Intro to SQL

SQL

Short for Structured Query Language

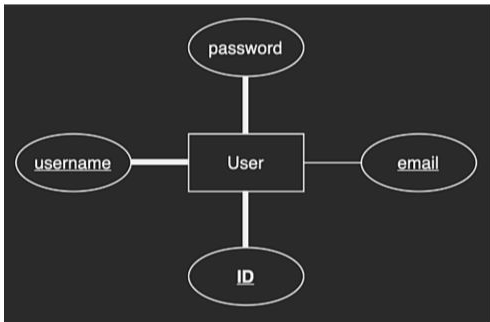Pronounced "S-Q-L" or "sequel"

Domain Specific Language (DSL)

Primary use is to Create, Read, Update, or Delete data

Also used to construct database table architectures

Creating a table with SQL

Start with ER diagram

Define tables
& columns

id	username	password	email
1	alice123	1234	
2	bob45	p455w0rd	
3	carol995	1234	carol@example.com
4	dave	mysteryw0rd	dave@example.com
5	edgar	data4life	

Create with SQL

?

SQL CREATE syntax

Basic syntax

```sql
CREATE TABLE table_name (
  column1 datatype column_constraints,
  column2 datatype column_constraints,
  column3 datatype column_constraints,
  PRIMARY KEY(column_names)
);
```

SQL CREATE syntax

Full syntax from Postgres documentation

```
CREATE [ [ GLOBAL | LOCAL ] { TEMPORARY | TEMP } | UNLOGGED ] TABLE [ IF NOT EXISTS ] table_name ( [
  { column_name data_type [ COLLATE collation ] [ column_constraint [ ... ] ]
    | table_constraint
    | LIKE parent_table [ like_option ... ] }
    [, ... ]
] )
[ INHERITS ( parent_table [, ... ] ) ]
[ WITH ( storage_parameter [= value] [, ... ] ) | WITH OIDS | WITHOUT OIDS ]
[ ON COMMIT { PRESERVE ROWS | DELETE ROWS | DROP } ]
[ TABLESPACE tablespace ]
```

Choosing a data type

Python Type	Postgres Type
int	INTEGER, INT
Sequential int	SERIAL
float	NUMERIC, DECIMAL
str	TEXT
str of length X	CHARACTER(X)
bool	BOOLEAN, BOOL
datetime	TIMESTAMP

Consider what it would be in Python, and find corresponding type

Consider special types provided by Postgres such as SERIAL or CHARACTER(X)

```
CREATE TABLE table_name (
    column1 datatype column_constraints,
    column2 datatype column_constraints,
    column3 datatype column_constraints,
    PRIMARY KEY(column_names)
);
```

Choosing column constraints

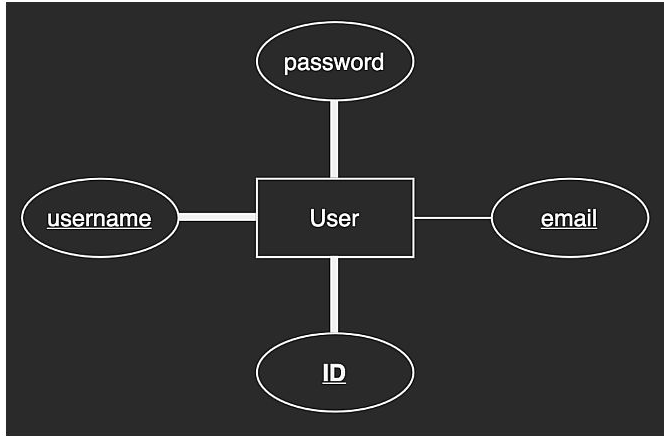| column constraint	SQL notation
column has different value for every row	UNIQUE
column cannot be blank	NOT NULL
default value if none is provided	DEFAULT
unique row identifier	PRIMARY KEY

Added after data type, separated by spaces

Primary key should have its own line

Primary key column names must match other column names, separated by commas

```
CREATE TABLE table_name (
  column1 datatype column_constraints,
  column2 datatype column_constraints,
  column3 datatype column_constraints,
  PRIMARY KEY(column_names)
);
```

Choosing column constraints

attribute	postgres type	column_constraints
id	SERIAL	PRIMARY KEY
username	TEXT	NOT NULL, UNIQUE
password	TEXT	NOT NULL
email	TEXT	UNIQUE

```
CREATE TABLE table_name (
  column1 datatype column_constraints,
  column2 datatype column_constraints,
  column3 datatype column_constraints,
  PRIMARY KEY(column_names)
);
```

```
CREATE TABLE users
(
  id SERIAL,
  username TEXT NOT NULL UNIQUE,
  password TEXT NOT NULL,
  email TEXT UNIQUE,
  PRIMARY KEY(id)
);
```