Ans 1. Customer table, Order table, sale_person table

Ans 2,3
Order_id will have ONE TO ONE mapping with sales_person_id
Sales_person_id MANY TO MANY mapping with customer_id
Customer_id ONE TO MANY with order_id

Customer table

```
mysql> SHOW INDEXES FROM customer;
+----------+------------+----------------------------+--------------+--------------------+-----------+-------------+----------+--------+------+--
----------+---------+---------------+---------+------------+
| Table    | Non_unique | Key_name                   | Seq_in_index | Column_name        | Collation | Cardinality | Sub_part | Packed | Null | I
ndex_type | Comment | Index_comment | Visible | Expression |
+----------+------------+----------------------------+--------------+--------------------+-----------+-------------+----------+--------+------+--
----------+---------+---------------+---------+------------+
| customer |          0 | PRIMARY                    |            1 | customer_id        | A         |           2 |     NULL |   NULL |      | B
TREE      |         |               | YES     | NULL       |
| customer |          1 | idx_customer_email_password |            1 | customer_email     | A         |           1 |     NULL |   NULL | YES  | B
TREE      |         |               | YES     | NULL       |
| customer |          1 | idx_customer_email_password |            2 | customer_passwrord | A         |           2 |     NULL |   NULL | YES  | B
TREE      |         |               | YES     | NULL       |
+----------+------------+----------------------------+--------------+--------------------+-----------+-------------+----------+--------+------+--
----------+---------+---------------+---------+------------+
3 rows in set (0.01 sec)
```

```
CREATE TABLE Customer(
        customer_id int(20) PRIMARY KEY, AUTO_INCREMENT,
        customer_email_id VARCHAR(225),
        customer_password VARCHAR(225),
);
```

Order table

```
CREATE TABLE Orders(
        order_id int(20) PRIMARY KEY, AUTO_INCREMENT,
        order_desc VARCHAR(225),
        Customer_id INT,
        Sale_person_id INT,
        FOREIGN KEY (customer_id) REFERENCE Customer(customer_id),
        FOREIGN KEY (sales_person_id) REFERENCE sales_person(sales_person_id),

);
```

Sales_person table

```
CREATE TABLE Sales_person(
        sales_person_id int(20) PRIMARY KEY AUTO_INCREMENT,
        Sales_person_name VARCHAR(225),

);
```

```
mysql> CREATE TABLE customer(
    -> customer_id INT PRIMARY KEY AUTO_INCREMENT,
    -> customer_email VARCHAR(255),
    -> customer_passwrord VARCHAR(255));
Query OK, 0 rows affected (0.05 sec)
```

```
mysql> CREATE TABLE sales_person(
    -> sales_person_id INT PRIMARY KEY AUTO_INCREMENT,
    -> sales_person_name VARCHAR(255)
    -> );
Query OK, 0 rows affected (0.04 sec)
```

```
mysql> CREATE TABLE orders(
    -> order_id INT PRIMARY KEY AUTO_INCREMENT,
    -> order_desc VARCHAR(255),
    -> customer_id INT,
    -> sales_person_id INT,
    -> FOREIGN KEY (customer_id) REFERENCES customer(customer_id),
    -> FOREIGN KEY (sales_person_id) REFERENCES sales_person(sales_person_id)
    -> );
Query OK, 0 rows affected (0.06 sec)
```

Ans 4

```
mysql>
mysql> INSERT INTO customer(customer_id, customer_email, customer_passwrord) VALUES (1, 'abc@gmail.com', 'password1');
Query OK, 1 row affected (0.01 sec)
```

```
mysql> INSERT INTO customer(customer_id, customer_email, customer_passwrord) VALUES (2, 'abc@gmail.com', 'password2');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO sales_person(sales_person_id, sales_person_name) VALUES (1, 'seller1');
Query OK, 1 row affected (0.02 sec)

mysql> INSERT INTO sales_person(sales_person_id, sales_person_name) VALUES (2, 'seller2');
Query OK, 1 row affected (0.02 sec)

mysql> INSERT INTO sales_person(sales_person_id, sales_person_name) VALUES (3, 'seller3');
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO orders(order_id, order_desc, customer_id, sales_person_id) VA
LUES (101, 'description 1', 2, 1);
Query OK, 1 row affected (0.02 sec)

mysql> INSERT INTO orders(order_id, order_desc, customer_id, sales_person_id) VALUES (102, 'description 2', 1, 1);
Query OK, 1 row affected (0.03 sec)

mysql> INSERT INTO orders(order_id, order_desc, customer_id, sales_person_id) VALUES (103, 'description 3', 1, 2);
Query OK, 1 row affected (0.00 sec)

mysql>
mysql>
```

Ans 5

```
mysql>
mysql> SELECT s.sales_person_id, s.sales_person_name, COUNT(o.order_id) AS ORDER_COUNT FROM orders o JOIN sales_person s ON o.sales_person_id = s.
sales_person_id GROUP BY s.sales_person_id, s.sales_person_name HAVING COUNT(o.order_id) > 1;
+-----------------+-------------------+-------------+
| sales_person_id | sales_person_name | ORDER_COUNT |
+-----------------+-------------------+-------------+
|               1 | seller1           |           2 |
+-----------------+-------------------+-------------+
1 row in set (0.01 sec)

mysql>
```

Ans 6

```
mysql> select * FROM sales_person LEFT JOIN orders ON sales_person.sales_person_id=orders.sales_person_id;
+-----------------+-------------------+----------+---------------+-------------+-----------------+
| sales_person_id | sales_person_name | order_id | order_desc    | customer_id | sales_person_id |
+-----------------+-------------------+----------+---------------+-------------+-----------------+
|               1 | seller1           |      101 | description 1 |           2 |               1 |
|               1 | seller1           |      102 | description 2 |           1 |               1 |
|               2 | seller2           |      103 | description 3 |           1 |               2 |
|               3 | seller3           |     NULL | NULL          |        NULL |            NULL |
+-----------------+-------------------+----------+---------------+-------------+-----------------+
4 rows in set (0.01 sec)

mysql>
```

Ans 7

```
mysql>
mysql> CREATE INDEX idx_customer_email_password ON customer(customer_email, customer_passwrord);
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql>
```

Ans 8

```
mysql> SHOW INDEXES FROM customer;
+----------+------------+-----------------------------+--------------+------------------+-----------+-------------+----------+--------+------+--
----------+---------+---------------+---------+------------+
| Table    | Non_unique | Key_name                    | Seq_in_index | Column_name      | Collation | Cardinality | Sub_part | Packed | Null | I
ndex_type | Comment | Index_comment | Visible | Expression |
+----------+------------+-----------------------------+--------------+------------------+-----------+-------------+----------+--------+------+--
----------+---------+---------------+---------+------------+
| customer |          0 | PRIMARY                     |            1 | customer_id      | A         |           2 |     NULL |   NULL |      | B
TREE      |         |               | YES     | NULL       |
| customer |          1 | idx_customer_email_password |            1 | customer_email   | A         |           1 |     NULL |   NULL | YES  | B
TREE      |         |               | YES     | NULL       |
| customer |          1 | idx_customer_email_password |            2 | customer_passwrord | A         |           2 |     NULL |   NULL | YES  | B
TREE      |         |               | YES     | NULL       |
+----------+------------+-----------------------------+--------------+------------------+-----------+-------------+----------+--------+------+--
----------+---------+---------------+---------+------------+
3 rows in set (0.01 sec)
```

Ans 9

```
mysql> SELECT o.order_id, s.sales_person_name, c.customer_email FROM orders o JOIN sales_person s ON o.sales_person_id=s.sales_person_id JOIN cust
omer c ON o.customer_id = c.customer_id;
+----------+-------------------+----------------+
| order_id | sales_person_name | customer_email |
+----------+-------------------+----------------+
|      101 | seller1           | abc@gmail.com  |
|      102 | seller1           | abc@gmail.com  |
|      103 | seller2           | abc@gmail.com  |
+----------+-------------------+----------------+
3 rows in set (0.00 sec)
```