

Here are some relations that exist in a database for an orchestra.

Person(email, name, age)

- This relation stores anyone who has signed up for our mailing list. Tuples in this relation may not be listed in Purchase.

Show(id, year, month, day, showing, attendanceNumber)

- Showing describes whether a show was during morning, afternoon, or evening
- {year, month, day, showing} is a candidate key for Show

Song(composer, title)

SongsPerformed(showID, composer, title)

- showID is a foreign key referring to Show
- composer and title are foreign keys referring to attributes of the same name in Song

Purchase(email, showID, price)

- email is a foreign key referring to the email attribute in Person
- showID is a foreign key referring to Show

Musician(id, name, instrument, position, nationality)

PerformedIn(id, showID)

- id refers to the attribute of the same name in Musician
- showID is a foreign key referring to Show

Write SQL statements to answer the following questions:

1. Find the email addresses of people who attended a show in January 2019. If you have multiple conditions in your WHERE clause, connect them with an AND (e.g., WHERE year > 1939 AND movieID > 2).

Do you need DISTINCT? Why or why not?

```
SELECT DISTINCT email
FROM Purchase p, Show s
WHERE p.showID = s.id AND year = 2019 AND month = 'January'
```

You need DISTINCT because email by itself is not a primary key. For example, what happens when you have someone who has attended two shows during January 2019?

2. Find the year, month, day, and attendance numbers of all shows that had a Canadian musician perform in it.

```
SELECT DISTINCT s.year, s.month, s.day, s.attendanceNumber
FROM Musician m, PerformedIn p, Show s
WHERE m.nationality = 'Canadian' AND m.id = p.id AND p.showID = s.id
```

Something to consider for this query:

- What happens when a show has more than one Canadian musician?
- What happens when different showings on the same day have Canadian musicians?
 - Not quite as easy! In this case, it is likely a good idea to also include “s.showing” in the SELECT DISTINCT clause. That way, you can list the different showings on the same day if you happened to have two or more showings on the same day with Canadian musicians.
- You don’t need to use the alias in the SELECT clause as year, month, day, and attendanceNumber are all uniquely named across the three relations. We use it out of habit.

3. Find the names of all musicians who play the flute.

Do you need DISTINCT? Why or why not?

```
SELECT name
FROM Musician
WHERE instrument = 'flute'
```

Whether or not you need DISTINCT will depend on how you want to handle cases where two people have the same name. Do you just want to include that name twice to represent both people? Or do you want to include that name once to represent that this is a name of someone who plays the flute.