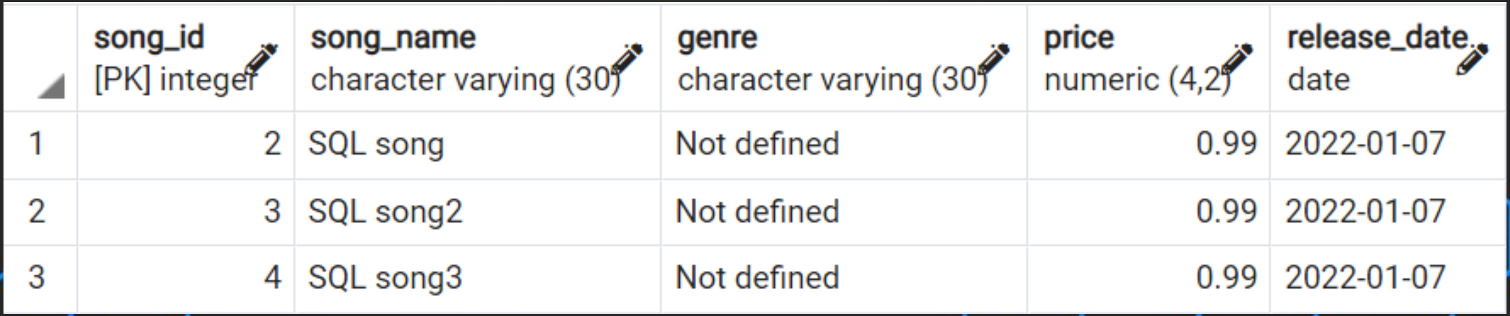
UPDATE

```
UPDATE <table>
SET <column>=value
```

UPDATE

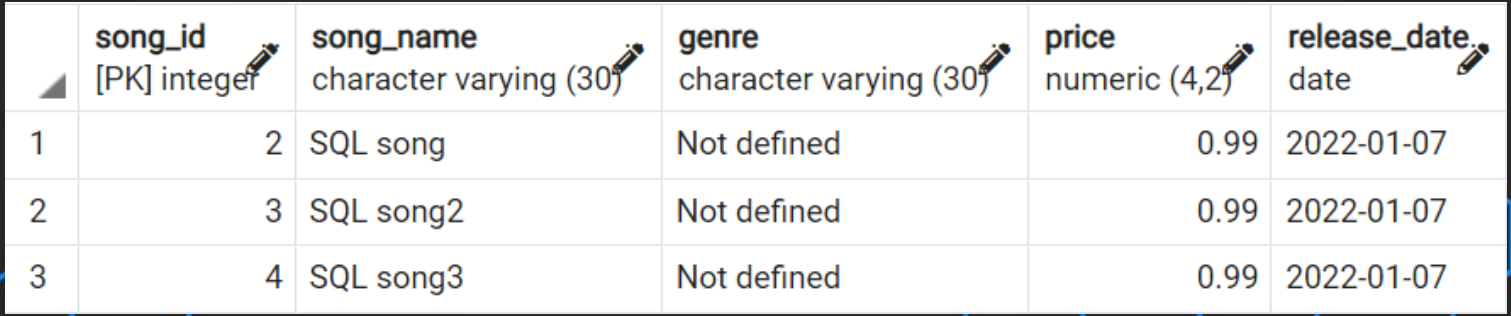
```
UPDATE <table>
SET <column>=value
```



	song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
1	2	SQL song	Not defined	0.99	2022-01-07
2	3	SQL song2	Not defined	0.99	2022-01-07
3	4	SQL song3	Not defined	0.99	2022-01-07

UPDATE

```sql
UPDATE songs
SET genre='Country music'
```



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1	2	SQL song	Not defined	0.99	2022-01-07
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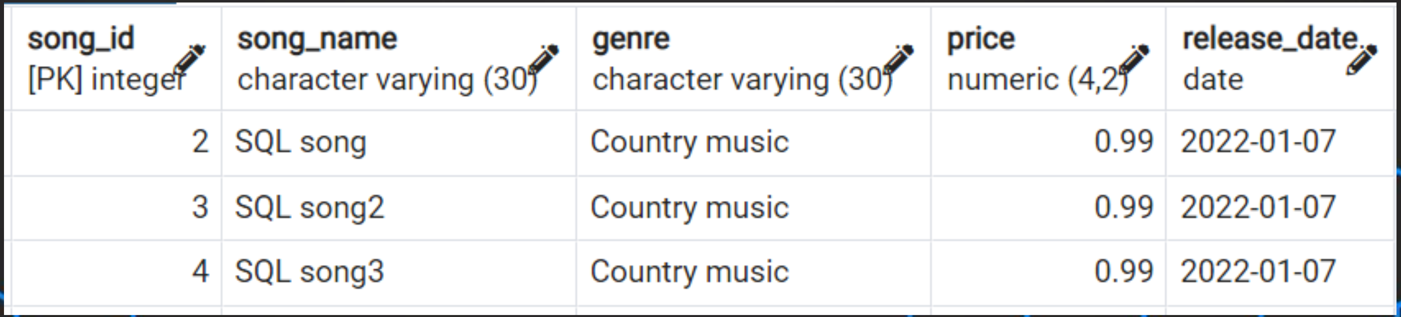
3	4	SQL song3	Not defined	0.99	2022-01-07

UPDATE

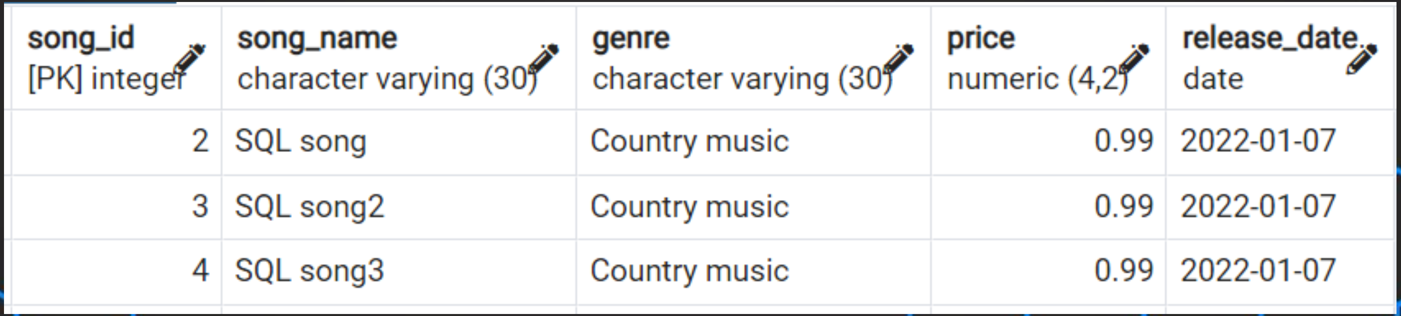
```
UPDATE songs
SET genre='Country music'
```



song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
2	SQL song	Country music	0.99	2022-01-07
3	SQL song2	Country music	0.99	2022-01-07
4	SQL song3	Country music	0.99	2022-01-07

UPDATE

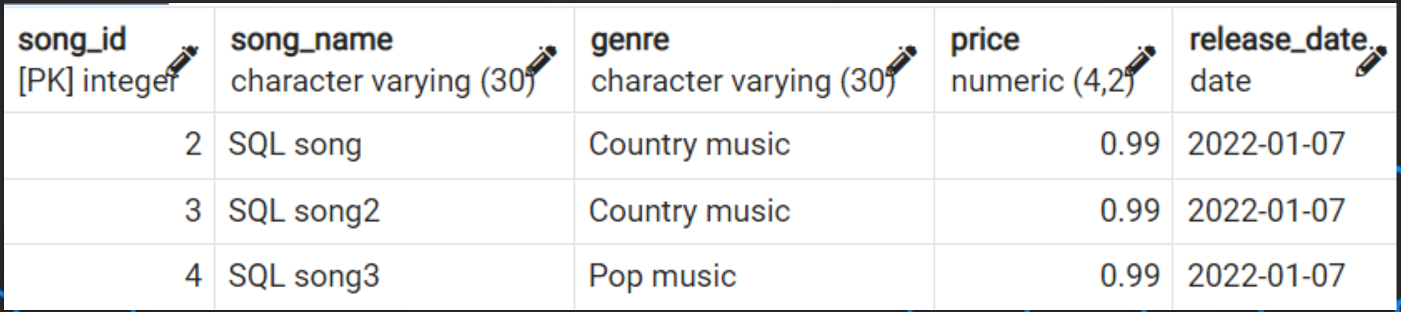
```sql
UPDATE songs
SET genre='Pop music'
WHERE song_id=4
```



song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
2	SQL song	Country music	0.99	2022-01-07
3	SQL song2	Country music	0.99	2022-01-07
4	SQL song3	Country music	0.99	2022-01-07

UPDATE

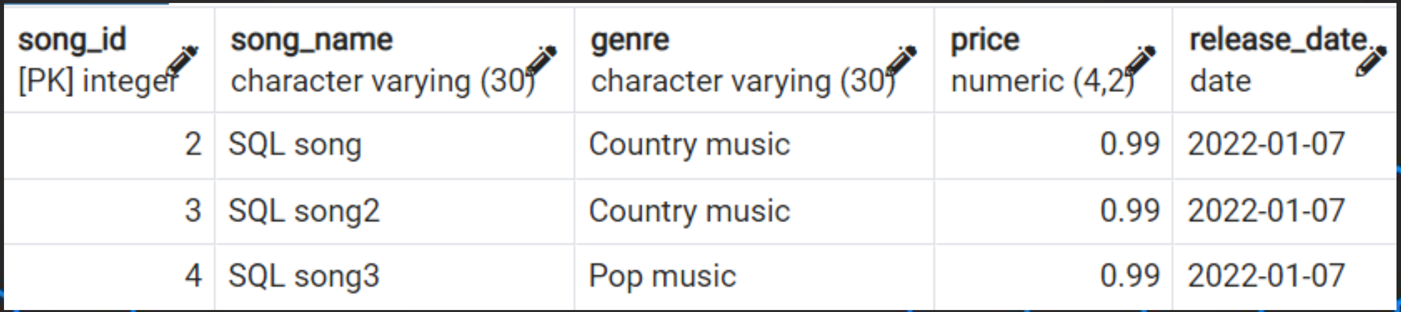
```sql
UPDATE songs
SET genre='Pop music'
WHERE song_id=4
```



song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
2	SQL song	Country music	0.99	2022-01-07
3	SQL song2	Country music	0.99	2022-01-07
4	SQL song3	Pop music	0.99	2022-01-07

UPDATE

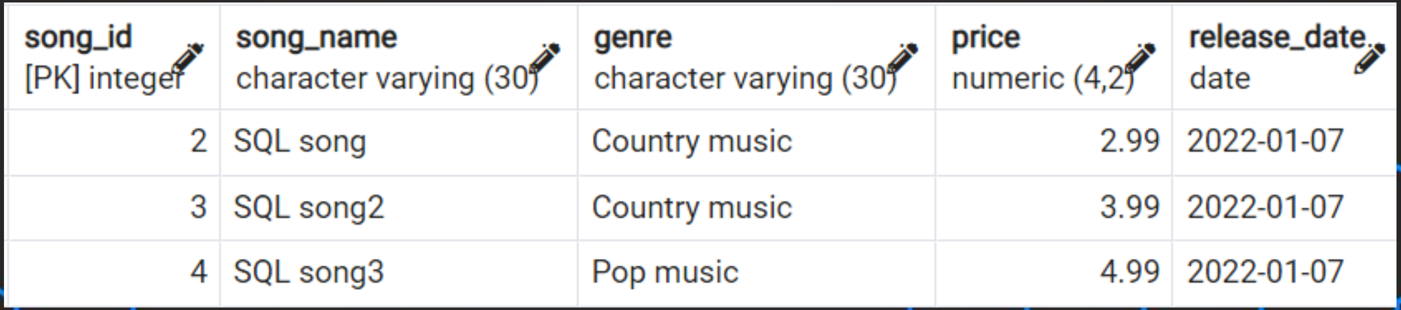
```
UPDATE songs
SET price=song_id+0.99
```



song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
2	SQL song	Country music	0.99	2022-01-07
3	SQL song2	Country music	0.99	2022-01-07
4	SQL song3	Pop music	0.99	2022-01-07

UPDATE

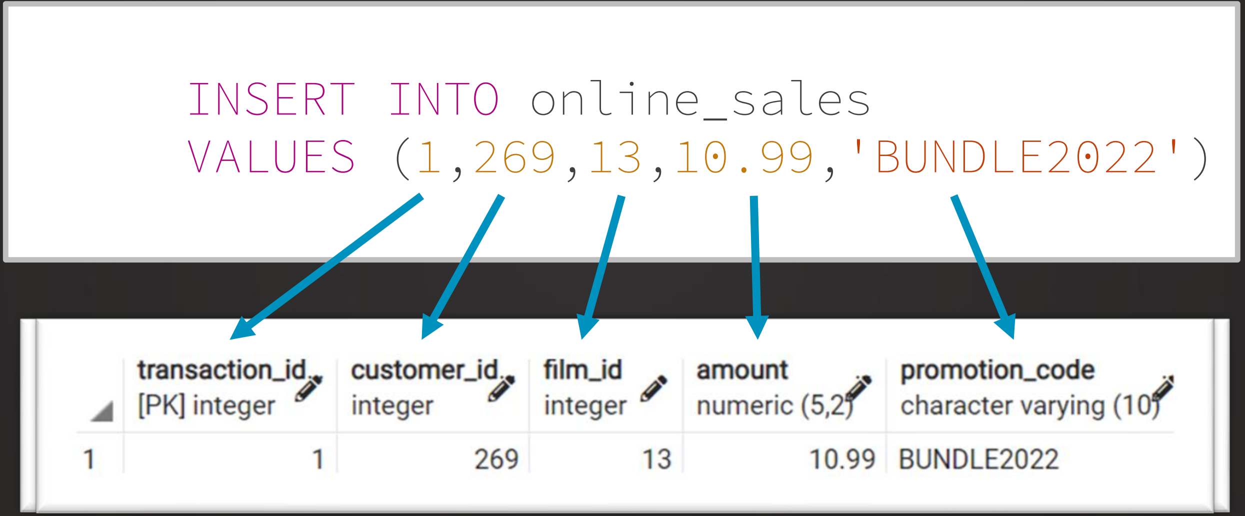
```
UPDATE songs
SET price=song_id+0.99
```



song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
2	SQL song	Country music	2.99	2022-01-07
3	SQL song2	Country music	3.99	2022-01-07
4	SQL song3	Pop music	4.99	2022-01-07

INSERT

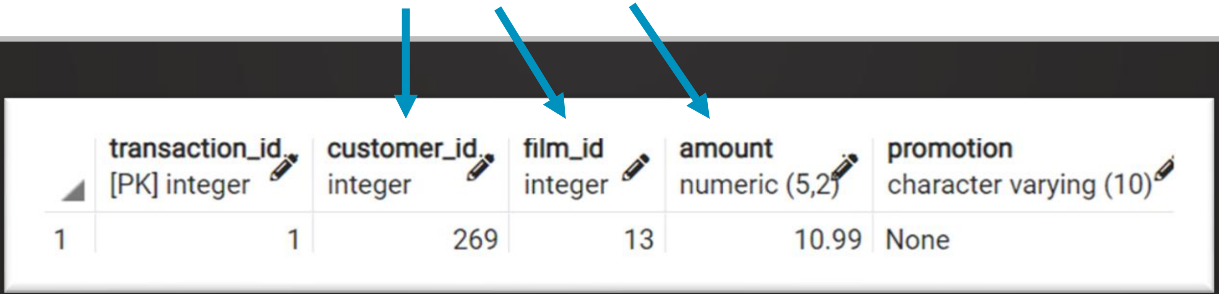
```
INSERT INTO online_sales
VALUES (1,269,13,10.99,'BUNDLE2022')
```



	transaction_id [PK] integer	customer_id integer	film_id integer	amount numeric (5,2)	promotion_code character varying (10)
1	1	269	13	10.99	BUNDLE2022

INSERT

```
INSERT INTO online_sales
(customer_id, film_id,amount)
VALUES (269,13,10.99)
```



	transaction_id [PK] integer	customer_id integer	film_id integer	amount numeric (5,2)	promotion character varying (10)
1	1	269	13	10.99	None

SERIAL

DEFAULT

Challenge

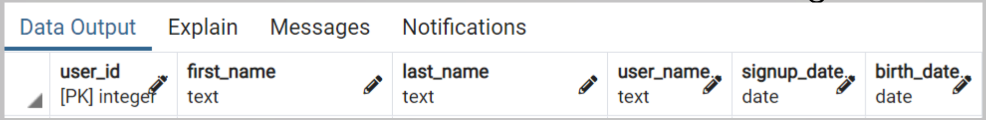
Update all rental prices that are 0.99 to 1.99.

The *customer* table needs to be altered as well:

1. Add the column *initials* (data type varchar(10))
2. Update the values to the actual initials for example *Frank Smith* should be *F.S.*

Challenge

Create a table called *users* with the following columns:



	user_id [PK] integer	first_name text	last_name text	user_name text	signup_date date	birth_date date

1. During creation add the DEFAULT current_date to the signup_date.
2. Add the constraint *namelength* to ensure the user_name has more than 2 characters.
3. Add the constraint with default name to ensure the birthdate is after 01-01-1900.
4. After the creation rename *namelength* to *name_length.*
5. Try to add Frank Smith with user name franksmith1 and birthday 02-12-1905.
6. Modify the constraint on the birthdate so that no dates after 01-01-1910 are allowed.
7. Try again to add Frank Smith with user name franksmith1 and birthday 02-12-1905.

Challenge

During creation add the DEFAULT 'Not defined' to the genre.

2. Add the not null constraint to the *song_name* column

3. Add the constraint with default name to ensure the price is at least 1.99.

4. Add the constraint *date_check* to ensure the release date is between today and 01-01-1950.

5. Try to add Frank Smith with user name franksmith1 and birthday 02-12-1905.

6. Modify the constraint on the birthdate so that no dates after 01-01-1910 are allowed.

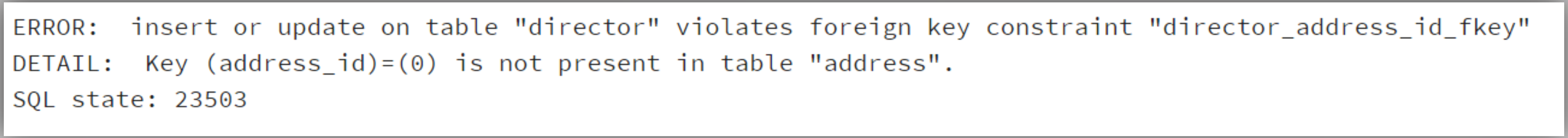
7. Try again to add Frank Smith with user name franksmith1 and birthday 02-12-1905.

Constraints

COLUMN CONSTRAINTS

What constraints do we have?

NOT NULL	Ensures that a column cannot have a NULL value
UNIQUE	Ensures that all values in a column are different
DEFAULT	Sets a default value for a column if no value is specified



```
ERROR:  insert or update on table "director" violates foreign key constraint "director_address_id_fkey"
DETAIL:  Key (address_id)=(0) is not present in table "address".
SQL state: 23503
```

REFERENCES	Ensures referential integrity (only values of another column can be used)
CHECK	Ensures that the values in a column satisfies a specific condition

Constraints

TABLE CONSTRAINTS

What constraints do we have?

```
PRIMARY KEY ( column [, ... ] )
UNIQUE ( column [, ... ] )
CHECK ( search_condition )
```

ALTER TABLE

```
ALTER TABLE <table_name>
ALTER COLUMN <column_name> SET DEFAULT <value>
```

DROP ADD TYPE RENAME DEFAULT

ALTER TABLE

```
ALTER TABLE staff
RENAME COLUMN first_name TO name,
DROP COLUMN last_name
```

CONSTRAINT

ALTER TABLE

```
ALTER TABLE <table_name>
ALTER COLUMN <column_name>
DROP DEFAULT <value>
```

DROP

ADD

ALTER TYPE

RENAME

DEFAULT

CONSTRAINT

ALTER TABLE

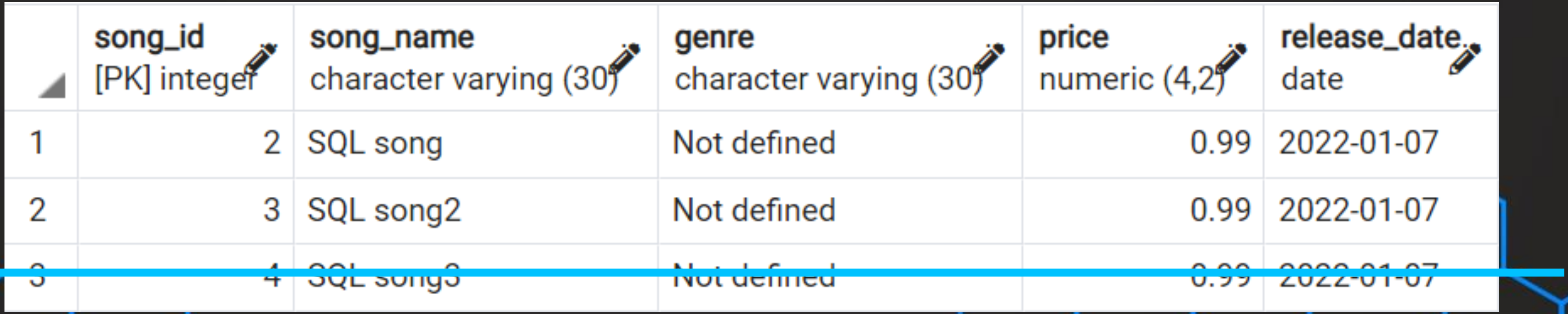
```sql
ALTER TABLE staff
ALTER COLUMN first_name TEXT
```

DELETE

```
DELETE FROM <table>
WHERE condition
```

DELETE

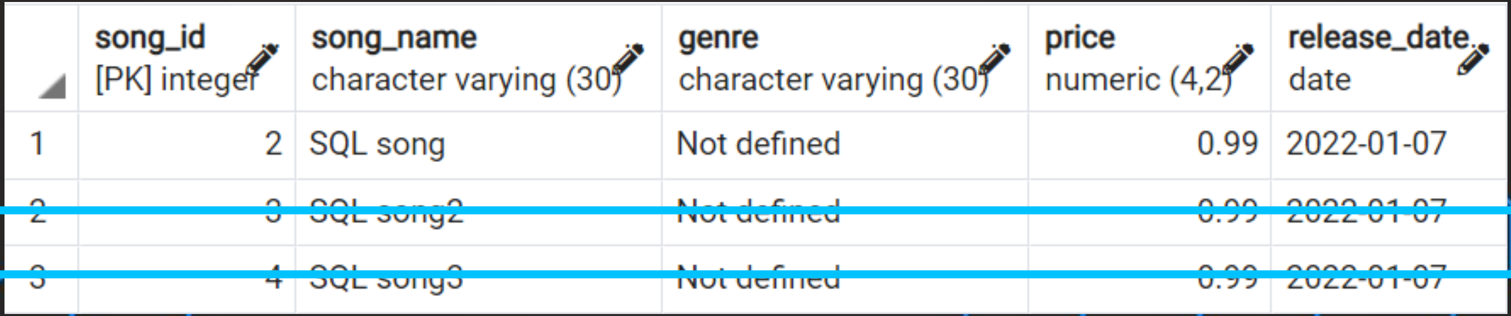
```
DELETE FROM songs
WHERE song_id=4
```



	song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
1	2	SQL song	Not defined	0.99	2022-01-07
2	3	SQL song2	Not defined	0.99	2022-01-07
~~3~~	~~4~~	~~SQL song3~~	~~Not defined~~	~~0.99~~	~~2022-01-07~~

DELETE

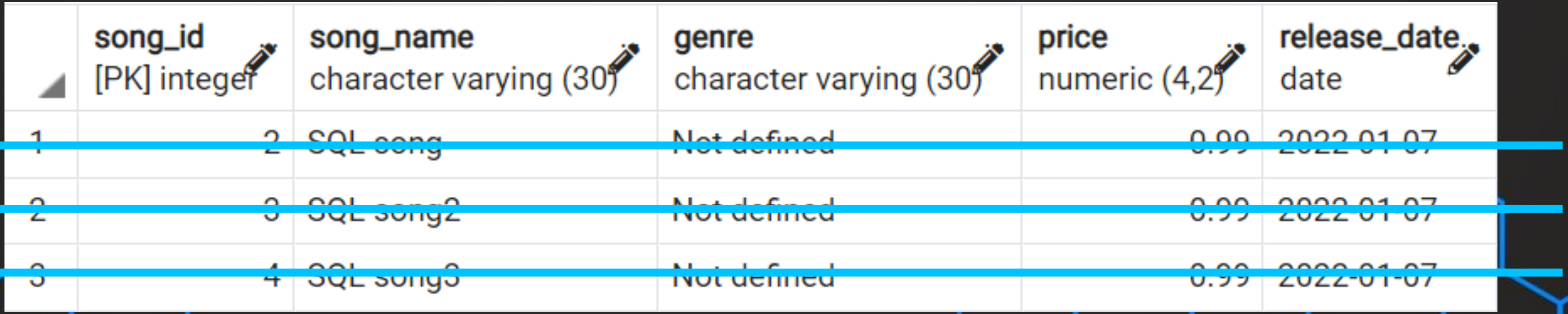
```sql
DELETE FROM songs
WHERE song_id IN (3,4)
```



	song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
1	2	SQL song	Not defined	0.99	2022-01-07
~~2~~	~~3~~	~~SQL song2~~	~~Not defined~~	~~0.99~~	~~2022-01-07~~
~~3~~	~~4~~	~~SQL song3~~	~~Not defined~~	~~0.99~~	~~2022-01-07~~

DELETE

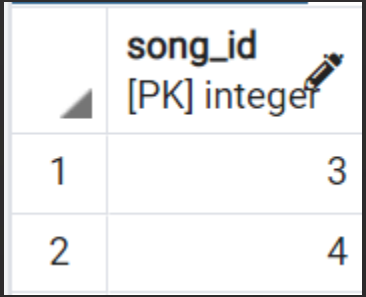
```
DELETE FROM songs
```



	song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
~~1~~	~~2~~	~~SQL song~~	~~Not defined~~	~~0.99~~	~~2022-01-07~~
~~2~~	~~3~~	~~SQL song2~~	~~Not defined~~	~~0.99~~	~~2022-01-07~~
~~3~~	~~4~~	~~SQL song3~~	~~Not defined~~	~~0.99~~	~~2022-01-07~~

DELETE

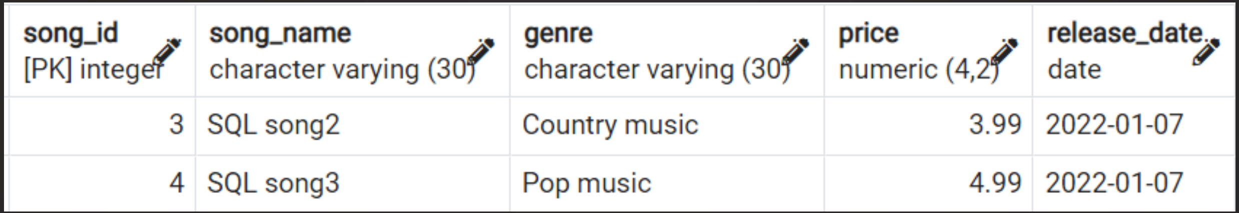
```
DELETE FROM songs
WHERE song_id IN (3,4)
RETURNING song_id
```



	song_id [PK] integer
1	3
2	4

DELETE

```sql
DELETE FROM songs
WHERE song_id IN (3,4)
RETURNING *
```



song_id [PK] integer	song_name character varying (30)	genre character varying (30)	price numeric (4,2)	release_date date
3	SQL song2	Country music	3.99	2022-01-07
4	SQL song3	Pop music	4.99	2022-01-07

CREATE TABLE … AS

```
CREATE TABLE <table_name>
AS query
```

CREATE TABLE ... AS

```
CREATE TABLE customer_test
AS
SELECT * FROM customer
```

CREATE TABLE ... AS

```
CREATE TABLE customer_anonymous
AS
SELECT customer_id, initials
FROM customer
WHERE first_name LIKE 'C%'
```

CREATE TABLE ... AS

```
CREATE TABLE customer_anonymous
AS
SELECT customer_id, initials
FROM customer
WHERE first_name LIKE 'C%'
```

```
SELECT * FROM customer_anonymous
```

Pyhsical storage needed!

Data can change!

Alternative: Create a view and just store the statement!

CREATE VIEW ... AS

```
CREATE VIEW <view_name>
AS query
```

CREATE VIEW ... AS

```
CREATE VIEW customer_anonymous
AS
SELECT customer_id, initials
FROM customer
WHERE first_name LIKE 'C%'
```

CREATE VIEW ... AS

```
CREATE VIEW customer_anonymous
AS
SELECT customer_id, initials
FROM customer
WHERE first_name LIKE 'C%'
```

```
SELECT * FROM customer_anonymous
```

CREATE VIEW ... AS

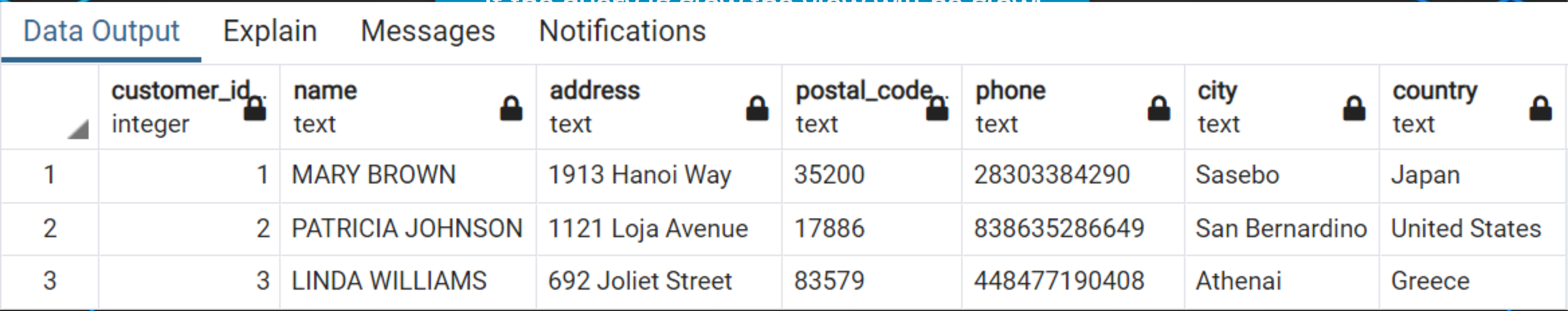
If the query is slow the view will be slow!

```
CREATE TABLE customer_an_table
AS
SELECT * FROM customer_anonymous
```

Problem: That table will not be updated if data in the underlying tables change!

CREATE VIEW ... AS

If the query is slow the view will be slow!



	customer_id integer	name text	address text	postal_code text	phone text	city text	country text
1	1	MARY BROWN	1913 Hanoi Way	35200	28303384290	Sasebo	Japan
2	2	PATRICIA JOHNSON	1121 Loja Avenue	17886	838635286649	San Bernardino	United States
3	3	LINDA WILLIAMS	692 Joliet Street	83579	448477190408	Athenai	Greece

Problem: That table will not be updated if data in the underlying tables change!

Managing views

ALTER VIEW	ALTER MATERIALIZED VIEW
DROP VIEW	DROP MATERIALIZED VIEW
CREATE OR REPLACE VIEW	X

DROP VIEW

```
DROP VIEW customer_anonymous
```

```
DROP MATERIALIZED VIEW customer_anonymous
```

ALTER VIEW

```
ALTER VIEW customer_anonymous
RENAME TO v_customer_info
```

```
ALTER VIEW v_customer_info
RENAME COLUMN name TO customer_name
```

REPLACE VIEW

```
CREATE OR REPLACE VIEW v_customer_info
AS new_query
```

Not possible with
MATERIALIZED VIEW!

CREATE VIEW ... AS

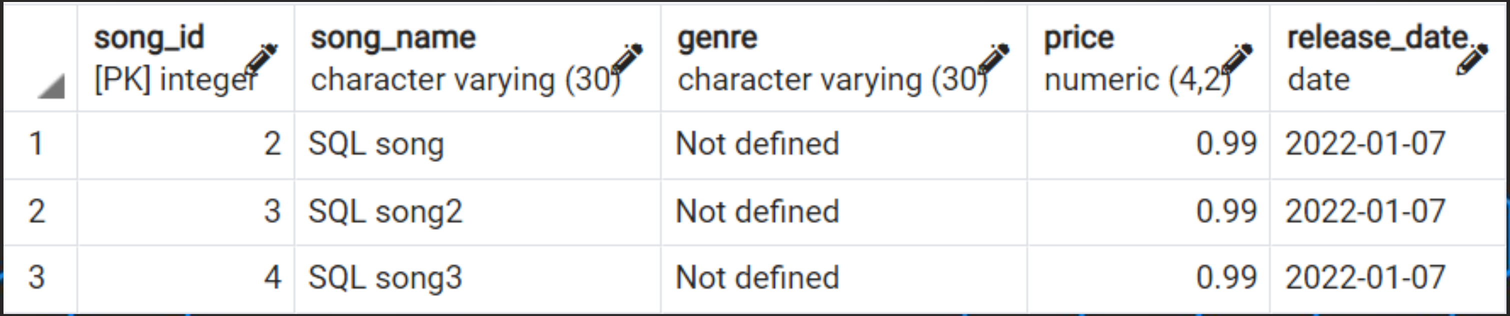
If the query is slow the view will be slow!

```
CREATE TABLE customer_an_table
AS
SELECT * FROM customer_anonymous
```

Problem: That table will not be updated if data in the underlying tables change!

VIEW

```sql
UPDATE songs
SET genre='Country music'
```



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