01 – StudentClass

-- Find the names of all Juniors (level = JR) who are enrolled in a class taught by Prof. Harshith

```
SELECT DISTINCT S.sname
FROM Student S, Enrolled E, Class C, Faculty F
WHERE S.snum = E.snum AND
        E.cname = C.cname AND
        C.fid = F.fid AND
        F.fname = 'Prof. Harshith' AND
        S.slevel = 'JR';
```

-- Find the names of all classes that either meet in room R128 or have five or more Students enrolled.

```
SELECT DISTINCT C.cname
FROM Class C
WHERE C.room = 'R128' OR
        C.cname IN (
                SELECT E.cname
                FROM Enrolled E
                GROUP BY E.cname
                HAVING COUNT(*) >= 5);
```

-- Find the names of all students who are enrolled in two classes that meet at the same time.

```
SELECT DISTINCT S.sname
FROM Student S
WHERE S.snum IN (
        SELECT E1.snum
        FROM Enrolled E1, Enrolled E2, Class C1, Class C2
        WHERE E1.cname = C1.cname AND
                E2.cname = C2.cname AND
                E1.snum = E2.snum AND
                -- <> means 'NOT EQUAL TO'
                C1.cname <> C2.cname AND
                C1.meets_at = C2.meets_at);
```

-- Find the names of faculty members who teach in every room in which some class is taught.

```
SELECT DISTINCT F.fname
FROM Faculty F
WHERE NOT EXISTS (
        SELECT *
        FROM Class C1
        WHERE C1.room NOT IN (
                SELECT C2.room
                FROM Class C2
                WHERE C2.fid = F.fid
        )
);
```

-- Find the names of faculty members for whom the combined enrollment of the courses that they teach is less than five.

```
SELECT DISTINCT F.fname
FROM Faculty F
WHERE 5 > (
        SELECT COUNT(*)
        FROM Class C, Enrolled E
        WHERE C.cname = E.cname AND
        C.fid = F.fid
);
```

---

02 – AirlineFlight

-- Find the names of Aircraft such that all pilots certified to operate them have salaries more than Rs. 80,000.

```
SELECT DISTINCT A.aname
FROM Aircraft A
WHERE A.aid IN (
        SELECT C.aid
        FROM Certified C, Employees E
        WHERE C.eid = E.eid AND
                E.salary > 80000
);
```

-- For each pilot who is certified for more than three aircrafts, find the eid and the maximum cruisingrange of the aircraft for which she or he is certified.

```
SELECT C.eid, MAX(A.cruisingrange)
FROM Certified C, Aircraft A
WHERE A.aid = C.aid
GROUP BY C.eid
HAVING COUNT(*) > 3;
```

-- Find the names of pilots whose salary is less than the price of the cheapest route from Bengaluru to Frankfurt.

```
SELECT E.ename
FROM Employees E
WHERE E.salary < (
        SELECT MIN(F.price)
        FROM Flights F
        WHERE F.ffrom = 'Bengaluru' AND
                F.tto = 'Frankfurt'
);
```

-- For all aircraft with cruising range over 1000 Kms, find the name of the aircraft and the average salary of all pilots certified for this aircraft.

```
SELECT A.aname, AVG(E.salary)
FROM Aircraft A, Certified C, Employees E
WHERE A.aid = C.aid AND
        E.eid = C.eid AND
        A.cruisingrange > 1000
GROUP BY A.aid, A.aname;
```

-- Find the names of pilots certified for some Boeing aircraft.

```
SELECT DISTINCT E.ename
FROM Employees E, Certified C, Aircraft A
WHERE E.eid = C.eid AND
        A.aid = C.aid AND
        A.aname = 'Boeing';
```

-- Find the aids of all aircraft that can be used on routes from Bengaluru to New Delhi.

```
SELECT DISTINCT A.aid
FROM Aircraft A
WHERE A.cruisingrange > (
        SELECT MIN(F.distance)
        FROM Flights F
        WHERE F.ffrom = 'Bengaluru' AND
                F.tto = 'New Delhi'
);
```

---

03 – StudentCoursesBooks

-- Demonstrate how you add a new text book to the database and make this book be adopted by some department.

```
INSERT INTO Text VALUES (11, 'DATABASE FUNDAMENTALS', 'TATA MCGRAW HILL',
'SCHIELD');
INSERT INTO Book_Adoption VALUES (1, 3, 11);
```

-- Produce a list of text books (include Course Number, Book ISBN, Book Title) in the alphabetical order for courses offered by the ‘CS’ department that use more than two books.

```
SELECT C.courseno, T.bookisbn, T.booktitle
FROM Course C, Book_Adoption BA, Text T
WHERE C.courseno = BA.courseno AND
        BA.bookisbn = T.bookisbn AND
        C.dept = 'CS' AND
        EXISTS (
                        SELECT *
                        FROM Book_Adoption BA1
                        WHERE BA1.courseno = C.courseno
                        GROUP BY BA1.courseno
                        HAVING COUNT(BA1.courseno) > 2
                )
ORDER BY T.booktitle;
```

-- List any department that has all its adopted books published by a specific publisher.

```
SELECT C.dept, T.booktitle, T.publisher
FROM Course C, Text T, Book_Adoption BA
WHERE C.courseno = BA.courseno AND
        T.bookisbn = BA.bookisbn AND
        T.publisher = 'PEARSON' AND
        T.publisher = ALL (
                SELECT T1.publisher
                FROM Course C1, Book_Adoption BA1, Text T1
                WHERE BA1.bookisbn = T1.bookisbn AND
                        BA1.courseno = C1.courseno AND
                        C.dept = C1.dept
        );
```

---

04 – BookDealer

-- Give the details of the authors who have 2 or more books in the catalog and the price of the books is greater than the average price of the books in the catalog and the year of publication is after 2000.

```
SELECT *
FROM Author A
WHERE EXISTS (
        SELECT A1.authorid, COUNT(A1.authorid)
        FROM Author A1, Book_Catalog C
        WHERE A1.authorid = C.authorid AND
                A.authorid = A1.authorid AND
                C.yearofpublish > 2000 AND
                C.price > (
                        SELECT AVG(price)
                        FROM Book_Catalog
                )
        GROUP BY A1.authorid
        HAVING COUNT(A1.authorid) >= 2
);
```

-- Find the author of the book which has maximum sales.

```
SELECT A.name
FROM Author A, Book_Catalog BC, Order_Details OD
WHERE A.authorid = BC.authorid AND
        BC.bookid = OD.bookid AND
        OD.quantity = (
                SELECT MIN(OD.quantity)
                FROM Order_Details OD
        );
```

-- Demonstrate how you increase the price of books published by a specific publisher by 10%.

```
SELECT BC.bookid, BC.title, BC.price, price*1.1
FROM Book_Catalog BC
WHERE BC.publisherid IN (
        SELECT P.publisherid
        FROM Publisher P
        WHERE P.name='JOHN WILEY'
);
```

---

05 – BankingEnterprise

-- Find all the customers who have at least two accounts at the Main branch.

```
SELECT *
FROM Customer C
WHERE EXISTS (
        SELECT D.customername, COUNT(D.customername)
        FROM Depositor D, Account A
        WHERE D.accno = A.accno AND
                C.customername = D.customername AND
                A.branchname = 'RESIDENCY ROAD'
        GROUP BY D.customername
        HAVING COUNT(D.customername) >= 2
);
```

-- Find all the customers who have an account at all the branches located in a specific city.

```
SELECT D.customername
FROM Branch B, Account A, Depositor D
WHERE B.branchname = A.branchname AND
        A.accno = D.accno AND
        B.branchcity = 'DELHI'
GROUP BY D.customername
HAVING COUNT(DISTINCT B.branchname) = (
        SELECT COUNT(branchname)
        FROM Branch
        WHERE branchcity = 'DELHI'
);
```

-- Demonstrate how you delete all account tuples at every branch located in a specific city.

```
DELETE FROM Account A
WHERE A.branchname IN (
        SELECT B.branchname
        FROM Branch B
        WHERE B.branchcity = 'BOMBAY'
);
```