PSTAT 10 Worksheet 7

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2024-07-18

```
library(RSQLite)
library(sqldf)
```

```
## Loading required package: gsubfn
```

```
## Loading required package: proto
```

```
library(DBI)
chinook_db <- dbConnect(SQLite(), "Chinook_Sqlite.sqlite")
dbExecute(chinook_db, "pragma foreign_keys = on")
```

```
## [1] 0
```

Problem 1: Terminology

#Primary keys must be unique (and not NULL) #Foreign keys must reference existing primary keys or be NULLr we are working with a relational database, following a relational data model.

1. Briefly explain the purpose of primary keys and foreign keys in a relational database.

The difference between two keys create constraints which enforce the integrity of a database

2. Briefly explain how relational databases model real world data.

Relational databases organize information into tables to make it easier understand how different data structures relate to each other.

3. Briefly explain the difference between SQL, SQLite, and RSQLite.

SQL is a language designed to create, read data from, and write data to relational databases. SQLite is designed for simple applications and it's provided by the RSQLite package in R.

Problem 2: Foreign keys

```
db_table <- dbListTables(chinook_db)
for (i in seq_along(db_table)){
  print(dbGetQuery(chinook_db, paste0("pragma foreign_key_list(", db_table[i], ")")))
}
```

```
##   id seq  table     from       to on_update on_delete match
## 1  0   0 Artist ArtistId ArtistId NO ACTION NO ACTION  NONE
## [1] id        seq       table     from      to        on_update on_delete
## [8] match
## <0 rows> (or 0-length row.names)
##   id seq    table         from         to on_update on_delete match
## 1  0   0 Employee SupportRepId EmployeeId NO ACTION NO ACTION  NONE
##   id seq    table      from         to on_update on_delete match
## 1  0   0 Employee ReportsTo EmployeeId NO ACTION NO ACTION  NONE
## [1] id        seq       table     from      to        on_update on_delete
## [8] match
## <0 rows> (or 0-length row.names)
##   id seq    table       from         to on_update on_delete match
## 1  0   0 Customer CustomerId CustomerId NO ACTION NO ACTION  NONE
##   id seq   table      from        to on_update on_delete match
## 1  0   0   Track   TrackId   TrackId NO ACTION NO ACTION  NONE
## 2  1   0 Invoice InvoiceId InvoiceId NO ACTION NO ACTION  NONE
## [1] id        seq       table     from      to        on_update on_delete
## [8] match
## <0 rows> (or 0-length row.names)
## [1] id        seq       table     from      to        on_update on_delete
## [8] match
## <0 rows> (or 0-length row.names)
##   id seq    table       from         to on_update on_delete match
## 1  0   0    Track    TrackId    TrackId NO ACTION NO ACTION  NONE
## 2  1   0 Playlist PlaylistId PlaylistId NO ACTION NO ACTION  NONE
##   id seq     table        from          to on_update on_delete match
## 1  0   0 MediaType MediaTypeId MediaTypeId NO ACTION NO ACTION  NONE
## 2  1   0     Genre     GenreId     GenreId NO ACTION NO ACTION  NONE
## 3  2   0     Album     AlbumId     AlbumId NO ACTION NO ACTION  NONE
```

1. Album.ArtistId -> Artist.ArtistId
2. Customer.SupportRepId -> Employee.EmployeeId
3. Employee.ReportsTo -> Employee.EmployeeId
4. Invoice.CustomerId -> Customer.CustomerId
5. InvoiceLine.TrackId -> Track.TrackId
6. InvoiceLine.InvoiceId -> Invoice.InvoiceId
7. PlaylistTrack.TrackId -> Track.TrackId
8. PlaylistTrack.PlaylistId -> Playlist.PlaylistId
9. Track.MediaTypeId -> MediaType.MediaTypeId

10. Track.GenreId -> Genre.GenreId
11. Track.AlbumId -> Album.AlbumId

Problem 3: Customer

1. Select the CustomerId, FirstName, LastName, State, Country of all customers living in California.

```
dbGetQuery(chinook_db, "select CustomerId, FirstName, LastName, State, country from customer where State
```

```
##   CustomerId FirstName LastName State Country
## 1         16     Frank   Harris    CA     USA
## 2         19       Tim    Goyer    CA     USA
## 3         20       Dan   Miller    CA     USA
```

2. How many customers are from Brazil?

```
dbGetQuery(chinook_db, "select count(*) from customer where Country = 'Brazil'")
```

```
##   count(*)
## 1        5
```