

E-COMMERCE MANAGEMENT SYSTEM



CPS 542 Database Management and Systems I
Under Dr. James Buckley

Team Members

Abhijeet Gupta

Shruti Singh

Tejas Patil

Pankaj Vanjani

Dhruvi Ramani



YOUTUBE VIDEO LINK :

<https://youtu.be/AYwEnEYCXIc>



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Introduction

In this modern era of ordering and shopping online no enterprise wants to be left behind, moreover due to its simplicity the shift from offline mode to an online mode is witnessing rampant growth.

Therefore, our job is to ease the path of this transition for the seller.

Amongst many things that an online site requires the most important is a database system. As technology grows, the number of people participating in e-commerce purchases will grow along with it.

Electronic commerce, known as e-commerce, is a type of business model that involves making transactions over the internet. Any store, business, or person who actively sells products online are considered to be a part of e-commerce.

However, with the ever-growing industry, there is a system that is running the backend of each and every successful e-commerce site; a **database**.



APPLICATION DESCRIPTION

MySQL Workbench tool is used for designing databases for an e-commerce business. Which can be able to track the record of Customers, Suppliers, Products, Customer orders, Customer payments and order delivery. A customer places an order for purchasing a product which is supplied by a supplier. A customer can place an order for multiple products and a particular product can be supplied by multiple suppliers.

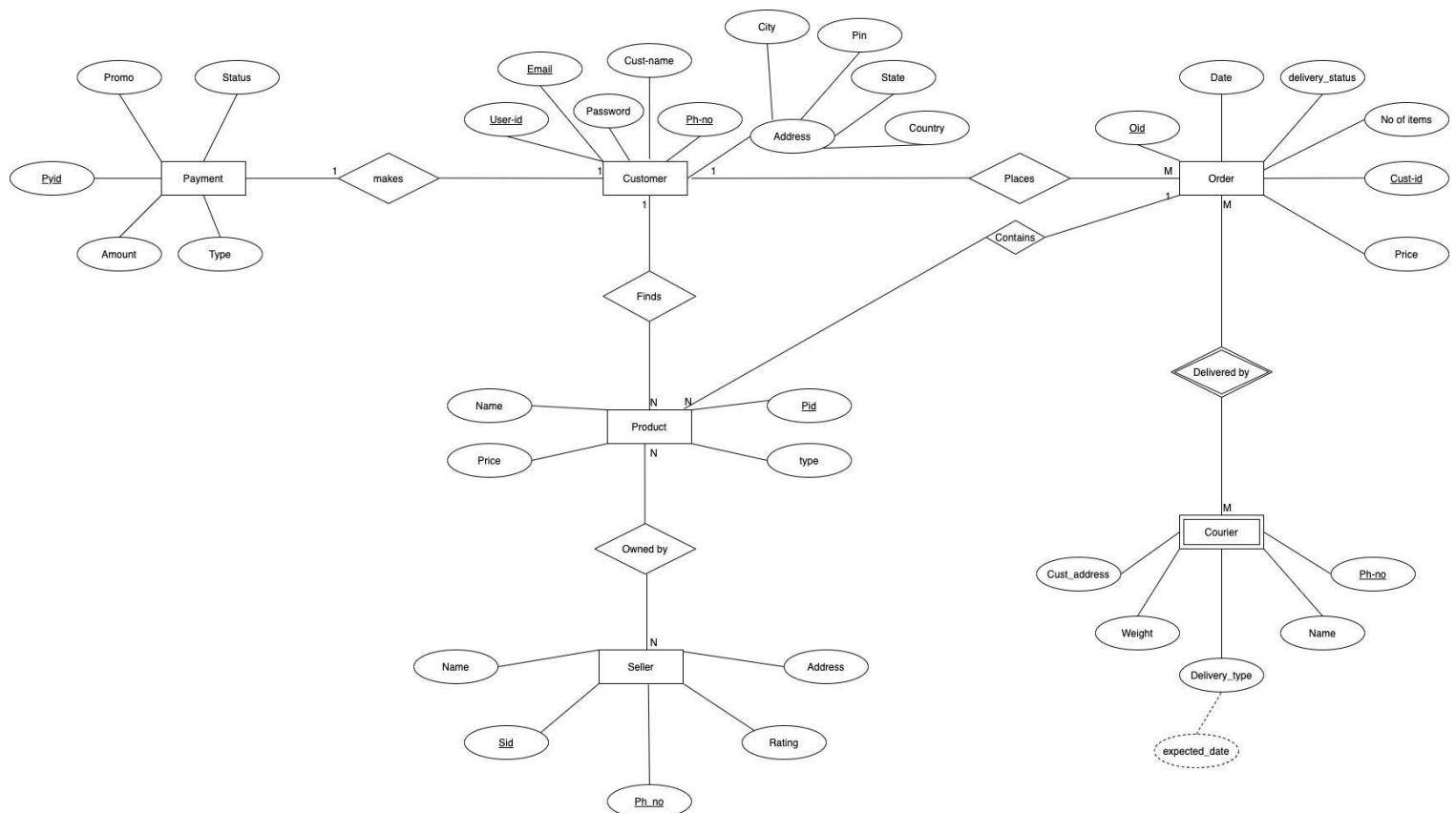
Entities are created for capturing data for customers, suppliers, orders, and payment used by customers. The goal of the project is to design and implement a retail based relational database that showcases how various entities are related to retail and commerce. It also tries to cover all the relative scenarios that one can come across in the field of e-commerce such as placing order, method for payment etc. In order to implement, MySQL is used as the relational database management system (RDBMS).



CONCEPTUAL MODEL

To understand the design better, ER diagram provides the conceptual schematic representation of the database system. Below is the

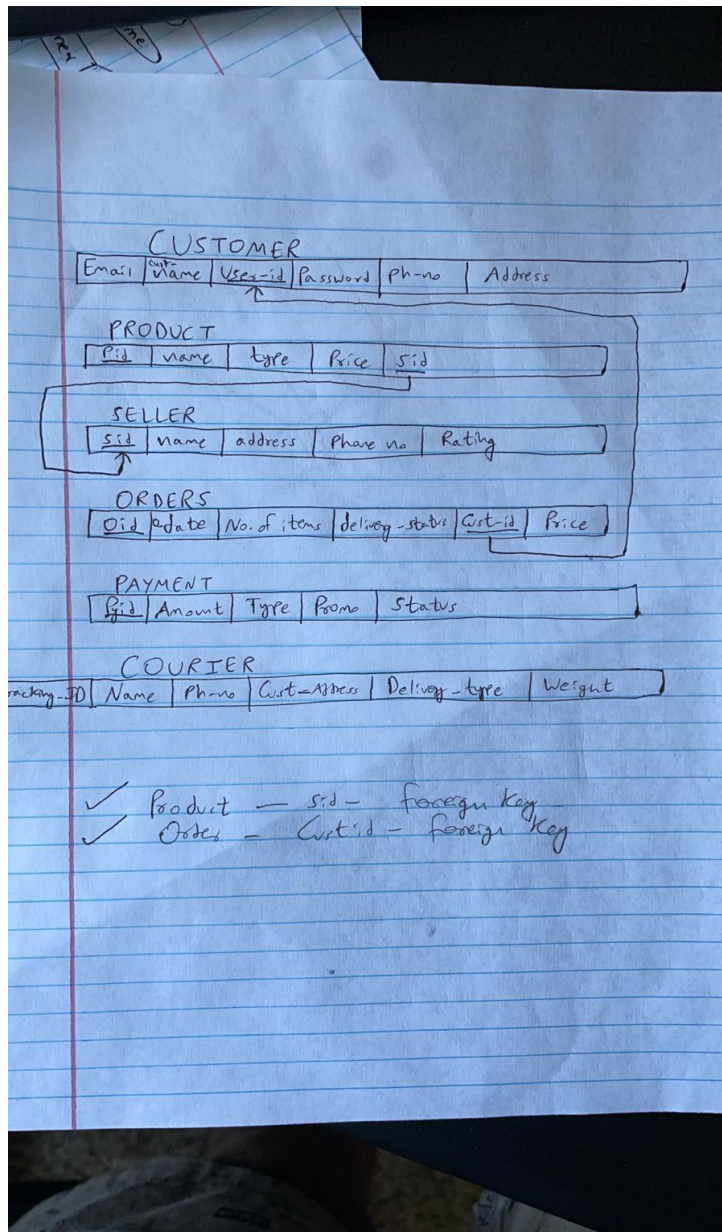
ENTITY RELATION DIAGRAM



But before making the ER diagram, one also needs to understand the relationships and cardinality between various entities:

- User-Address (1-N): A user may have multiple addresses and one address must belong to one user.
- Buyer-Shopping Cart (1-1): A buyer may have one shopping cart and one shopping cart must belong to one buyer.
- Shopping Cart-Product (M-N): A shopping cart may contain multiple products and a product may be in different shopping carts.
- Product-Offers (1-1): A product may have one offer and an offer must belong to one product.
- User-Order (1-N): A user may place multiple orders and an order must belong to one user.
- Product-Order (M-N): A product may be a part of multiple orders and an order must contain one or multiple products.
- Order-Payment (1-1): An order should have a payment method and a payment method must belong to an order.
- Order-Shipper (N-1): An order may have one shipper and a shipper may have multiple orders to ship.

INITIAL DATABASE SCHEMA



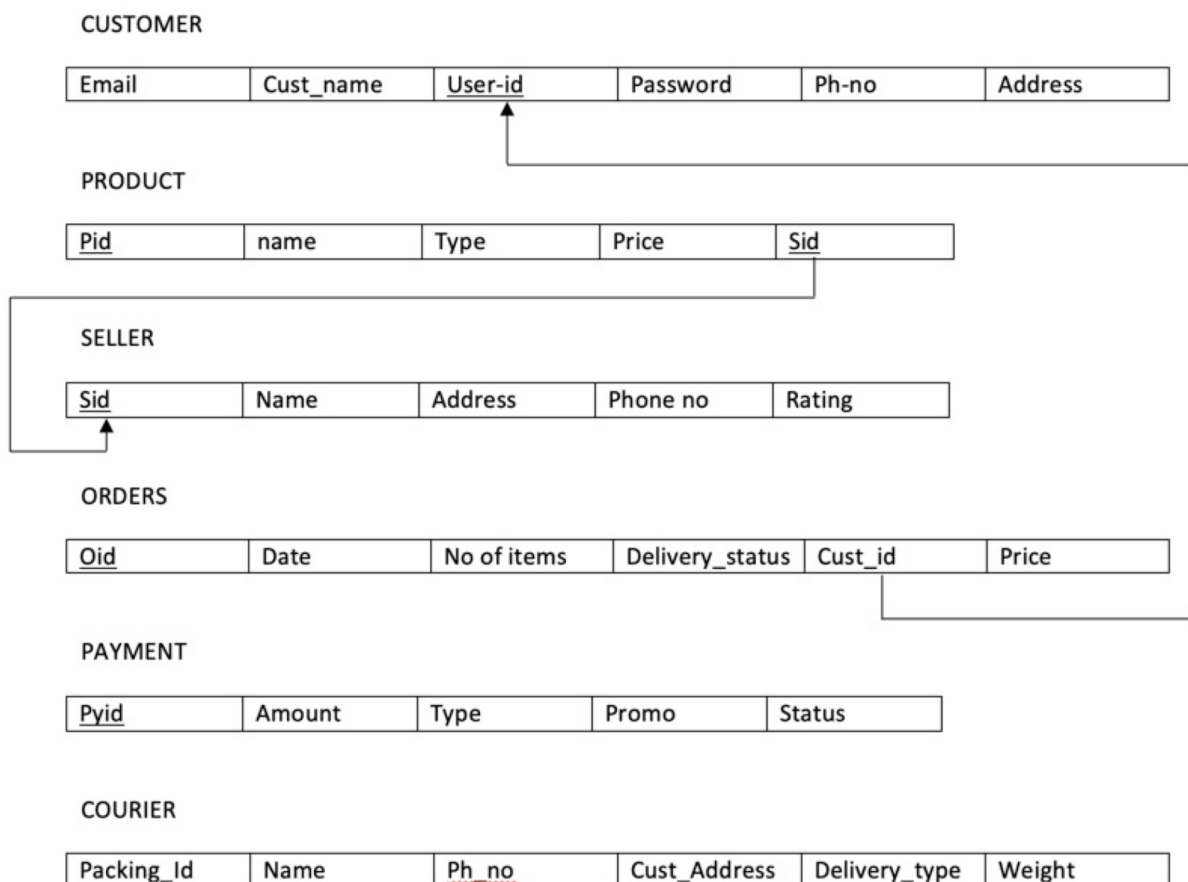
FINAL DATABASE SCHEMA

Below is our implementation of the final database:

While creating we integrated all the necessary algorithms, and practised good database design.

REVIEW : QUALITIES OF GOOD DATABASE IN OUR PROJECT

- Reflects real-world structure of the problem.
- Can represent all expected data over time.
- Clean, consistent, and easy to understand.
- Provides efficient access to data








REVIEW: DATABASE NORMALIZATION






Much of our formal database design is focused on **normalizing** the database and ensuring that the design conforms to a **level of normalization**. We used **Third Normal Form** as it's generally considered good enough for typical applications. Our design initially had fewer tables and many columns, but we transformed it into a design with more tables with fewer columns -- after conducting some tests and applying some rules.






In our database we made sure that there were no multi-valued attributes, hence following the **First normal form**.







The **Second Normal Form** requires that non-key fields must be dependent upon the entire key. **Third Normal Form** prohibits transitive dependencies whereby a non-key attribute is dependent on another non-key attribute , so we only put the unique customer ID in the table and not any owner information such as their age.







DATABASE INSTANCE



ecom payment	
	PYID : varchar(255)
	AMOUNT : int(11)
	P_TYPE : varchar(255)
	PROMO : varchar(255)
	STATUS : varchar(255)

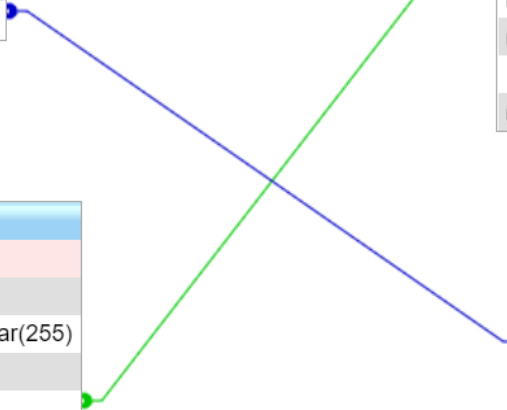
ecom product	
	PID : varchar(255)
	PNAME : varchar(255)
	TYPE : varchar(255)
	PRICE : int(11)
	SEL_ID : varchar(255)

ecom orders	
	OID : varchar(255)
	O_DATE : date
	DELIVERY_STATUS : varchar(255)
	NO_OF_ITEMS : int(11)
	CUST_ID : varchar(255)

ecom courier	
	TRACKING_ID : varchar(255)
	COUR_NAME : varchar(255)
	C_PH_NO : int(11)
	CUST_ADDRESS : varchar(255)
	DELIVERY_TYPE : varchar(255)
	WEIGHT : int(11)

ecom customer	
	USER_ID : varchar(255)
	EMAIL : varchar(255)
	PASSWORD : varchar(255)
	CUST_NAME : varchar(255)
	PHONE_NO : int(11)
	CUST_ADDRESS : varchar(255)

ecom seller	
	SID : varchar(255)
	SNAME : varchar(255)
	S_ADDRESS : varchar(255)
	S_PHONE_NO : int(11)
	RATING : varchar(255)



DATA MANIPULATION

Below are the 10 listings of queries we implemented with the results and data retrieved:

1) `SELECT * FROM CUSTOMER WHERE CUST_ADDRESS = 'NEW YORK';`

USER_ID	EMAIL	PASSWORD	CUST_NAME	PHONE_NO	CUST_ADDRESS
anishsag	anish@gmail.com	anish123	Anish Sagvekar	2147483647	New York
Jessica89	jessica@gmail.com	Jesss741	Jessica John	2147483647	New York
rakshita	rakshita@gmail.com	rakshuuuu	Rakshita Patel	0	New York
Saumitra98	Saumitrakulkarni@gmail.com	Saumi145	Saumitra Kulkarni	2147483647	New York

2) `SELECT * FROM PAYMENT WHERE STATUS = 'CREDIT CARD';`

PYID	AMOUNT	P_TYPE	PROMO	STATUS
23789709204	0	Success	643	Credit Card
3290329219	0	success	33	Credit card
8092389837	0	Success	21	Credit Card
82938938279	0	Delivered	66	Credit Card
83498793980	0	Success	35	Credit Card
87349879348	0	Declined	90	Credit Card
87518943654	0	Pending	54	Credit Card
93489839002	0	pending	89	Credit Card
98896546874	0	Success	97	Credit card

3) `UPDATE CUSTOMER SET USER_ID = 'TJSPATIL3' WHERE EMAIL='TJSPATIL2@GMAIL.COM';`

TJSPATIL3	tjspatil2@gmail.com	tejas123	Tejas Patil	2147483647	dayton
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4) `SELECT DISTINCT C.USER_ID, C.CUST_NAME FROM CUSTOMER C, ORDERS O WHERE DELIVERY_STATUS = 'DELIVERED';`

user_id	cust_name
abhijitgupta12	Abhijit Gupta
akhil	Akhil Sharma
anishsag	Anish Sagvekar
Athena87	Athena George
Dhurvi789	Dhurvi Patel
Jack23	Jack Willow
Jessica89	Jessica John

5) SELECT DISTINCT c.CUST_NAME, C.CUST_ADDRESS from customer c, orders o where NO_OF_ITEMS = 5;

Joseph Diaz	Dayton
Nilesh Bhare	Mumbai
Pankaj Vanjani	mumbai

6) SELECT DISTINCT S.SNAME, P.PNAME FROM seller S, product P WHERE PNAME = 'Airpods Pro';

Intraset	Airpods Pro
Swing Infotech	Airpods Pro

7) SELECT COUR_NAME, C_PH_NO FROM COURIER WHERE TRACKING_ID = 8093468732;

COUR_NAME	C_PH_NO
DHL	2147483647

8) SELECT PYID, STATUS FROM PAYMENT WHERE P_TYPE ='SUCCESS';

PYID	STATUS
23789709204	Credit Card
3290329219	Credit card
8092389837	Credit Card
83498793980	Credit Card
872893092	Net Banking
8732409798342	Gift Card
897348634786	Debit card
9090983908	Debit Card
93048908432	Debit Card
98896546874	Credit card

9) SELECT C.CUST_NAME, C.CUST_ADDRESS FROM CUSTOMER C, ORDER O WHERE O_DATE = 21-04-12;

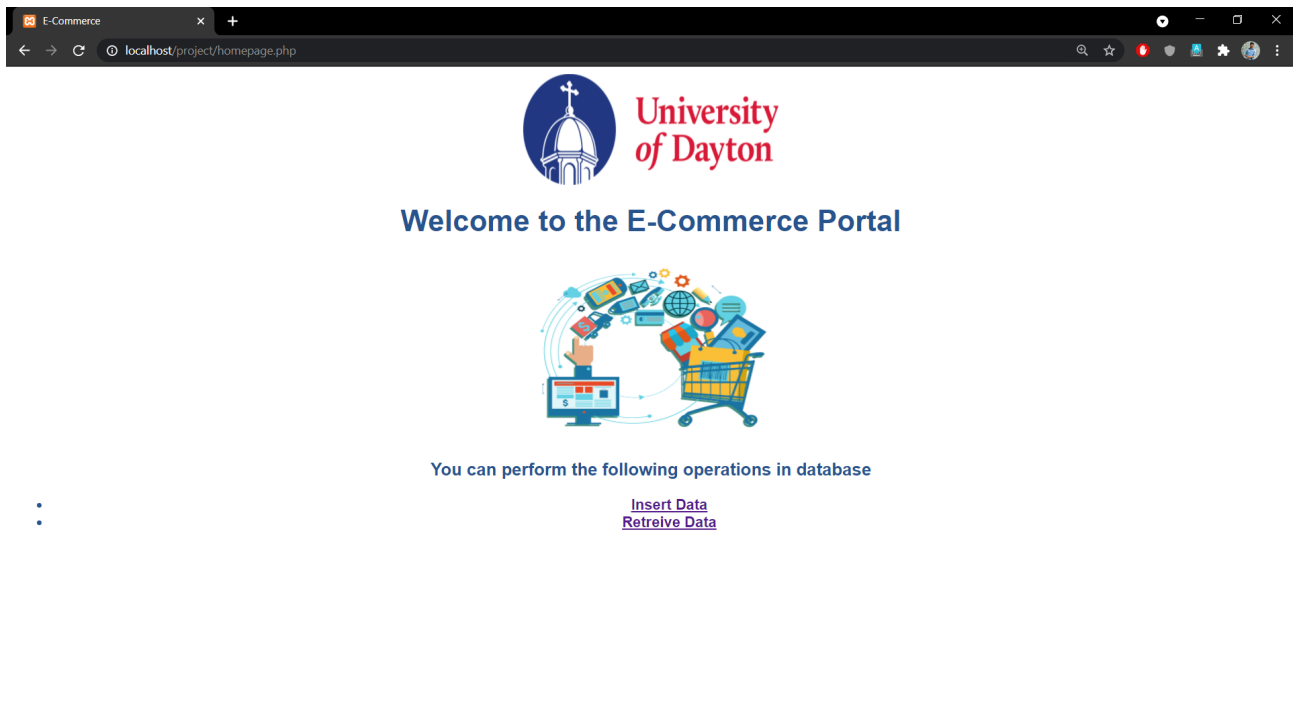
Saurabh Pashte	Florida
Savannah Michel	Houston
Shruti Singh	Brooklyn
Tejas Patil	dayton

10) SELECT PNAME, TYPE FROM PRODUCT WHERE PRICE = 200;

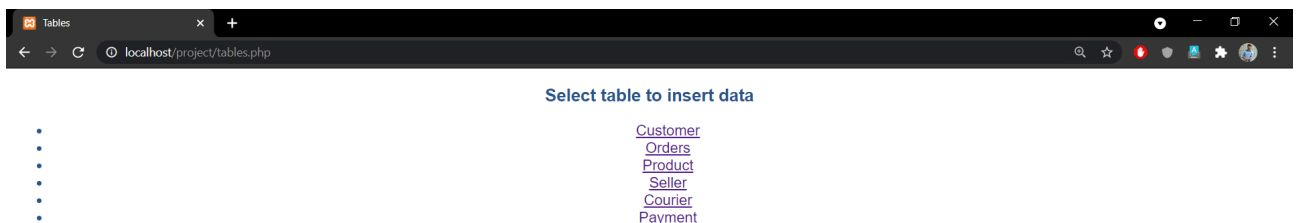
PNAME	TYPE
Airpods Pro	Electronics

WEB INTERFACE

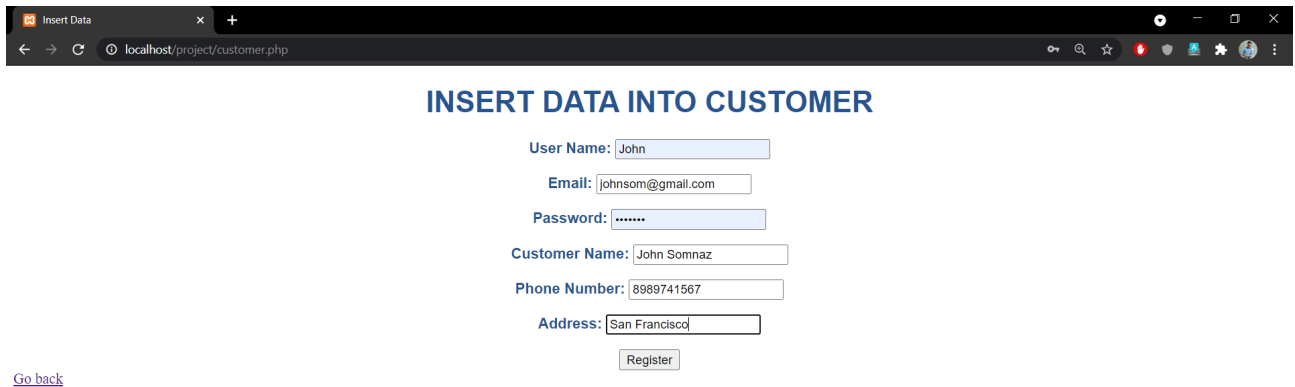
1. Front Page:



2. Inserting the data:



3. We selected customer, to insert the data:



INSERT DATA INTO CUSTOMER

User Name:

Email:

Password:

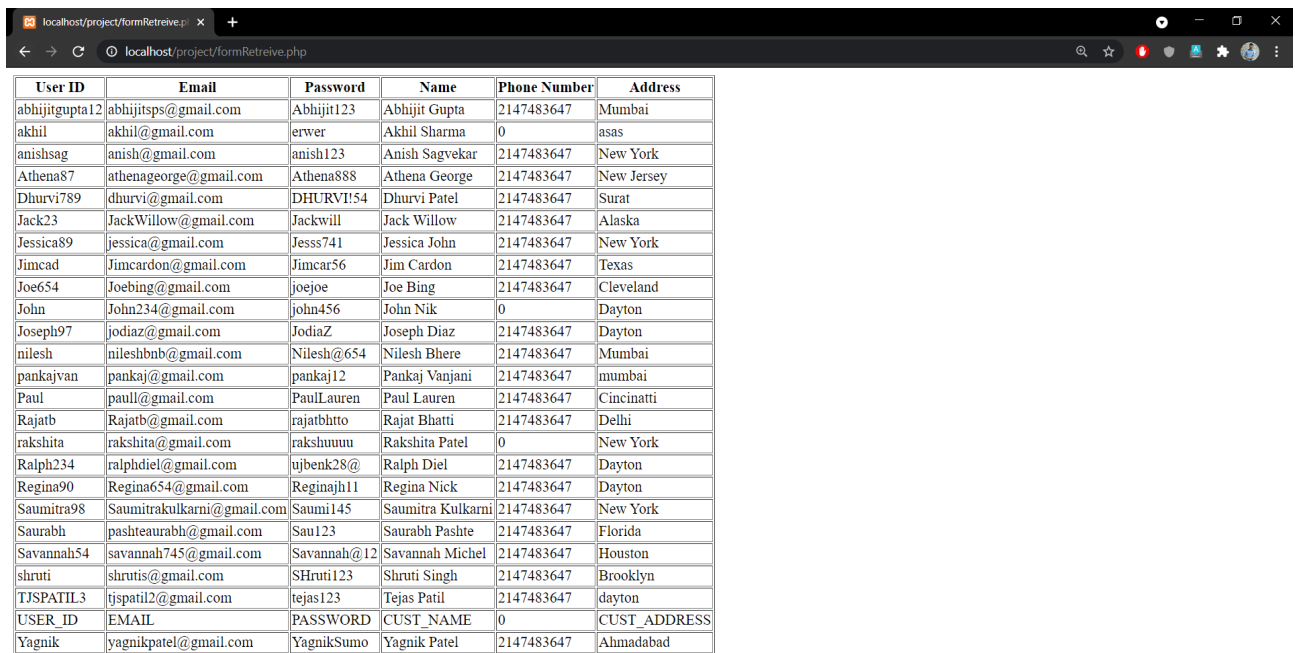
Customer Name:

Phone Number:

Address:

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4. Result:



User ID	Email	Password	Name	Phone Number	Address
abhijitgupta12	abhijitgpts@gmail.com	Abhijit123	Abhijit Gupta	2147483647	Mumbai
akhil	akhil@gmail.com	erwer	Akhil Sharma	0	asas
anishsag	anish@gmail.com	anish123	Anish Sagvekar	2147483647	New York
Athena87	athenageorge@gmail.com	Athena888	Athena George	2147483647	New Jersey
Dhurvi789	dhurvi@gmail.com	DHURVI!54	Dhurvi Patel	2147483647	Surat
Jack23	JackWillow@gmail.com	Jackwill	Jack Willow	2147483647	Alaska
Jessica89	jessica@gmail.com	Jess741	Jessica John	2147483647	New York
Jimcad	Jimcardon@gmail.com	Jimcar56	Jim Cardon	2147483647	Texas
Joe654	Joebing@gmail.com	joejoe	Joe Bing	2147483647	Cleveland
John	John234@gmail.com	john456	John Nik	0	Dayton
Joseph97	jodiaz@gmail.com	JodiaZ	Joseph Diaz	2147483647	Dayton
nilesh	nileshbnnb@gmail.com	Nilesh@654	Nilesh Bhare	2147483647	Mumbai
pankajvan	pankaj@gmail.com	pankaj12	Pankaj Vanjani	2147483647	mumbai
Paul	paull@gmail.com	PaulLauren	Paul Lauren	2147483647	Cincinatti
Rajatb	Rajatb@gmail.com	rajatbhtto	Rajat Bhatti	2147483647	Delhi
rakshita	rakshita@gmail.com	rakshuuu	Rakshita Patel	0	New York
Ralph234	ralphdiel@gmail.com	ujbenk28@	Ralph Diel	2147483647	Dayton
Regina90	Regina654@gmail.com	Reginajh11	Regina Nick	2147483647	Dayton
Saumitra98	Saumitrakulkarni@gmail.com	Saumi145	Saumitra Kulkarni	2147483647	New York
Saurabh	pashteaurabh@gmail.com	Sau123	Saurabh Pashte	2147483647	Florida
Savannah54	savannah745@gmail.com	Savannah@12	Savannah Michel	2147483647	Houston
shruti	shrutis@gmail.com	SHruti123	Shruti Singh	2147483647	Brooklyn
TJSPATIL3	tjspatil2@gmail.com	tejas123	Tejas Patil	2147483647	dayton
USER_ID	EMAIL	PASSWORD	CUST_NAME	0	CUST_ADDRESS
Yagnik	yagnikpatel@gmail.com	YagnikSumo	Yagnik Patel	2147483647	Ahmadabad

OBSERVATIONS

We all brainstormed together to come up with the idea of “E-commerce database management system” as our final project. And the reason was that in future we can expand this project beyond just the scope of database systems.

While using the database we first chose Oracle and implemented our queries on that, but later on we faced the problem of GUI server, so we had to change our database to MYSQL, and then do the process all over again. From this, I learned MYSQL is definitely easier when I want to implement a web interface.

- Creation of tables has thrown an error, Violation Parent key. The tables are to be created in an order.
- While creating tables, we have specified the datatype and length of the attribute. But while inserting values to the database, there was a length violation.
- The primary key was made null while updating. Then we faced an entity integrity constraint which is violating the primary key cannot be null.
- We learned how to create desktop applications by solving unexpected errors which we faced while working together and merging the code and establishing the database and software code from one machine to another machine.

- While developing the application we learned the “connectionless” and “connection oriented” connectivity approaches. Also how to create “data sources” and “data adapters” and handle the data in the “data grid view” container tool.
- We learned how to work virtually and develop an application/database and how to resolve the issues that we face using.
- While updating the table definition we were facing errors, so to resolve it we “Prevent saving changes that require table re-creation” in the “option” in the tools menu.

ACKNOWLEDGMENT

At last, we would like to thank Professor Dr. James Buckley. It was really exciting to work on such a thought-provoking project. We used all the concepts that we learned in our database design course thus making it more fruitful. After completing this project, we feel that we are on a good foundation on how to use our gained knowledge into designing a real-time database system.