



Database Modeling to Study the New York Jazz Scene

Boriss Mejías

Holistic System Software Engineer

Air Guitar Player

PgConf NYC – October 1st, 2025



Database Modeling to Study the New York Jazz Scene

Boriss Mejías

Global Solutions Architect

Air Guitar Player

PgConf NYC – October 1st, 2025

Use Case





MILES

"GROOVES"

WITH THE MILES DAVIS QUINTET

9 Big Days

The BLUE CORONET

1200 FULTON ST. B'KLYN

JUNE 21 - 29



event	
artist	'Miles Davis'
venue	'The Blue Coronet'
address	'1200 Fulton St. B'klyn'
date	'June 21-29'



venue
name 'The Blue Coronet'
address '1200 Fulton St. B'klyn'

artist
name 'Miles Davis'



event	
artist	'Miles Davis'
venue	'The Blue Coronet'
date	'June 21-29'

venue	
name	'The Blue Coronet'
address	'1200 Fulton St. B'klyn'

artist	
name	'Miles Davis'

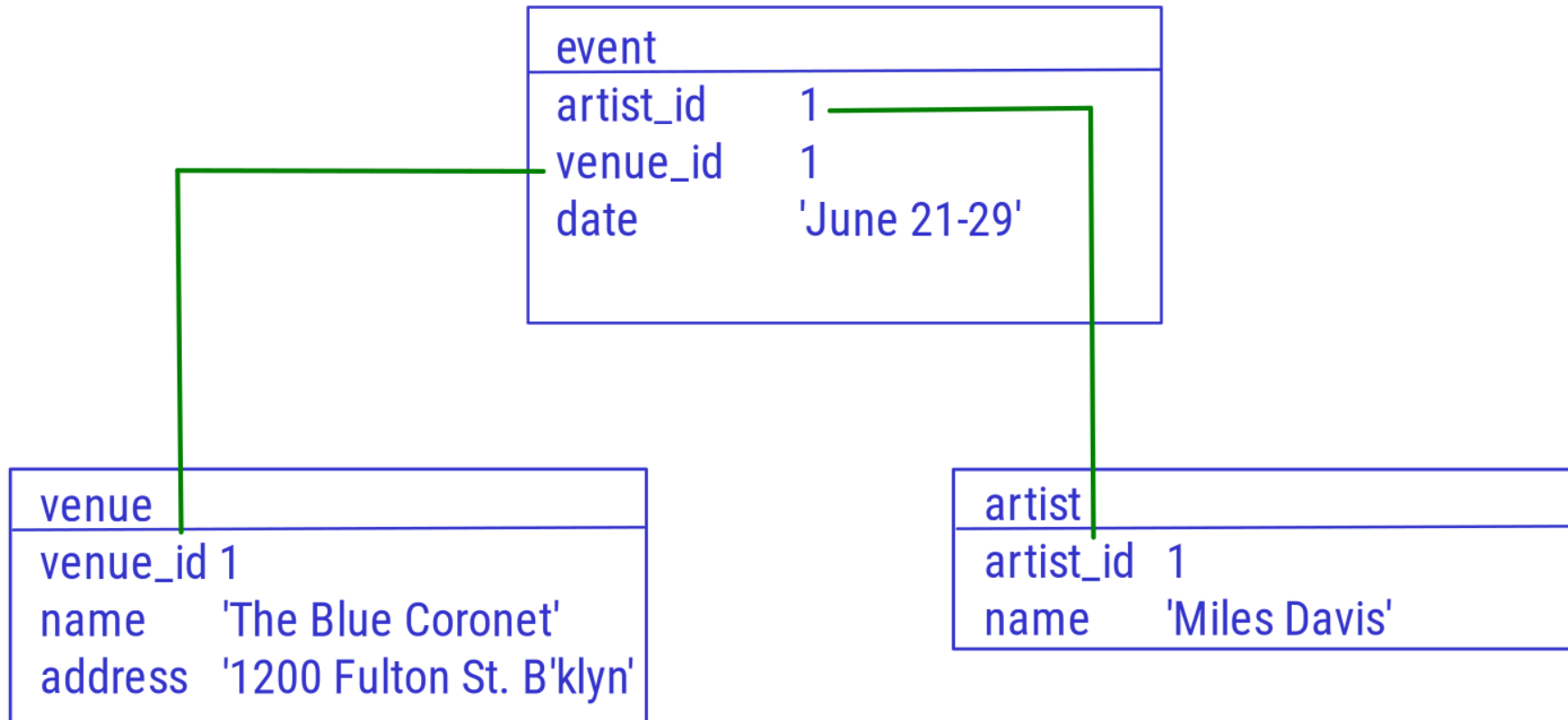


event	
artist_id	1
venue_id	1
date	'June 21-29'

venue	
venue_id	1
name	'The Blue Coronet'
address	'1200 Fulton St. B'klyn'

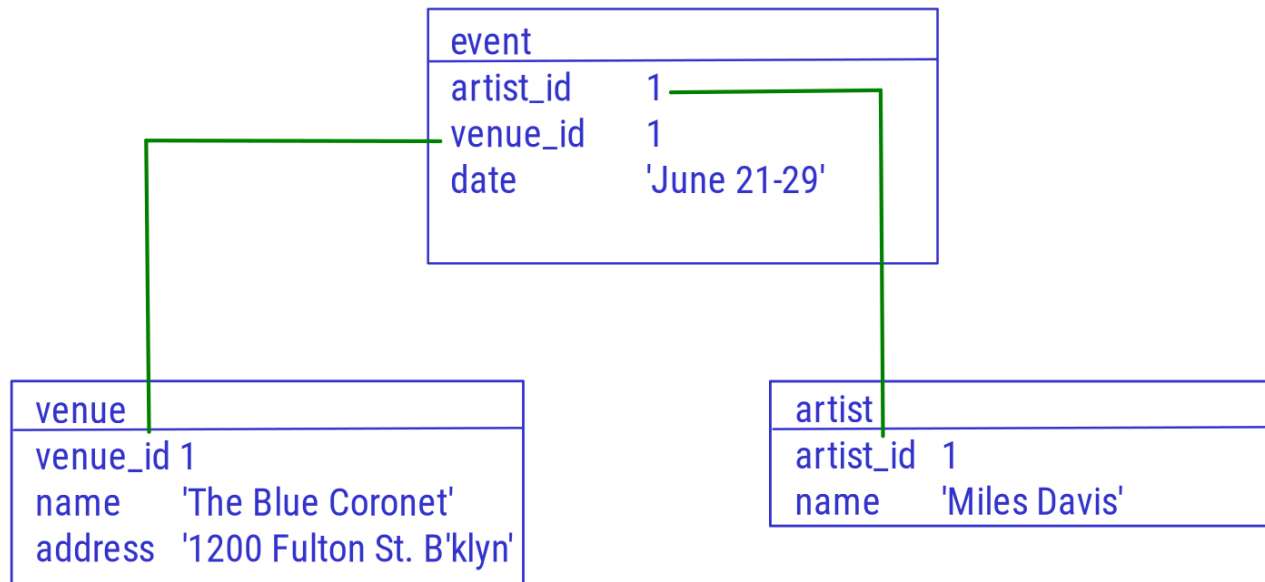
artist	
artist_id	1
name	'Miles Davis'





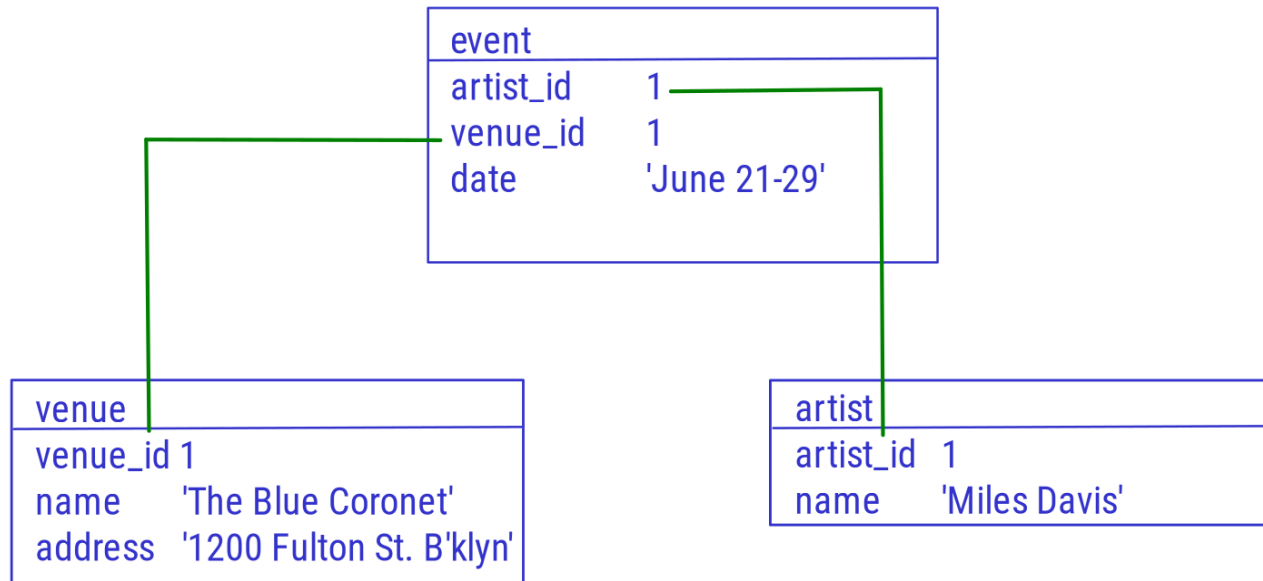
We already applied a few
data modeling design principles





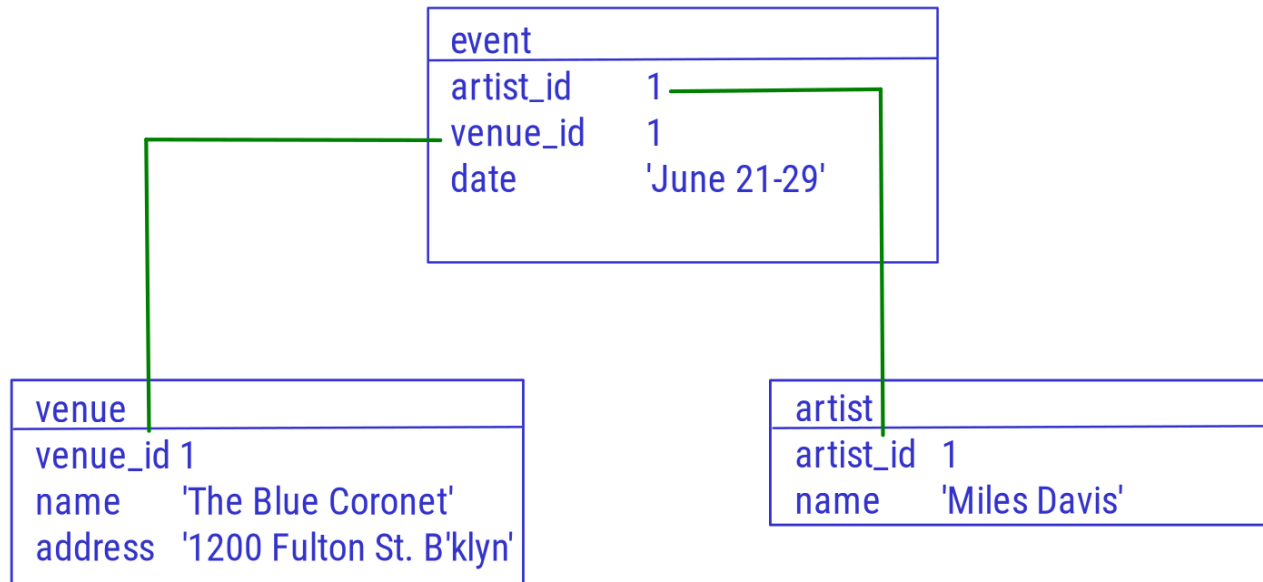
Prevent data duplication





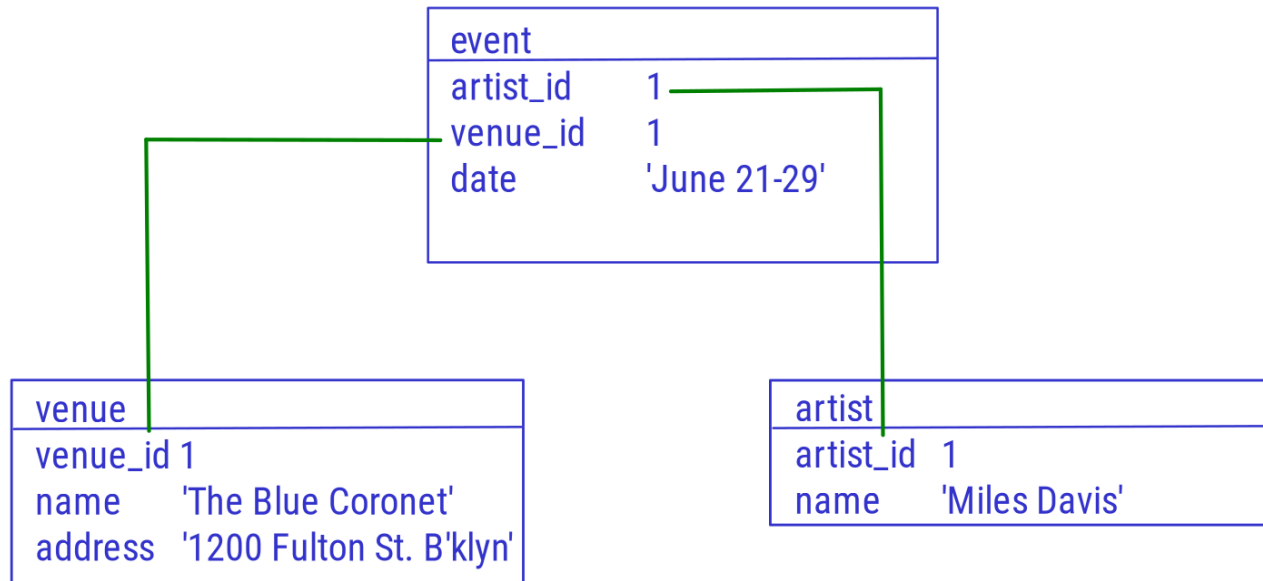
Each entity must be unique





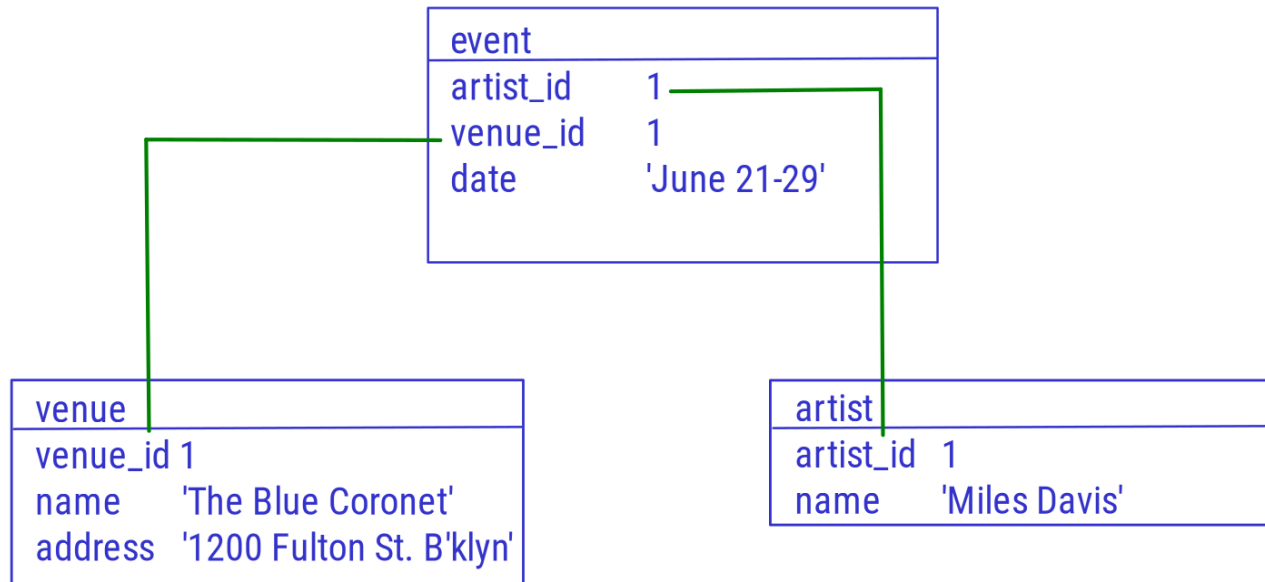
A constraint
is not a restriction.
It is a guarantee.





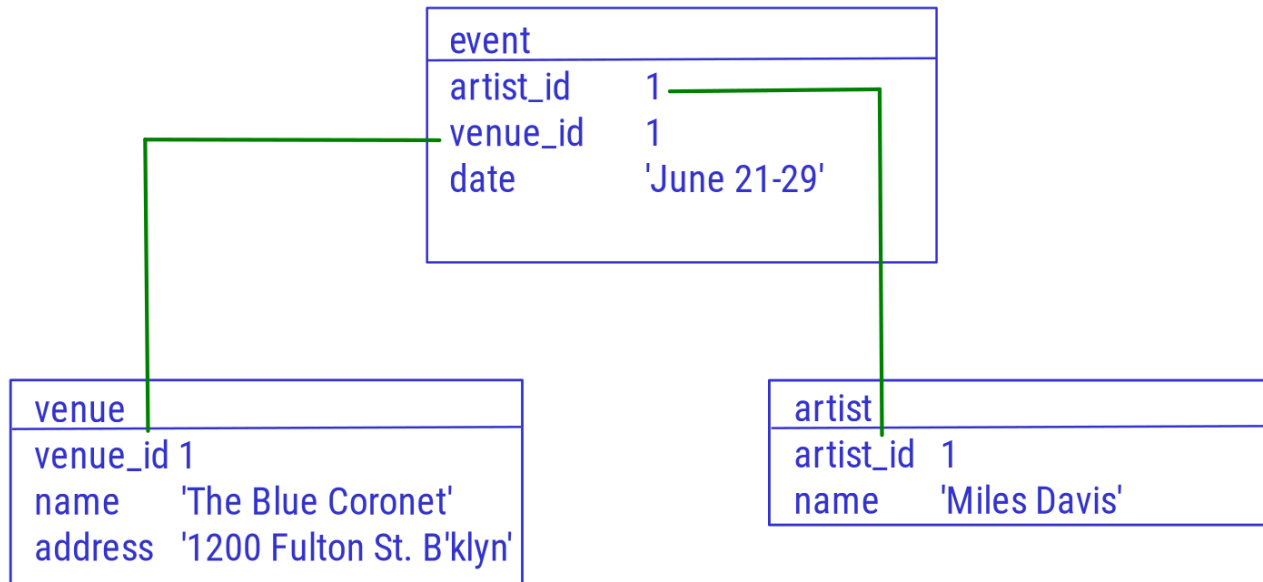
We don't use business keys
as primary keys





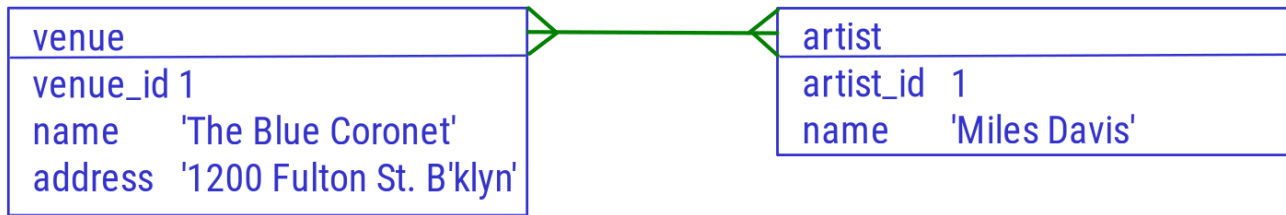
We don't use natural keys
as primary keys





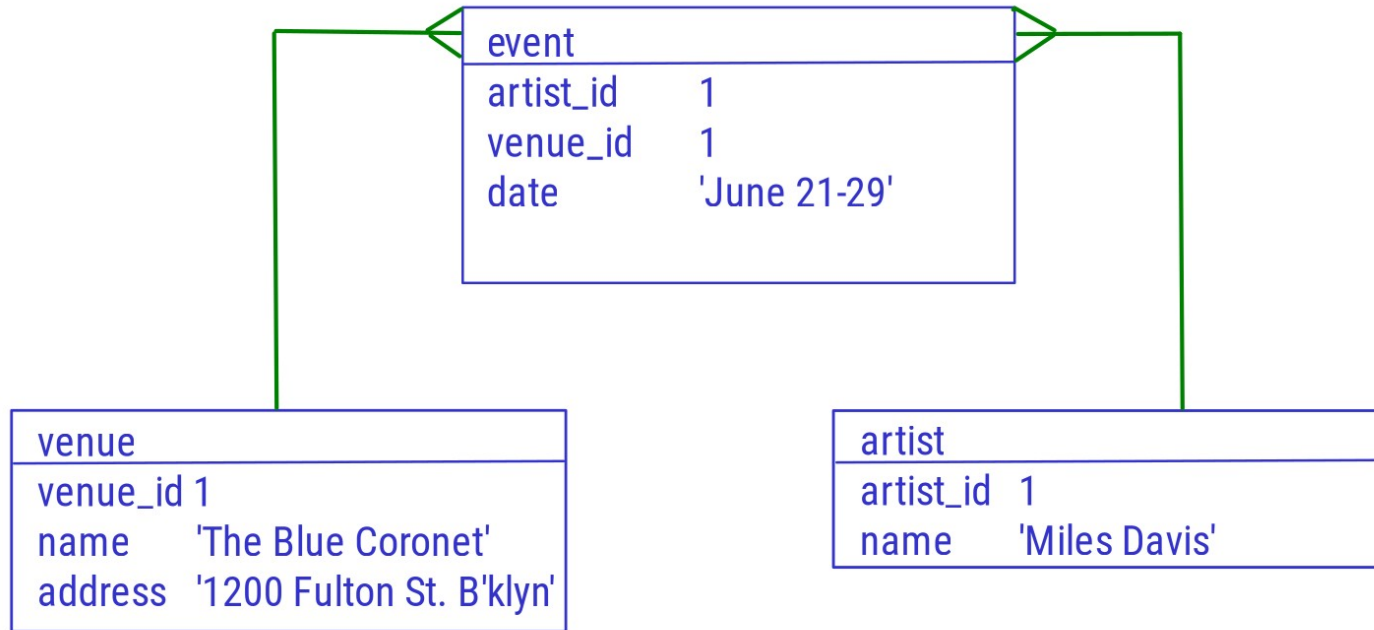
We solved
some cardinality issues





How do we really express
many to many





Twice one to many



electric tour 2016

AL DI MEOLA

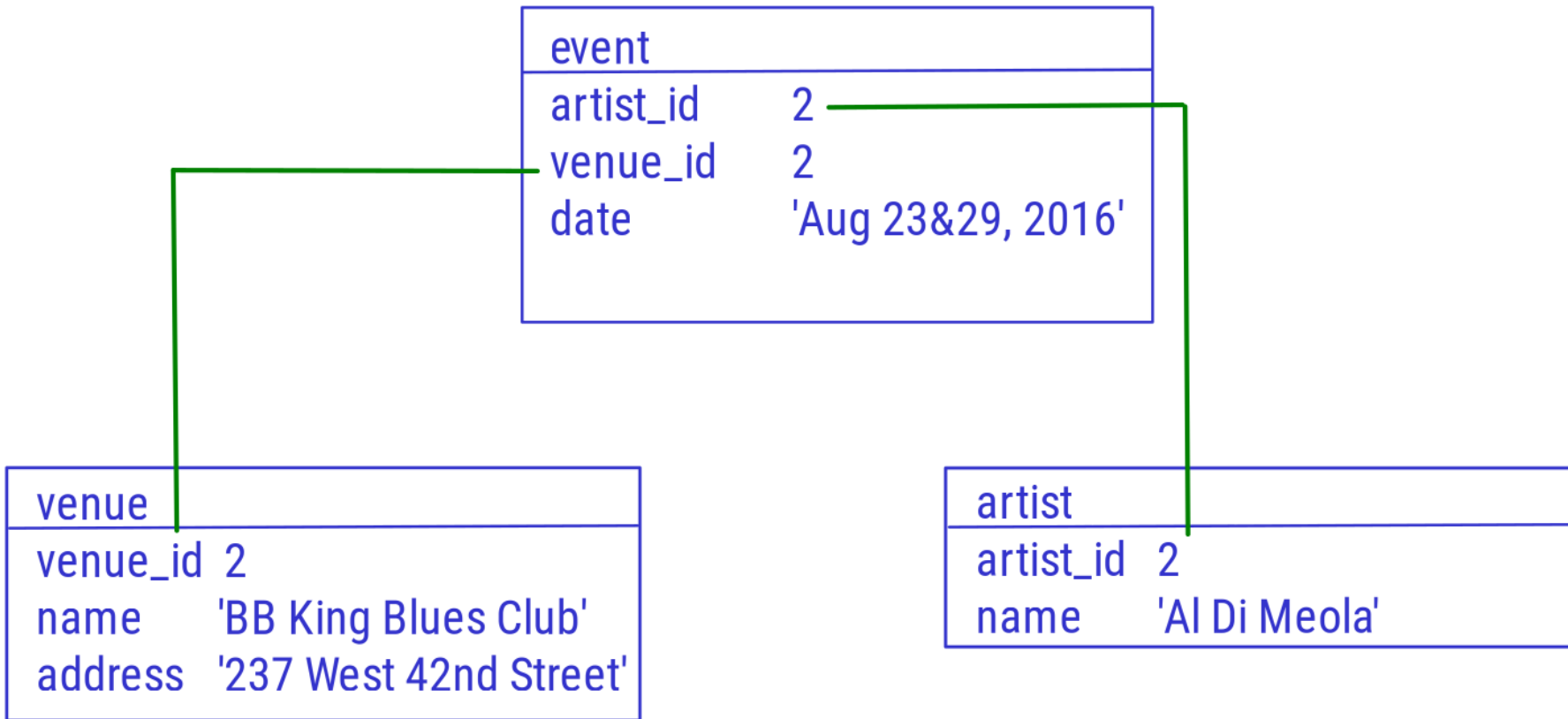
elegant gypsy meets romantic warrior

AUGUST 23 & 24, 2016

DOORS: 6PM | SHOW: 8PM

TICKETS AVAILABLE AT THE BB KING BOX OFFICE, TICKETMASTER CHARGE BY PHONE: 1.800.745.3000 OR TICKETMASTER.COM
BBKINGBLUES.COM [f](https://www.facebook.com/bbkingbluesnyc) [t](https://twitter.com/bbkingbluesnyc) [i](https://www.instagram.com/bbkingbluesnyc) [y](https://www.youtube.com/bbkingbluesnyc) /BBKINGBLUESNYC /BBKINGBLUESCLUBNYC
237 WEST 42ND STREET | TIMES SQUARE | NEW YORK CITY, NY 10036 | 212.997.4144

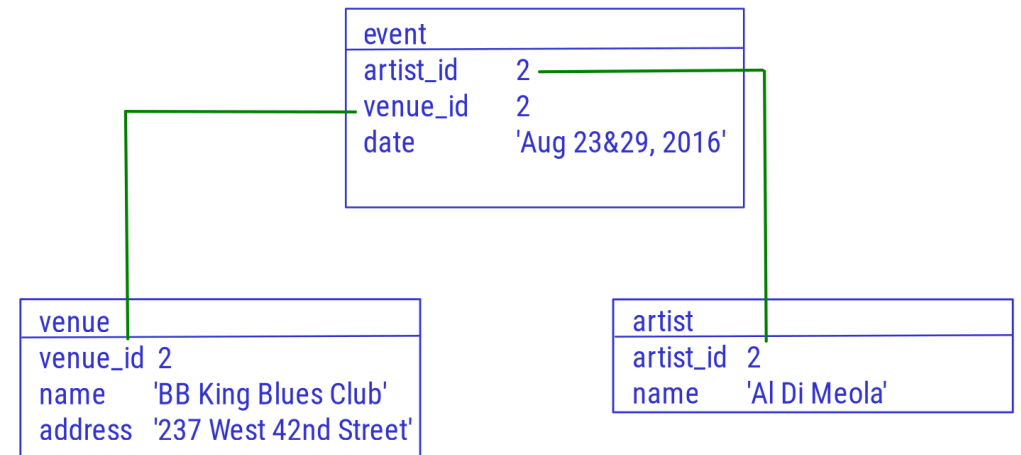
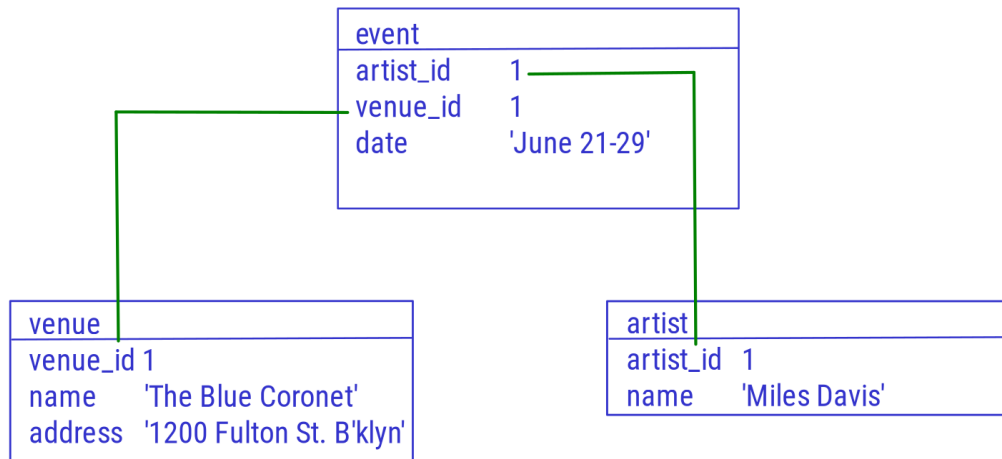




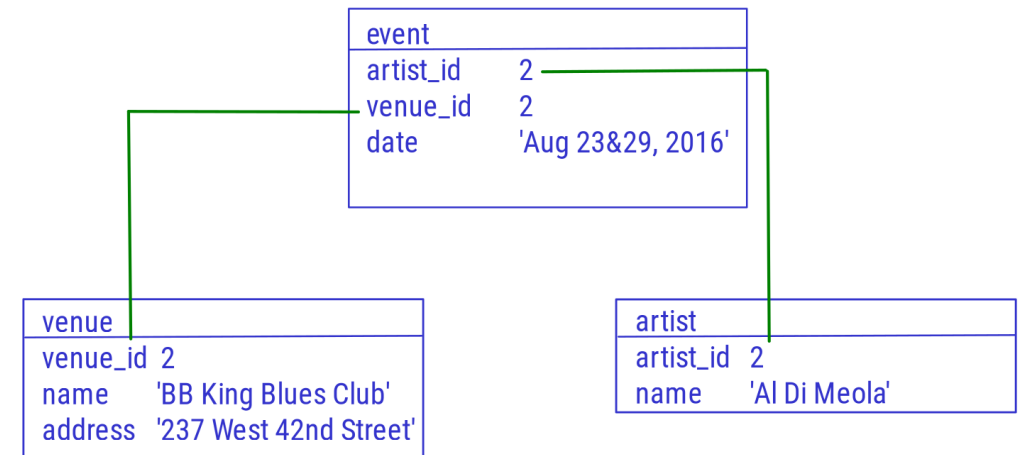
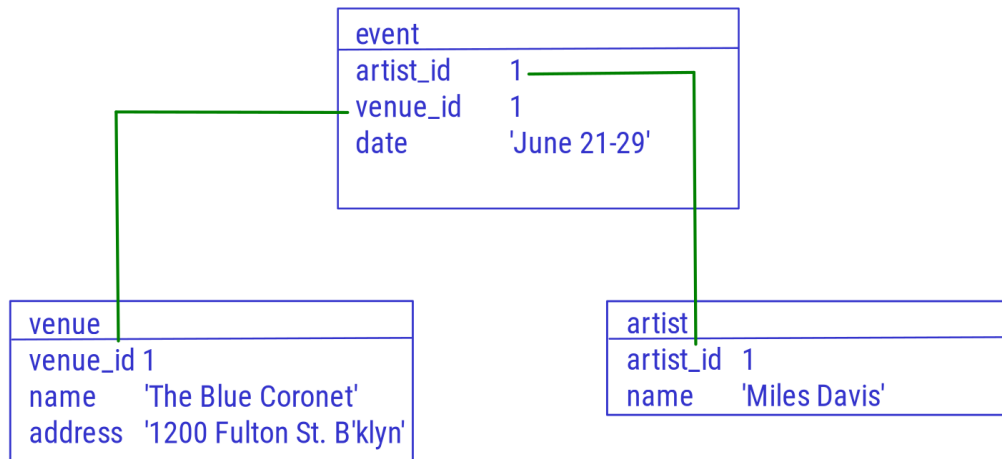
Should the event entity
also have a primary key?



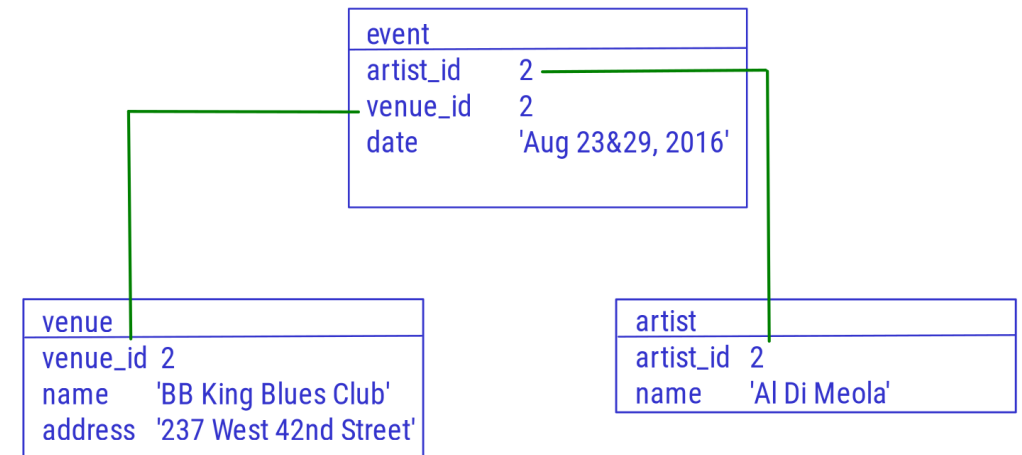
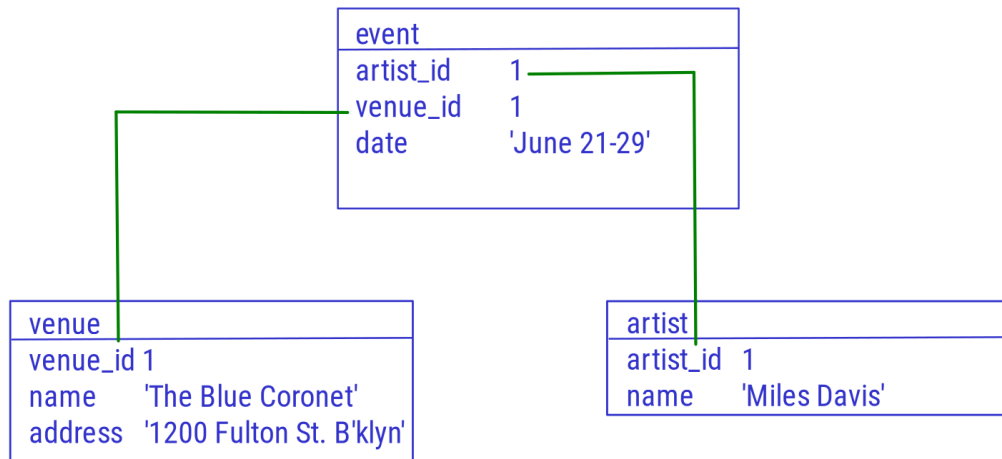
Should the event entity also have a primary key?



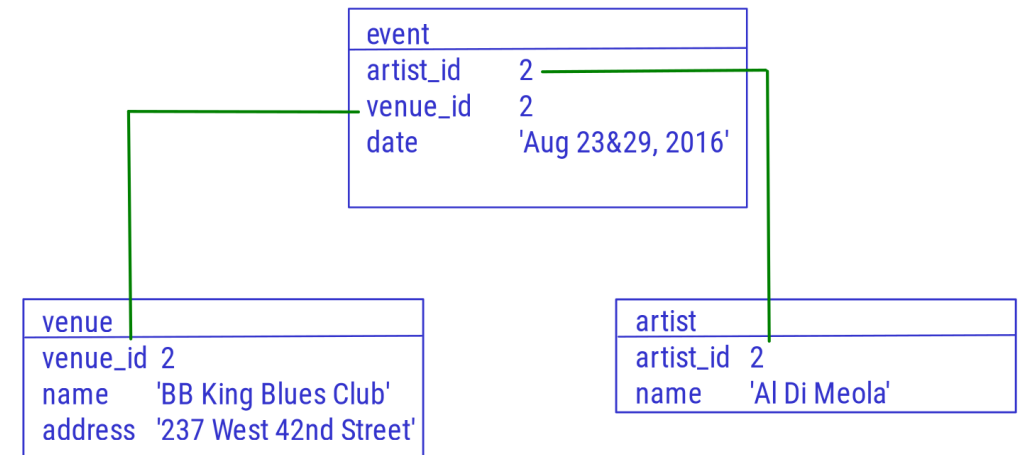
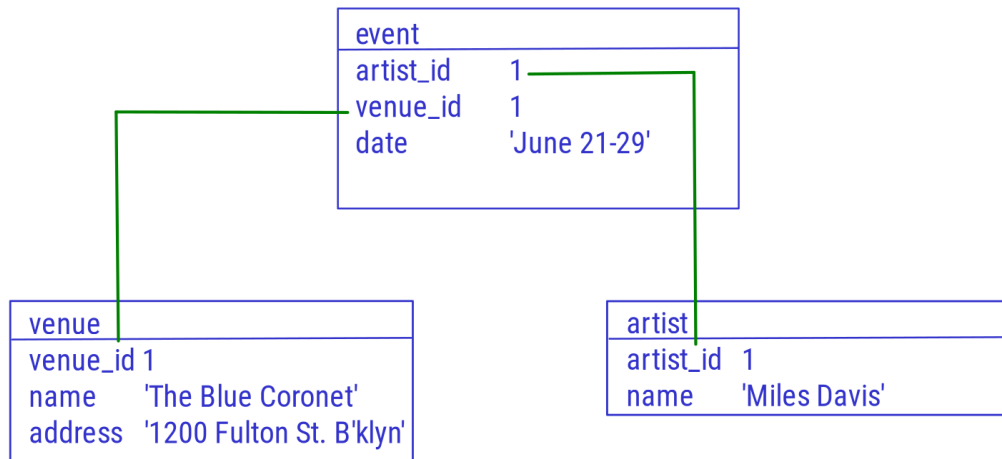
Should the event entity also have a composed primary key?



Should the event entity also have a surrogate primary key?



What about data types?



event	
artist_id	1
venue_id	1
date	'June 21-29'

venue	
id	1
name	'The Blue Coronet'
address	'1200 Fulton St. B"klyn'

artist	
id	1
name	'Miles Davis'

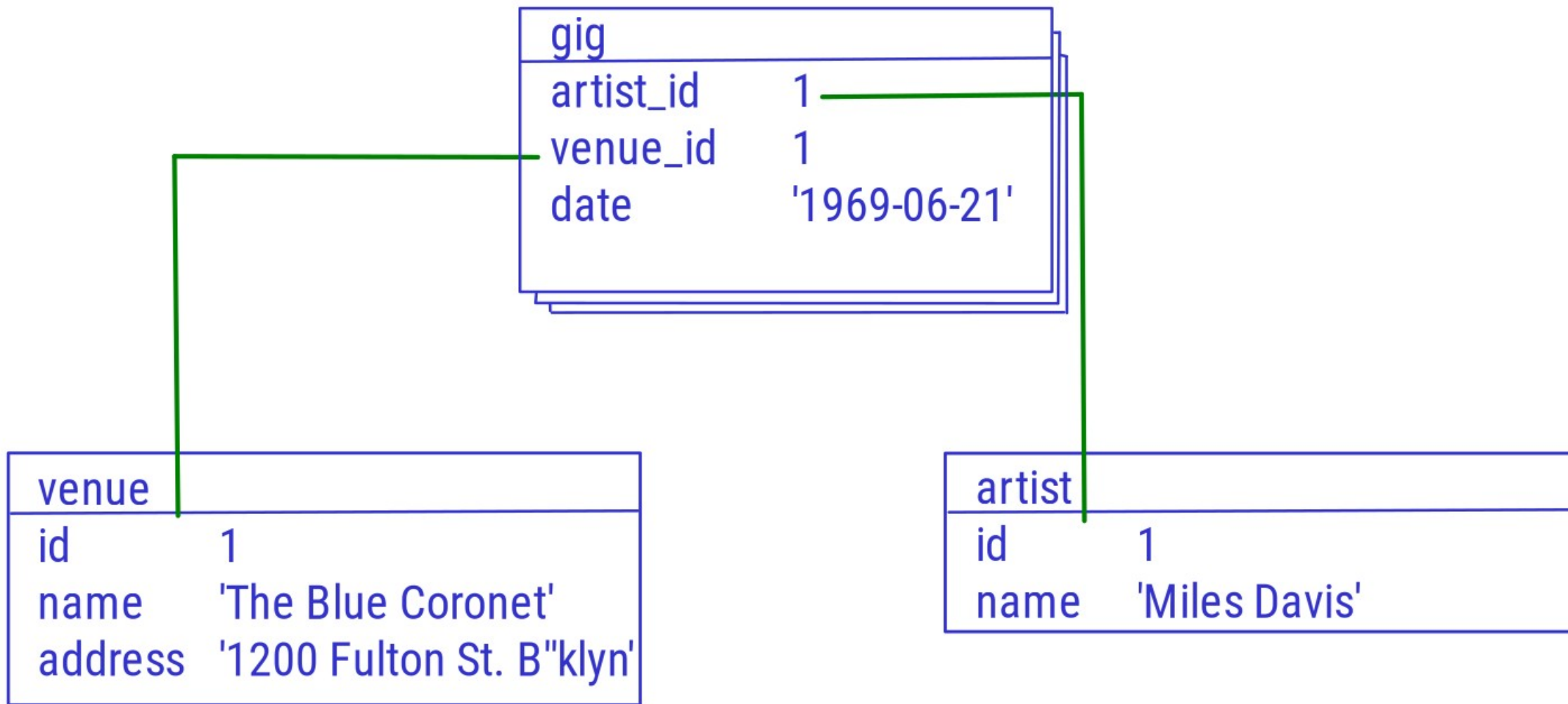


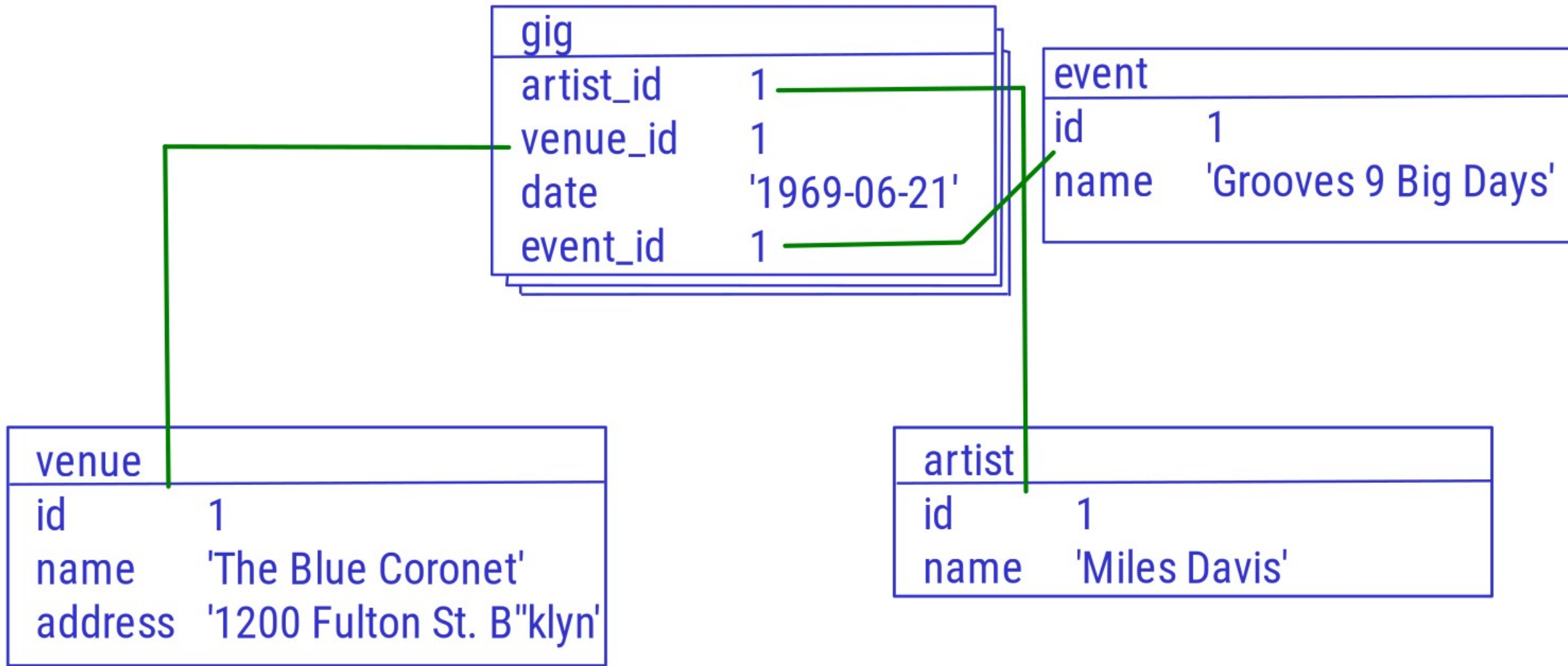
gig	
artist_id	1
venue_id	1
date	'1969-06-21'

venue	
id	1
name	'The Blue Coronet'
address	'1200 Fulton St. B"klyn'

artist	
id	1
name	'Miles Davis'









MILES

"GROOVES"

WITH THE MILES DAVIS QUINTET

9 Big Days

The BLUE CORONET

1200 FULTON ST. B'KLYN

JUNE 21 - 29



electric tour 2016

AL DI MEOLA

elegant gypsy meets romantic warrior

AUGUST 23 & 24, 2016

DOORS: 6PM | SHOW: 8PM

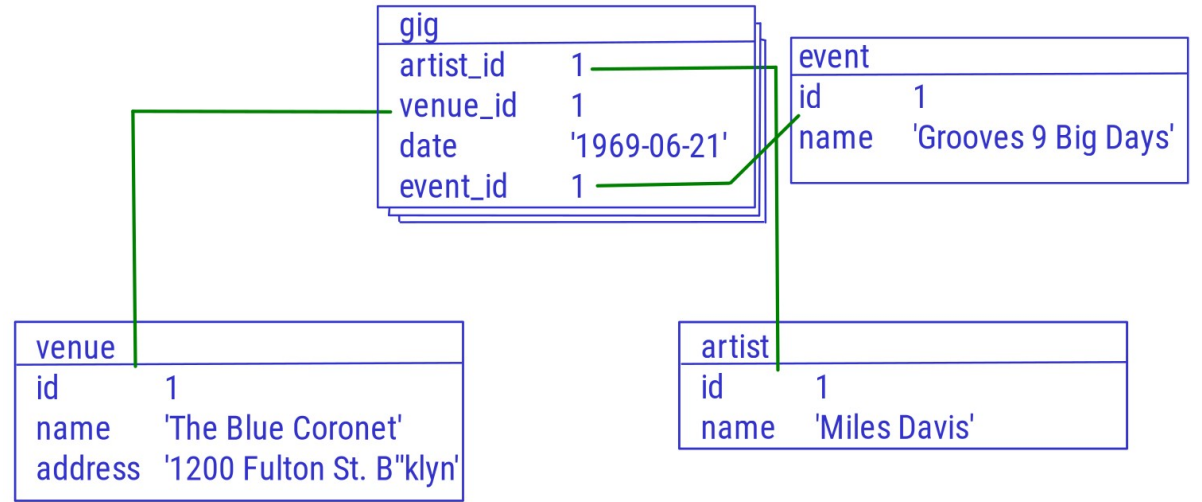
TICKETS AVAILABLE AT THE BB KING BOX OFFICE, TICKETMASTER CHARGE BY PHONE: 1.800.745.3000 OR TICKETMASTER.COM
BBKINGBLUES.COM [f](https://www.facebook.com/bbkingbluesnyc) [t](https://twitter.com/bbkingbluesnyc) [i](https://www.instagram.com/bbkingbluesnyc) [p](https://www.youtube.com/bbkingbluesnyc) /BBKINGBLUESNYC [/BBKINGBLUESCLUBNYC](https://www.youtube.com/bbkingbluesclubnyc)
237 WEST 42ND STREET | TIMES SQUARE | NEW YORK CITY, NY 10036 | 212.997.4144



Show me the code

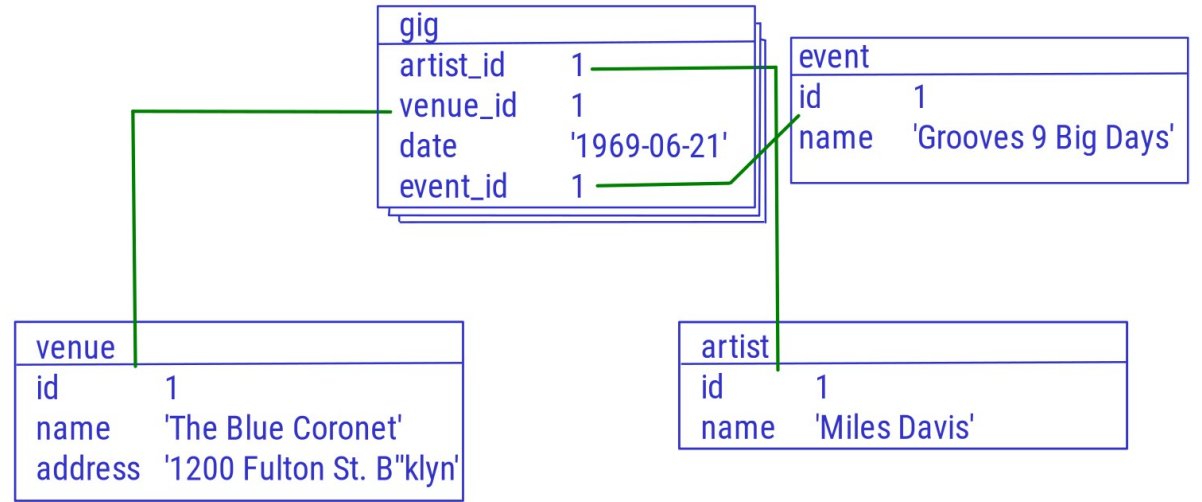


CREATE SCHEMA nycjazz;



```
CREATE SCHEMA nycjazz;
```

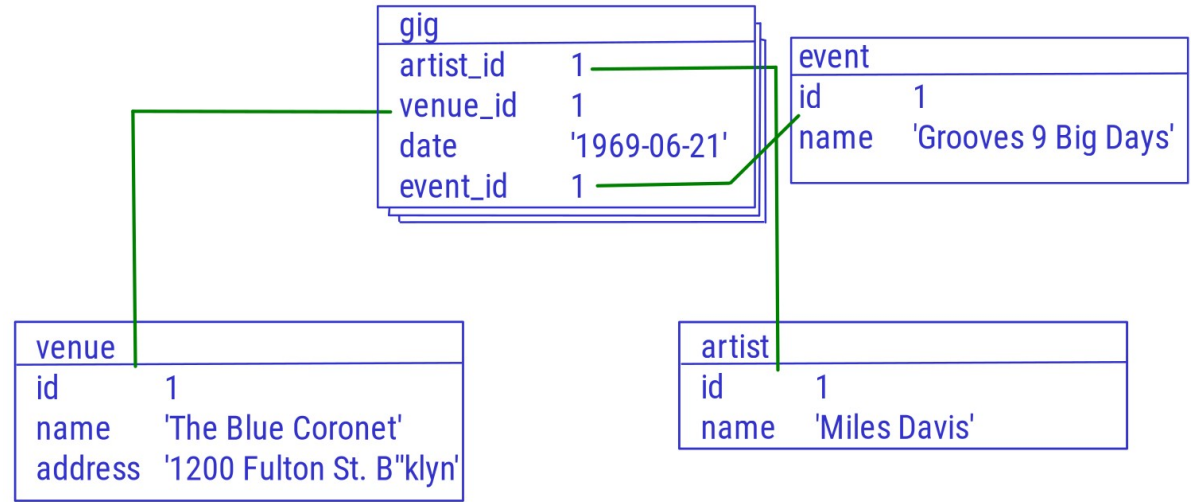
```
CREATE TABLE nycjazz.venues (  
    id          int    PRIMARY KEY  
    , name      text   UNIQUE  
    , address   text  
);
```



```
CREATE SCHEMA nycjazz;
```

```
CREATE TABLE nycjazz.venues (  
    id          int    PRIMARY KEY  
    , name      text   UNIQUE  
    , address   text  
);
```

```
CREATE TABLE nycjazz.artists (  
    id          int    PRIMARY KEY  
    , name      text   UNIQUE  
);
```

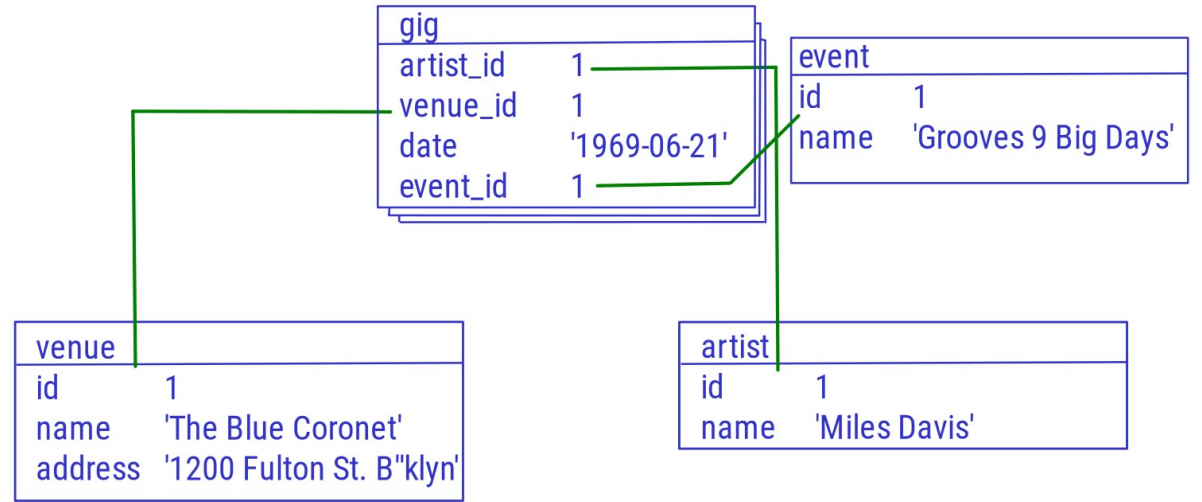


```
CREATE SCHEMA nycjazz;
```

```
CREATE TABLE nycjazz.venues (  
    id          int    PRIMARY KEY  
    , name      text   UNIQUE  
    , address   text  
);
```

```
CREATE TABLE nycjazz.artists (  
    id          int    PRIMARY KEY  
    , name      text   UNIQUE  
);
```

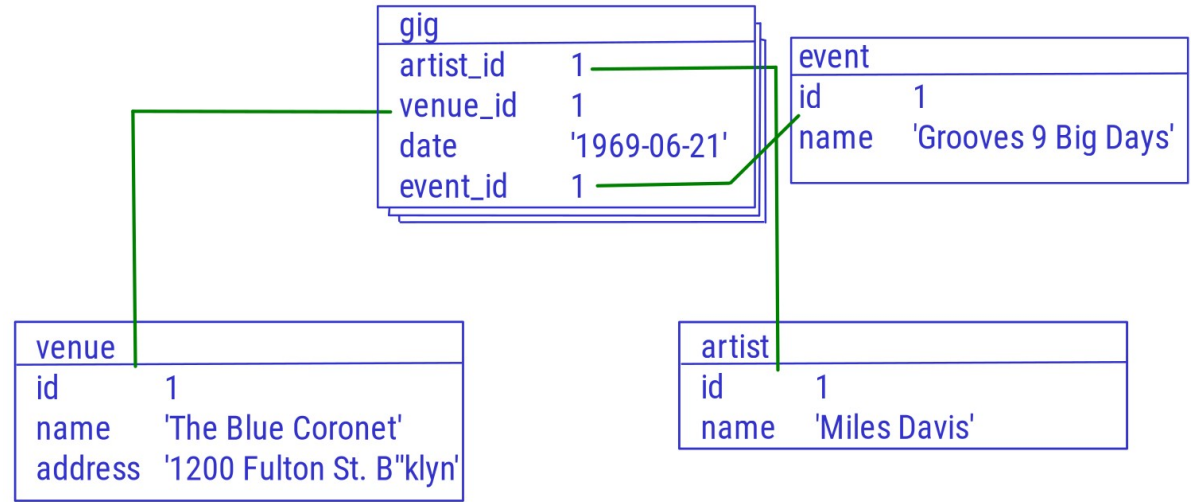
```
CREATE TABLE nycjazz.events (  
    id          int    PRIMARY KEY  
    , name      text   UNIQUE  
);
```



```

CREATE SCHEMA nycjazz;
CREATE TABLE nycjazz.venues (
    id      int    PRIMARY KEY
  , name    text   UNIQUE
  , address text
);
CREATE TABLE nycjazz.artists (
    id      int    PRIMARY KEY
  , name    text   UNIQUE
);
CREATE TABLE nycjazz.events (
    id      int    PRIMARY KEY
  , name    text   UNIQUE
);

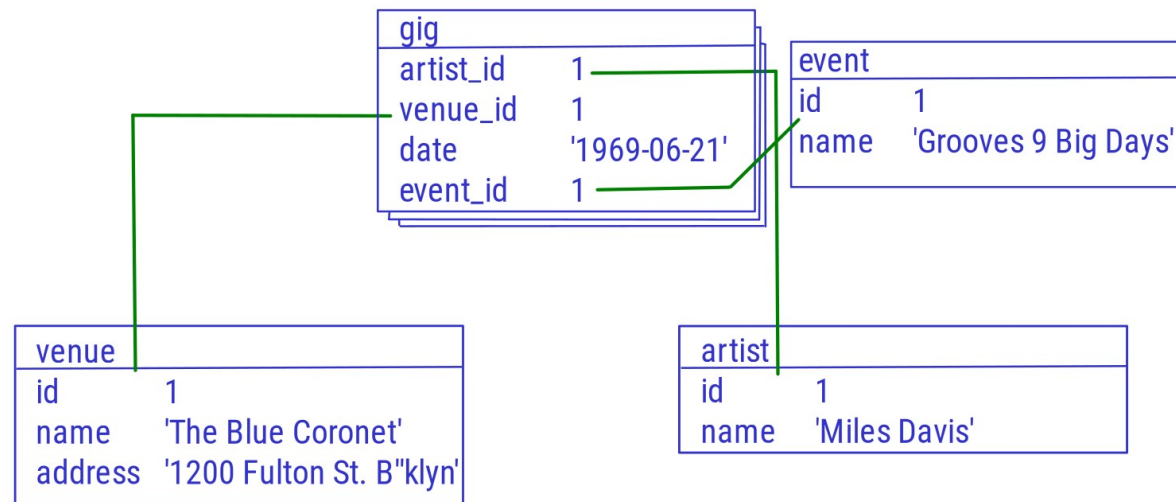
```



```

CREATE SCHEMA nycjazz;
CREATE TABLE nycjazz.venues (
    id      int    PRIMARY KEY
    , name   text   UNIQUE
    , address text
);
CREATE TABLE nycjazz.artists (
    id      int    PRIMARY KEY
    , name   text   UNIQUE
);
CREATE TABLE nycjazz.events (
    id      int    PRIMARY KEY
    , name   text   UNIQUE
);
CREATE TABLE nycjazz.gigs (
    artist_id int    REFERENCES nycjazz.artists(id)
    , venue_id int    REFERENCES nycjazz.venues(id)
    , date     date
    , event_id int    REFERENCES nycjazz.events(id)
);

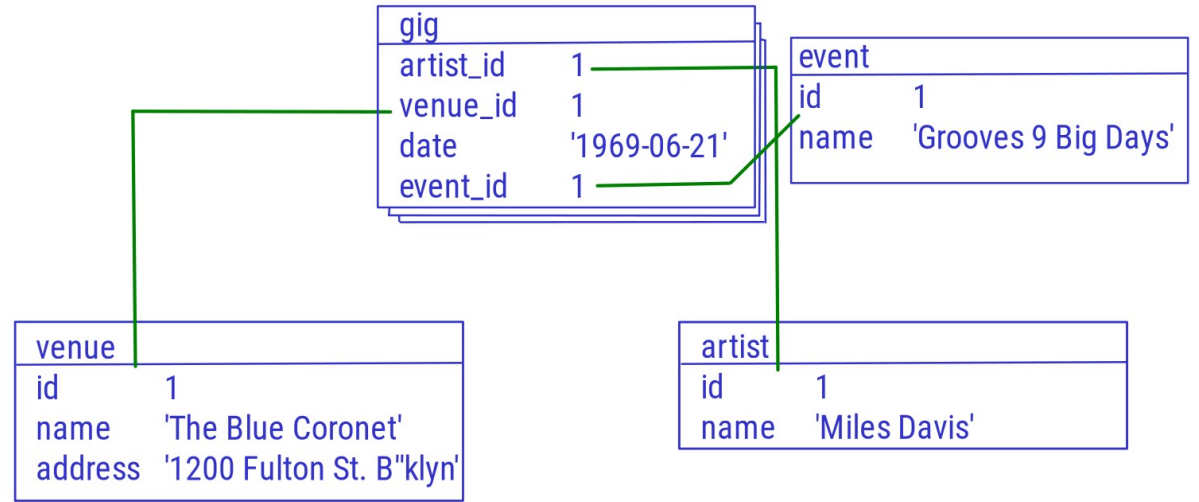
```



```

CREATE SCHEMA nycjazz;
CREATE TABLE nycjazz.venues (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
    , address text
);
CREATE TABLE nycjazz.artists (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
);
CREATE TABLE nycjazz.events (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
);
CREATE TABLE nycjazz.gigs (
    artist_id int    REFERENCES nycjazz.artists(id)
    , venue_id int    REFERENCES nycjazz.venues(id)
    , date     date
    , event_id int    REFERENCES nycjazz.events(id)
);

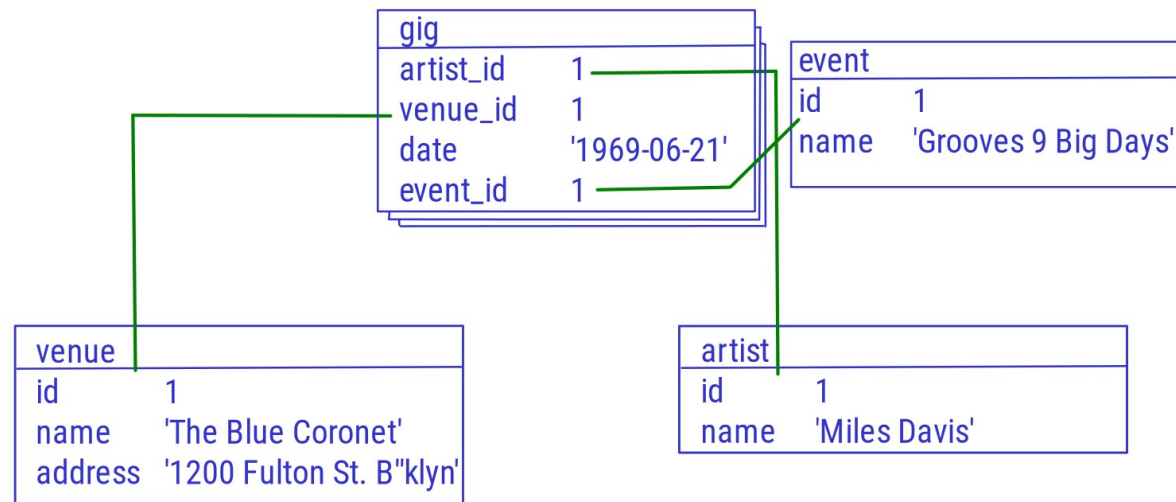
```



```

CREATE SCHEMA nycjazz;
CREATE TABLE nycjazz.venues (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
    , address text
);
CREATE TABLE nycjazz.artists (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
);
CREATE TABLE nycjazz.events (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
);
CREATE TABLE nycjazz.gigs (
    artist_id int    REFERENCES nycjazz.artists(id) NOT NULL
    , venue_id int    REFERENCES nycjazz.venues(id)  NOT NULL
    , date     date
    , event_id int    REFERENCES nycjazz.events(id)
);

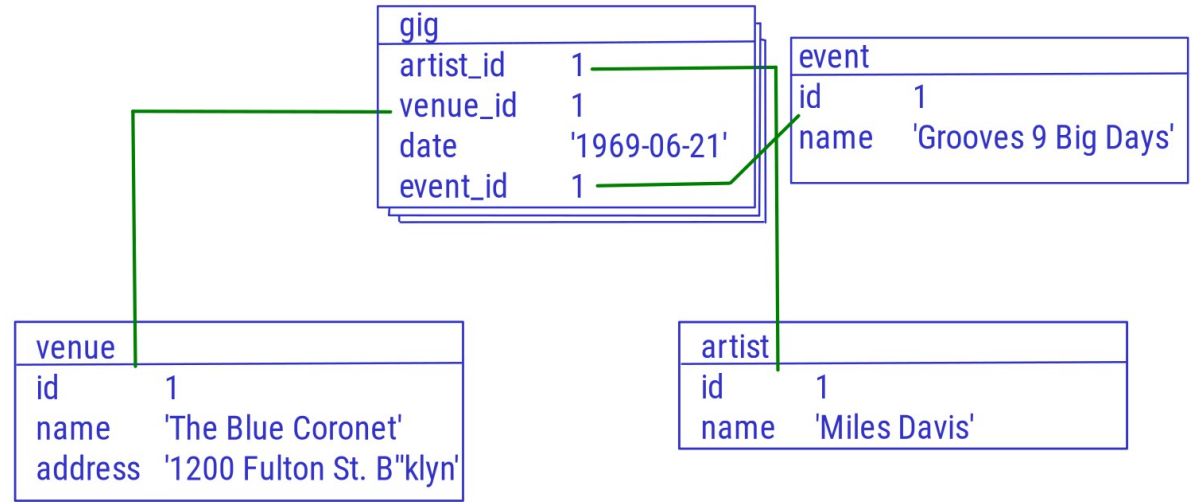
```




```

CREATE SCHEMA nycjazz;
CREATE TABLE nycjazz.venues (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
    , address text
);
CREATE TABLE nycjazz.artists (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
);
CREATE TABLE nycjazz.events (
    id      int    PRIMARY KEY
    , name   text   UNIQUE NOT NULL
);
CREATE TABLE nycjazz.gigs (
    artist_id int    REFERENCES nycjazz.artists(id) NOT NULL
    , venue_id int    REFERENCES nycjazz.venues(id)  NOT NULL
    , date     date   NOT NULL
    , event_id int    REFERENCES nycjazz.events(id)
);

```



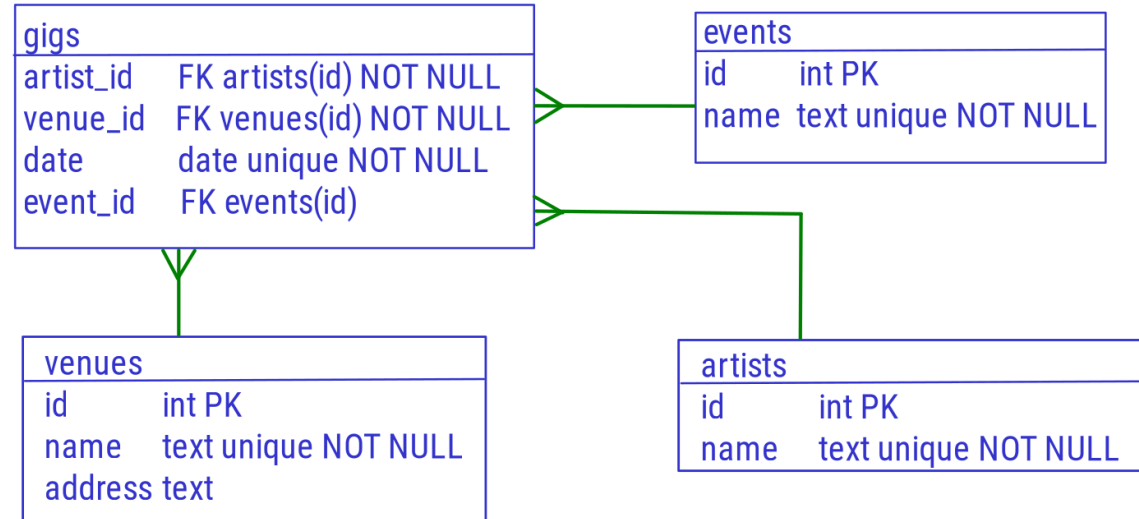
```
CREATE SCHEMA nycjazz;  
CREATE TABLE nycjazz.venues (  
    id        int    PRIMARY KEY  
    , name    text   UNIQUE NOT NULL  
    , address text  
);  
CREATE TABLE nycjazz.artists (  
    id        int    PRIMARY KEY  
    , name    text   UNIQUE NOT NULL  
);  
CREATE TABLE nycjazz.events (  
    id        int    PRIMARY KEY  
    , name    text   UNIQUE NOT NULL  
);  
CREATE TABLE nycjazz.gigs (  
    artist_id int    REFERENCES nycjazz.artists(id) NOT NULL  
    , venue_id int    REFERENCES nycjazz.venues(id)  NOT NULL  
    , date     date   NOT NULL  
    , event_id int    REFERENCES nycjazz.events(id)  
);
```

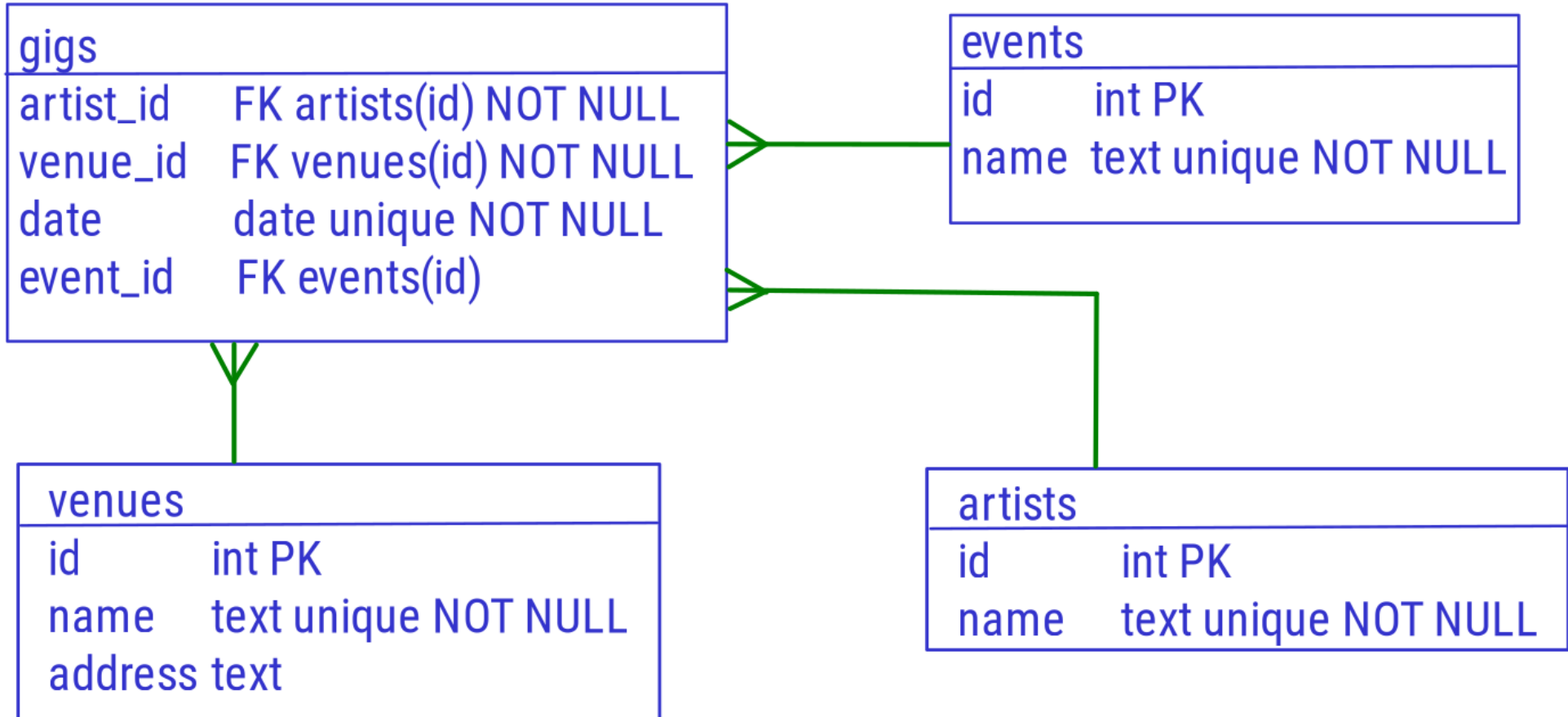


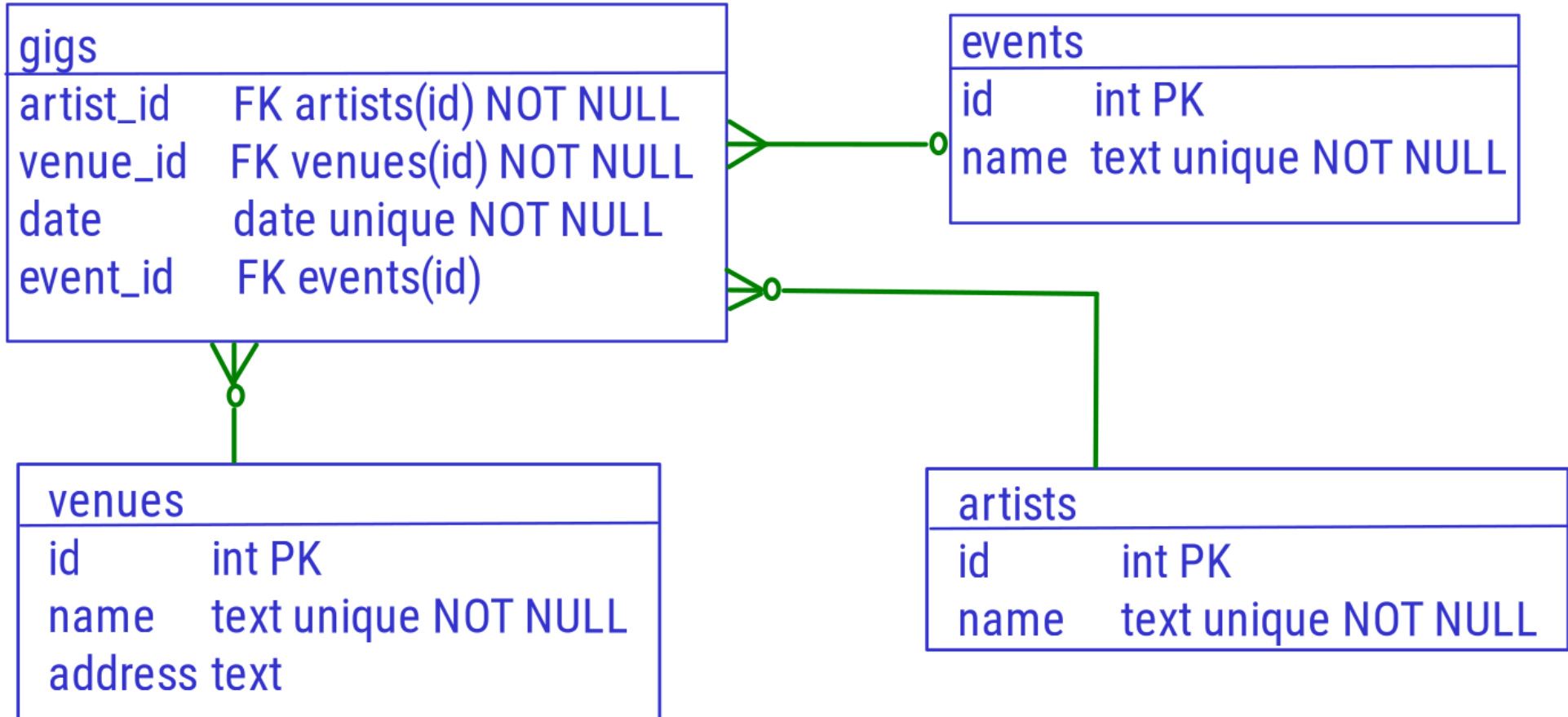
```

CREATE SCHEMA nycjazz;
CREATE TABLE nycjazz.venues (
    id      int    PRIMARY KEY
  , name    text  UNIQUE NOT NULL
  , address text
);
CREATE TABLE nycjazz.artists (
    id      int    PRIMARY KEY
  , name    text  UNIQUE NOT NULL
);
CREATE TABLE nycjazz.events (
    id      int    PRIMARY KEY
  , name    text  UNIQUE NOT NULL
);
CREATE TABLE nycjazz.gigs (
    artist_id int    REFERENCES nycjazz.artists(id) NOT NULL
  , venue_id  int    REFERENCES nycjazz.venues(id)  NOT NULL
  , date      date   NOT NULL
  , event_id  int    REFERENCES nycjazz.events(id)
);

```





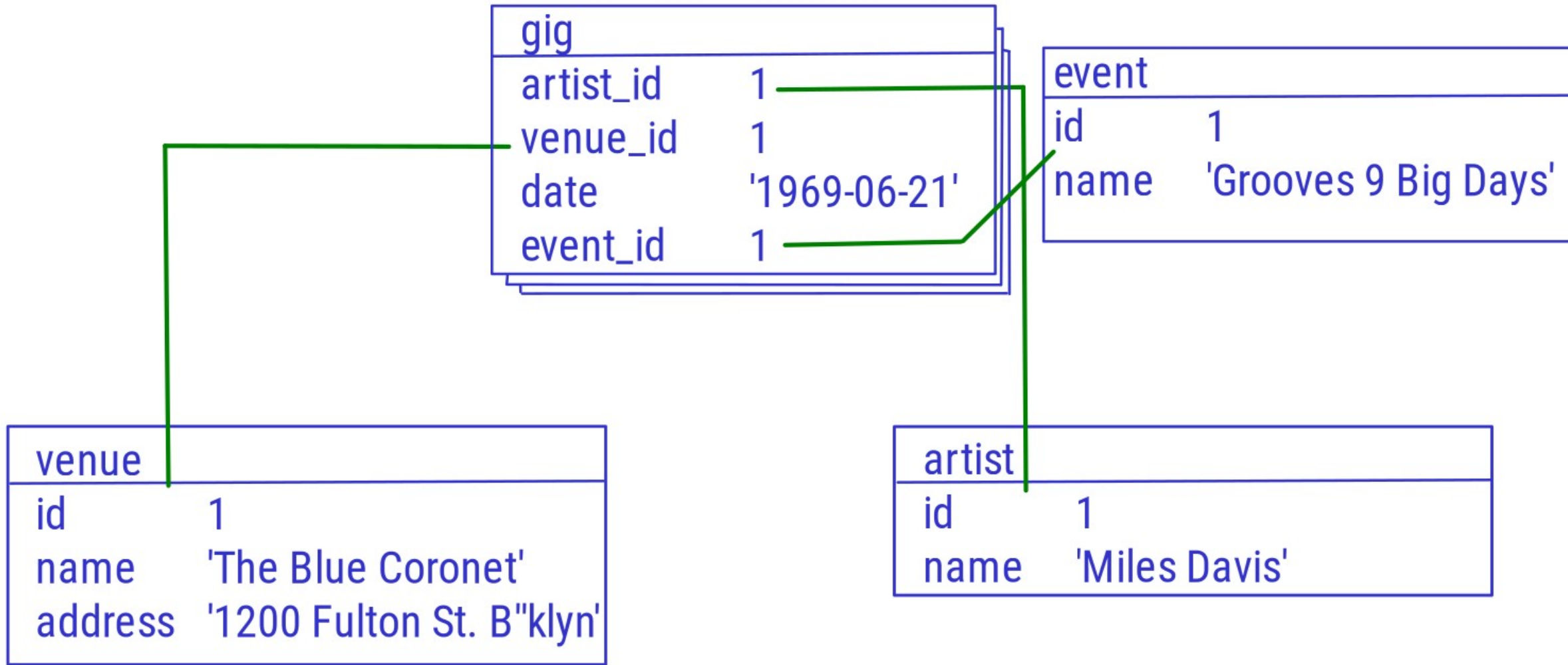


What about addresses?



What about addresses?
What about maps?





venues

id int PK

name text unique NOT NULL

street text

number text

postcode text

locality borough



```
CREATE TYPE borough
AS ENUM (
    'Manhattan'
  , 'Brooklyn'
  , 'Queens'
  , 'The Bronx'
  , 'Staten Island'
);
```

venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough



```
CREATE TYPE borough
AS ENUM (
    'Manhattan'
    , 'Brooklyn'
    , 'Queens'
    , 'The Bronx'
    , 'Staten Island'
);
```

venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough



```
CREATE TYPE borough
AS ENUM (
    'Manhattan'
    , 'Brooklyn'
    , 'Queens'
    , 'The Bronx'
    , 'Staten Island'
);
```

venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough



```
INSERT INTO nycjazz.venues VALUES
(1, 'The Blue Coronet', 'Fulton St', '1200', NULL, 'B' 'KLYN');
```



```
CREATE TYPE borough
AS ENUM (
    'Manhattan'
    , 'Brooklyn'
    , 'Queens'
    , 'The Bronx'
    , 'Staten Island'
);
```

venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough



```
INSERT INTO nycjazz.venues VALUES
(1, 'The Blue Coronet', 'Fulton St', '1200', NULL, 'B' 'KLYN');
```

```
ERROR:  invalid input value for enum borough: "B'KLYN"
LINE 2: ...1, 'The Blue Coronet', 'Fulton St', '1200', NULL, 'B' 'KLYN')
                                     ^
```



```
CREATE TYPE borough
AS ENUM (
    'Manhattan'
    , 'Brooklyn'
    , 'Queens'
    , 'The Bronx'
    , 'Staten Island'
);
```

venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough



```
INSERT INTO nycjazz.venues VALUES
(1, 'The Blue Coronet', 'Fulton St', '1200', NULL, 'Brooklyn');
```



```
CREATE TYPE borough
AS ENUM (
    'Manhattan'
    , 'Brooklyn'
    , 'Queens'
    , 'The Bronx'
    , 'Staten Island'
);
```

venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough



```
INSERT INTO nycjazz.venues VALUES
(1, 'The Blue Coronet', 'Fulton St', '1200', NULL, 'Brooklyn');
INSERT 0 1
```



What about history of the venues?



venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough



venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough
active	boolean
open	date
close	date



venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough
active	boolean
from_to	daterange



venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough
active	boolean
from_to	daterange

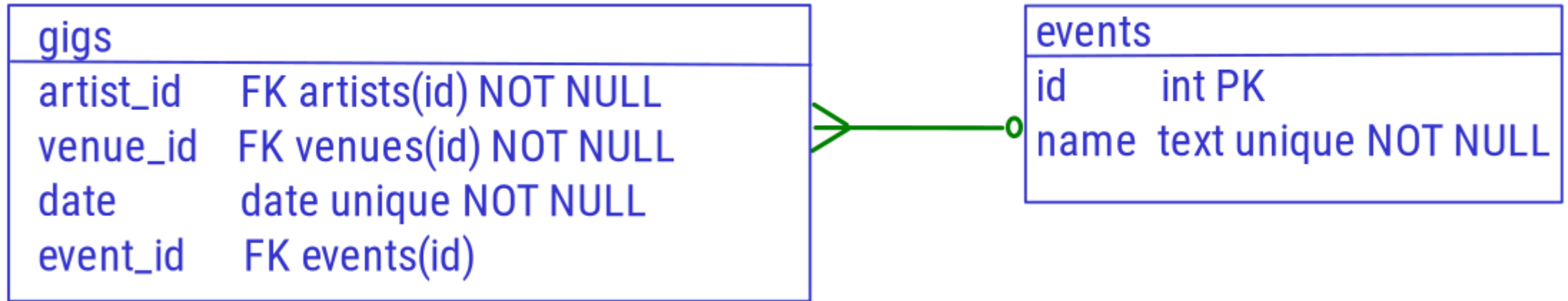


venue_periods	
venue_id	FK venues(id) NOT NULL
from_to	daterange NOT NULL
active	boolean NOT NULL
description	text NOT NULL



Let's get back to events vs gigs





gigs	
artist_id	FK artists(id) NOT NULL
venue_id	FK venues(id) NOT NULL
date	date unique NOT NULL
event_id	FK events(id)



events	
id	int PK
name	text unique NOT NULL

WED OCT 01

SMALLS

6:00 PM & 7:30 PM

CHET DOXAS SEXTET -
CEREMONIAL

MEZZROW

6:00 PM & 7:30 PM

VITO LESCZAK TRIO

SMALLS

9:00 PM & 10:30 PM

DAVID AMBROSIO QUINTET

MEZZROW

9:00 PM & 10:30 PM

DANNY TOBIAS TRIO

MEZZROW

11:30 PM - 12:45 AM

VINYL AFTER HOURS

SMALLS

11:45 PM - 4:00 AM



gigs	
artist_id	FK artists(id) NOT NULL
venue_id	FK venues(id) NOT NULL
date	date unique NOT NULL
event_id	FK events(id)

events	
id	int PK
name	text unique NOT NULL



```
ALTER TABLE nycjazz.gigs
ALTER COLUMN date
TYPE timestamptz;
```

WED OCT 01

SMALLS

6:00 PM & 7:30 PM

CHET DOXAS SEXTET -
CEREMONIAL

MEZZROW

6:00 PM & 7:30 PM

VITO LESCHAK TRIO

SMALLS

9:00 PM & 10:30 PM

DAVID AMBROSIO QUINTET

MEZZROW

9:00 PM & 10:30 PM

DANNY TOBIAS TRIO

MEZZROW

11:30 PM - 12:45 AM

VINYL AFTER HOURS

SMALLS

11:45 PM - 4:00 AM



gigs	
artist_id	FK artists(id) NOT NULL
venue_id	FK venues(id) NOT NULL
date	date unique NOT NULL
event_id	FK events(id)

events	
id	int PK
name	text unique NOT NULL



```
ALTER TABLE nycjazz.gigs
ALTER COLUMN date
TYPE timestamptz;
```

```
ALTER TABLE nycjazz.gigs
RENAME COLUMN date TO ts;
```

WED OCT 01

SMALLS

6:00 PM & 7:30 PM

CHET DOXAS SEXTET -
CEREMONIAL

MEZZROW

6:00 PM & 7:30 PM

VITO LESZAK TRIO

SMALLS

9:00 PM & 10:30 PM

DAVID AMBROSIO QUINTET

MEZZROW

9:00 PM & 10:30 PM

DANNY TOBIAS TRIO

MEZZROW

11:30 PM - 12:45 AM

VINYL AFTER HOURS

SMALLS

11:45 PM - 4:00 AM



gigs	
artist_id	FK artists(id) NOT NULL
venue_id	FK venues(id) NOT NULL
ts	timestampz unique NOT NULL
event_id	FK events(id)

events	
id	int PK
name	text unique NOT NULL



```
ALTER TABLE nycjazz.gigs
ALTER COLUMN date
TYPE timestampz;
```

```
ALTER TABLE nycjazz.gigs
RENAME COLUMN date TO ts;
```

WED OCT 01

SMALLS

6:00 PM & 7:30 PM

CHET DOXAS SEXTET -
CEREMONIAL

MEZZROW

6:00 PM & 7:30 PM

VITO LESCHAK TRIO

SMALLS

9:00 PM & 10:30 PM

DAVID AMBROSIO QUINTET

MEZZROW

9:00 PM & 10:30 PM

DANNY TOBIAS TRIO

MEZZROW

11:30 PM - 12:45 AM

VINYL AFTER HOURS

SMALLS

11:45 PM - 4:00 AM



Who was playing in Miles Davis Quintet?



Who was playing in Miles Davis Quintet?



gig	
artist_id	1
venue_id	1
date	'1969-06-21'
event_id	1

event	
id	1
name	'Grooves 9 Big Days'

venue	
id	1
name	'The Blue Coronet'
address	'1200 Fulton St. B"klyn'

artist	
id	1
name	'Miles Davis'

gig	
artist_id	1
venue_id	1
date	'1969-06-21'
event_id	1

event	
id	1
name	'Grooves 9 Big Days'

venue	
id	1
name	'The Blue Coronet'
address	'1200 Fulton St. B"klyn'

artist	
id	1
name	'Miles Davis'

artist	
id	42
name	'John Coltrane'

gig	
artist_id	1
venue_id	1
date	'1969-06-21'
event_id	1
featuring	[42]

event	
id	1
name	'Grooves 9 Big Days'

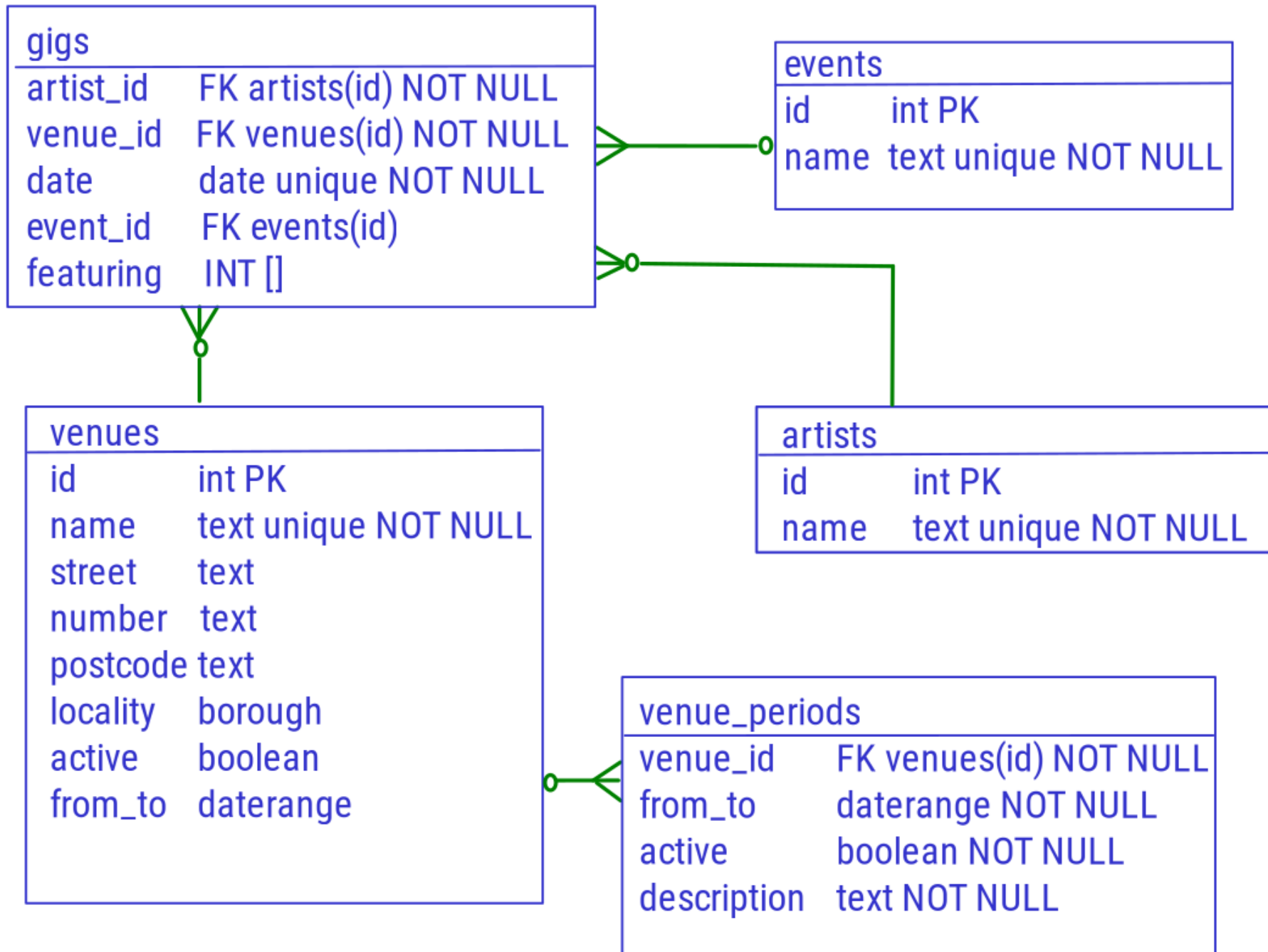
venue	
id	1
name	'The Blue Coronet'
address	'1200 Fulton St. B"klyn'

artist	
id	1
name	'Miles Davis'

artist	
id	42
name	'John Coltrane'

Give me all the venues where
John Coltrane played

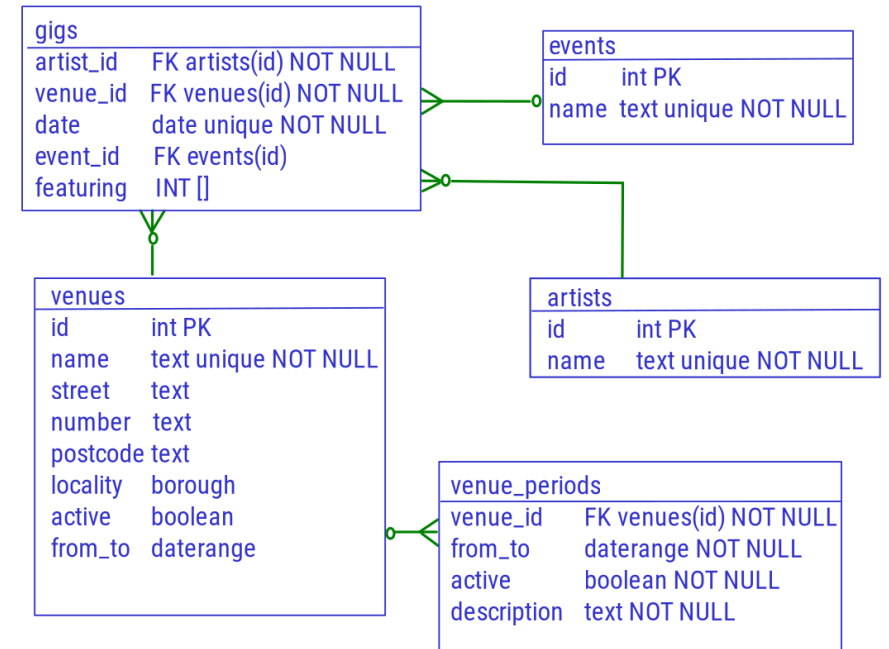




```

WITH the_artist AS (
    SELECT id FROM nycjazz.artists
    WHERE name='John Coltrane'
)

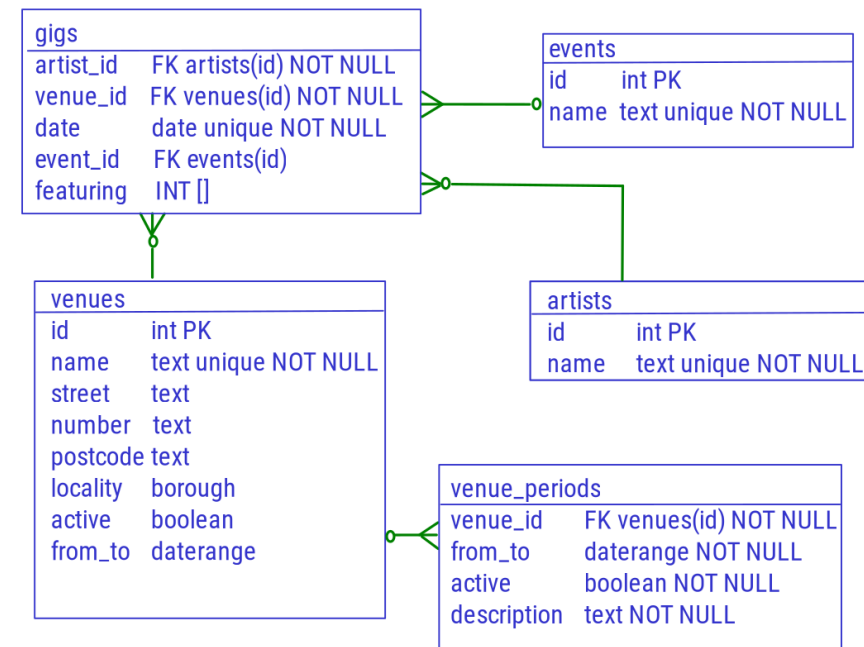
```



```

WITH the_artist AS (
    SELECT id FROM nycjazz.artists
    WHERE name='John Coltrane'
)
SELECT v.name
FROM nycjazz.venues v
JOIN nycjazz.gigs g ON v.id = g.venue_id
JOIN the_artist a
    ON g.artist_id = a.id
    OR g.featuring @> ARRAY[a.id];

```

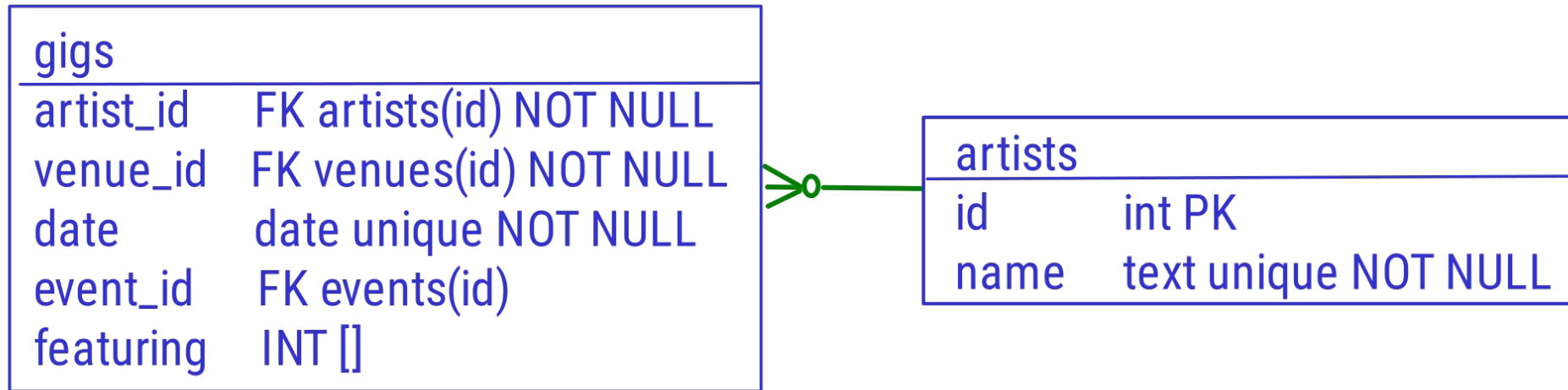


The Savoy Ballroom



The Savoy Ballroom





gig	
artist_id	101
venue_id	142
date	'1946-05-11'
event_id	NULL
featuring	[303, 307]

artist	
id	101
name	'Battle of the Bands'

venue	
id	142
name	'Savoy Ballroom'
street	'140-141th Street, Harlem'
locality	'Manhattan'
active	false
from_to	'[1926-03-12, 1958-07-10]'

artist	
id	307
name	'Dizzy Gillespie'

artist	
id	303
name	'Chick Webb'



gig	
artist_id	111
venue_id	142
date	'1946-05-13'
event_id	NULL
featuring	[440, 309]

artist	
id	111
name	'Cutting Contest'

venue	
id	142
name	'Savoy Ballroom'
street	'140-141th Street, Harlem'
locality	'Manhattan'
active	false
from_to	'[1926-03-12, 1958-07-10]'

artist	
id	440
name	'Willy "The Lion" Smith'

artist	
id	309
name	'Luckey Roberts'



This also solves Jam Sessions



This also solves Jam Sessions

WED OCT 01

SMALLS

6:00 PM & 7:30 PM

CHET DOXAS SEXTET -
CEREMONIAL

MEZZROW

6:00 PM & 7:30 PM

VITO LESZAK TRIO

SMALLS

9:00 PM & 10:30 PM

DAVID AMBROSIO QUINTET

MEZZROW

9:00 PM & 10:30 PM

DANNY TOBIAS TRIO

MEZZROW

11:30 PM - 12:45 AM

VINYL AFTER HOURS

SMALLS

11:45 PM - 4:00 AM

JAM SESSION HOSTED BY
CARLOS ABADIE



gig	
artist_id	54
venue_id	1666
date	'2025-10-31'
event_id	NULL
featuring	[234, 27, 987]

artist	
id	54
name	'Jam Session'

venue	
id	1666
name	'Smalls Jazz Club'
street	'183 West 10th Street'
locality	'Manhattan'
active	true
from_to	'[1994-01-01, infinity]'

artist	
id	27
name	'Aneesa Strings'

artist	
id	234
name	'Savannah Harris'

artist	
id	987
name	'Nicole Glover'



Reviews and Articles

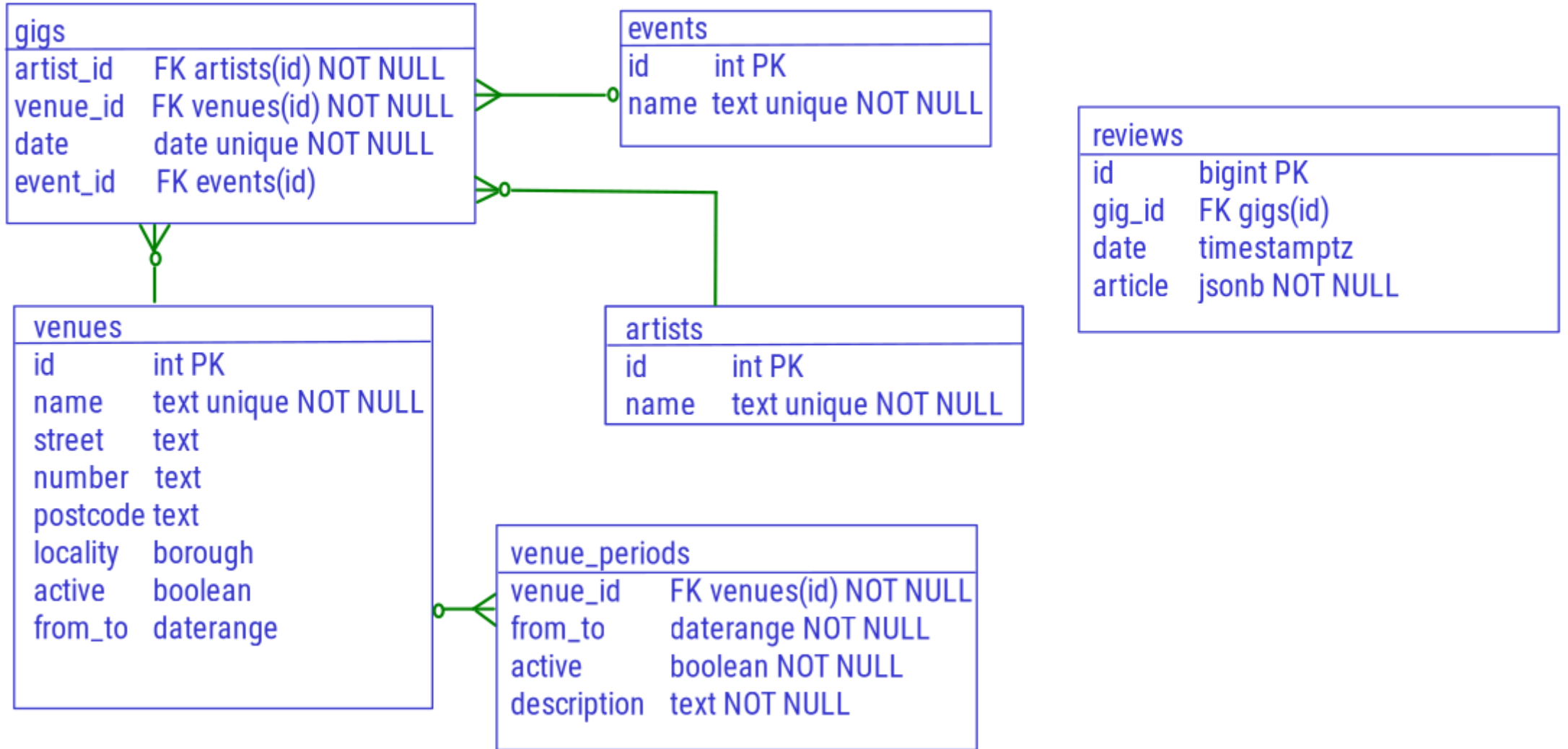


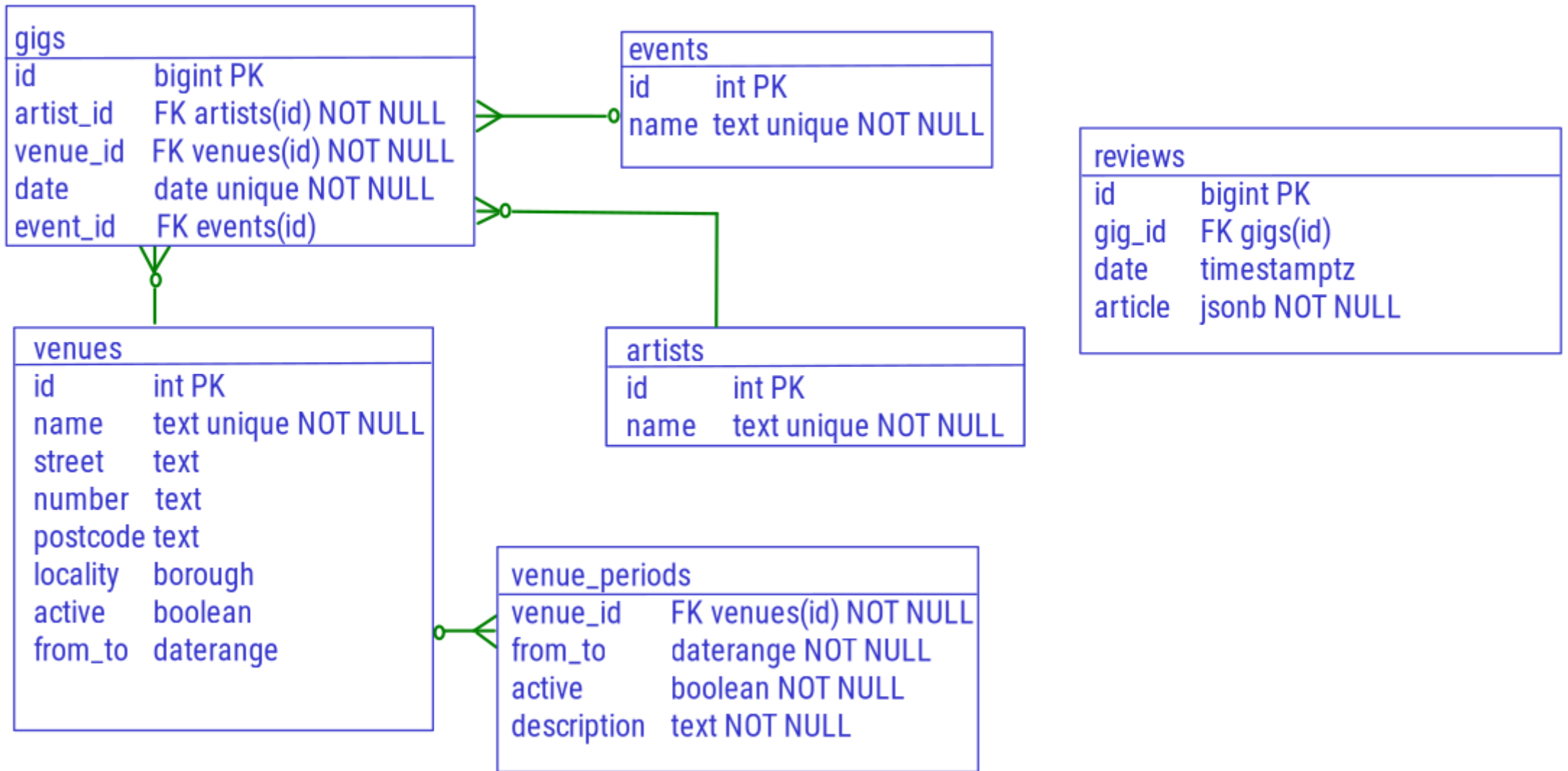
Title: "That Jam Session didn't Jam"
Date: "2025-09-12"
Score: "1 crumble cookie"
Venue: "The Dark Elephant"
Article: "The music was too heavy and
evil, I even so people headbanging... What
was that!?"



```
Id      1
Gig     666
Article '{ "Title": "That Jam Session didn't Jam",
           "Date": "2025-09-12",
           "Score": "1 crumble cookie"
           "Venue": "The Dark Elephant"
           "Article": "The music was too heavy and
                       evil, I even so people
                       headbanging... What was that!?" }'
```







What about the following event?





gigs	
id	bigint PK
artist_id	FK artists(id) NOT NULL
venue_id	FK venues(id) NOT NULL
date	date unique NOT NULL
event_id	FK events(id)

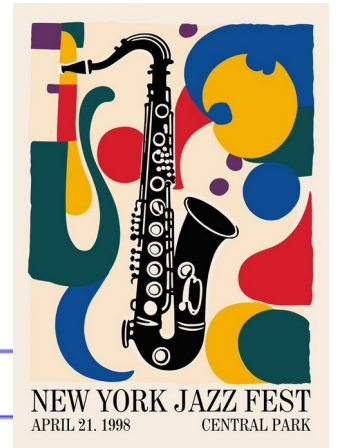
events	
id	int PK
name	text unique NOT NULL

reviews	
id	bigint PK
gig_id	FK gigs(id)
date	timestamp tz
article	jsonb NOT NULL

venues	
id	int PK
name	text unique NOT NULL
street	text
number	text
postcode	text
locality	borough
active	boolean
from_to	daterange

artists	
id	int PK
name	text unique NOT NULL

venue_periods	
venue_id	FK venues(id) NOT NULL
from_to	daterange NOT NULL
active	boolean NOT NULL
description	text NOT NULL



Closing Words



Data Modeling to Study New York Jazz Scene



Data Modeling to Study Any Topic



Data Modeling to Study Nearly Any Topic



Data Modeling to Study Nearly Any Topic

Start with the use case



Data Modeling to Study Nearly Any Topic

Start with the use case

The Entity Relationship Diagram
should give a lot of information



Data Modeling to Study Nearly Any Topic

Start with the use case

The Entity Relationship Diagram
should give a lot of information

Apply design principles



Data Modeling to Study Nearly Any Topic

Start with the use case

The Entity Relationship Diagram
should give a lot of information

Apply design principles

Choose the most suitable data type



Data Modeling to Study Nearly Any Topic

Start with the use case

The Entity Relationship Diagram
should give a lot of information

Apply design principles

Choose the most suitable data type

Postgres gives you a lot of
guarantees and flexibility



Thank You



@tchorix@mastodon.world



[@tchorix.bsky.social](https://bsky.social/@tchorix)



linkedin.com/in/boriss-mejías-4637401



github.com/bmejias

