List the List the names and birthplaces of all Artists.

```
SQL> select aname, birthplace from artist;

ANAME                BIRTHPLACE
-------------------- --------------------
Leonardo             Florence
Michelangelo         Arezzo
Josefa               Seville
Hans Hofmann         Weisenburg
John                 San Francisco
```

List the title and price of all Artworks that were painted after 1600.

```
SQL> select title, price from artwork where year > 1600;

TITLE                     PRICE
-------------------- ----------
Waves                       4000
Three Musicians            11000
```

List the names and country of birth of all Artists whose painting style are Modern, Baroque or Renaissance (HINT: Use the IN keyword).

```
SQL> select aname, country from artist
  2  where style in ('Modern', 'Baroque', 'Renaissance');

ANAME                COUNTRY
-------------------- --------------------
Leonardo             Italy
Michelangelo         Italy
Josefa               Spain
Hans Hofmann         Germany
John                 USA
```

List all details of the Artworks in the database, ordered by Title

```
SQL> select * from artwork order by title;

TITLE                YEAR TYPE          PRICE ANAME
-------------------- ----- ---------- --------- ---------
Three Musicians      1921 Modern      $11,000 Picasso
Waves                2000              $4,000 John
```

List the names of all customers who like Artists from the Renaissance style and having an amount larger than 30000.

```
SQL> select c.name from likeartist l, artist a, customer c
  2  where c.custid = l.custid and a.aname = l.aname and
  3  a.style in ('Renaissance') and a.aname in
  4  (select aname from artwork where price > 30000);

no rows selected
```

List the names and customers' ids of all customers who like Picasso.

```
SQL> select c.name, c.custid from likeartist l, customer c
  2  where c.custid = l.custid and l.aname in ('Picasso');

NAME                 CUSTID
-------------------- ----------
Emre                      1
Saeid                     2
```

Same Query, JOIN Style:

```
SELECT S.sname
FROM Sailors S INNER JOIN Reserves R ON S.sid = R.sid
 JOIN Boats B ON R.bid = B.bid
WHERE B.color = 'red' AND S.sid IN (
SELECT S2.sid
FROM Sailors S2 INNER JOIN Reserves R2 ON S2.sid = R2.sid
INNER JOIN boats B2 ON R2.bid = B2.bid WHERE
B2.color = 'green');
```

Your turn

- Using our ArtDB database, find names of Customers who likes both an artist born in Malaga and an artist born in Florence.
- Answer this question by writing a similar query that is described in previous slide.

```
SQL> select c.name from likeartist l, customer c
  2  where c.custid = l.custid and l.aname in (
  3  select aname from artist where birthplace in ('Malaga', 'Florence'));

NAME
--------------------
Emre
```

```
SQL> select c.name from customer c inner join likeartist l
  2  on c.custid = l.custid and l.aname in (
  3  select aname from artist where birthplace in ('Malaga', 'Florence'));

NAME
--------------------
Emre
```

Your turn

- You need to insert following rows to Artwork table.
  - *('Saints', 1470, 'Renaissance', 30000.00, 'Leonardo')*
  - *('Hand of god', 1510, 'Renaissance', 52000.00, 'Michelangelo')*
  - *('Murder', 1600, 'Baroque', 15000.00, 'Caravaggio')*
  - *('Green', 1950, 'Modern', 5000.00, 'John')*
- Find the average price of artworks which are painted after 1490, for each artwork type that has at least two such artworks.
- And find the average price of artworks which are painted after 1490, for each artwork type that has at least two artworks (**painted in any year**).
- Write a query similar to what is described in previous slides to answer the question.

17

```
SQL> insert into artwork values
  2  ('Saints', 1470, 'Renaissance', 30000.00, 'Leonardo');

1 row created.

SQL> insert into artwork values
  2  ('Hand of god', 1510, 'Renaissance', 52000.00, 'Michelangelo');

1 row created.

SQL> insert into artwork values
  2  ('Murder', 1600, 'Baroque', 15000.00, 'Caravaggio');

1 row created.

SQL> insert into artwork values
  2  ('Green', 1950, 'Modern', 5000.00, 'John');

1 row created.
```

```
SQL> select a.type, avg(a.price) as average from artwork a
  2  group by a.type having (select count(*) from artwork a2
  3  where a.type = a2.type and a2.year > 1490) >= 2;

TYPE            AVERAGE
------------ ----------
Modern             8000
```

```
SQL> select a.type, avg(a.price) as average from artwork a
  2  where a.year > 1490 group by a.type having
  3  (select count(*) from artwork a2 where a.type = a2.type) >= 2;

TYPE            AVERAGE
------------ ----------
Renaissance       52000
Modern             8000
```

Your turn

- You need the following values inserted into LikeArtist table first.
  - *(2,'Caravaggio')*
  - *(2,'Hans Hofmann')*
  - *(2,'John')*
  - *(2,'Josefa')*
  - *(2,'Michelangelo')*
- Find names of customers who like all the artists. You can answer this query using what you have learned in previous slide.

19

```
SQL> insert into LikeArtist values (2,'Caravaggio');

1 row created.

SQL> insert into LikeArtist values (2,'Hans Hofmann');

1 row created.

SQL> insert into LikeArtist values (2,'John');

1 row created.

SQL> insert into LikeArtist values (2,'Josefa');

1 row created.

SQL> insert into LikeArtist values (2,'Michelangelo');

1 row created.
```

```
SQL> SELECT C.name FROM Customer C WHERE NOT EXISTS (
  2     SELECT A.aname FROM Artist A WHERE NOT EXISTS (
  3            SELECT L.aname FROM LikeArtist L WHERE
  4                   L.aname=A.aname AND L.custid=C.custid
  5     )
  6  );

no rows selected
```


```
SQL> DELETE FROM Artwork WHERE price = 4000.00;

1 row deleted.
```

```
SQL> SELECT Tmp.type, Tmp.average FROM (
  2     SELECT A.type, AVG(A.price) AS average
  3             FROM artwork A GROUP BY A.type ) Tmp
  4  WHERE Tmp.average = (
  5     SELECT MIN(T.average) FROM (
  6             SELECT S.type, AVG(S.price) AS average
  7     FROM artwork S GROUP BY S.type ) T
  8  );

TYPE            AVERAGE
------------ ----------
Modern             8000
```