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Final Projects
Zoom
Week 7

• SQL
  • CREATE TABLE
  • INSERT
  • SELECT
  • UPDATE
  • DELETE
  • Indexes
  • Race Conditions
  • SQL Injection
What questions do you have?
Questions
Today

SQL

SQL and Python

Test Review
Part One

SQL
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<th>id</th>
<th>title</th>
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CREATE TABLE books ( 
    id INTEGER PRIMARY KEY AUTOINCREMENT, 
    title TEXT, 
    author TEXT, 
    year NUMERIC 
);
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CREATE TABLE ratings (  
    book_id INTEGER,  
    rating REAL,  
    votes INTEGER,  
    FOREIGN KEY (book_id) REFERENCES books(id) );
INSERT INTO books
(title, author, year)
VALUES ("Emma", "Jane Autsen", 1815);
SELECT * FROM books
WHERE author = "J.K. Rowling";
UPDATE ratings
SET rating = 4.2
WHERE book_id = 28;
DELETE FROM books
WHERE title = "Fahrenheit 451";
Multiple Tables
Students

• People
• Classes
• Who are the instructors of each class?
• Who are the students in each class?
CREATE TABLE people (  
id INTEGER PRIMARY KEY AUTOINCREMENT,  
name TEXT NOT NULL
);

CREATE TABLE courses (  
id INTEGER PRIMARY KEY AUTOINCREMENT,  
code TEXT NOT NULL,  
title TEXT NOT NULL
);
CREATE TABLE students (  
  person_id INTEGER NOT NULL,  
  course_id INTEGER NOT NULL  
);

CREATE TABLE instructors (  
  person_id INTEGER NOT NULL,  
  course_id INTEGER NOT NULL  
);
wget cdn.cs50.net/2020/spring/classes/7/students.db
Exercise

Write a SQL query to answer the following question:

What is Amanda’s student id?
Write a SQL query to answer the following question:

What is the course title for CS51?
Exercise

Write a SQL query to answer the following question:

What are the course codes and titles for all of the CS courses? Assume that all CS courses have a course code that begins with 'CS'.

Exercise

Write a SQL query to answer the following question:

How many courses are there?
Exercise

Write a SQL query to answer the following question:

How many students are taking CS50?
Exercise

Write a SQL query to answer the following question:

What are the names of all of the instructors? Generate a table with all instructors’ names and the course they teach.
Exercise

Write a SQL query to answer the following question:

What are the names of all of the students taking CS50?
We’ll continue in 10 minutes
We’ll continue in 9 minutes
We’ll continue in 8 minutes
We’ll continue in 7 minutes
We’ll continue in 6 minutes
We’ll continue in 5 minutes
We’ll continue in 4 minutes
We’ll continue in 3 minutes
We’ll continue in 2 minutes
We’ll continue in 1 minute
PART TWO

SQL and Python
from cs50 import SQL
Exercise

Write a Python program to enroll a student in a course.

$ python enroll.py
Name: Emma
Course Code: CS51
Added Emma to CS51
Race Conditions
SQL Injection
Username: 

Password:
SELECT * FROM users
WHERE username = username AND password = password;
Username: harry
Password: 12345
SELECT * FROM users
WHERE username = username AND password = password;
SELECT * FROM users
WHERE username = "harry" AND password = "12345";
Username: 

hacker” --

Password:
SELECT * FROM users
WHERE username = username AND password = password;
SELECT * FROM users
WHERE username = "hacker" --" AND password = "";
SELECT * FROM users
WHERE username = "hacker" --" AND password = "";
We’ll continue in 10 minutes
We’ll continue in 9 minutes
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We’ll continue in 7 minutes
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We’ll continue in 5 minutes
We’ll continue in 4 minutes
We’ll continue in 3 minutes
We’ll continue in 2 minutes
We’ll continue in 1 minute
Part Three

Test Review
Week 0

- Binary
- Representing Data
- Algorithms
- Pseudocode
- Scratch
Week 1

• C
• Compiling
• Strings
• Variables
• Types
• Loops
• Conditions
• Imprecision
• Overflow
Week 2

- Compiling
- Debugging
- Data Types
- Memory
- Arrays
- Strings
- Command-Line Arguments
Week 3

- Searching (Linear, Binary)
- Sorting (Bubble, Selection)
- Big O
- Structs
- Recursion
- Merge Sort
Week 4

• Hexadecimal
• Pointers
• Dynamic Memory
• Memory Layout
• File I/O
Week 5

• Data Structures
• Linked Lists
• Trees
• Hash Tables
• Tries
Week 6

- Python
- Regular Expressions
Week 7

• SQL
  • CREATE TABLE
  • INSERT
  • SELECT
  • UPDATE
  • DELETE
  • Indexes
  • Race Conditions
  • SQL Injection
What questions do you have?
Problem Set 7
Problem Set 7

- Movies
- Houses
This is CS50.