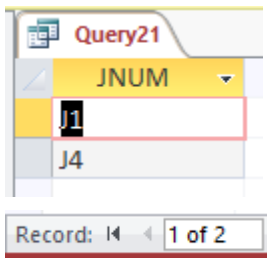## Lab 3

**Name :** Pritesh Gandhi & Peter Luciani

21. Get job numbers for jobs using at least one part available from supplier S1.

Query:

> SELECT DISTINCT J.JNUM
>
> FROM Jobs AS J, Shipment AS SP
>
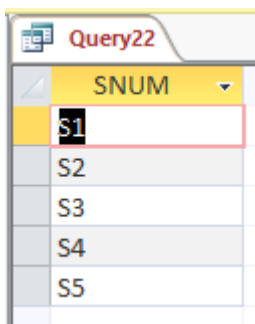> WHERE J.JNUM = SP.JNUM
>
> AND SP.SNUM = 'S1';

Result:



Cardinality:

22. Get supplier numbers for suppliers that ship at least one part shipped by at least one supplier who ships at least one red part.

Query :

> SELECT DISTINCT SP3.SNUM
>
> FROM Shipment SP3
>
> WHERE SP3.PNUM IN (SELECT DISTINCT SP2.PNUM
>
> FROM Shipment SP2
>
> WHERE EXISTS (SELECT DISTINCT SP1.SNUM
>
> FROM Shipment AS SP1, Parts AS P
>
> WHERE P.PNUM = SP1.PNUM
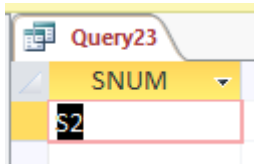>
> AND P.Color = 'Red'));

Result :



Cardinality:

23. Get supplier numbers for suppliers with a status lower than that of supplier S1.

Query:

SELECT SS.SNUM

FROM Supplier AS FS, Supplier AS SS

WHERE FS.SNUM = 'S1'

AND SS.Status < FS.Status;

Result:



Cardinality:

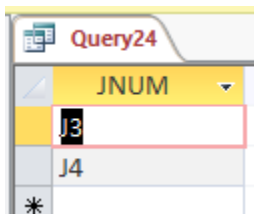24. Get job numbers for jobs whose city is first in the alphabetic list of such cities.

Query:

SELECT J1.JNUM

FROM Jobs J1

WHERE J1.CITY=(SELECT MIN(J2.CITY)

FROM Jobs AS J2);

Result:



Cardinality:
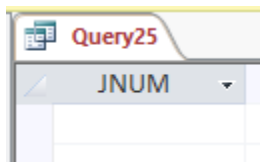
25. Get job numbers for jobs that receive shipment(s) of part P1 in an average quantity greater than the greatest quantity in which any part is shipped to job J1.
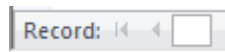
Query:

```
SELECT DISTINCT AVG_SP.JNUM
FROM (SELECT SP.JNUM, AVG(SP.QTY) AS AVG_QTY
        FROM Shipment AS SP
        WHERE SP.PNUM='P1'
        GROUP BY SP.JNUM)  AS AVG_SP
WHERE AVG_SP.AVG_QTY>(SELECT MAX(SP_MAX.QTY)
                        FROM Shipment SP_MAX
                        WHERE SP_MAX.JNUM='J1');
```
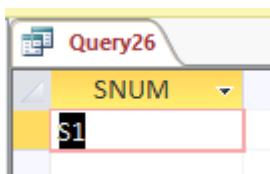
Result:



Cardinality: **0**

26. Get supplier numbers for suppliers that ship part P1 to some job in a quantity greater than the average shipment quantity of part P1 for that job.

Query:

```
SELECT DISTINCT SP.SNUM
FROM Shipment AS SP, (SELECT SP_AVG.JNUM, AVG(SP_AVG.QTY) AS AVG_QTY
                        FROM Shipment AS SP_AVG
                        WHERE SP_AVG.PNUM='P1'
                        GROUP BY SP_AVG.JNUM)  AS J_AVG
WHERE SP.PNUM='P1'
AND SP.JNUM=J_AVG.JNUM
AND SP.QTY>J_AVG.AVG_QTY;
```
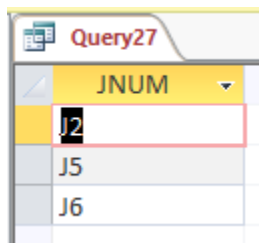
Result:



Cardinality:

27. Get job numbers for jobs that receive no shipments of any red part by any London supplier.

Query:

> SELECT DISTINCT SP.JNUM
>
> FROM Shipment AS SP
>
> WHERE SP.JNUM NOT IN
>
> (SELECT SP.JNUM
>
> FROM Shipment AS SP, Parts AS P, Supplier AS S
>
> WHERE P.PNUM = SP.PNUM
>
> AND S.SNUM = SP.SNUM
>
> AND P.COLOR = 'Red'
>
> AND S.CITY = 'London');

Result:

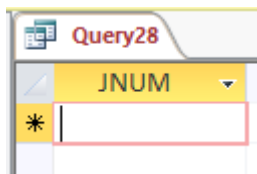| Query27 |
| --- |
| JNUM |
| J2 |
| J5 |
| J6 |

Cardinality: Record: I4 ◄ 1 of 3 ►

28. Get job numbers for jobs whose shipments come solely from supplier S1.

Query:

> SELECT SP1.JNUM
>
> FROM (SELECT SP2.JNUM
>
> FROM Shipment AS SP2
>
> WHERE SP2.SNUM='S1')  AS SP1
>
> WHERE SP1.JNUM NOT IN ( SELECT SP3.JNUM
>
> FROM Shipment SP3
>
> WHERE SP3.SNUM<>'S1');

Result:

| Query28 |
| --- |
| JNUM |
| * |

Cardinality:  **0**  Record: I4 ◄ ☐
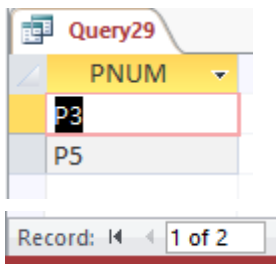
29. Get part numbers for parts shipped to all jobs in London.

Query:

SELECT DISTINCT SP_FIRST.PNUM

FROM Shipment AS SP_FIRST

WHERE NOT EXISTS

    (SELECT *

     FROM Jobs J

     WHERE J.CITY='London'

     AND NOT EXISTS (SELECT *

                FROM Shipment SP_SECOND

                WHERE SP_FIRST.PNUM=SP_SECOND.PNUM

                AND SP_SECOND.JNUM=J.JNUM));
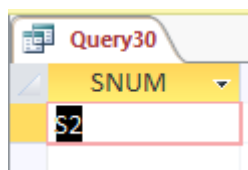
Result:

| PNUM |
| --- |
| P3 |
| P5 |

Record: 1 of 2

Cardinality:

30. Get supplier numbers for suppliers who ship the same part to all jobs.

Query:

SELECT SP.SNUM

FROM Shipment AS SP

GROUP BY SP.SNUM, SP.PNUM

HAVING COUNT(SP.JNUM)=(SELECT COUNT(*)

                     FROM Jobs J );
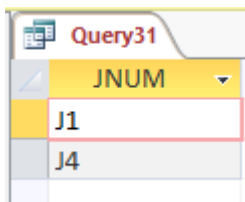
Result:

| SNUM |
| --- |
| S2 |

Record: 1 of 1

Cardinality:

31. Get job numbers for jobs that receive shipments of at least all parts available from supplier S1.

Query:

SELECT SP1.JNUM

FROM Shipment AS SP1

WHERE SP1.SNUM='S1'

GROUP BY SP1.JNUM

HAVING COUNT(SP1.PNUM)= ( SELECT COUNT (*)

FROM (SELECT DISTINCT SP2.PNUM

FROM Shipment SP2

WHERE SP2.SNUM='S1'));

Result:

| Query31 |
| --- |
| JNUM |
| J1 |
| J4 |

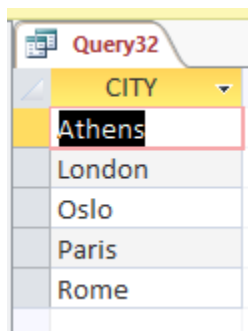Cardinality: Record: I4 ◄ 1 of 2

32. Get all cities in which at least one supplier, part, or job is located.

Query:

(SELECT S.CITY

FROM Supplier S)

UNION

(SELECT J.CITY

FROM Jobs J

UNION SELECT P.CITY

FROM Parts P);

Result:

| Query32 |
| --- |
| CITY |
| Athens |
| London |
| Oslo |
| Paris |
| Rome |

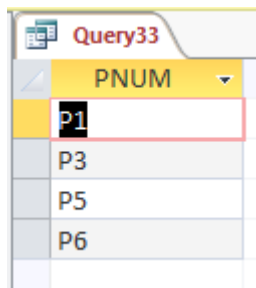Cardinality: Record: I4 ◄ 1 of 5

33. Get part numbers for parts that are shipped either by a London supplier or to a London job.

Query:

         (SELECT DISTINCT SP.PNUM

         FROM Shipment AS SP, Supplier AS S, Jobs AS J

         WHERE S.SNUM = SP.SNUM

         AND J.JNUM = SP.JNUM

         AND  S.City = 'London')

         UNION

         (SELECT DISTINCT SP.PNUM

         FROM Shipment AS SP, Supplier AS S, Jobs AS J

         WHERE S.SNUM = SP.SNUM

         AND J.JNUM = SP.JNUM

         AND J.City = 'London');

Result:

| Query33 |
|---|
| PNUM |
| P1 |
| P3 |
| P5 |
| P6 |

Cardinality: Record: I◄ ◄ 1 of 4