

## Lesson 6: Principles of Data Manipulation and Management

## Lesson 7: Relational Algebra

## Lesson 8: SQL for Data Science

## Lesson 9: Key Principles of Relational Databases

▶ **Video:** Optimization: Physical Query Plans  
5 min

▶ **Video:** Optimization: Choosing Physical Plans  
4 min

▶ **Video:** Declarative Languages  
5 min


▶ **Video:** Declarative Languages: More Examples  
4 min

▶ **Video:** Views: Logical Data Independence  
5 min

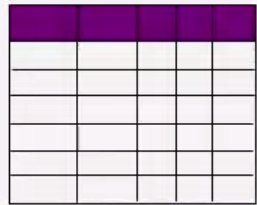
▶ **Video:** Indexes  
6 min

## Assignment 2: SQL

### Views: Logical Data Independence


UNIVERSITY of WASHINGTON

## Key Idea: "Logical Data Independence"

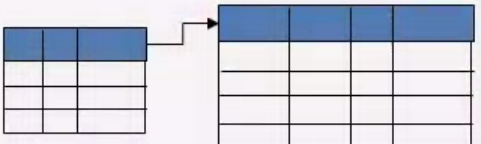


views

```
SELECT *
FROM my_sequences
```

---

logical data independence

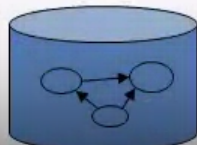


relations

```
SELECT seq
FROM ncbi_sequences
WHERE seq = 'GATTACGATATTA';
```

---

physical data independence



files and pointers

```
f = fopen('table_file');
fseek(10030440);
while (True) {
    fread(&buf, 1, 8192, f);
    if (buf == GATTACGATATTA) {
```

0:04 / 5:07
Bill Howe, eScience Institute
16

Share



Save Note



Discuss

Download



Share



English ▾

[Help Us Translate](#)

0:00 [MUSIC] Okay, so we talked about physical data independence and we talked about algebraic optimisation. I wanna talk about another kind of data independence, which is Logical Data Independence. And so, we argued that physical data independence was this ability to insulate applications and protect applications from changes in the physical organization of the data. All right? So things were rearranged on disk, we don't wanna have to rewrite all the code in the application. And this is what databases provide and relational databases in particular do a great job of providing this. But if you go back to first paper, and even the quote I gave you, he talks about insulating applications from the changes to the internal representation, but also insulating