Q1. Create a table vehicles with columns vehicleid int, year int,make varchar(100).

Make vehicleid as the primary key and the columns year and make not null.

```
mysql> create table vehicles(vehicleid int primary key auto_increment,year int not null,make
 varchar(100) not null);
Query OK, 0 rows affected (0.04 sec)

mysql> desc vehicles;
+-----------+--------------+------+-----+---------+----------------+
| Field     | Type         | Null | Key | Default | Extra          |
+-----------+--------------+------+-----+---------+----------------+
| vehicleid | int          | NO   | PRI | NULL    | auto_increment |
| year      | int          | NO   |     | NULL    |                |
| make      | varchar(100) | NO   |     | NULL    |                |
+-----------+--------------+------+-----+---------+----------------+
3 rows in set (0.00 sec)
```

Q.2. Add 3 new columns to the vehicles table a. model varchar(100) not null b. color varchar(50)

c. note varchar(255).

```
mysql> alter table vehicles add column (model varchar(100) not null,color var
char(50),note varchar(255));
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc vehicles;
+-----------+--------------+------+-----+---------+----------------+
| Field     | Type         | Null | Key | Default | Extra          |
+-----------+--------------+------+-----+---------+----------------+
| vehicleid | int          | NO   | PRI | NULL    | auto_increment |
| year      | int          | NO   |     | NULL    |                |
| make      | varchar(100) | NO   |     | NULL    |                |
| model     | varchar(100) | NO   |     | NULL    |                |
| color     | varchar(50)  | YES  |     | NULL    |                |
| note      | varchar(255) | YES  |     | NULL    |                |
+-----------+--------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

Q3. In the vehicles table, change the note column a NOT NULL column with a maximum of

100 characters.

```
mysql> alter table vehicles modify note varchar(100) ;
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc vehicles;
+-----------+--------------+------+-----+---------+----------------+
| Field     | Type         | Null | Key | Default | Extra          |
+-----------+--------------+------+-----+---------+----------------+
| vehicleid | int          | NO   | PRI | NULL    | auto_increment |
| year      | smallint     | YES  |     | NULL    |                |
| make      | varchar(100) | NO   |     | NULL    |                |
| model     | varchar(100) | NO   |     | NULL    |                |
| color     | varchar(50)  | YES  |     | NULL    |                |
| note      | varchar(100) | YES  |     | NULL    |                |
+-----------+--------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

Q4. In the vehicles table, modify the data type of the year column from INT to SMALLINT

```
mysql> alter table vehicles modify column year smallint;
Query OK, 0 rows affected (0.06 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc vehicles;
+------------+--------------+------+-----+---------+----------------+
| Field      | Type         | Null | Key | Default | Extra          |
+------------+--------------+------+-----+---------+----------------+
| vehicleid  | int          | NO   | PRI | NULL    | auto_increment |
| year       | smallint     | YES  |     | NULL    |                |
| make       | varchar(100) | NO   |     | NULL    |                |
| model      | varchar(100) | NO   |     | NULL    |                |
| color      | varchar(50)  | YES  |     | NULL    |                |
| note       | varchar(100) | NO   |     | NULL    |                |
+------------+--------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

Q5 In the vehicles table, modify the color column by setting the maximum length to 20,

removing the NOT NULL constraint, and changing its position to appear after the make column.

```
mysql> alter table vehicles modify color varchar(20) after make;
Query OK, 0 rows affected (0.05 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc vehicles;
+------------------+--------------+------+-----+---------+----------------+
| Field            | Type         | Null | Key | Default | Extra          |
+------------------+--------------+------+-----+---------+----------------+
| vehicleid        | int          | NO   | PRI | NULL    | auto_increment |
| year             | smallint     | YES  |     | NULL    |                |
| make             | varchar(100) | NO   |     | NULL    |                |
| color            | varchar(20)  | YES  |     | NULL    |                |
| model            | varchar(100) | NO   |     | NULL    |                |
| vehiclecondition | varchar(100) | YES  |     | NULL    |                |
+------------------+--------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

Q6. In vehicles table, rename the column note to vehicleCondition

```
mysql> alter table vehicles change column note vehiclecondition varchar(100);
Query OK, 0 rows affected (0.01 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> desc vehicles;
+------------------+--------------+------+-----+---------+----------------+
| Field            | Type         | Null | Key | Default | Extra          |
+------------------+--------------+------+-----+---------+----------------+
| vehicleid        | int          | NO   | PRI | NULL    | auto_increment |
| year             | smallint     | YES  |     | NULL    |                |
| make             | varchar(100) | NO   |     | NULL    |                |
| model            | varchar(100) | NO   |     | NULL    |                |
| color            | varchar(50)  | YES  |     | NULL    |                |
| vehiclecondition | varchar(100) | YES  |     | NULL    |                |
+------------------+--------------+------+-----+---------+----------------+
6 rows in set (0.00 sec)
```

Q7. Create a table and insert some rows into the table. Add different constraints into the

table using alter table statement

```
mysql> create table students(s_id int primary key,name varchar(20),age int,email varchar(100
));
Query OK, 0 rows affected (0.03 sec)

mysql> desc students;
+-------+--------------+------+-----+---------+-------+
| Field | Type         | Null | Key | Default | Extra |
+-------+--------------+------+-----+---------+-------+
| s_id  | int          | NO   | PRI | NULL    |       |
| name  | varchar(20)  | YES  |     | NULL    |       |
| age   | int          | YES  |     | NULL    |       |
| email | varchar(100) | YES  |     | NULL    |       |
+-------+--------------+------+-----+---------+-------+
4 rows in set (0.00 sec)
```

```
mysql> insert into students(s_id,name,age,email) values (1,'mahi',20,'r@gmail.com'),(2,'ruhi
',18,'ru@gmail.com'),(3,'anna',26,'anna@gmail.com');
Query OK, 3 rows affected (0.00 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

```
mysql> select * from students;
+------+------+------+----------------+
| s_id | name | age  | email          |
+------+------+------+----------------+
|    1 | mahi |   20 | r@gmail.com    |
|    2 | ruhi |   18 | ru@gmail.com   |
|    3 | anna |   26 | anna@gmail.com |
+------+------+------+----------------+
3 rows in set (0.00 sec)
```

Unique constraint:

```
mysql> alter table students add constraint unique_email unique(email);
Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

Check constraint:

```
mysql> alter table students add constraint check_age check (age>=18);
Query OK, 3 rows affected (0.04 sec)
Records: 3  Duplicates: 0  Warnings: 0
```

Q8. Display the productcode, productname, textdescription from products and

productdetails tables

```
mysql> select p.productcode,p.productname,pd.textdescription from products p inner join prod
uctlines pd on p.productLine =pd.productLine;
```

Q9. Display customernumber,customername,ordernumber and status of all the customers

using left join

```
mysql> select c.customernumber,c.customername,o.ordernumber,o.status from customers c left
join orders o on c.customernumber=o.customernumber;
+----------------+---------------------------+-------------+-------------+
| customernumber | customername              | ordernumber | status      |
+----------------+---------------------------+-------------+-------------+
|            103 | Atelier graphique         |       10123 | Shipped     |
|            103 | Atelier graphique         |       10298 | Shipped     |

|            496 | Kelly's Gift Shop         |       10360 | Shipped     |
|            496 | Kelly's Gift Shop         |       10399 | Shipped     |
+----------------+---------------------------+-------------+-------------+
350 rows in set (0.00 sec)
```

Q10.Join the customers and employees table using Right Join

```
mysql> select c.customername from customers c right join employees e on c.salesrepemployeen
umber=e.employeenumber;

108 rows in set (0.00 sec)
```

Q11. Use a subquery to return the employees who work in the offices located in the USA.

```
mysql> select * from employees e where e.officecode in (select o.officecode from offices o
where o.country='USA');
+--------------+-----------+-----------+-----------+-------------------------------+------------+----------+------------------+
| employeeNumber | lastName | firstName | extension | email                         | officeCode | reportsTo | jobTitle         |
+--------------+-----------+-----------+-----------+-------------------------------+------------+----------+------------------+
|         1002 | Murphy    | Diane     | x5800     | dmurphy@classicmodelcars.com  | 1          |     NULL | President         |
|         1056 | Patterson | Mary      | x4611     | mpatterso@classicmodelcars.com| 1          |     1002 | VP Sales          |
|         1076 | Firrelli  | Jeff      | x9273     | jfirrelli@classicmodelcars.com| 1          |     1002 | VP Marketing      |
|         1143 | Bow       | Anthony   | x5428     | abow@classicmodelcars.com     | 1          |     1056 | Sales Manager (NA)|
|         1165 | Jennings  | Leslie    | x3291     | ljennings@classicmodelcars.com| 1          |     1143 | Sales Rep         |
|         1166 | Thompson  | Leslie    | x4065     | lthompson@classicmodelcars.com| 1          |     1143 | Sales Rep         |
|         1188 | Firrelli  | Julie     | x2173     | jfirrelli@classicmodelcars.com| 2          |     1143 | Sales Rep         |
|         1216 | Patterson | Steve     | x4334     | spatterson@classicmodelcars.com| 2         |     1143 | Sales Rep         |
|         1286 | Tseng     | Foon Yue  | x2248     | ftseng@classicmodelcars.com   | 3          |     1143 | Sales Rep         |
|         1323 | Vanauf    | George    | x4102     | gvanauf@classicmodelcars.com  | 3          |     1143 | Sales Rep         |
+--------------+-----------+-----------+-----------+-------------------------------+------------+----------+------------------+
10 rows in set (0.00 sec)
```

Q12. Display the details from the payments table who has the highest payment

```
mysql> select * from payments where amount=(select max(amount) from payments);
+----------------+-------------+-------------+-----------+
| customerNumber | checkNumber | paymentDate | amount    |
+----------------+-------------+-------------+-----------+
|            141 | JE105477    | 2005-03-18  | 120166.58 |
+----------------+-------------+-------------+-----------+
1 row in set (0.01 sec)
```

Q13. Find customers whose payments are greater than the average payment

```
mysql> select c.customernumber ,c.customername,p.amount from customers c join payments p on
 c.customernumber=p.customernumber where p.amount > (select avg(amount) from payments);
+----------------+------------------------------------+-----------+
| customernumber | customername                       | amount    |
+----------------+------------------------------------+-----------+
|            112 | Signal Gift Stores                 |  32641.98 |
|            112 | Signal Gift Stores                 |  33347.88 |
|            114 | Australian Collectors, Co.         |  45864.03 |
```

```
+----------------+---------
134 rows in set (0.01 sec)
```

Q14Find the customers who have not placed any orders.

```
mysql> select c.customernumber,c.customername from customers c left join orders o on c.cust
omernumber=o.customernumber where o.customernumber is null;
+----------------+-------------------------------+
| customernumber | customername                  |
+----------------+-------------------------------+
|            125 | Havel & Zbyszek Co            |
|            168 | American Souvenirs Inc        |
|            169 | Porto Imports Co.             |
|            206 | Asian Shopping Network, Co    |
|            223 | Natürlich Autos               |
|            237 | ANG Resellers                 |
|            247 | Messner Shopping Network      |
|            273 | Franken Gifts, Co             |
|            293 | BG&E Collectables             |
|            303 | Schuyler Imports              |
|            307 | Der Hund Imports              |
|            335 | Cramer Spezialitäten, Ltd     |
|            348 | Asian Treasures, Inc.         |
|            356 | SAR Distributors, Co          |
|            361 | Kommission Auto               |
|            369 | Lisboa Souveniers, Inc        |
|            376 | Precious Collectables         |
|            409 | Stuttgart Collectable Exchange |
|            443 | Feuer Online Stores, Inc      |
|            459 | Warburg Exchange              |
|            465 | Anton Designs, Ltd.           |
|            477 | Mit Vergnügen & Co.           |
|            480 | Kremlin Collectables, Co.     |
|            481 | Raanan Stores, Inc            |
+----------------+-------------------------------+
24 rows in set (0.00 sec)
```