



"Heaven's light is our guide"

Rajshahi University of Engineering & Technology

*Department of Computer Science &
Engineering*

Course No: CSE 3102

Course Title: Database System Sessional

Lab Report (Lab 2)

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INTRODUCTION TO THE PROBLEM

The problem is about a **customer-sale** scenario where we need to store and manipulate data within database.

A **database** is a collection of information that is organized so that it can be easily accessed, managed and updated. Computer **databases** typically contain aggregations of data records or files, containing information about sales transactions or interactions with specific customers.

A **database management system (DBMS)** is a software package designed to define, manipulate, retrieve and **manage** data in a **database**. A **DBMS** generally manipulates the data itself, the data format, field names, record structure and file structure. It also defines rules to validate and manipulate this data.

PROBLEM STATEMENT

Database Schema:

Customer (Cust id : integer, cust_name: string)

Item (item_id: integer, item_name: string, price: integer)

Sale (bill_no: integer, bill_date: date, qty_sold: integer)

Relation_c_i (cust_id, item_id)

Relation_c_s (cust_id, bill_no)

The problem is to perform the following:

- Creating table and inserting records
- Designing relationship set tables
- Listing the bill details with quantity sold, total price of the items
- Listing the total bill details with customer name, quantity sold and total billable amount

OBJECTIVES

- Learning about Database
- Learning about Database Management System (DBMS)
- Creating and manipulating Database
- Performing Queries to the Database

DESIGNED DATABASE

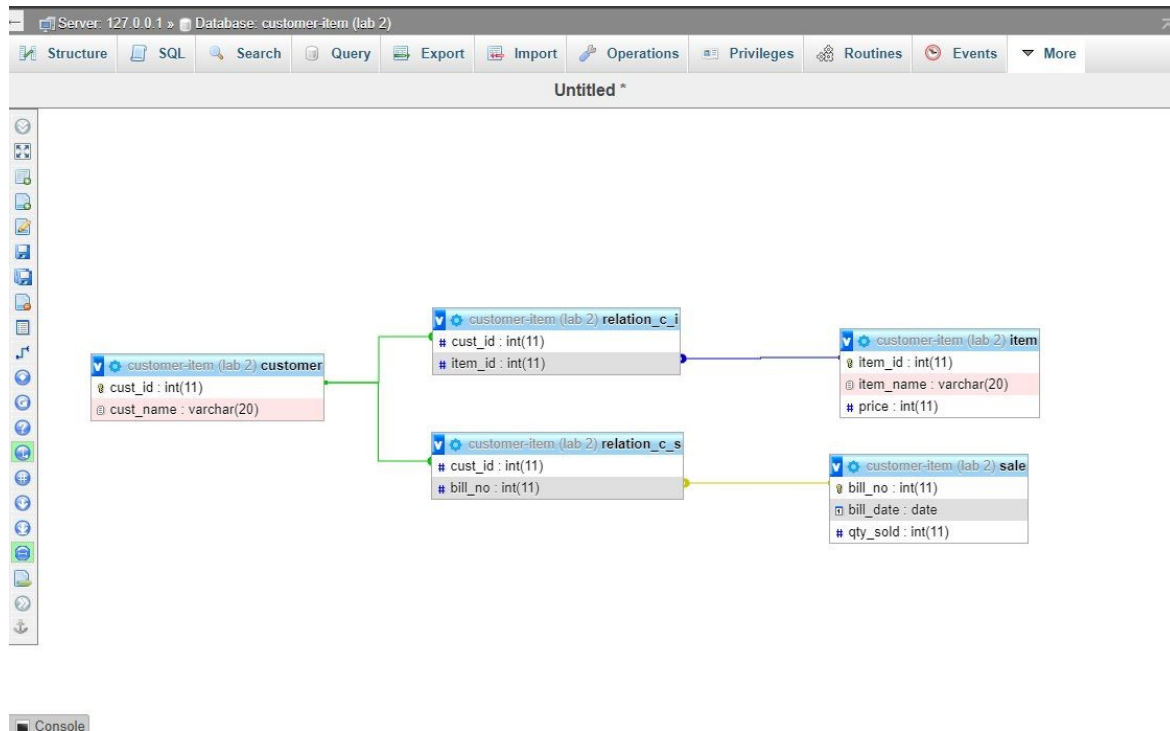


Fig 2.1: Database design for billing details with quantity sold, total price of the items

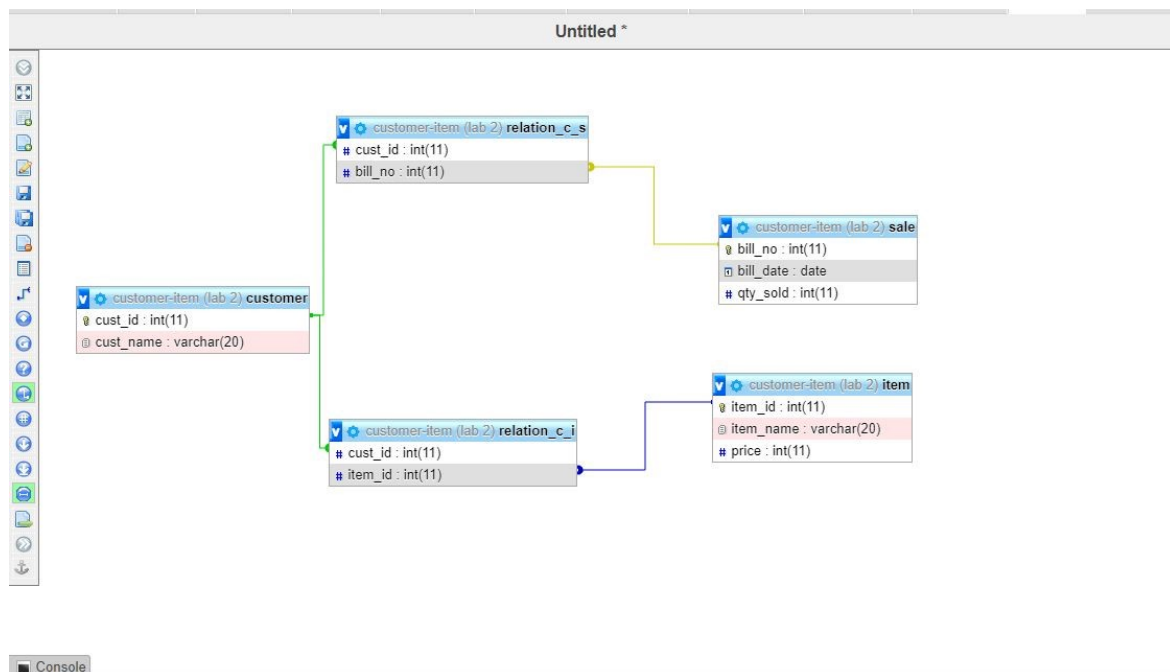


Fig 2.2: Database design for billing details with customer name, quantity sold and total billable amount

SUBMITTED QUERIES

Creation of Tables:

Run SQL query/queries on database customer-item (lab 2):

```
1 create table customer (
2   cust_id int,
3   cust_name varchar(20),
4   primary key(cust_id)
5 );|
```

Fig 2.3: Customer Table Creation

Run SQL query/queries on database customer-item (lab 2):

```
1 create table item (
2   item_id int,
3   item_name varchar(20),
4   price int,
5   primary key(item_id)
6 );|
```

Fig 2.4: Item Table Creation

Run SQL query/queries on database customer-item (lab 2):

```
1 create table sale (
2   bill_no int,
3   bill_date date,
4   qty_sold int,
5   primary key(bill_no)
6 );|
```

Fig 2.5: Sale Table Creation

Run SQL query/queries on database customer-item (lab 2):

```
1 create table relation_c_i (
2   cust_id int,
3   item_id int,
4   foreign key (cust_id) references customer(cust_id),
5   foreign key (item_id) references item(item_id)
6 );|
```

Fig 2.6: Relation Customer Item Table Creation

Run SQL query/queries on database customer-item (lab 2):

```
1 create table relation_c_s (
2   cust_id int,
3   bill_no int,
4   foreign key(cust_id) references customer(cust_id),
5   foreign key(bill_no) references sale(bill_no)
6 );|
```

Fig 2.7: Relation Customer Sales Table Creation

Insertion:

```
Run SQL query/queries on database customer-item (lab 2): ⓘ
1 insert into customer values (1, 'Antor');
2 insert into customer values (2, 'Sohan');
3 insert into customer values (3, 'Vadu');
4 insert into customer values (4, 'Sadaf');
5 insert into customer values (5, 'Yeasin');
6 insert into customer values (6, 'Jion');
7 insert into customer values (7, 'Ansary');
8 insert into customer values (8, 'Sakib');
9 insert into customer values (9, 'Asif');
10 insert into customer values (10, 'Subornd');
```

Fig 2.8: Customer Table Insertion

```
Run SQL query/queries on database customer-item (lab 2): ⓘ
1 insert into item values (1, 'rice', 30);
2 insert into item values (2, 'beef', 500);
3 insert into item values (3, 'chicken', 200);
4 insert into item values (4, 'goat', 600);
5 insert into item values (5, 'oil', 100);
6 insert into item values (6, 'ingredients', 200);
7 insert into item values (7, 'vegetables', 300);
8 insert into item values (8, 'drinks', 1000);
9 insert into item values (9, 'water', 250);
10 insert into item values (10, 'bird', 400);
11 |
```

Fig 2.9: Item Table Insertion

```
Run SQL query/queries on database customer-item (lab 2): ⓘ
1 insert into sale values (1, '2021-01-01', 2);
2 insert into sale values (2, '2021-01-02', 3);
3 insert into sale values (3, '2021-01-03', 1);
4 insert into sale values (4, '2021-01-04', 5);
5 insert into sale values (5, '2021-01-05', 4);
6 insert into sale values (6, '2021-01-06', 7);
7 insert into sale values (7, '2021-01-07', 9);
8 insert into sale values (8, '2021-01-08', 8);
9 insert into sale values (9, '2021-01-09', 2);
10 insert into sale values (10, '2021-01-10', 1);
11 |
```

Fig 2.10: Sales Table Insertion

```
Run SQL query/queries on database customer-item (lab 2): ⓘ
1 insert into relation_c_i values(1, 3);
2 insert into relation_c_i values(2, 4);
3 insert into relation_c_i values(3, 5);
4 insert into relation_c_i values(4, 2);
5 insert into relation_c_i values(5, 8);
6 insert into relation_c_i values(6, 7);
7 insert into relation_c_i values(7, 9);
8 insert into relation_c_i values(8, 10);
9 insert into relation_c_i values(9, 1);
10 insert into relation_c_i values(10, 6);
```

Fig 2.11: Relation Customer Item Table Insertion

```
Run SQL query/queries on database customer-item (lab 2): ⓘ
1 insert into relation_c_s values (1, 3);
2 insert into relation_c_s values (2, 4);
3 insert into relation_c_s values (3, 1);
4 insert into relation_c_s values (4, 2);
5 insert into relation_c_s values (5, 6);
6 insert into relation_c_s values (6, 5);
7 insert into relation_c_s values (7, 8);
8 insert into relation_c_s values (8, 7);
9 insert into relation_c_s values (9, 10);
10 insert into relation_c_s values (10, 9);
11
```

Fig 2.12: Relation Customer Sale Table Insertion

OUTPUTS

+ Options

			cust_id	cust_name
<input type="checkbox"/>	Edit	Copy	Delete	1 Antor
<input type="checkbox"/>	Edit	Copy	Delete	2 Sohan
<input type="checkbox"/>	Edit	Copy	Delete	3 Vadu
<input type="checkbox"/>	Edit	Copy	Delete	4 Sadaf
<input type="checkbox"/>	Edit	Copy	Delete	5 Yeasir
<input type="checkbox"/>	Edit	Copy	Delete	6 Jion
<input type="checkbox"/>	Edit	Copy	Delete	7 Ansary
<input type="checkbox"/>	Edit	Copy	Delete	8 Sakib
<input type="checkbox"/>	Edit	Copy	Delete	9 Asif
<input type="checkbox"/>	Edit	Copy	Delete	10 Suborno

Fig 2.13: Customer Table

+ Options

cust_id	item_id
1	3
2	4
3	5
4	2
5	8
6	7
7	9
8	10
9	1
10	6

Fig 2.16: Relation Customer Item Table

+ Options

				item_id	item_name	price
<input type="checkbox"/>	Edit	Copy	Delete	1	rice	30
<input type="checkbox"/>	Edit	Copy	Delete	2	beef	500
<input type="checkbox"/>	Edit	Copy	Delete	3	chicken	200
<input type="checkbox"/>	Edit	Copy	Delete	4	goat	600
<input type="checkbox"/>	Edit	Copy	Delete	5	oil	100
<input type="checkbox"/>	Edit	Copy	Delete	6	ingredients	200
<input type="checkbox"/>	Edit	Copy	Delete	7	vegetables	300
<input type="checkbox"/>	Edit	Copy	Delete	8	drinks	1000
<input type="checkbox"/>	Edit	Copy	Delete	9	water	250
<input type="checkbox"/>	Edit	Copy	Delete	10	bird	400

Fig 2.14: Item Table

+ Options

cust_id	bill_no
1	3
2	4
3	1
4	2
5	6
6	5
7	8
8	7
9	10
10	9

Fig 2.17: Relation Customer Sale Table

+ Options

				bill_no	bill_date	qty_sold
<input type="checkbox"/>	Edit	Copy	Delete	1	2021-01-01	2
<input type="checkbox"/>	Edit	Copy	Delete	2	2021-01-02	3
<input type="checkbox"/>	Edit	Copy	Delete	3	2021-01-03	1
<input type="checkbox"/>	Edit	Copy	Delete	4	2021-01-04	5
<input type="checkbox"/>	Edit	Copy	Delete	5	2021-01-05	4
<input type="checkbox"/>	Edit	Copy	Delete	6	2021-01-06	7
<input type="checkbox"/>	Edit	Copy	Delete	7	2021-01-07	9
<input type="checkbox"/>	Edit	Copy	Delete	8	2021-01-08	8
<input type="checkbox"/>	Edit	Copy	Delete	9	2021-01-09	2
<input type="checkbox"/>	Edit	Copy	Delete	10	2021-01-10	1

Fig 2.15: Sale Table

Output of Performed Queries

✓ Showing rows 0 - 9 (10 total, Query took 0.0039 seconds.)

```
select item.item_name, item.price, sale.qty_sold, sale.qty_sold * item.price from sale, item, relation_c_s, relation_c_i where relation_c_i.cust_id = relation_c_s.cust_id and relation_c_i.item_id = item.item_id and relation_c_s.bill_no = sale.bill_no
```

☐ Profiling [\[Edit inline\]](#) [\[Edit\]](#) [\[Explain SQL\]](#) [\[Create PHP code\]](#) [\[Refresh\]](#)

☐ Show all | Number of rows: 25 | Filter rows:

+ Options

item_name	price	qty_sold	sale.qty_sold * item.price
chicken	200	1	200
goat	600	5	3000
oil	100	2	200
beef	500	3	1500
drinks	1000	7	7000
vegetables	300	4	1200
water	250	8	2000
bird	400	9	3600
rice	30	1	30
ingredients	200	2	400

☐ Show all | Number of rows: 25 | Filter rows:

Fig 2.18: Billing Details with the Quantity Sold, Total Price of the Items

✓ Showing rows 0 - 9 (10 total, Query took 0.0043 seconds.)

```
select sale.bill_date, customer.cust_name, item.item_name, item.price, sale.qty_sold, item.price * sale.qty_sold from sale, customer, item, relation_c_s, relation_c_i where sale.bill_no = relation_c_s.bill_no and relation_c_s.cust_id = customer.cust_id and customer.cust_id = relation_c_i.cust_id and relation_c_i.item_id = item.item_id
```

☐ Profiling [\[Edit inline\]](#) [\[Edit\]](#) [\[Explain SQL\]](#) [\[Create PHP code\]](#) [\[Refresh\]](#)

☐ Show all | Number of rows: 25 | Filter rows:

+ Options

bill_date	cust_name	item_name	price	qty_sold	item.price * sale.qty_sold
2021-01-03	Antor	chicken	200	1	200
2021-01-04	Sohan	goat	600	5	3000
2021-01-01	Vadu	oil	100	2	200
2021-01-02	Sadaf	beef	500	3	1500
2021-01-06	Yasir	drinks	1000	7	7000
2021-01-05	Jion	vegetables	300	4	1200
2021-01-08	Ansary	water	250	8	2000
2021-01-07	Sakib	bird	400	9	3600
2021-01-10	Asif	rice	30	1	30
2021-01-09	Suborno	ingredients	200	2	400

☐ Show all | Number of rows: 25 | Filter rows:

Fig 2.19: Billing Details with the Customer Name, Quantity Sold and Total Billable Amount

CONCLUSION

Databases are mainly based on various data tables which are connected with each other through another relationship set table. The queries performed on the database are mainly based on the relationship table. The relationship tables take primary keys of one table and connects to another primary key of another table. So, to find a specific query between two or more tables one just needs to identify the relation between them and perform the operation according to it. In this Database I've connected three data tables together with two relationship sets and connected their primary keys to find out the query I wanted.