1. create table student_information(stu_id int primary key,stu_name varchar (20) ,stu_address varchar(20),stu_phone_no bigint,stu_email varchar(50),stu_dob date);

```
MariaDB [college_library_management]> desc student_details;
+--------------+-------------+------+-----+---------+-------+
| Field        | Type        | Null | Key | Default | Extra |
+--------------+-------------+------+-----+---------+-------+
| stu_id       | int(11)     | NO   | PRI | NULL    |       |
| stu_name     | varchar(20) | YES  |     | NULL    |       |
| stu_address  | varchar(20) | YES  |     | NULL    |       |
| contact_no   | bigint(20)  | YES  |     | NULL    |       |
| stu_email    | varchar(20) | YES  | UNI | NULL    |       |
| stu_dob      | date        | YES  |     | NULL    |       |
| branch_code  | int(11)     | YES  |     | NULL    |       |
| branch_name  | varchar(50) | YES  |     | NULL    |       |
| age          | int(11)     | YES  |     | NULL    |       |
+--------------+-------------+------+-----+---------+-------+
9 rows in set (0.043 sec)
```

2. insert into student_information values (1,"ram", "nagpur",8727986543, "ram@abc.com","1990-09-12",01,"electronics"), (2,"shyam","pune",9812763578," shyam@abc.com","1990-12-23",02,"electrical"), (3,"karan","kanpur",9763542761, "karan@abc.com","1991-08-12",03,"IT"),(4,"priya","delhi",8976354267,"priya@ abc.com","1991-09-23",01,"electronics"),(5,"siya","mumbai",8156487632 ,"siya@ abc.com","1991-04-24",04,"civil"),(6,"priyakumari","lucknow",9127986543," priya kumari@abc.com","1992-08-10",05,"mechanical"),(7,"sakshi","jammu",90127635 12,"sakshi@abc.com","1997-01-20",03,"IT"),(8,"rohan","chandig arh",8763542761 ,"rohan@abc.com","1993-05-12",04,"civil"),(9,"rajiv","jaipur",9076894261,"rajiv @ abc.com","1992-12 30",05,"mechanical"), (10,"mohena", "bhopal", 9029487698, "mohena@abc.com","1991-07-29",01,"electronics"),(11,"arun","jodhpur",893798 6543,"arun@abc.com","1993-01-11",02,"electrical"),(12,"rani","malegaon",98279 86539,"rani@abc.com","1991-09-09",03,"IT"),(13,"arpita","bhandara",912798894 3 ,"arpita @abc.Com","1992-05 18",04,"civil"),(14,"tarun","rachi",9527986543, "tarun@abc.com","1993-11-10",02,"electrical"), (15,"sonal","nagpur",8027986543, "sonal@abc.com","1991-07-16",05,"mechanical"),(16,"ajay","bhopal",987698654 3,"ajay@abc.com","1993-01-19",05,"mechanical"),(17,"sayali","delhi",982798643 ,"sayali@abc.com","1992-07-14",03,"IT"),(18,"manvi","kolhapur",8827923543,"m anvi@abc.com","1991-02-19",02,"electrical"),(19,"joyti","chandigarh",909798654 3,"joyti@abc.com","1994-09-15",04,"civil"),(20,"paresh","rachi",9712986543 ,"par esh@abc.com","1993-03-31",04,"civil");

```
MariaDB [college_library_management]> select * from student_details;
+--------+--------------+-------------+------------+---------------------+------------+-------------+-------------+-----+
| stu_id | stu_name     | stu_address | contact_no | stu_email           | stu_dob    | branch_code | branch_name | age |
+--------+--------------+-------------+------------+---------------------+------------+-------------+-------------+-----+
|      1 | ram          | nagpur      | 8727986543 | ram@abc.com         | 1990-09-12 |           1 | electronics |  20 |
|      2 | shyam        | pune        | 9812763578 | shyam@abc.com       | 1990-12-23 |           2 | electrical  |  21 |
|      3 | karan        | kanpur      | 9763542761 | karan@abc.com       | 1991-08-12 |           3 | IT          |  23 |
|      4 | priya        | delhi       | 8976354267 | priya@abc.com       | 1991-09-23 |           1 | electronics |  22 |
|      5 | siya         | mumbai      | 8156487632 | siya@abc.com        | 1991-04-24 |           4 | civil       |  20 |
|      6 | priyakumari  | lucknow     | 9127986543 | priyakumari@abc.com | 1992-08-10 |           5 | mechanical  |  22 |
|      7 | sakshi       | jammu       | 9012763512 | sakshi@abc.com      | 1997-01-20 |           3 | IT          |  23 |
|      8 | rohan        | chandigarh  | 8763542761 | rohan@abc.com       | 1993-05-12 |           4 | civil       |  21 |
|      9 | rajiv        | jaipur      | 9076894261 | rajiv@abc.com       | 1992-12-30 |           5 | mechanical  |  22 |
|     10 | mohena       | bhopal      | 9029487698 | mohena@abc.com      | 1991-07-29 |           1 | electronics |  20 |
|     11 | arun         | jodhpur     | 8937986543 | arun@abc.com        | 1993-01-11 |           2 | electrical  |  22 |
|     12 | rani         | malegaon    | 9827986539 | rani@abc.com        | 1991-09-09 |           3 | IT          |  23 |
|     13 | arpita       | bhandara    | 9127988943 | arpita@abc.com      | 1992-05-18 |           4 | civil       |  23 |
|     14 | tarun        | rachi       | 9527986543 | tarun@abc.com       | 1993-11-10 |           2 | electrical  |  22 |
|     15 | sonal        | nagpur      | 8027986543 | sonal@abc.com       | 1991-07-16 |           5 | mechanical  |  21 |
|     16 | ajay         | bhopal      | 9876986543 | ajay@abc.com        | 1993-01-19 |           5 | mechanical  |  21 |
|     17 | sayali       | delhi       | 9827986543 | sayali@abc.com      | 1992-07-14 |           3 | IT          |  20 |
|     18 | manvi        | kolhapur    | 8827923543 | manvi@abc.com       | 1991-02-19 |           2 | electrical  |  22 |
|     19 | joyti        | chandigarh  | 9097986543 | joyti@abc.com       | 1994-09-15 |           4 | civil       |  23 |
|     20 | paresh       | rachi       | 9712986543 | paresh@abc.com      | 1993-03-31 |           4 | civil       |  21 |
+--------+--------------+-------------+------------+---------------------+------------+-------------+-------------+-----+
20 rows in set (0.001 sec)
```

3. create table book(book_id int primary key,book_name varchar(20),book_price int,book_brn_id int,author_name varchar(20),stu_id int,branch_id int,foreign key(stu_id)references student_information(stu_id),foreign key(branch_id) references branch_information(branch_id));

```
MariaDB [college_library_management]> desc book;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| book_id     | int(11)     | NO   | PRI | NULL    |       |
| book_name   | varchar(20) | YES  |     | NULL    |       |
| book_price  | int(11)     | YES  |     | NULL    |       |
| book_brn_id | int(11)     | YES  |     | NULL    |       |
| author_name | varchar(20) | YES  |     | NULL    |       |
| stu_id      | int(11)     | YES  | MUL | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
6 rows in set (0.053 sec)
```

4. Insert into book values(100,"basics of science",239,112233,"george.c",2),(200,"basics of math",309,223344,"handway rome",1),(300,"python for DS",557,445566,"kathy holmes ",2),(400,"c++ all in one",345,556677,"jason.y",3),(500,"object oriented programming" ,298,667788,"william ray",5),(600,"basics of electrical", 290, 102033, "leonardo rain",2) ,(700,"basics of electronics",230,192333,"levis tatley",1),(800,"basics os technology",139 ,910233,"michel lauren",7),(900,"computer network",600,902138,"danny parker",7), (1000,"engg drawing",180,102133,"raman chaudhary",15),(1100,"engg drawing",180, 102133,"raman chaudhary",16),(1200,"electrical circuit",220,112229,"chang deu",10) ,(1300,"electrical circuit",220,112229,"cheng deu",14),(1400,"structural engg",209,111936 ,"laura canvas",8),(1500,"environmental studies",280,1126293,"rahul ghosh",20),(1600, "construction management",939,012233,"ranchit agrawal",8),(1700,"HTML", 839,092233, "megan pierce",3),(1800,"CSS",199,192232,"george markas",12),(1900,"structural design", 190 ,152903,"yakub khan",19),(2000,"robotics",909,102278,"riyan sharma",16), (2100, "circuit design",780,182233,"george canady",14),(2200,"land survey",129,432234,"peter parker",19),(2300,"basics_of_science",239,112233,"george.c",2),(2400,"SQL",900,282233,"

sandy milan",17),(2500,"basics of c",300,092233,"amerie nelson",12),(2600,"building structure design",879,986233,"jonny slew",13),(2700,"digital electronics ",800,298233, "germy park",1),(2800,"basics_of_science",239,112233,"george.c",2), (2900, "communication engg",400,927233,"andrew philip",4),(3000,"basics_of_science",239,112233,"george.c",2),(3100,"embedded system",600,765233,"levin ray",1),(3200,"python programming",290,096233,"simon anderson",17),(3300,"machine design",500,286233,"jia katwal",15);

```
MariaDB [college_library_management]> select * from book;
+---------+----------------------+------------+-------------+----------------+--------+
| book_id | book_name            | book_price | book_brn_id | author_name    | stu_id |
+---------+----------------------+------------+-------------+----------------+--------+
|     100 | basics of science    |        239 |      112233 | george.c       |      2 |
|     200 | basics of math       |        309 |      223344 | handway rome   |      1 |
|     300 | python for DS        |        557 |      445566 | kathy holmes   |      2 |
|     400 | c++ all in one       |        345 |      556677 | jason.y        |      3 |
|     500 | object oriented prog  |        298 |      667788 | william ray    |      5 |
|     600 | basics of electrical  |        290 |      102033 | leonardo rain  |      2 |
|     700 | basics of electronic  |        230 |      192333 | levis tatley   |      1 |
|     800 | basics os technology  |        139 |      910233 | michel lauren  |      7 |
|     900 | computer network      |        600 |      902138 | danny parker   |      7 |
|    1000 | engg drawing          |        180 |      102133 | raman chaudhary |     15 |
|    1100 | engg drawing          |        180 |      102133 | raman chaudhary |     16 |
|    1200 | electrical circuit    |        220 |      112229 | chang deu      |     10 |
|    1300 | electrical circuit    |        220 |      112229 | cheng deu      |     14 |
|    1400 | structural engg       |        209 |      111936 | laura canvas   |      8 |
|    1500 | environmental studie  |        280 |      178653 | rahul ghosh    |     20 |
|    1600 | construction managem  |        939 |      986653 | ranchit agrawal |      8 |
|    1700 | HTML                  |        839 |      986873 | megan pierce   |      3 |
|    1800 | CSS                   |        199 |      192232 | george markas  |     12 |
|    1900 | structural design     |        190 |      152903 | yakub khan     |     19 |
|    2000 | robotics              |        909 |      102278 | riyan sharma   |     16 |
|    2100 | circuit design        |        780 |      182233 | george canady  |     14 |
|    2200 | land survey           |        129 |      432234 | peter parker   |     19 |
|    2300 | basics_of_science     |        239 |      112233 | george.c       |      2 |
|    2400 | SQL                   |        900 |      282233 | sandy milan    |     17 |
|    2500 | basics of c           |        300 |      786873 | amerie nelson  |     12 |
|    2600 | building structure d  |        879 |      986233 | jonny slew     |     13 |
|    2700 | digital electronics   |        800 |      298233 | germy park     |      1 |
|    2800 | basics_of_science     |        239 |      112233 | george.c       |      2 |
|    2900 | communication engg    |        400 |      927233 | andrew philip  |      4 |
|    3000 | basics_of_science     |        239 |      112233 | george.c       |      2 |
|    3100 | embedded system       |        600 |      765233 | levin ray      |      1 |
|    3200 | python programming    |        290 |      861873 | simon anderson |     17 |
|    3300 | machine design        |        500 |      286233 | jia katwal     |     15 |
+---------+----------------------+------------+-------------+----------------+--------+
33 rows in set (0.001 sec)
```

5. create table student_book_issue_details(issue_id int primary key,issue_date date, due_ date date ,return_date date ,fine int, stu_id int,book_id int,foreign key(stu_id)references student_information(stu_id),foreign key(book_id)references book(book_id));

```
MariaDB [college_library_management]> desc student_book_issue_details;
+-------------+----------+------+-----+---------+-------+
| Field       | Type     | Null | Key | Default | Extra |
+-------------+----------+------+-----+---------+-------+
| issue_id    | int(11)  | NO   | PRI | NULL    |       |
| issue_date  | date     | YES  |     | NULL    |       |
| due_date    | date     | YES  |     | NULL    |       |
| return_date | date     | YES  |     | NULL    |       |
| fine        | int(11)  | YES  |     | NULL    |       |
| stu_id      | int(11)  | YES  | MUL | NULL    |       |
| book_id     | int(11)  | YES  | MUL | NULL    |       |
+-------------+----------+------+-----+---------+-------+
7 rows in set (0.049 sec)
```

6. insert into student_book_issue_details values(4000,"2024-01-01","2024-02-01","2024-02-01",0,19,1900),(4100,"2024-01-12","2024-02-12","2024-02-15",15,19,2200),(4300,"2024-02-10","2024-03-10","2024-03-10",0,12,2500),(4400,"2024-01-20","2024-02-20","2024-02-20",0,12,1800),(4500,"2024-01-12","2024-02-12","2024-02-15",35,8,1600),(4600,"2024-01-02","2024-02-02","2024-02-06",15,2,3000),(4700,"2024-01-02","2024-02-02","2024-02-01",0,2,2800),(4800,"2024-01-15","2024-02-15","2024-02-20",25,2,100),(4900,"2024-01-10","2024-02-10","2024-02-14",20,2,300),(5000,"2024-02-20","2024-03-20","2024-03-30",50,12,1800),(5100,"2024-01-25","2024-02-25","2024-02-26",5,1,3100),(5200,"2024-03-20","2024-04-20","2024-04-20",0,1,2700),(5300,"2024-03-20","2024-04-20","2024-04-20",0,1,700),(5400,"2024-02-14","2024-03-14","2024-03-20",30,1,200),(5500,"2024-01-12","2024-02-12","2024-02-12",0,3,1700),(5600,"2024-01-12","2024-02-12","2024-02-19",35,3,400),(5700,"2024-04-01","2024-05-01","2024-05-01",0,5,500),(5800,"2024-04-07","2024-05-07","2024-05-10",15,15,3300),(5900,"2024-04-07","2024-05-07","2024-05-15",40,15,1000),(6000,"2024-04-03","2024-05-03","2024-05-15",70,16,1100),(6100,"2024-04-03","2024-05-03","2024-05-03",0,16,2000),(6200,"2024-05-20","2024-06-09","2024-06-20",0,10,1200),(6300,"2024-05-30","2024-06-30","2024-07-02",10,14,2100),(6400,"2024-05-10","2024-06-10","2024-06-09",0,14,1300),(6500,"2024-06-09","2024-07-09","2024-07-10",5,17,3200),(6600,"2024-06-04","2024-07-04","2024-07-03",0,17,2400),(6700,"2024-06-20","2024-07-20","2024-07-29",45,13,2600),(6800,"2024-06-17","2024-07-17","2024-07-20",15,4,2900);

```
MariaDB [college_library_management]> select * from student_book_issue_details;
+----------+------------+------------+-------------+------+--------+---------+
| issue_id | issue_date | due_date   | return_date | fine | stu_id | book_id |
+----------+------------+------------+-------------+------+--------+---------+
|     4000 | 2024-01-01 | 2024-02-01 | 2024-02-01  |    0 |     19 |    1900 |
|     4100 | 2024-01-12 | 2024-02-12 | 2024-02-15  |   15 |     19 |    2200 |
|     4300 | 2024-02-10 | 2024-03-10 | 2024-03-10  |    0 |     12 |    2500 |
|     4400 | 2024-01-20 | 2024-02-20 | 2024-02-20  |    0 |     12 |    1800 |
|     4500 | 2024-01-12 | 2024-02-12 | 2024-02-15  |   35 |      8 |    1600 |
|     4600 | 2024-01-02 | 2024-02-02 | 2024-02-06  |   15 |      2 |    3000 |
|     4700 | 2024-01-02 | 2024-02-02 | 2024-02-01  |    0 |      2 |    2800 |
|     4800 | 2024-01-15 | 2024-02-15 | 2024-02-20  |   25 |      2 |     100 |
|     4900 | 2024-01-10 | 2024-02-10 | 2024-02-14  |   20 |      2 |     300 |
|     5000 | 2024-02-20 | 2024-03-20 | 2024-03-30  |   50 |     12 |    1800 |
|     5100 | 2024-01-25 | 2024-02-25 | 2024-02-26  |    5 |      1 |    3100 |
|     5200 | 2024-03-20 | 2024-04-20 | 2024-04-20  |    0 |      1 |    2700 |
|     5300 | 2024-03-20 | 2024-04-20 | 2024-04-20  |    0 |      1 |     700 |
|     5400 | 2024-02-14 | 2024-03-14 | 2024-03-20  |   30 |      1 |     200 |
|     5500 | 2024-01-12 | 2024-02-12 | 2024-02-12  |    0 |      3 |    1700 |
|     5600 | 2024-01-12 | 2024-02-12 | 2024-02-19  |   35 |      3 |     400 |
|     5700 | 2024-04-01 | 2024-05-01 | 2024-05-01  |    0 |      5 |     500 |
|     5800 | 2024-04-07 | 2024-05-07 | 2024-05-10  |   15 |     15 |    3300 |
|     5900 | 2024-04-07 | 2024-05-07 | 2024-05-15  |   40 |     15 |    1000 |
|     6000 | 2024-04-03 | 2024-05-03 | 2024-05-15  |   70 |     16 |    1100 |
|     6100 | 2024-04-03 | 2024-05-03 | 2024-05-03  |    0 |     16 |    2000 |
|     6200 | 2024-05-20 | 2024-06-09 | 2024-06-20  |    0 |     10 |    1200 |
|     6300 | 2024-05-30 | 2024-06-30 | 2024-07-02  |   10 |     14 |    2100 |
|     6400 | 2024-05-10 | 2024-06-10 | 2024-06-09  |    0 |     14 |    1300 |
|     6500 | 2024-06-09 | 2024-07-09 | 2024-07-10  |    5 |     17 |    3200 |
|     6600 | 2024-06-04 | 2024-07-04 | 2024-07-03  |    0 |     17 |    2400 |
|     6700 | 2024-06-20 | 2024-07-20 | 2024-07-29  |   45 |     13 |    2600 |
|     6800 | 2024-06-17 | 2024-07-17 | 2024-07-20  |   15 |      4 |    2900 |
+----------+------------+------------+-------------+------+--------+---------+
28 rows in set (0.001 sec)
```

7. create table transaction_status(transaction_id int primary key,transaction_status varchar(20),stu_id int,book_id int,issue_id int,foreign key(stu_id)references student_information(stu_id),foreign key(book_id)references book(book_id),foreign key(issue_id)references student_book_issue_details(issue_id));

```
MariaDB [college_library_management]> desc transaction_details;
+--------------------+-------------+------+-----+---------+-------+
| Field              | Type        | Null | Key | Default | Extra |
+--------------------+-------------+------+-----+---------+-------+
| transaction_id     | int(11)     | NO   | PRI | NULL    |       |
| transaction_status | varchar(20) | YES  |     | NULL    |       |
| stu_id             | int(11)     | YES  | MUL | NULL    |       |
| book_id            | int(11)     | YES  | MUL | NULL    |       |
| issue_id           | int(11)     | YES  | MUL | NULL    |       |
+--------------------+-------------+------+-----+---------+-------+
5 rows in set (0.047 sec)
```

8. insert into transaction_status values(1001,"completed",1,3100,5100),(1002,"completed",1,200,5400),(1003,"completed",2,3000,4600),(1004,"pending",2,100,4800),(1005,"pending",2,300,4900),(1006,"completed",3,400,5600),(1007,"pending",4,2900,6800),(1008,"completed",8,1600,4500),(1009,"pending",12,1800,5000),(1010,"completed",13,2600,6700),(1011,"completed",14,2100,6300),(1012,"completed",15,3300,5800),(1013,"completed",15,1000,5900),(1014,"pending",16,1100,6000),(1015,"completed",17,3200,6600),(1016,"pending",19,2200,4100);

```
MariaDB [college_library_management]> select * from transaction_status;
+----------------+--------------------+--------+---------+----------+
| transaction_id | transaction_status | stu_id | book_id | issue_id |
+----------------+--------------------+--------+---------+----------+
|           1001 | completed          |      1 |    3100 |     5100 |
|           1002 | completed          |      1 |     200 |     5400 |
|           1003 | completed          |      2 |    3000 |     4600 |
|           1004 | pending            |      2 |     100 |     4800 |
|           1005 | pending            |      2 |     300 |     4900 |
|           1006 | completed          |      3 |     400 |     5600 |
|           1007 | pending            |      4 |    2900 |     6800 |
|           1008 | completed          |      8 |    1600 |     4500 |
|           1009 | pending            |     12 |    1800 |     5000 |
|           1010 | completed          |     13 |    2600 |     6700 |
|           1011 | completed          |     14 |    2100 |     6300 |
|           1012 | completed          |     15 |    3300 |     5800 |
|           1013 | completed          |     15 |    1000 |     5900 |
|           1014 | pending            |     16 |    1100 |     6000 |
|           1015 | completed          |     17 |    3200 |     6600 |
|           1016 | pending            |     19 |    2200 |     4100 |
+----------------+--------------------+--------+---------+----------+
16 rows in set (0.001 sec)
```

Queries

1) alter table student_information change column stu_phone_no contact_no bigint;

```
MariaDB [college_library_management]> alter table student_information add column age int;
Query OK, 0 rows affected (0.027 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [college_library_management]> desc student_information;
+--------------+--------------+------+-----+---------+-------+
| Field        | Type         | Null | Key | Default | Extra |
+--------------+--------------+------+-----+---------+-------+
| stu_id       | int(11)      | NO   | PRI | NULL    |       |
| stu_name     | varchar(20)  | YES  |     | NULL    |       |
| stu_address  | varchar(20)  | YES  |     | NULL    |       |
| contact_no   | bigint(20)   | YES  |     | NULL    |       |
| stu_email    | varchar(50)  | YES  | UNI | NULL    |       |
| stu_dob      | date         | YES  |     | NULL    |       |
| branch_code  | int(11)      | YES  |     | NULL    |       |
| branch_name  | varchar(50)  | YES  |     | NULL    |       |
| age          | int(11)      | YES  |     | NULL    |       |
+--------------+--------------+------+-----+---------+-------+
9 rows in set (0.045 sec)
```

2) alter table student_information add column age int;

```
MariaDB [college_library_management]> alter table student_information change column stu_phone_no contact_no bigint;
Query OK, 0 rows affected (0.029 sec)
Records: 0  Duplicates: 0  Warnings: 0

MariaDB [college_library_management]> select * from student_information;
+--------+-------------+-------------+------------+---------------------+------------+-------------+-------------+
| stu_id | stu_name    | stu_address | contact_no | stu_email           | stu_dob    | branch_code | branch_name |
+--------+-------------+-------------+------------+---------------------+------------+-------------+-------------+
|      1 | ram         | nagpur      | 8727986543 | ram@abc.com         | 1990-09-12 |           1 | electronics |
|      2 | shyam       | pune        | 9812763578 | shyam@abc.com       | 1990-12-23 |           2 | electrical  |
|      3 | karan       | kanpur      | 9763542761 | karan@abc.com       | 1991-08-12 |           3 | IT          |
|      4 | priya       | delhi       | 8976354267 | priya@abc.com       | 1991-09-23 |           1 | electronics |
|      5 | siya        | mumbai      | 8156487632 | siya@abc.com        | 1991-04-24 |           4 | civil       |
|      6 | priyakumari | lucknow     | 9127986543 | priyakumari@abc.com | 1992-08-10 |           5 | mechanical  |
|      7 | sakshi      | jammu       | 9012763512 | sakshi@abc.com      | 1997-01-20 |           3 | IT          |
|      8 | rohan       | chandigarh  | 8763542761 | rohan@abc.com       | 1993-05-12 |           4 | civil       |
|      9 | rajiv       | jaipur      | 9076894261 | rajiv@abc.com       | 1992-12-30 |           5 | mechanical  |
|     10 | mohena      | bhopal      | 9029487698 | mohena@abc.com      | 1991-07-29 |           1 | electronics |
|     11 | arun        | jodhpur     | 8937986543 | arun@abc.com        | 1993-01-11 |           2 | electrical  |
|     12 | rani        | malegaon    | 9827986539 | rani@abc.com        | 1991-09-09 |           3 | IT          |
|     13 | arpita      | bhandara    | 9127988943 | arpita@abc.com      | 1992-05-18 |           4 | civil       |
|     14 | tarun       | rachi       | 9527986543 | tarun@abc.com       | 1993-11-10 |           2 | electrical  |
|     15 | sonal       | nagpur      | 8027986543 | sonal@abc.com       | 1991-07-16 |           5 | mechanical  |
|     16 | ajay        | bhopal      | 9876986543 | ajay@abc.com        | 1993-01-19 |           5 | mechanical  |
|     17 | sayali      | delhi       | 9827986543 | sayali@abc.com      | 1992-07-14 |           3 | IT          |
|     18 | manvi       | kolhapur    | 8827923543 | manvi@abc.com       | 1991-02-19 |           2 | electrical  |
|     19 | joyti       | chandigarh  | 9097986543 | joyti@abc.com       | 1994-09-15 |           4 | civil       |
|     20 | paresh      | rachi       | 9712986543 | paresh@abc.com      | 1993-03-31 |           4 | civil       |
+--------+-------------+-------------+------------+---------------------+------------+-------------+-------------+
20 rows in set (0.001 sec)
```

3) **alter table student_information add check(age>=18);**

```
MariaDB [college_library_management]> alter table student_information add check(age>=18);
Query OK, 20 rows affected (0.113 sec)
Records: 20  Duplicates: 0  Warnings: 0

MariaDB [college_library_management]> desc student_information;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| stu_id      | int(11)     | NO   | PRI | NULL    |       |
| stu_name    | varchar(20) | YES  |     | NULL    |       |
| stu_address | varchar(20) | YES  |     | NULL    |       |
| contact_no  | bigint(20)  | YES  |     | NULL    |       |
| stu_email   | varchar(50) | YES  | UNI | NULL    |       |
| stu_dob     | date        | YES  |     | NULL    |       |
| branch_code | int(11)     | YES  |     | NULL    |       |
| branch_name | varchar(50) | YES  |     | NULL    |       |
| age         | int(11)     | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
9 rows in set (0.022 sec)
```

4) **update student_information set age= 20 where stu_id=1;**

```
MariaDB [college_library_management]> update student_information set age= 20 where stu_id=1;
Query OK, 1 row affected (0.022 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 21 where stu_id=2;
Query OK, 1 row affected (0.021 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 21 where stu_id=3;
Query OK, 1 row affected (0.020 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 23 where stu_id=3;
Query OK, 1 row affected (0.020 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 22 where stu_id=4;
Query OK, 1 row affected (0.021 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 20 where stu_id=5;
Query OK, 1 row affected (0.022 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 22 where stu_id=6;
Query OK, 1 row affected (0.021 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 23 where stu_id=7;
Query OK, 1 row affected (0.021 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 21 where stu_id=8;
Query OK, 1 row affected (0.021 sec)
Rows matched: 1  Changed: 1  Warnings: 0

MariaDB [college_library_management]> update student_information set age= 22 where stu_id=9;
Query OK, 1 row affected (0.021 sec)
Rows matched: 1  Changed: 1  Warnings: 0
```

5) alter table student_information rename to student_details;

```
MariaDB [college_library_management]> alter table student_information rename to student_details;
Query OK, 0 rows affected (0.030 sec)

MariaDB [college_library_management]> select * from student_details;
+--------+-------------+-------------+------------+---------------------+------------+-------------+-------------+------+
| stu_id | stu_name    | stu_address | contact_no | stu_email           | stu_dob    | branch_code | branch_name | age  |
+--------+-------------+-------------+------------+---------------------+------------+-------------+-------------+------+
|      1 | ram         | nagpur      | 8727986543 | ram@abc.com         | 1990-09-12 |           1 | electronics |   20 |
|      2 | shyam       | pune        | 9812763578 | shyam@abc.com       | 1990-12-23 |           2 | electrical  |   21 |
|      3 | karan       | kanpur      | 9763542761 | karan@abc.com       | 1991-08-12 |           3 | IT          |   23 |
|      4 | priya       | delhi       | 8976354267 | priya@abc.com       | 1991-09-23 |           1 | electronics |   22 |
|      5 | siya        | mumbai      | 8156487632 | siya@abc.com        | 1991-04-24 |           4 | civil       |   20 |
|      6 | priyakumari | lucknow     | 9127986543 | priyakumari@abc.com | 1992-08-10 |           5 | mechanical  |   22 |
|      7 | sakshi      | jammu       | 9012763512 | sakshi@abc.com      | 1997-01-20 |           3 | IT          |   23 |
|      8 | rohan       | chandigarh  | 8763542761 | rohan@abc.com       | 1993-05-12 |           4 | civil       |   21 |
|      9 | rajiv       | jaipur      | 9076894261 | rajiv@abc.com       | 1992-12-30 |           5 | mechanical  |   22 |
|     10 | mohena      | bhopal      | 9029487698 | mohena@abc.com      | 1991-07-29 |           1 | electronics |   20 |
|     11 | arun        | jodhpur     | 8937986543 | arun@abc.com        | 1993-01-11 |           2 | electrical  |   22 |
|     12 | rani        | malegaon    | 9827986539 | rani@abc.com        | 1991-09-09 |           3 | IT          |   23 |
|     13 | arpita      | bhandara    | 9127988943 | arpita@abc.com      | 1992-05-18 |           4 | civil       |   23 |
|     14 | tarun       | rachi       | 9527986543 | tarun@abc.com       | 1993-11-10 |           2 | electrical  |   22 |
|     15 | sonal       | nagpur      | 8027986543 | sonal@abc.com       | 1991-07-16 |           5 | mechanical  |   21 |
|     16 | ajay        | bhopal      | 9876986543 | ajay@abc.com        | 1993-01-19 |           5 | mechanical  |   21 |
|     17 | sayali      | delhi       | 9827986543 | sayali@abc.com      | 1992-07-14 |           3 | IT          |   20 |
|     18 | manvi       | kolhapur    | 8827923543 | manvi@abc.com       | 1991-02-19 |           2 | electrical  |   22 |
|     19 | joyti       | chandigarh  | 9097986543 | joyti@abc.com       | 1994-09-15 |           4 | civil       |   23 |
|     20 | paresh      | rachi       | 9712986543 | paresh@abc.com      | 1993-03-31 |           4 | civil       |   21 |
+--------+-------------+-------------+------------+---------------------+------------+-------------+-------------+------+
20 rows in set (0.002 sec)
```

6) delete from transaction_status where transaction_id=1016;

```
MariaDB [college_library_management]> delete from transaction_status where transaction_id=1016;
Query OK, 1 row affected (0.022 sec)

MariaDB [college_library_management]> select * from transaction_status;
+----------------+--------------------+--------+---------+----------+
| transaction_id | transaction_status | stu_id | book_id | issue_id |
+----------------+--------------------+--------+---------+----------+
|           1001 | completed          |      1 |    3100 |     5100 |
|           1002 | completed          |      1 |     200 |     5400 |
|           1003 | completed          |      2 |    3000 |     4600 |
|           1004 | pending            |      2 |     100 |     4800 |
|           1005 | pending            |      2 |     300 |     4900 |
|           1006 | completed          |      3 |     400 |     5600 |
|           1007 | pending            |      4 |    2900 |     6800 |
|           1008 | completed          |      8 |    1600 |     4500 |
|           1009 | pending            |     12 |    1800 |     5000 |
|           1010 | completed          |     13 |    2600 |     6700 |
|           1011 | completed          |     14 |    2100 |     6300 |
|           1012 | completed          |     15 |    3300 |     5800 |
|           1013 | completed          |     15 |    1000 |     5900 |
|           1014 | pending            |     16 |    1100 |     6000 |
|           1015 | completed          |     17 |    3200 |     6600 |
+----------------+--------------------+--------+---------+----------+
15 rows in set (0.001 sec)
```

7) alter table student_details modify stu_email varchar(20);

```
MariaDB [college_library_management]> alter table student_details modify stu_email varchar(20);
Query OK, 20 rows affected (0.099 sec)
Records: 20  Duplicates: 0  Warnings: 0

MariaDB [college_library_management]> desc student_details;
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| stu_id      | int(11)     | NO   | PRI | NULL    |       |
| stu_name    | varchar(20) | YES  |     | NULL    |       |
| stu_address | varchar(20) | YES  |     | NULL    |       |
| contact_no  | bigint(20)  | YES  |     | NULL    |       |
| stu_email   | varchar(20) | YES  | UNI | NULL    |       |
| stu_dob     | date        | YES  |     | NULL    |       |
| branch_code | int(11)     | YES  |     | NULL    |       |
| branch_name | varchar(50) | YES  |     | NULL    |       |
| age         | int(11)     | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
9 rows in set (0.041 sec)
```

8) select count(distinct branch_name)as available_branch from student_details;

```
MariaDB [college_library_management]> select count(distinct branch_name)as available_branch from student_details;
+------------------+
| available_branch |
+------------------+
|                5 |
+------------------+
1 row in set (0.001 sec)
```

9) select * from student_book_issue_details where fine>=20;

```
MariaDB [college_library_management]> select * from student_book_issue_details where fine>=20;
+----------+------------+------------+-------------+------+--------+---------+
| issue_id | issue_date | due_date   | return_date | fine | stu_id | book_id |
+----------+------------+------------+-------------+------+--------+---------+
|     4500 | 2024-01-12 | 2024-02-12 | 2024-02-15  |   35 |      8 |    1600 |
|     4800 | 2024-01-15 | 2024-02-15 | 2024-02-20  |   25 |      2 |     100 |
|     4900 | 2024-01-10 | 2024-02-10 | 2024-02-14  |   20 |      2 |     300 |
|     5000 | 2024-02-20 | 2024-03-20 | 2024-03-30  |   50 |     12 |    1800 |
|     5400 | 2024-02-14 | 2024-03-14 | 2024-03-20  |   30 |      1 |     200 |
|     5600 | 2024-01-12 | 2024-02-12 | 2024-02-19  |   35 |      3 |     400 |
|     5900 | 2024-04-07 | 2024-05-07 | 2024-05-15  |   40 |     15 |    1000 |
|     6000 | 2024-04-03 | 2024-05-03 | 2024-05-15  |   70 |     16 |    1100 |
|     6700 | 2024-06-20 | 2024-07-20 | 2024-07-29  |   45 |     13 |    2600 |
+----------+------------+------------+-------------+------+--------+---------+
9 rows in set (0.001 sec)
```

10) select stu_name,branch_name,contact_no from student_details where stu_id in(select stu_id from student_book_issue_details where fine>30);

```
MariaDB [college_library_management]> select stu_name,branch_name,contact_no from student_details where stu_id in(select stu_id from student
_book_issue_details where fine>30);
+----------+-------------+------------+
| stu_name | branch_name | contact_no |
+----------+-------------+------------+
| karan    | IT          | 9763542761 |
| rohan    | civil       | 8763542761 |
| rani     | IT          | 9827986539 |
| arpita   | civil       | 9127988943 |
| sonal    | mechanical  | 8027986543 |
| ajay     | mechanical  | 9876986543 |
+----------+-------------+------------+
6 rows in set (0.001 sec)
```

11) select stu_name,branch_name,branch_code from student_details where stu_id in(select stu_id from book where book_price>=250);

```
MariaDB [college_library_management]> select stu_name,branch_name,branch_code from student_details where stu_id in(select stu_id from book w
here book_price>=250);
+----------+-------------+-------------+
| stu_name | branch_name | branch_code |
+----------+-------------+-------------+
| ram      | electronics |           1 |
| shyam    | electrical  |           2 |
| karan    | IT          |           3 |
| priya    | electronics |           1 |
| siya     | civil       |           4 |
| sakshi   | IT          |           3 |
| rohan    | civil       |           4 |
| rani     | IT          |           3 |
| arpita   | civil       |           4 |
| tarun    | electrical  |           2 |
| sonal    | mechanical  |           5 |
| ajay     | mechanical  |           5 |
| sayali   | IT          |           3 |
| paresh   | civil       |           4 |
+----------+-------------+-------------+
14 rows in set (0.001 sec)
```

12) select * from student_details where stu_id in(select stu_id from transaction_details where transaction_status="pending");

```
MariaDB [college_library_management]> select * from student_details where stu_id in(select stu_id from transaction_details where transaction
_status="pending");
+--------+----------+-------------+------------+---------------+------------+-------------+-------------+------+
| stu_id | stu_name | stu_address | contact_no | stu_email     | stu_dob    | branch_code | branch_name | age  |
+--------+----------+-------------+------------+---------------+------------+-------------+-------------+------+
|      2 | shyam    | pune        | 9812763578 | shyam@abc.com | 1990-12-23 |           2 | electrical  |   21 |
|      4 | priya    | delhi       | 8976354267 | priya@abc.com | 1991-09-23 |           1 | electronics |   22 |
|     12 | rani     | malegaon    | 9827986539 | rani@abc.com  | 1991-09-09 |           3 | IT          |   23 |
|     16 | ajay     | bhopal      | 9876986543 | ajay@abc.com  | 1993-01-19 |           5 | mechanical  |   21 |
+--------+----------+-------------+------------+---------------+------------+-------------+-------------+------+
4 rows in set (0.001 sec)
```

13) select * from student_details where stu_id in(select stu_id from transaction_details where transaction_status="completed");

```
MariaDB [college_library_management]> select * from student_details where stu_id in(select stu_id from transaction_details where transaction
_status="completed");
+--------+----------+-------------+------------+----------------+------------+-------------+-------------+------+
| stu_id | stu_name | stu_address | contact_no | stu_email      | stu_dob    | branch_code | branch_name | age  |
+--------+----------+-------------+------------+----------------+------------+-------------+-------------+------+
|      1 | ram      | nagpur      | 8727986543 | ram@abc.com    | 1990-09-12 |           1 | electronics |   20 |
|      2 | shyam    | pune        | 9812763578 | shyam@abc.com  | 1990-12-23 |           2 | electrical  |   21 |
|      3 | karan    | kanpur      | 9763542761 | karan@abc.com  | 1991-08-12 |           3 | IT          |   23 |
|      8 | rohan    | chandigarh  | 8763542761 | rohan@abc.com  | 1993-05-12 |           4 | civil       |   21 |
|     13 | arpita   | bhandara    | 9127988943 | arpita@abc.com | 1992-05-18 |           4 | civil       |   23 |
|     14 | tarun    | rachi       | 9527986543 | tarun@abc.com  | 1993-11-10 |           2 | electrical  |   22 |
|     15 | sonal    | nagpur      | 8027986543 | sonal@abc.com  | 1991-07-16 |           5 | mechanical  |   21 |
|     17 | sayali   | delhi       | 9827986543 | sayali@abc.com | 1992-07-14 |           3 | IT          |   20 |
+--------+----------+-------------+------------+----------------+------------+-------------+-------------+------+
8 rows in set (0.001 sec)
```

14) select stu_name,branch_name from student_details where stu_id in(select stu_id from student_book_issue_details where fine=0);

```
MariaDB [college_library_management]> select stu_name,branch_name from student_details where stu_id in(select stu_id from student_book_issue
_details where fine=0);
+----------+-------------+
| stu_name | branch_name |
+----------+-------------+
| ram      | electronics |
| shyam    | electrical  |
| karan    | IT          |
| siya     | civil       |
| mohena   | electronics |
| rani     | IT          |
| tarun    | electrical  |
| ajay     | mechanical  |
| sayali   | IT          |
| joyti    | civil       |
+----------+-------------+
10 rows in set (0.001 sec)
```

15) select book_name,book_brn_id,author_name from book where book_price between 300 and 700;

```
MariaDB [college_library_management]> select book_name,book_brn_id,author_name from book where book_price between 300 and 700;
+-------------------+-------------+----------------+
| book_name         | book_brn_id | author_name    |
+-------------------+-------------+----------------+
| basics of math    |      223344 | handway rome   |
| python for DS     |      445566 | kathy holmes   |
| c++ all in one    |      556677 | jason.y        |
| computer network  |      902138 | danny parker   |
| basics of c       |      786873 | amerie nelson  |
| communication engg|      927233 | andrew philip  |
| embedded system   |      765233 | levin ray      |
| machine design    |      286233 | jia katwal     |
+-------------------+-------------+----------------+
8 rows in set (0.001 sec)
```

16) select * from book order by book_price asc,book_id desc;

```
MariaDB [college_library_management]> select * from book order by book_price asc,book_id desc;
+---------+-------------------+------------+-------------+----------------+--------+
| book_id | book_name         | book_price | book_brn_id | author_name    | stu_id |
+---------+-------------------+------------+-------------+----------------+--------+
|    2200 | land survey       |        129 |      432234 | peter parker   |     19 |
|     800 | basics os technology |     139 |      910233 | michel lauren  |      7 |
|    1100 | engg drawing      |        180 |      102133 | raman chaudhary|     16 |
|    1000 | engg drawing      |        180 |      102133 | raman chaudhary|     15 |
|    1900 | structural design |        190 |      152903 | yakub khan     |     19 |
|    1800 | CSS               |        199 |      192232 | george markas  |     12 |
|    1400 | structural engg   |        209 |      111936 | laura canvas   |      8 |
|    1300 | electrical circuit|        220 |      112229 | cheng deu      |     14 |
|    1200 | electrical circuit|        220 |      112229 | chang deu      |     10 |
|     700 | basics of electronic|      230 |      192333 | levis tatley   |      1 |
|    3000 | basics_of_science |        239 |      112233 | george.c       |      2 |
|    2800 | basics_of_science |        239 |      112233 | george.c       |      2 |
|    2300 | basics_of_science |        239 |      112233 | george.c       |      2 |
|     100 | basics of science |        239 |      112233 | george.c       |      2 |
|    1500 | environmental studie|      280 |      178653 | rahul ghosh    |     20 |
|    3200 | python programming|        290 |      861873 | simon anderson |     17 |
|     600 | basics of electrical|      290 |      102033 | leonardo rain  |      2 |
|     500 | object oriented prog|      298 |      667788 | william ray    |      5 |
|    2500 | basics of c       |        300 |      786873 | amerie nelson  |     12 |
|     200 | basics of math    |        309 |      223344 | handway rome   |      1 |
|     400 | c++ all in one    |        345 |      556677 | jason.y        |      3 |
|    2900 | communication engg|        400 |      927233 | andrew philip  |      4 |
|    3300 | machine design    |        500 |      286233 | jia katwal     |     15 |
|     300 | python for DS     |        557 |      445566 | kathy holmes   |      2 |
|    3100 | embedded system   |        600 |      765233 | levin ray      |      1 |
|     900 | computer network  |        600 |      902138 | danny parker   |      7 |
|    2100 | circuit design    |        780 |      182233 | george canady  |     14 |
|    2700 | digital electronics|       800 |      298233 | germy park     |      1 |
|    1700 | HTML              |        839 |      986873 | megan pierce   |      3 |
|    2600 | building structure d|      879 |      986233 | jonny slew     |     13 |
|    2400 | SQL               |        900 |      282233 | sandy milan    |     17 |
|    2000 | robotics          |        909 |      102278 | riyan sharma   |     16 |
|    1600 | construction managem|      939 |      986653 | ranchit agrawal|      8 |
+---------+-------------------+------------+-------------+----------------+--------+
33 rows in set (0.001 sec)
```

17) select sum(book_price) as total_book_price from book;

```
MariaDB [college_library_management]> select sum(book_price) as total_book_price from book;
+------------------+
| total_book_price |
+------------------+
|            13667 |
+------------------+
1 row in set (0.001 sec)
```

18) select book_name as books_starts_B from book where book_name like 'b%';

```
MariaDB [college_library_management]> select book_name as books_starts_B from book where book_name like 'b%';
+----------------------+
| books_starts_B       |
+----------------------+
| basics of science    |
| basics of math       |
| basics of electrical |
| basics of electronic |
| basics os technology |
| basics_of_science    |
| basics of c          |
| building structure d |
| basics_of_science    |
| basics_of_science    |
+----------------------+
10 rows in set (0.001 sec)
```

19) select book_price as price ,count(*) as book_id, sum(book_price) as total_book_price,avg(book_price) as avg_book_price,max(book_price) as max_book_price,min(book_price) as min_book_price from book;

```
MariaDB [college_library_management]> select book_price as price ,count(*) as book_id, sum(book_price) as total_book_price,avg(book_price) a
s avg_book_price,max(book_price) as max_book_price,min(book_price) as min_book_price from book;
+-------+---------+------------------+----------------+----------------+----------------+
| price | book_id | total_book_price | avg_book_price | max_book_price | min_book_price |
+-------+---------+------------------+----------------+----------------+----------------+
|   239 |      33 |            13667 |       414.1515 |            939 |            129 |
+-------+---------+------------------+----------------+----------------+----------------+
1 row in set (0.001 sec)
```

20) select branch_name from student_details group by branch_code;

```
MariaDB [college_library_management]> select branch_name from student_details group by branch_code;
+-------------+
| branch_name |
+-------------+
| electronics |
| electrical  |
| IT          |
| civil       |
| mechanical  |
+-------------+
5 rows in set (0.001 sec)
```

21) select stu_name,branch_name,book_name from student_details inner join book on student_details.stu_id=book.stu_id;

```
MariaDB [college_library_management]> select stu_name,branch_name,book_name from student_details inner join book on student_details.stu_id=b
ook.stu_id;
+----------+-------------+----------------------+
| stu_name | branch_name | book_name            |
+----------+-------------+----------------------+
| shyam    | electrical  | basics of science    |
| ram      | electronics | basics of math       |
| shyam    | electrical  | python for DS        |
| karan    | IT          | c++ all in one       |
| siya     | civil       | object oriented prog |
| shyam    | electrical  | basics of electrical |
| ram      | electronics | basics of electronic |
| sakshi   | IT          | basics os technology |
| sakshi   | IT          | computer network     |
| sonal    | mechanical  | engg drawing         |
| ajay     | mechanical  | engg drawing         |
| mohena   | electronics | electrical circuit   |
| tarun    | electrical  | electrical circuit   |
| rohan    | civil       | structural engg      |
| paresh   | civil       | environmental studie |
| rohan    | civil       | construction managem |
| karan    | IT          | HTML                 |
| rani     | IT          | CSS                  |
| joyti    | civil       | structural design    |
| ajay     | mechanical  | robotics             |
| tarun    | electrical  | circuit design       |
| joyti    | civil       | land survey          |
| shyam    | electrical  | basics_of_science    |
| sayali   | IT          | SQL                  |
| rani     | IT          | basics of c          |
| arpita   | civil       | building structure d |
| ram      | electronics | digital electronics  |
| shyam    | electrical  | basics_of_science    |
| priya    | electronics | communication engg   |
| shyam    | electrical  | basics_of_science    |
| ram      | electronics | embedded system      |
| sayali   | IT          | python programming   |
| sonal    | mechanical  | machine design       |
+----------+-------------+----------------------+
33 rows in set (0.001 sec)
```