

# Online Retail Database

Niles: Aditya, Raj, Saurav, Yash | Mentor: Rajiv Mishra  
Indian Institute of Technology Patna

## Objectives

- Designing a systematic online retail store database.
- Easily maintainable and scalable.
- Assigning a dynamic '*preference index*' to all the sellers
- Secure payment gateway leading to maximum customer satisfaction

## Introduction

We are designing a systematic, maintainable and scalable database service leveraging the full power of SQL relational database. We also aim to integrate a fast and secure payment gateway.

A customer can register to purchase an item. The customer will provide bank account number and bank name (can have multiple account number). After registration, each customer will have a unique customerid, userid and password. A customer can purchase one or more item in different quantities. The items can of different classes based on their prices. Based on the quantity, the price of the item and discount (if any) on the purchased items, the bill will be generated. A bank account is required to settle the bill. The items can be ordered to one or more suppliers.

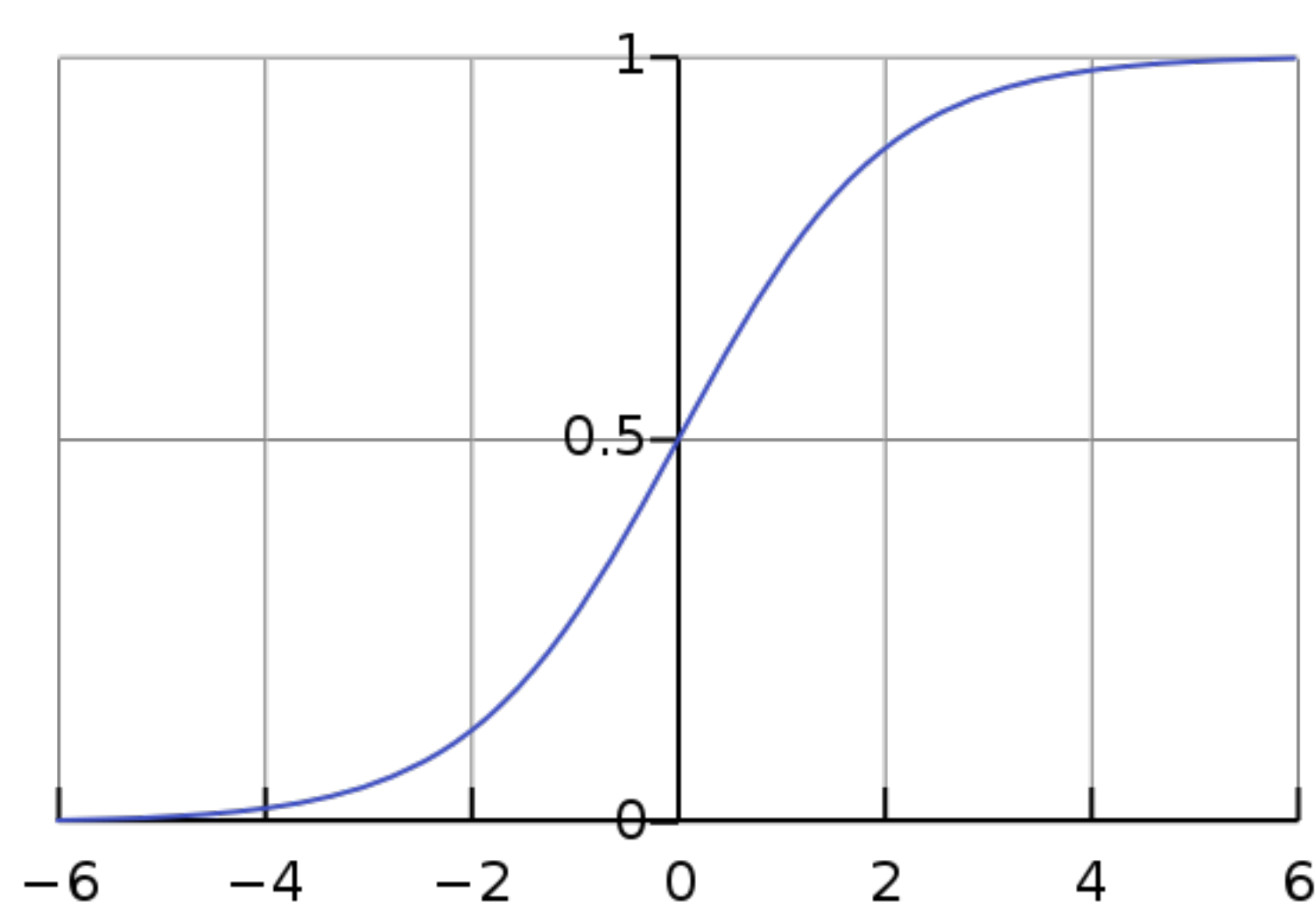


Figure 1: Sigmoid Function

## Functionality

The following points briefly explain the functionality of the database model:

- Every customer has a unique userID and a secure password. A customer can have multiple related accounts defined in the customer\_accounts table
- Every item will have multiple suppliers, categorized into various classes
- Every customer's order will be defined in the customer\_order table. Moreover all the items in one particular order will be stored in the order\_items table
- We use a mathematical parameter called preference index to define the priority order for suppliers of a particular product

## Details

Classes Involved

- Customer: customer\_id, user\_id, password
- Customer Accounts: account\_id, bank\_account\_no, bank\_name, customer\_id
- Customer Order: customer\_order\_id, total\_price, customer\_account\_id
- Item: item\_id, item\_name
- Class: class\_id, item\_id, price, class\_type
- Order Item: order\_item\_id, customer\_order\_id, item\_id, quantity, price, supplier\_id, class\_id
- Supplier Item: supplier\_item\_id, supplier\_id, class\_id, discount, stock, commission

## Queries

- Select all the seller for a given item of a given class
- Display the total cost of an order with customer user id and bank account number
- Display the item name, class, price and its seller of a particular order
- Display the customer details for a given customer id
- Display the stock of a certain item with its seller name and class
- Display all the products sold by a particular seller
- Display the commission details of all the sellers for a particular product

## Acknowledgement

- Rajiv Mishra - DBMS Lab
- CS354 Slides
- Fundamentals of Database Systems - Book

## Authors

- Aditya Prakash Patra - 1601CS03
- Raj Shekhar - 1601CS37
- Saurav - 1601CS41
- Yash Palriwal - 1601CS50

## Innovative Point

The usage of preferential index proved to be very crucial in finding the optimal seller for the customer

## Mathematical Section

Preference Index is our innovative mathematical equation to define the priority order for suppliers of a particular product

$$PI = \frac{1}{1 + e^{-ax-by+cz}} \quad (1)$$

Here,  
x is the percentage commission,  
y is the seller review in the scale of 10  
z is the (cost-minimum base price)/cost  
a, b, c are constants used to take the weighted and normalized sum of the above parameters

## Conclusion

We were successfully able to design an ER Model for the given problem statement. From there, we transformed it to a Relation-Database Model.

We also firmly believe that the usage of preference index will significantly improve the user experience and also help to increase our revenue.

Higher preference index signifies that the seller has a good reputation and trust among the customers.