

## Public Service Announcement

"Camp Sudo is looking for motivated, qualified teaching fellows to lead 5-week intensive computer science summer camps in the Bay Area! You and a colleague will inspire young high school minds through code education by leading them on a curriculum that covers basic computer science fundamentals (HTML, CSS, JS). The position is stipended and relocation will be made available. Applications due APRIL 22ND, 2016. Online Application at <http://bit.ly/1UOMFJn> and Job Description at <http://bit.ly/1qaEpXi> Questions? Email [chenchen@campsudo.org](mailto:chenchen@campsudo.org) <[chenchen@campsudo.org](mailto:chenchen@campsudo.org)>."

## Lecture 32: More SQL

- Abstractly, a *select* statement that lists multiple tables filters *all possible combinations of rows* from those tables.

```
> create table T1 as  
  select "a" as val union select "b";
```

```
> create table T2 as  
  select 1 as val union select 2;
```

```
> select T1.val, T2.val from T1, T2;
```

```
a|1
```

```
a|2
```

```
b|1
```

```
b|2
```

# Comparison to Python

- This includes the case where the same table is named twice, as in

```
select A.val, B.val from T1 as A, T1 as B;
```

```
a|a
```

```
a|b
```

```
b|a
```

```
b|b
```

- Thus, the `select ... from ...` part is rather like the `for` part of a list comprehension in Python:

```
[ (A.val, B.val) for A from T1 for B from T1 ]
```

- The `where` clause is now a filter, like the `if` clause in a list comprehension.

```
> select A.val, B.val from T1 as A, T1 as B  
   where A.val <= B.val;
```

```
a|a
```

```
a|b
```

```
b|b
```

# Expressions

- Familiar arithmetic is possible:

```
> select 3 + 4;
```

```
7
```

```
> select 3+GP from grade_values;
```

```
7
```

```
7
```

```
6.7
```

```
6
```

```
6.3
```

```
...
```

- Also string operations (not quite like Python):

```
> select First || " " || Last from students;
```

```
Jason Knowles
```

```
Valerie Chan
```

```
...
```

# Aggregation

- Certain expressions *aggregate* results:

```
> select avg(GP) from grades, grade_values  
   where Letter=Grade and SID = 101;
```

3.25

```
> select max(GP) from grades, grade_values  
   where Letter=Grade and SID = 101;
```

3.7

```
> select count(GP) from grades, grade_values  
   where Letter=Grade and SID = 101;
```

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