

Supermarket Management

Supermarkets are a multibillion-dollar industry. According to “[IBISWorld](#)” the market size of supermarkets and grocery stores in the United States in 2022 will be \$765.2 billion which is an expected increase of 1.1%. This industry employs people ranging from delivery drivers to CEOs, so a large chain can employ millions of people.

Managing so many people and thousands of products with the goal of optimizing expenditure and increasing profits necessitates the use of an effective database. We planned to do a deep dive into this industry and concentrate on establishing a database for it because it deals with daily requirements. Thus, in this project, we will create a database that will keep track of **employees, customers, orders, products** and the relations between them.

Assumptions:

- Assuming the supermarket is built on the owner's property therefore we are not considering any operating or infrastructure costs
- Returns and refunds are not permitted
- No delivery fee for online orders
- Spring is between January to April, Summer is between May to July, Fall is between August to December
- Customer is someone who places at-least one order and he/she can place any number of orders with respective timestamp(order day, order date and order time)
- Order should have at-least one product and can contain any number of products
- Employee can handle 0 products or any number of products
- Product can be present in 0 number of orders or any number of orders
- Employee can work for at least 1 and at max 1 department
- For a department there has to be at least one employee or more than one employee
- At least 0 number of employee can manage a department and at max 1 employee can manage a department
- Department can be managed by at least and at max 1 employee
- Order contains certain quantity of product

Requirements

Product: This entity contains details of all the products along with their price in the supermarket:

- ❖ Unique product id
- ❖ Name of the product
- ❖ Category of the product
- ❖ Cost price of the product
- ❖ Selling price of the product

Category: This entity contains details of all the categories along with their Aisle number in the supermarket:

- ❖ Unique Category of the product
- ❖ Aisle number of the product

Customer: This entity contains details of all the customers who made a purchase in the supermarket:

- ❖ Unique customer id
- ❖ Phone number(Multiple phone numbers allowed)
- ❖ Email
- ❖ Name

Employee: This entity contains details of all the employees who work in the supermarket:

- ❖ Name of the employee(First, Middle and Last)
- ❖ Unique Employee ID
- ❖ Designation of the employee(Ex: Store manager, Cashier, Salesman)
- ❖ Salary of the employee

Order: This entity contains details of all the orders sold to the customer in the supermarket:

- ❖ Every order has a unique order id
- ❖ Order amount
- ❖ Placed order (day, date and time)
- ❖ Customer id(Foreign Key)
- ❖ Order mode (Ex: store and online)

Department: This entity contains details of all the departments for which employee works in the supermarket:

- ❖ Unique department id
- ❖ Department name
- ❖ Employee id who manages the department

Business Goals

- Day of the week with highest and lowest sale using **Order**
- List of most favorable categories using **Order** and **Product**
- Total amount of sale online and in store using **Order**
- Most favored products near billing section(Identify using aisle number) using **Order** and **Product**
- List of products that have less marginal value using **Product**
- Gross profit using **Order**, **Product**
- Net profit using **Order**, **Product**, **Department** and **Employee**
- List of customers who made maximum number of purchases using **Customer** and **Order**

Team Details

Team number: 13

Team members:

1. Vinay Kumar Anant
2. Prasanna Sundararajan Muthukumaran
3. Hariharan Prakash
4. Gayathri Ban Manjunath