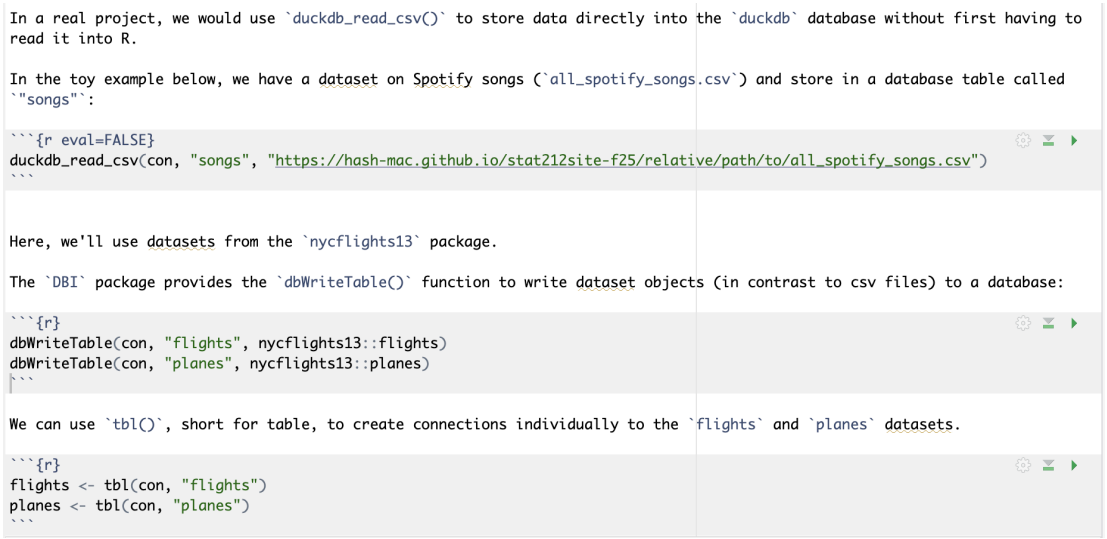
1) Database basics
    a) Database tables
        i) Stored on disk → can be larger
        ii) Indexes → can find rows without looking at every row
        iii) Row oriented → information stored in rows, not values stored in columns
            (1) More modern ones (like ones in R) are column-oriented → for more analytical purposes
    b) Database management systems (DBMS)
        i) Client server → central server that clients can connect to with their personal devices
        ii) Cloud → managed by a cloud provider but can be connected to and used (good for TB of data)
        iii) In-process → stored on computer
2) Connecting to a database w/ R
    a) DBI (database interface) → provides set of generic functions to connect to database and run SQL queries
    b) Also need a package that translates DBI commands into specific ones needed for any given DBMS
        i) *The odbc package usually works for a lot of different DBMS
    c) Create connection w/ DBI::dbConnect()
        i) Arguments include where it lives and the credentials needed to access it
    d) Loading data
        i) Ex:



````
In a real project, we would use `duckdb_read_csv()` to store data directly into the `duckdb` database without first having to read it into R.

In the toy example below, we have a dataset on Spotify songs (`all_spotify_songs.csv`) and store in a database table called `"songs"`:

```{r eval=FALSE}
duckdb_read_csv(con, "songs", "https://hash-mac.github.io/stat212site-f25/relative/path/to/all_spotify_songs.csv")
```


Here, we'll use datasets from the `nycflights13` package.

The `DBI` package provides the `dbWriteTable()` function to write dataset objects (in contrast to csv files) to a database:

```{r}
dbWriteTable(con, "flights", nycflights13::flights)
dbWriteTable(con, "planes", nycflights13::planes)
```

We can use `tbl()`, short for table, to create connections individually to the `flights` and `planes` datasets.

```{r}
flights <- tbl(con, "flights")
planes <- tbl(con, "planes")
```
````

    e) DBI basics
        i) *check that data loaded in correctly w/ dbListTables()
        ii) dbReadTabble() retrieves content of the table
    f) SQL basics
        i) CREATE → creates new tables
        ii) INSERT → adding data
        iii) SELECT → retrieving data (also called **queries**)

iv) Queries (made up of five main clauses)

(1) SELECT (dplyr: select, mutate, rename, relocate)
(2) FROM
(3) WHERE
(4) ORDER
(5) ORDER BY
(6) GROUP BY
(7) LEFT JOIN
(8) ON
(9) AS