This is CS50
Favorite TV Shows

* Required

title *
Title of your favorite TV show

Your answer

genres *
Genre(s) of your favorite TV show

- Action
- Adventure
- Animation
- Biography
flat-file database
CSV
relational database
SQLite
sqlite3
.mode csv
.import FILE TABLE
SQL
CREATE
READ
UPDATE
DELETE
CREATE, INSERT
SELECT
UPDATE
DELETE
...

CREATE TABLE table (column type, ...);
SELECT columns FROM table;
...

AVG
COUNT
DISTINCT
LOWER
MAX
MIN
UPPER
...

...
WHERE
LIKE
ORDER BY
LIMIT
GROUP BY
...
...
from cs50 import SQL
CREATE TABLE table (column type, ...);
INSERT INTO table (column, ...) VALUES(value, ...);
NOT NULL
UNIQUE
PRIMARY KEY
FOREIGN KEY
BLOB
INTEGER
   smallint
   integer
   bigint
NUMERIC
REAL
TEXT
BLOB
INTEGER
NUMERIC
  boolean
date
datetime
numeric(scale,precision)
time
timestamp
REAL
TEXT
BLOB
INTEGER
NUMERIC
REAL
TEXT
  char(n)
  varchar(n)
  text
UPDATE table SET column = value WHERE condition;
DELETE FROM table WHERE condition;
IMDb
indexes
CREATE INDEX name ON table (column, ...);
B-trees
JOIN
...

JOIN

...
JOIN

...
JOIN

...
CREATE INDEX name ON table (column, ...);
SQL injection attacks
Sign In

NetID

Password

Forgot My Password

LOGIN
Please Log In

To log in, please select your login type from the tabs below and enter your credentials. If you're not sure what login type to use, look here for how you login with HarvardKey.

HarvardKey

Login Name (in the form of an email address):

me@examplemailprovider.com

Password:

Login

Recover/Reset Your HarvardKey Password >
Recover Your HarvardKey Login Name >
Recover/Reset Passwords for Other Login Types >
Back to HarvardKey Home >
Please Log In

To log in, please select your login type from the tabs below and enter your credentials. If you're not sure what login type to use, look here for how you login with HarvardKey.

HarvardKey

Login Name (in the form of an email address):

malan@harvard.edu

Password:

Login

Recover/Reset Your HarvardKey Password >

Recover Your HarvardKey Login Name >

Recover/Reset Passwords for Other Login Types >

Back to HarvardKey Home >
rows = db.execute("SELECT * FROM users WHERE username = ? AND password = ?", username, password)

if len(rows) == 1:
    # Log user in
rows = db.execute("SELECT * FROM users WHERE username = ? AND password = ?", username, password)

if len(rows) == 1:
    # Log user in
rows = db.execute("SELECT * FROM users WHERE username = ? AND password = ?", username, password)

if len(rows) == 1:
    # Log user in
rows = db.execute(f"SELECT * FROM users WHERE username = '{username}' AND password = '{password}'")

if len(rows) == 1:
    # Log user in
rows = db.execute(f"SELECT * FROM users WHERE username = '{username}' AND password = '{password}'")

if len(rows) == 1:
    # Log user in
rows = db.execute(f"SELECT * FROM users WHERE username = 'malan@harvard.edu'-- AND password = '{password}'")

if len(rows) == 1:
    # Log user in
rows = db.execute(f"SELECT * FROM users WHERE username = 'malan@harvard.edu'--' AND password = '{password}'")

if len(rows) == 1:
    # Log user in
rows = db.execute("SELECT * FROM users WHERE username = ? AND password = ?", username, password)

if len(rows) == 1:
    # Log user in
ZU 0666, 0, 0; DROP DATABASE TABLE;
ZU 0666', 0, 0); DROP DATABASE TABLICE
Hi, this is your son's school. We're having some computer trouble.

Oh, dear - did he break something?

In a way -

Did you really name your son Robert?); DROP TABLE Students; -- ?

Oh, yes. Little Bobby Tables, we call him.

Well, we've lost this year's student records. I hope you're happy.

And I hope you've learned to sanitize your database inputs.
race conditions
rows = db.execute("SELECT likes FROM posts WHERE id = ?", id);
likes = rows[0]["likes"]
db.execute("UPDATE posts SET likes = ? WHERE id = ?", likes + 1, id);
rows = db.execute("SELECT likes FROM posts WHERE id = ?", id);
likes = rows[0]["likes"]
db.execute("UPDATE posts SET likes = ? WHERE id = ?", likes + 1, id);
BEGIN TRANSACTION
COMMIT
ROLLBACK
db.execute("BEGIN TRANSACTION")
rows = db.execute("SELECT likes FROM posts WHERE id = ?", id);
likes = rows[0]["likes"]
db.execute("UPDATE posts SET likes = ? WHERE id = ?", likes + 1, id);
db.execute("COMMIT")
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