

Here are some relations that exist in a database for a symphony.

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, date, showing, attendanceNumber)

- Showing describes whether a show was during morning, afternoon, or evening

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 relational algebra statements to answer the following questions:

1. Find the emails of the people who have attended a show in January 2020 and February 2020.
2. What songs were performed in the shows with the most attendance? In the event of a tie, list all the songs that were performed in the shows.
3. Find the email addresses of people who have purchased a ticket for every performance that includes a piece composed by Tchaikovsky.