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
relational databases
.mode csv
.import FILE TABLE
.schema
CREATE
READ
UPDATE
DELETE
SQL
INSERT
SELECT
UPDATE
DELETE

...
CREATE TABLE table (column type, ...);
BLOB
INTEGER
  smallint
  integer
  bigint
NUMERIC
REAL
TEXT
BLOB
INTEGER
NUMERIC
REAL
  real
    double precision
TEXT
BLOB
INTEGER
NUMERIC
REAL
TEXT
  char(n)
  varchar(n)
  text
INSERT INTO table (column, ...) VALUES(value, ...);
SELECT columns FROM table;
AVG
COUNT
DISTINCT
MAX
MIN
...
SELECT columns FROM table WHERE condition;
UPDATE table SET column=value WHERE condition;
DELETE FROM table WHERE condition;
IMDb
imdb.com/interfaces
title.basics.tsv

tconst

titleType

primaryTitle

startYear

genres

...
<table>
<thead>
<tr>
<th>tconst</th>
<th>tt4786824</th>
</tr>
</thead>
<tbody>
<tr>
<td>titleType</td>
<td>tvSeries</td>
</tr>
<tr>
<td>primaryTitle</td>
<td>The Crown</td>
</tr>
<tr>
<td>startYear</td>
<td>2016</td>
</tr>
<tr>
<td>genres</td>
<td>Drama, History</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>column</td>
<td>value</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
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</tr>
<tr>
<td>startYear</td>
<td>2016</td>
</tr>
<tr>
<td>genres</td>
<td></td>
</tr>
</tbody>
</table>
tt4786824

The Crown

2016

Drama, History
Please don’t eat candy in here btw :}
db = cs50.SQL("sqlite:///shows.db")
<table>
<thead>
<tr>
<th>id</th>
</tr>
</thead>
<tbody>
<tr>
<td>title</td>
</tr>
<tr>
<td>year</td>
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<tr>
<td>genres</td>
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<tr>
<td>tconst</td>
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<tr>
<td>------------</td>
</tr>
<tr>
<td>titleType</td>
</tr>
<tr>
<td>primaryTitle</td>
</tr>
<tr>
<td>startYear</td>
</tr>
<tr>
<td>genres</td>
</tr>
</tbody>
</table>

...
<table>
<thead>
<tr>
<th>nconst</th>
<th>nm2946516</th>
</tr>
</thead>
<tbody>
<tr>
<td>primaryName</td>
<td>Claire Foy</td>
</tr>
<tr>
<td>birthYear</td>
<td>1984</td>
</tr>
<tr>
<td>tconst</td>
<td>tt4786824</td>
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<tr>
<td>---------</td>
<td>-----------</td>
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<tr>
<td>nconst</td>
<td>nm2946516</td>
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<tr>
<td>category</td>
<td>actress</td>
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</tbody>
</table>

...
<table>
<thead>
<tr>
<th>tconst</th>
<th>tt4786824</th>
</tr>
</thead>
<tbody>
<tr>
<td>averageRating</td>
<td>8.7</td>
</tr>
<tr>
<td>numVotes</td>
<td>88529</td>
</tr>
</tbody>
</table>
PRIMARY KEY
FOREIGN KEY
UNIQUE
INDEX
AUTOINCREMENT
NOT NULL
indexes
B-trees
CREATE INDEX name ON table (column, ...);
CREATE INDEX name ON table (column, ...);
CREATE INDEX name ON table (column, ...);
CREATE INDEX name ON table (column, ...);
CREATE INDEX name ON table (column, ...);
DB Browser for SQLite

sqlitebrowser.org
race conditions
rows = db.execute("SELECT likes FROM posts WHERE id=?", id);
likes = rows[0]["likes"]
db.execute("UPDATE posts SET likes = ?", likes + 1);
rows = db.execute("SELECT likes FROM posts WHERE id=?", id);
likes = rows[0]["likes"]
db.execute("UPDATE posts SET likes = ?", likes + 1);
BEGIN TRANSACTION
COMMIT
ROLLBACK
SQL injection attacks
Login required
You may establish Yale authentication now in order to access protected services later.

NetID: [ ]
Password: [ ]

Warn me before logging me in to other sites.

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@exampleemailprovider.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:
    # Logged in!
rows = db.execute("SELECT * FROM users WHERE username = ? AND password = ?", username, password)

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

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

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

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

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

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

if len(rows) == 1:
    # Logged in!
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.
This is CS50