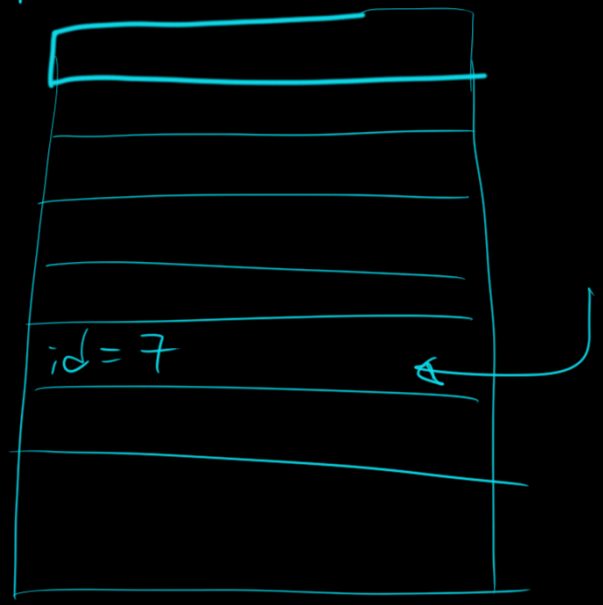
Input/Output Object Stream



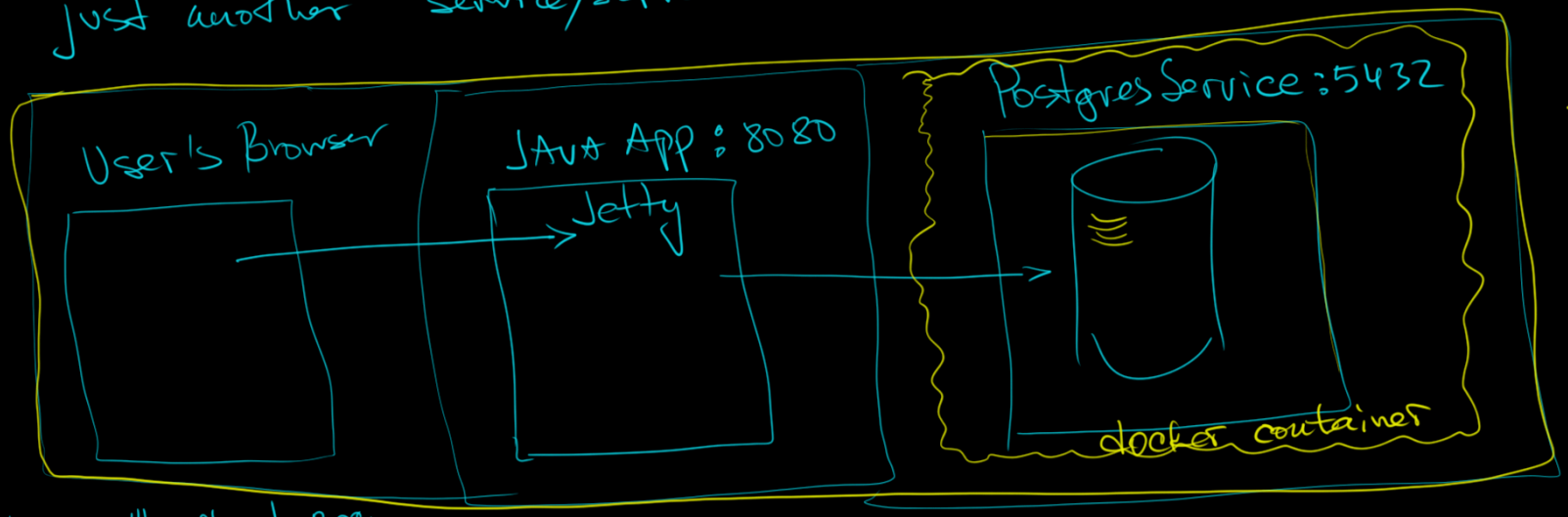
we can't read particular one because we don't know where it's located

we need the way to read/write data in more configurable way

100 / 1000 / 1000000 / 100000000

SQL Relational Databases

SQL Server
Just another service/server




```
SELECT
  user.name
FROM
  USERS
WHERE id=7
```

http://localhost:8080

Postgres 5432

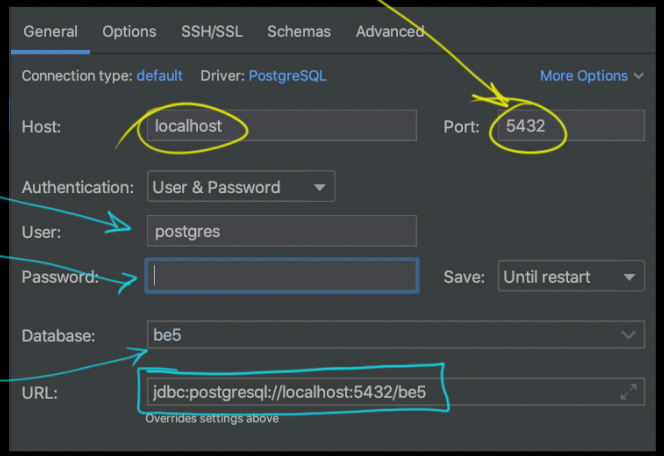
docker-compose.yaml

```
version: '3.3'

services:
  postgres:
    image: postgres:9.6
    environment:
      POSTGRES_USER: 'postgres'
      POSTGRES_PASSWORD: 'pg123456'
    ports:
      - '5432:5432'
    container_name: pg_0
```

```
docker exec -ti pg_0 bash
```

```
createdb be5
```



jdbc:postgresql://localhost:5432/be5

SQL Server

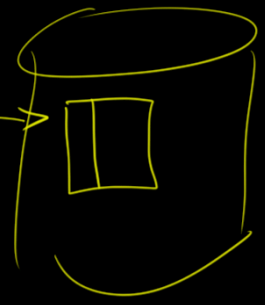
http://localhost:8080/hello

Java Server

protocol address port resource name

jdbc:postgresql://app-vpc.ch23jpcnudlw.us-east-1.rds.amazonaws.com:5432/vidiq

```sql
create table person
(
    id   integer,
    name text
);
```



count, types

```sql
insert into person (id, name) values (1, 'Jim');
insert into person (id, name) values (2, 'Sergio');
insert into person (id, name) values (3, 'Jackson');
insert into person (id, name) values (10, 'Jeremy');
insert into person (id, name) values (10, 'Jack');
insert into person (name) values ('Alex');
```

```sql
select id, name from person;
```

	id	name
1	1	Jim
2	2	Sergio
3	3	Jackson
4	10	Jeremy
5	10	Jack
6	<null>	Alex

how to access it?

```sql
select id, name
from person
where id=1;
```

	id	name
1	1	Jim

```sql
select id, name
from person
where id=10;
```

id	name
10	Jeremy
10	Jack

- Id should be unique
- every entity should have id

```
update person set id = 20 where name = 'Alex';
```

AND
OR

Boolean

IS NOT
IS NULL
IS NOT NULL

id	name
1	Jim
2	Sergio
3	Jackson
10	Jeremy
10	Jack
20	Alex

```
update person set id = 11 where name = 'Jack';
```

id	name
1	Jim
2	Sergio
3	Jackson
10	Jeremy
20	Alex
11	Jack

```
delete from person where name = 'Alex';
```

```
delete from person
```

← careful!

Insert DATA
Update DATA
Read/Select DATA
Delete DATA

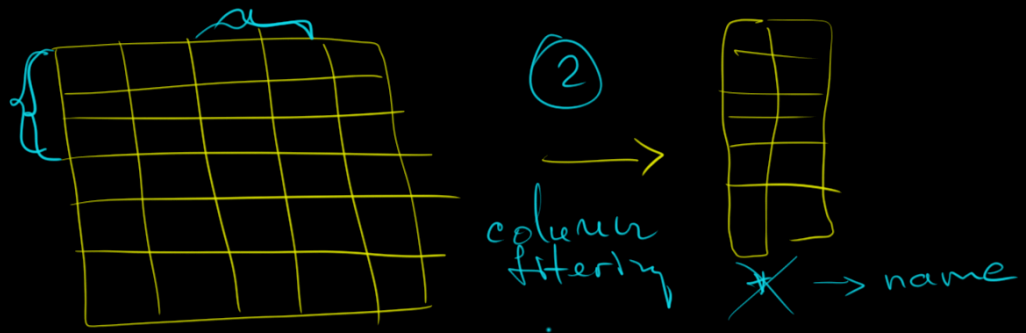
intention + data + filtering clause

```
select * from person order by id;
```

id	name
1	Jim
2	Sergio
3	Jackson
10	Jeremy
11	Jack
20	Alex

```
select * from person order by name;
```

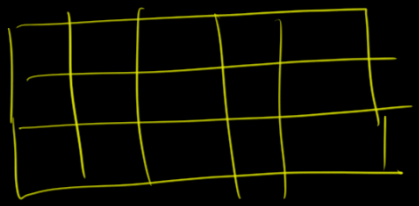
id	name
20	Alex
11	Jack
3	Jackson
10	Jeremy
1	Jim
2	Sergio



② column filtering → name

① row filtering

where id>5



③ sort

④ merge (join) more than 1 table

⑤ aggregation: → SUM, MIN, MAX, AVG, count

→ grouping

→ unique