notnull	dflt_value	pk
0	store_id	INTEGER	0	NULL	1
1	store_name	TEXT	0	NULL	0
2	store_address	TEXT	0	NULL	0
3	store_phone	TEXT	0	NULL	0

## ORDER

SQL ▾ < 1 / 1 > 1 - 7 of 7

cid	name	type	notnull	dflt_value	pk
0	cst_phone	TEXT	0	NULL	0
1	emp_phone	TEXT	0	NULL	0
2	store_id	INTEGER	0	NULL	0
3	order_id	INTEGER	0	NULL	1
4	order_details	TEXT	0	NULL	0
5	order_status	INTEGER	0	NULL	0
6	order_price	INTEGER	0	NULL	0

## DELIVERY

SQL ▾ < 1 / 1 > 1 - 6 of 6

cid	name	type	notnull	dflt_value	pk
0	emp_phone	TEXT	0	NULL	0
1	delivery_id	INTEGER	0	NULL	1
2	delivery_date	TEXT	0	NULL	0
3	delivery_time	TEXT	0	NULL	0
4	delivery_status	INTEGER	0	NULL	0
5	delivery_ratings	INTEGER	0	NULL	0

## PAYMENT

SQL ▾ < 1 / 1 > 1 - 5 of 5

cid	name	type	notnull	dflt_value	pk
0	cst_phone	TEXT	0	NULL	0
1	payment_id	INTEGER	0	NULL	1
2	payment_type	TEXT	0	NULL	0
3	price	INTEGER	0	NULL	0
4	payment_status	INTEGER	0	NULL	0

# Chapter 5

## Results and Discussion

**Login Page:**



Figure 5.1: Login Page

This is our login page. Here the cashier can select his Id from a dropdown list and can login.

**Bill Details:**



Figure 5.2: Adding Customer Details

This page allows cashier to add a customer details i.e name and phonenumber.

**Deleting bills:**

Figure 5.3: Delete Bill

Here cashier can delete bills of the customers by selecting that particular row.

**Update Customer Details:**

Figure 5.4: Updating Customer Mobile Number

Here cashier can update the mobile number of the customer and can proceed for billing.

**Search Customer:**

Figure 5.5: Searching Customer ID

Here Cashier can search for customer id,if he has already visited the store before.

**Purchased Products:**

Figure 5.6: Adding Products

Purchased products are added to the list by selecting the proid, total amount is calculated.

**Trigger:**

Figure 5.7: Trigger for Adding Bill

Trigger will be violated if will try to generate bill between 8am to 8pm.

**Bill:**

Figure 5.8: Generated Bill

Printing the bill.

# Chapter 6

## Conclusion and Future work

The small and medium-sized supermarket management system is using Oracle database and Java language to develop and realize. Procurement and inventory management has always been an essential part of the supermarket . In order to save money, there still has a lot of small and medium-sized supermarkets uses the way of human purchasing which is waste time, poor secrecy and low efficiency. These disadvantages will lead to small and medium-sized supermarkets and managers faces the difficulties of related documents, query and maintain the data for supermarket. Supermarket management system realizes the function of procurement management, inventory management, sales management, staff management and membership management that supermarket needed. With the continuous improvement of science and technology, the computer's powerful function has been known and used. Compared with the old manual work, the system not only reduces the workload, but also greatly reduced the occurrence of human error. This project can be further improved by keeping a track of the login and logout time of each cashier. Keeping track of when the cashier or the customer was registered or deleted, giving a warning when the product quantity goes low. Keeping a track of the sales that have happened on a particular day, Issuing gift voucher or discount coupons for the customers.



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