SQL Lesson 1: SELECT queries 101

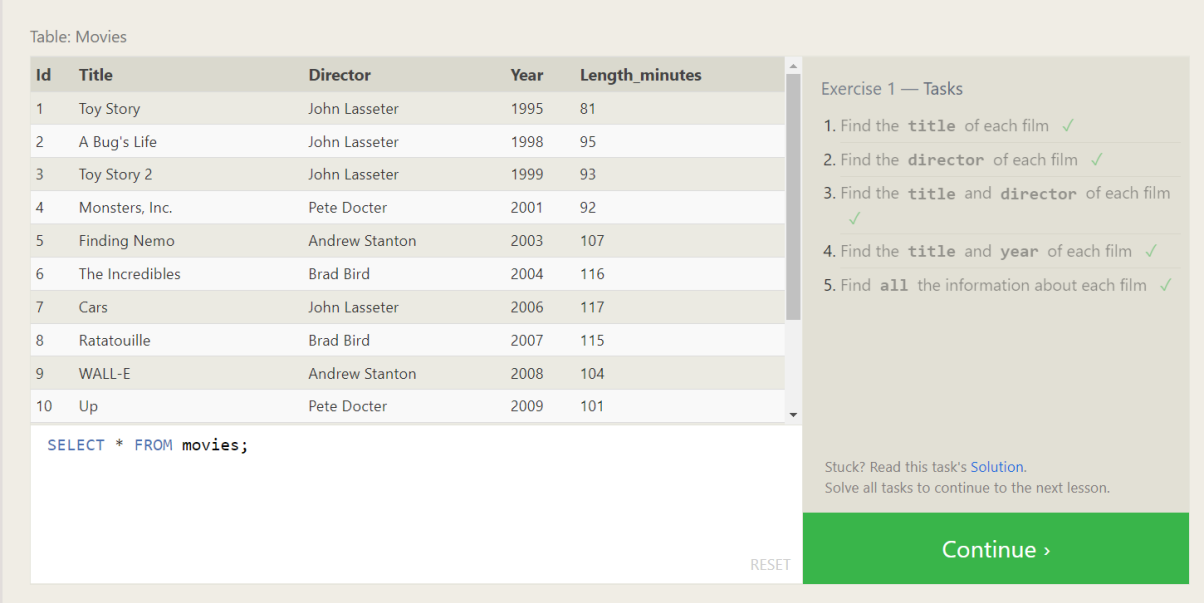


Table: Movies

Id	Title	Director	Year	Length_minutes
1	Toy Story	John Lasseter	1995	81
2	A Bug's Life	John Lasseter	1998	95
3	Toy Story 2	John Lasseter	1999	93
4	Monsters, Inc.	Pete Docter	2001	92
5	Finding Nemo	Andrew Stanton	2003	107
6	The Incredibles	Brad Bird	2004	116
7	Cars	John Lasseter	2006	117
8	Ratatouille	Brad Bird	2007	115
9	WALL-E	Andrew Stanton	2008	104
10	Up	Pete Docter	2009	101

1)Find the title of each film

Ans : SELECT title FROM movies;

2) Find the director of each film

Ans : SELECT title,director FROM movies;

3) Find the title and director of each film

Ans : SELECT title FROM movies;

4) Find the title and year of each film

Ans : SELECT title,year FROM movies;

5) Find all the information about each film

Ans : SELECT * FROM movies;

SQL Lesson 2: Queries with constraints (Pt. 1)

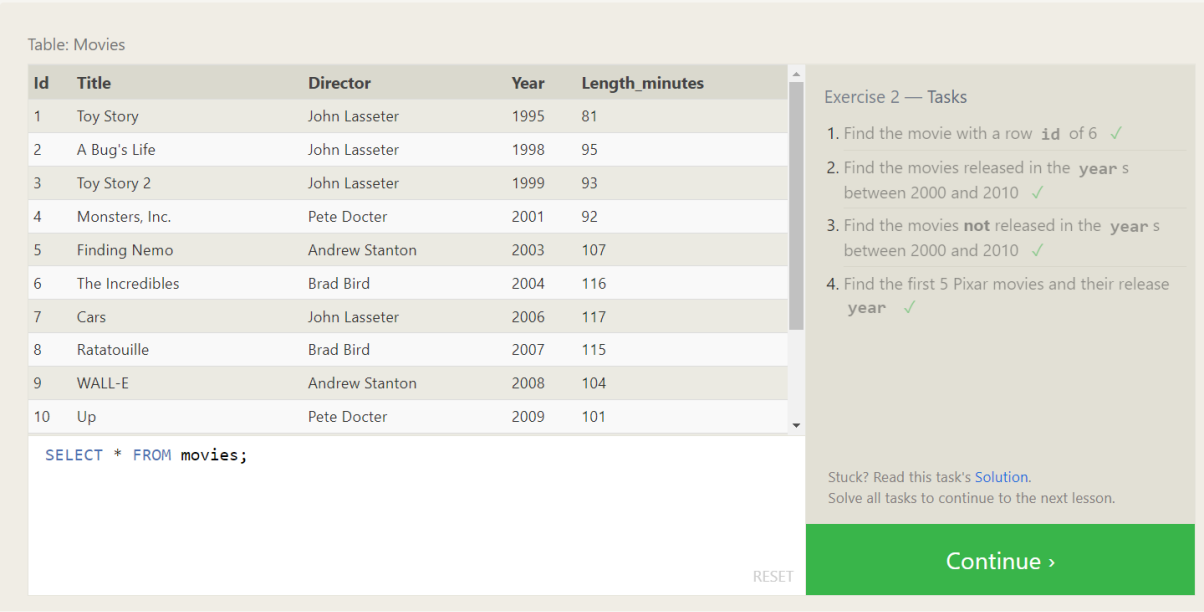


Table: Movies

Id	Title	Director	Year	Length_minutes
1	Toy Story	John Lasseter	1995	81
2	A Bug's Life	John Lasseter	1998	95
3	Toy Story 2	John Lasseter	1999	93
4	Monsters, Inc.	Pete Docter	2001	92
5	Finding Nemo	Andrew Stanton	2003	107
6	The Incredibles	Brad Bird	2004	116
7	Cars	John Lasseter	2006	117
8	Ratatouille	Brad Bird	2007	115
9	WALL-E	Andrew Stanton	2008	104
10	Up	Pete Docter	2009	101

```
SELECT * FROM movies;
```

RESET

Exercise 2 — Tasks

1. Find the movie with a row `id` of 6 ✓
2. Find the movies released in the `year`s between 2000 and 2010 ✓
3. Find the movies **not** released in the `year`s between 2000 and 2010 ✓
4. Find the first 5 Pixar movies and their release `year` ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1)Find the movie with a row id of 6 ✓

Ans : SELECT title FROM movies where id=6;

2)Find the movies released in the years between 2000 and 2010

Ans: SELECT title FROM movies where year between 2000 and 2010;

3)Find the movies not released in the years between 2000 and 2010

Ans : SELECT title FROM movies where year not between 2000 and 2010;

4)Find the first 5 Pixar movies and their release year

Ans : SELECT title,year FROM movies limit 5;

SQL Lesson 3: Queries with constraints (Pt. 2)

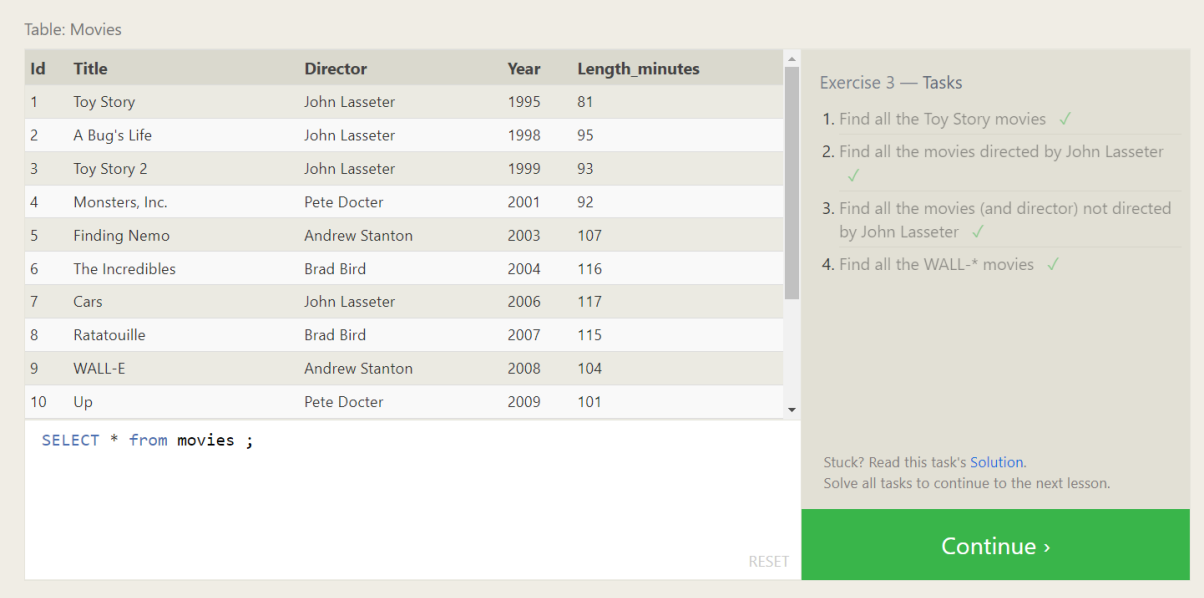


Table: Movies

Id	Title	Director	Year	Length_minutes
1	Toy Story	John Lasseter	1995	81
2	A Bug's Life	John Lasseter	1998	95
3	Toy Story 2	John Lasseter	1999	93
4	Monsters, Inc.	Pete Docter	2001	92
5	Finding Nemo	Andrew Stanton	2003	107
6	The Incredibles	Brad Bird	2004	116
7	Cars	John Lasseter	2006	117
8	Ratatouille	Brad Bird	2007	115
9	WALL-E	Andrew Stanton	2008	104
10	Up	Pete Docter	2009	101

```
SELECT * from movies ;
```

RESET

Exercise 3 — Tasks

1. Find all the Toy Story movies ✓
2. Find all the movies directed by John Lasseter ✓
3. Find all the movies (and director) not directed by John Lasseter ✓
4. Find all the WALL-* movies ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) Find all the Toy Story movies

Ans : SELECT * from movies where title like 'Toy%';

2) Find all the movies directed by John Lasseter

Ans : SELECT title from movies where director='John Lasseter';

3) Find all the movies (and director) not directed by John Lasseter

Ans : SELECT title,director from movies where not director='John Lasseter';

4) Find all the WALL-* movies

Ans : SELECT title from movies where title like 'WALL%';

SQL Lesson 4: Filtering and sorting Query results

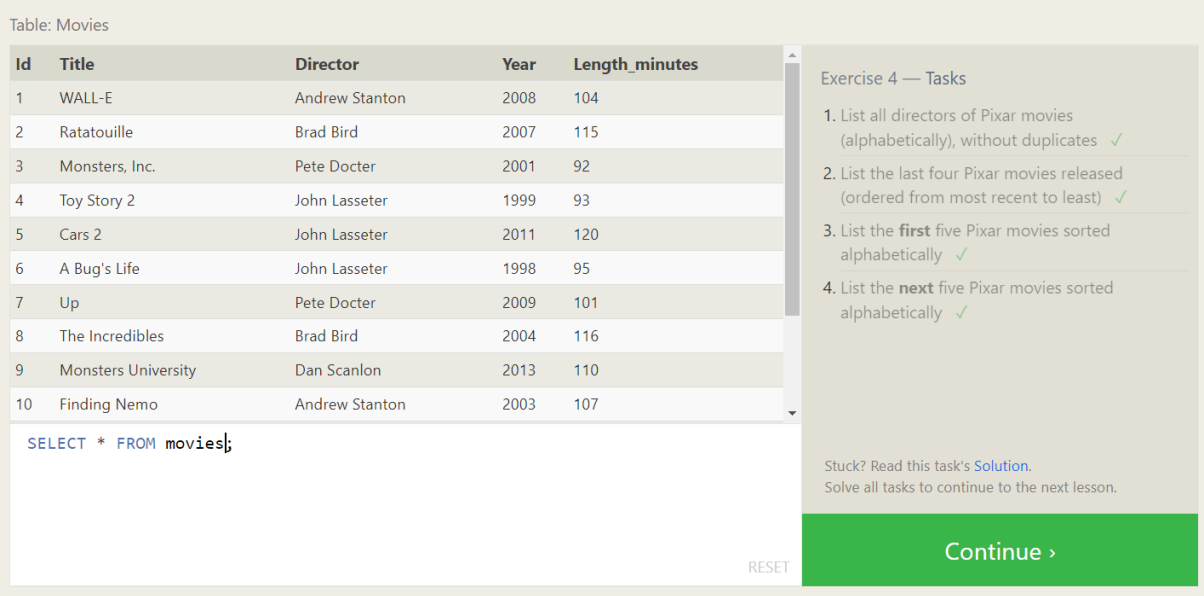


Table: Movies

Id	Title	Director	Year	Length_minutes
1	WALL-E	Andrew Stanton	2008	104
2	Ratatouille	Brad Bird	2007	115
3	Monsters, Inc.	Pete Docter	2001	92
4	Toy Story 2	John Lasseter	1999	93
5	Cars 2	John Lasseter	2011	120
6	A Bug's Life	John Lasseter	1998	95
7	Up	Pete Docter	2009	101
8	The Incredibles	Brad Bird	2004	116
9	Monsters University	Dan Scanlon	2013	110
10	Finding Nemo	Andrew Stanton	2003	107

```
SELECT * FROM movies;
```

RESET

Exercise 4 — Tasks

1. List all directors of Pixar movies (alphabetically), without duplicates ✓
2. List the last four Pixar movies released (ordered from most recent to least) ✓
3. List the **first** five Pixar movies sorted alphabetically ✓
4. List the **next** five Pixar movies sorted alphabetically ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) List all directors of Pixar movies (alphabetically), without duplicates

Ans : SELECT distinct director FROM movies order by director asc;

2) List the last four Pixar movies released (ordered from most recent to least)

Ans : SELECT title FROM movies order by year desc limit 4;

3) List the first five Pixar movies sorted alphabetically

Ans : SELECT title FROM movies order by title asc limit 5;

4) List the next five Pixar movies sorted alphabetically

Ans : SELECT title FROM movies order by title asc limit 5 offset 5;

SQL Review: Simple SELECT Queries

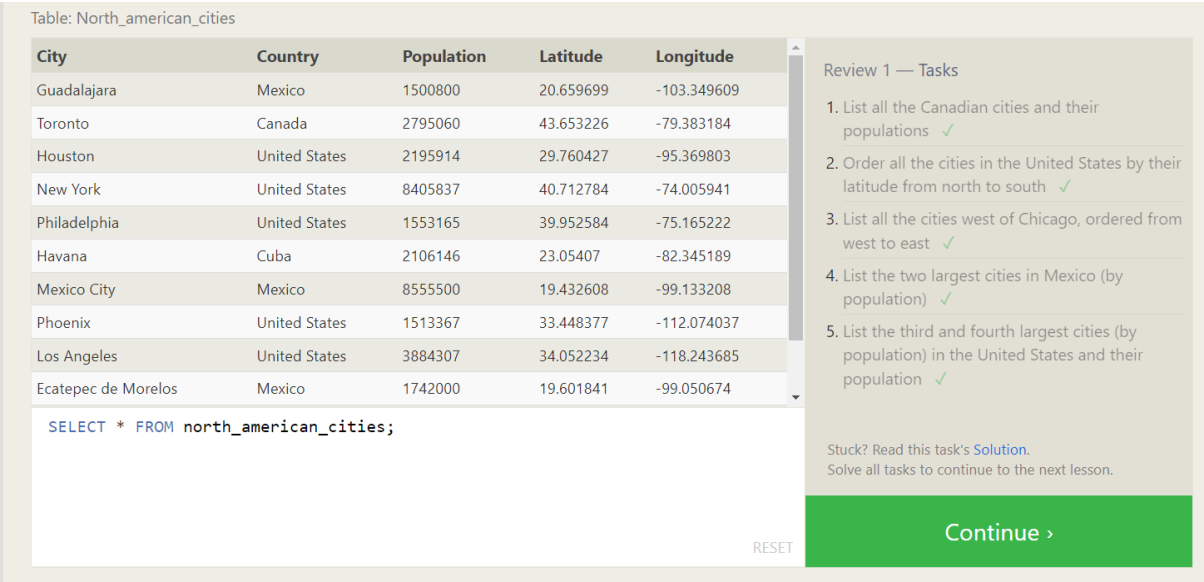


Table: North_american_cities

City	Country	Population	Latitude	Longitude
Guadalajara	Mexico	1500800	20.659699	-103.349609
Toronto	Canada	2795060	43.653226	-79.383184
Houston	United States	2195914	29.760427	-95.369803
New York	United States	8405837	40.712784	-74.005941
Philadelphia	United States	1553165	39.952584	-75.165222
Havana	Cuba	2106146	23.05407	-82.345189
Mexico City	Mexico	8555500	19.432608	-99.133208
Phoenix	United States	1513367	33.448377	-112.074037
Los Angeles	United States	3884307	34.052234	-118.243685
Ecatepec de Morelos	Mexico	1742000	19.601841	-99.050674

```
SELECT * FROM north_american_cities;
```

RESET

Review 1 — Tasks

1. List all the Canadian cities and their populations ✓
2. Order all the cities in the United States by their latitude from north to south ✓
3. List all the cities west of Chicago, ordered from west to east ✓
4. List the two largest cities in Mexico (by population) ✓
5. List the third and fourth largest cities (by population) in the United States and their population ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) List all the Canadian cities and their populations

Ans : SELECT city,population FROM north_american_cities where country='Canada';

2) Order all the cities in the United States by their latitude from north to south

Ans : SELECT city FROM north_american_cities where country='United States' order by latitude desc;

3) List all the cities west of Chicago, ordered from west to east

Ans : SELECT * FROM north_american_cities WHERE longitude<-87.629798 order by longitude;

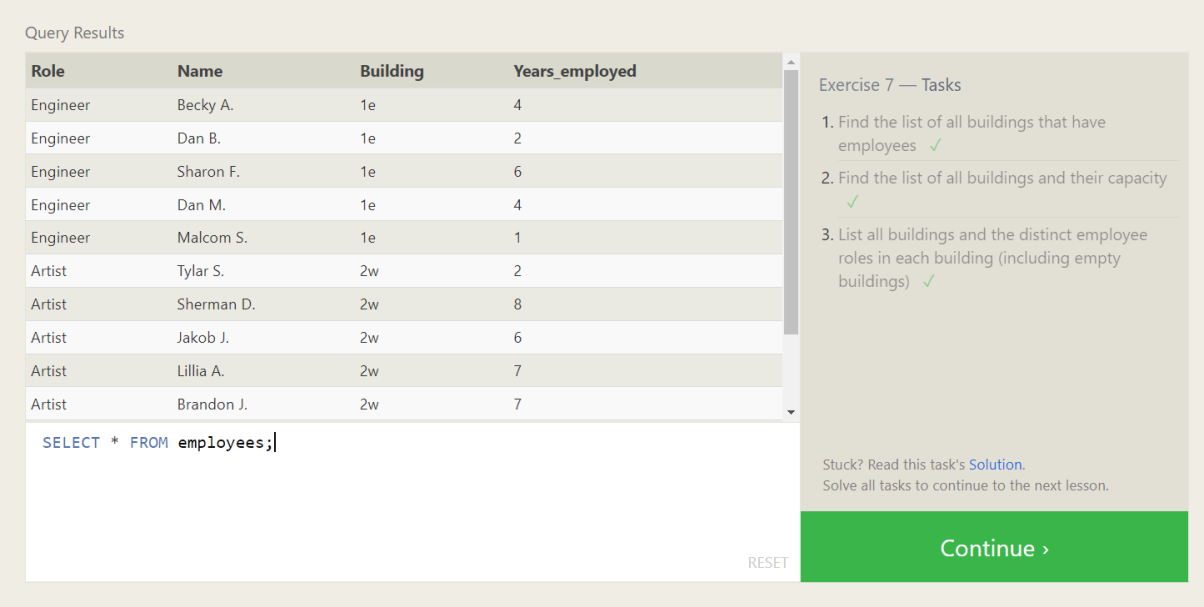
4) List the two largest cities in Mexico (by population)

Ans : SELECT * FROM north_american_cities where country='Mexico' order by population desc limit 2;

5) List the third and fourth largest cities (by population) in the United States and their population

Ans : SELECT * FROM north_american_cities where country='United States' order by population desc limit 2 offset 2;

SQL Lesson 7: OUTER JOINs



Query Results

Role	Name	Building	Years_employed
Engineer	Becky A.	1e	4
Engineer	Dan B.	1e	2
Engineer	Sharon F.	1e	6
Engineer	Dan M.	1e	4
Engineer	Malcom S.	1e	1
Artist	Tylar S.	2w	2
Artist	Sherman D.	2w	8
Artist	Jakob J.	2w	6
Artist	Lillia A.	2w	7
Artist	Brandon J.	2w	7

```
SELECT * FROM employees;
```

RESET

Exercise 7 — Tasks

1. Find the list of all buildings that have employees ✓
2. Find the list of all buildings and their capacity ✓
3. List all buildings and the distinct employee roles in each building (including empty buildings) ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) Find the list of all buildings that have employees

Ans : SELECT distinct building FROM employees;

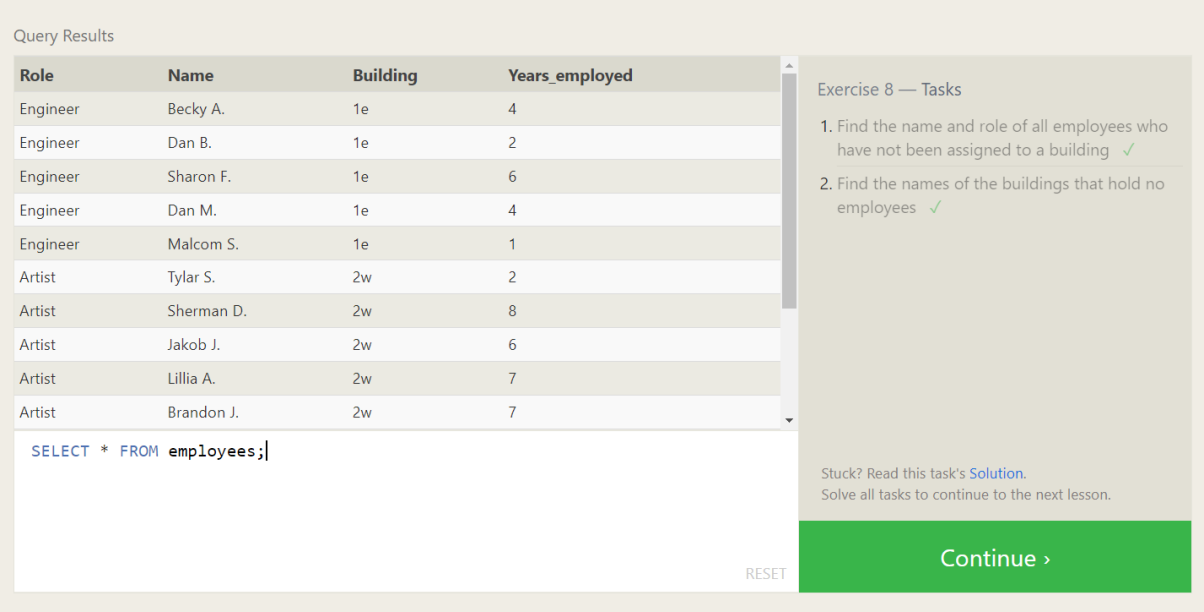
2) Find the list of all buildings and their capacity

Ans : SELECT * FROM buildings;

3) List all buildings and the distinct employee roles in each building (including empty buildings)

Ans : SELECT distinct building_name,role FROM buildings left join employees on building_name=building;

SQL Lesson 8: A short note on NULLs



Query Results

Role	Name	Building	Years_employed
Engineer	Becky A.	1e	4
Engineer	Dan B.	1e	2
Engineer	Sharon F.	1e	6
Engineer	Dan M.	1e	4
Engineer	Malcom S.	1e	1
Artist	Tylar S.	2w	2
Artist	Sherman D.	2w	8
Artist	Jakob J.	2w	6
Artist	Lillia A.	2w	7
Artist	Brandon J.	2w	7

```
SELECT * FROM employees;
```

RESET

Exercise 8 — Tasks

1. Find the name and role of all employees who have not been assigned to a building ✓
2. Find the names of the buildings that hold no employees ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

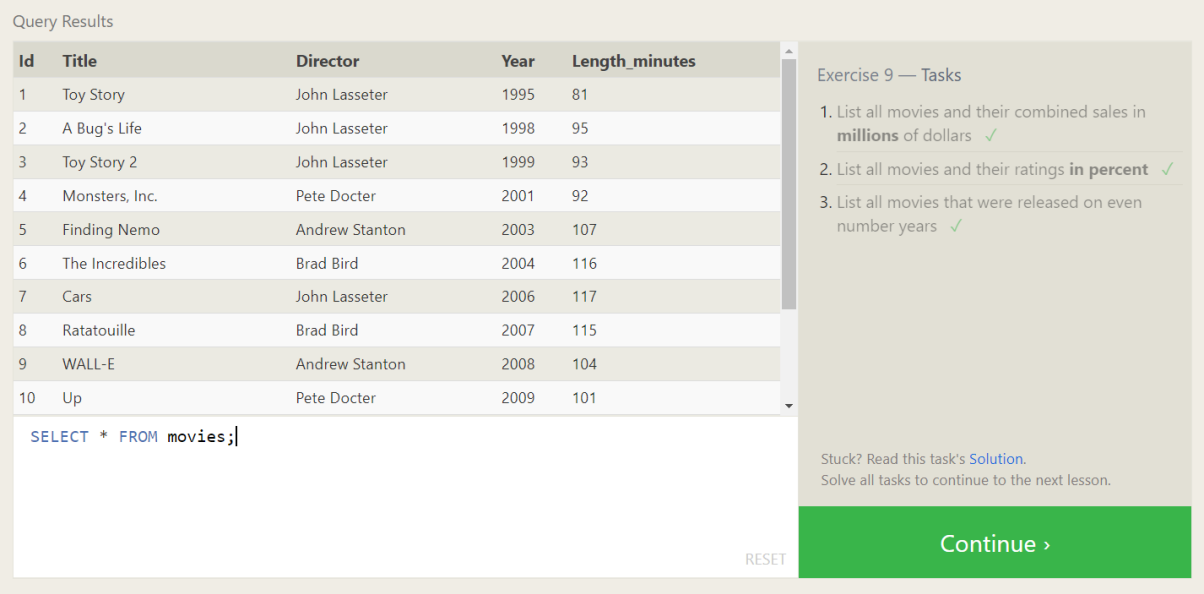
1) Find the name and role of all employees who have not been assigned to a building

Ans : SELECT * FROM employees where building is null;

2) Find the names of the buildings that hold no employees

Ans : SELECT * FROM buildings left join employees on building_name = building where building is null;

SQL Lesson 9: Queries with expressions



Query Results

Id	Title	Director	Year	Length_minutes
1	Toy Story	John Lasseter	1995	81
2	A Bug's Life	John Lasseter	1998	95
3	Toy Story 2	John Lasseter	1999	93
4	Monsters, Inc.	Pete Docter	2001	92
5	Finding Nemo	Andrew Stanton	2003	107
6	The Incredibles	Brad Bird	2004	116
7	Cars	John Lasseter	2006	117
8	Ratatouille	Brad Bird	2007	115
9	WALL-E	Andrew Stanton	2008	104
10	Up	Pete Docter	2009	101

```
SELECT * FROM movies;
```

RESET

Exercise 9 — Tasks

1. List all movies and their combined sales in **millions** of dollars ✓
2. List all movies and their ratings **in percent** ✓
3. List all movies that were released on even number years ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) List all movies and their combined sales in millions of dollars

Ans : SELECT title,(domestic_sales+international_sales)/1000000 as sales FROM movies join boxoffice on id=movie_id ;

2) List all movies and their ratings in percent

Ans : SELECT title,rating*10 FROM movies join boxoffice on id=movie_id ;

3) List all movies that were released on even number years

Ans : SELECT title FROM movies join boxoffice on id=movie_id where year%2=0;

SQL Lesson 10: Queries with aggregates (Pt. 1)

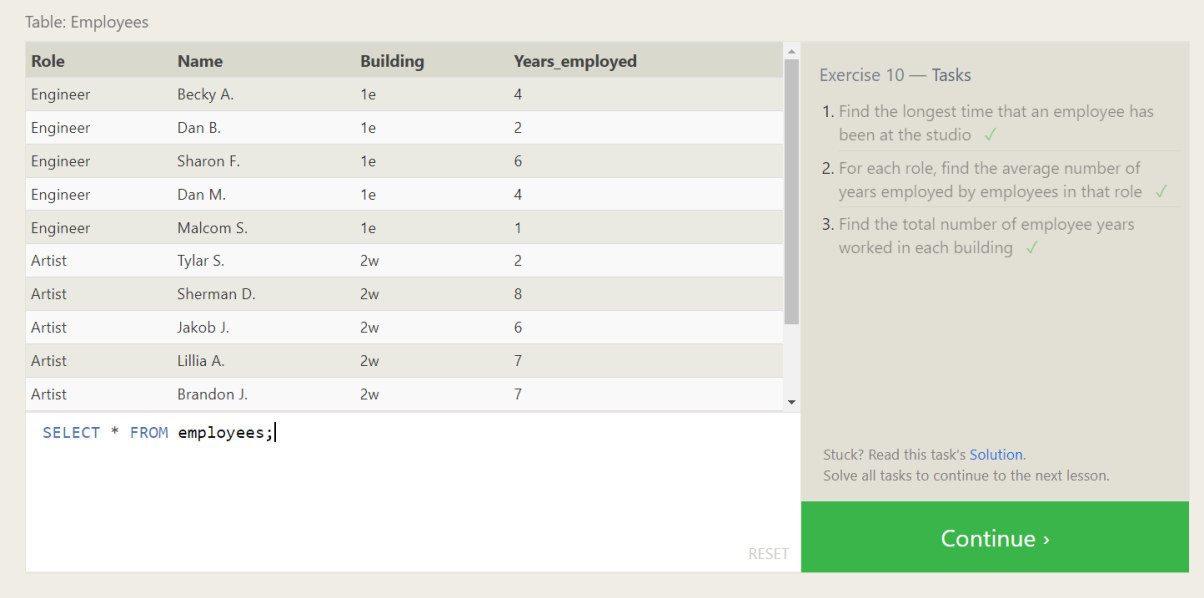


Table: Employees

Role	Name	Building	Years_employed
Engineer	Becky A.	1e	4
Engineer	Dan B.	1e	2
Engineer	Sharon F.	1e	6
Engineer	Dan M.	1e	4
Engineer	Malcom S.	1e	1
Artist	Tylar S.	2w	2
Artist	Sherman D.	2w	8
Artist	Jakob J.	2w	6
Artist	Lillia A.	2w	7
Artist	Brandon J.	2w	7

```
SELECT * FROM employees;
```

RESET

Exercise 10 — Tasks

1. Find the longest time that an employee has been at the studio ✓
2. For each role, find the average number of years employed by employees in that role ✓
3. Find the total number of employee years worked in each building ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) Find the longest time that an employee has been at the studio

Ans : SELECT * FROM employees order by Years_employed desc limit 1;

2) For each role, find the average number of years employed by employees in that role

Ans : SELECT role,avg(Years_employed) FROM employees group by role;

3) Find the total number of employee years worked in each building

Ans : SELECT building,sum(years_employed) FROM employees group by building;

SQL Lesson 11: Queries with aggregates (Pt. 2)

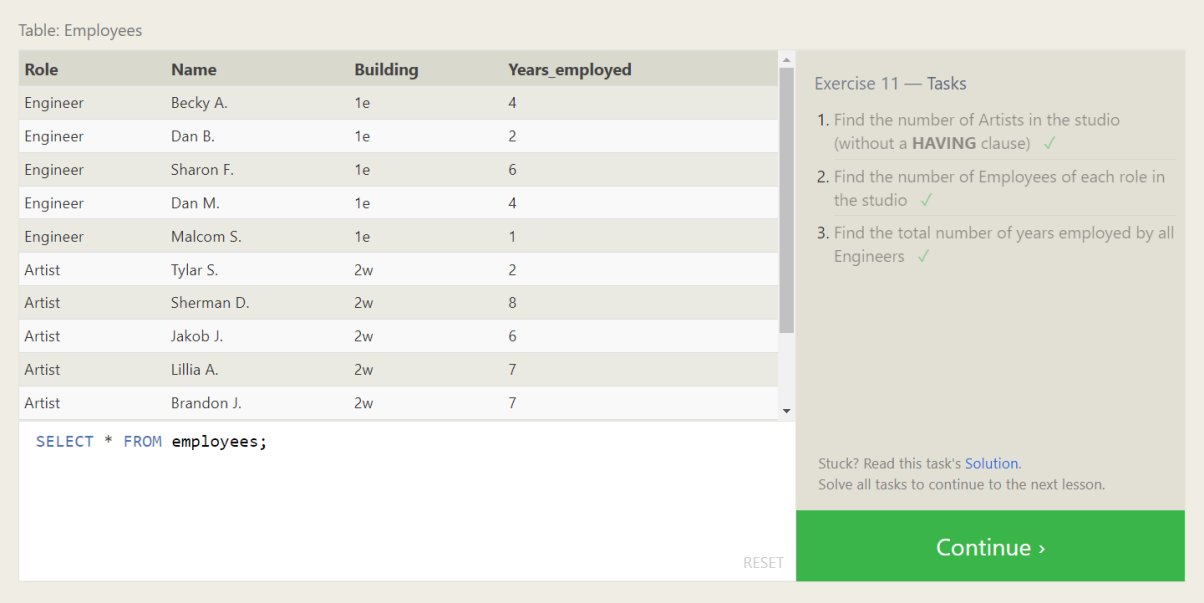


Table: Employees

Role	Name	Building	Years_employed
Engineer	Becky A.	1e	4
Engineer	Dan B.	1e	2
Engineer	Sharon F.	1e	6
Engineer	Dan M.	1e	4
Engineer	Malcom S.	1e	1
Artist	Tylar S.	2w	2
Artist	Sherman D.	2w	8
Artist	Jakob J.	2w	6
Artist	Lillia A.	2w	7
Artist	Brandon J.	2w	7

```
SELECT * FROM employees;
```

RESET

Exercise 11 — Tasks

1. Find the number of Artists in the studio (without a **HAVING** clause) ✓
2. Find the number of Employees of each role in the studio ✓
3. Find the total number of years employed by all Engineers ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) Find the number of Artists in the studio (without a HAVING clause)

Ans : SELECT count(role) FROM employees where role='Artist';

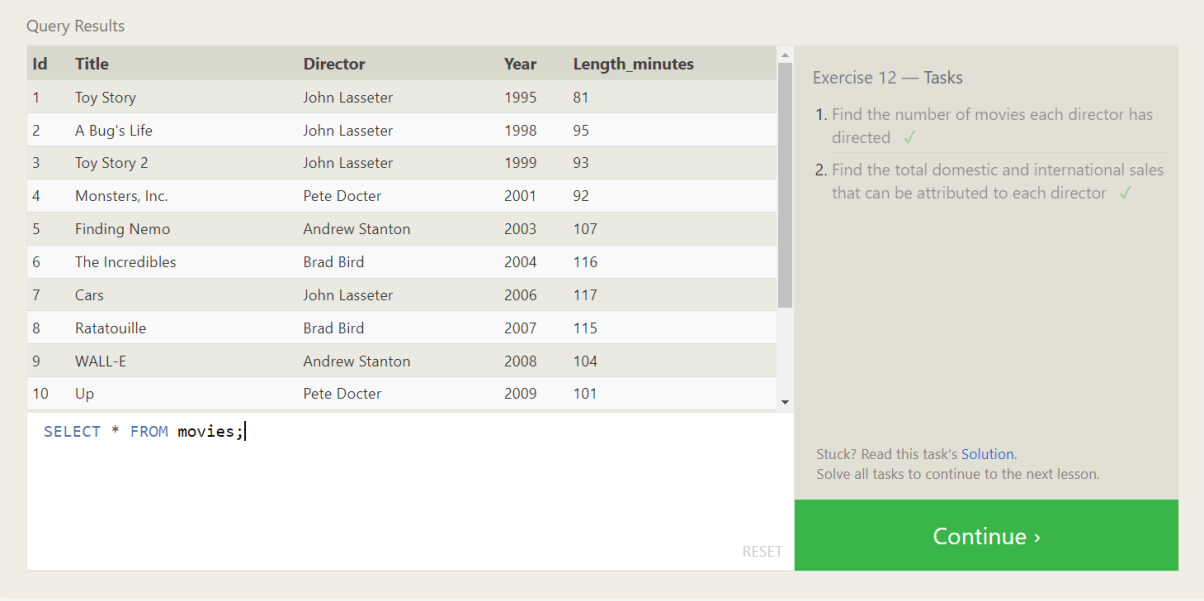
2) Find the number of Employees of each role in the studio

Ans : SELECT role,count(role) FROM employees group by role;

3) Find the total number of years employed by all Engineers

Ans : SELECT sum(Years_employed) FROM employees where role='Engineer';

SQL Lesson 12: Order of execution of a Query



Query Results

Id	Title	Director	Year	Length_minutes
1	Toy Story	John Lasseter	1995	81
2	A Bug's Life	John Lasseter	1998	95
3	Toy Story 2	John Lasseter	1999	93
4	Monsters, Inc.	Pete Docter	2001	92
5	Finding Nemo	Andrew Stanton	2003	107
6	The Incredibles	Brad Bird	2004	116
7	Cars	John Lasseter	2006	117
8	Ratatouille	Brad Bird	2007	115
9	WALL-E	Andrew Stanton	2008	104
10	Up	Pete Docter	2009	101

```
SELECT * FROM movies;
```

RESET

Exercise 12 — Tasks

1. Find the number of movies each director has directed ✓
2. Find the total domestic and international sales that can be attributed to each director ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

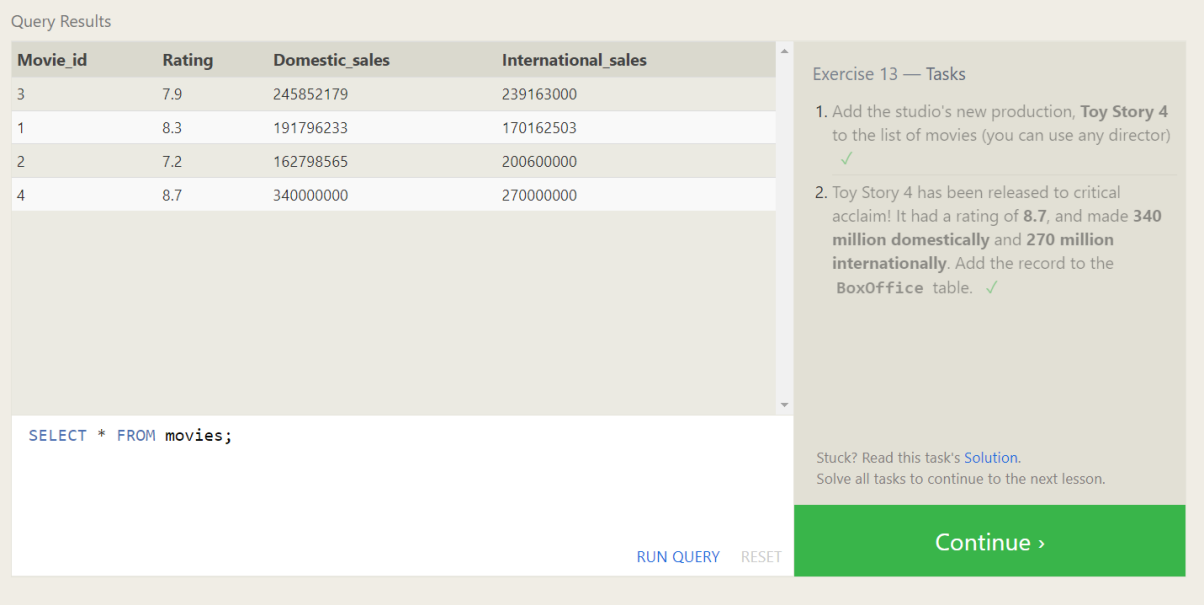
1) Find the number of movies each director has directed

Ans : SELECT director,count(title) as movies FROM movies group by director;

2) Find the total domestic and international sales that can be attributed to each director

Ans : SELECT director,sum(Domestic_sales+international_sales) FROM movies join boxoffice on id=movie_id group by director;

SQL Lesson 13: Inserting rows



1) Add the studio's new production, Toy Story 4 to the list of movies (you can use any director)

Ans : INSERT into movies values(4,'Toy Story 4','John Lasseter',2014,90);

2) Toy Story 4 has been released to critical acclaim! It had a rating of 8.7, and made 340 million domestically and 270 million internationally. Add the record to the BoxOffice table.

Ans : INSERT INTO Boxoffice (Movie_id, Rating, Domestic_sales, International_sales)VALUES (4, 8.7, 340000000, 270000000);

SQL Lesson 14: Updating rows

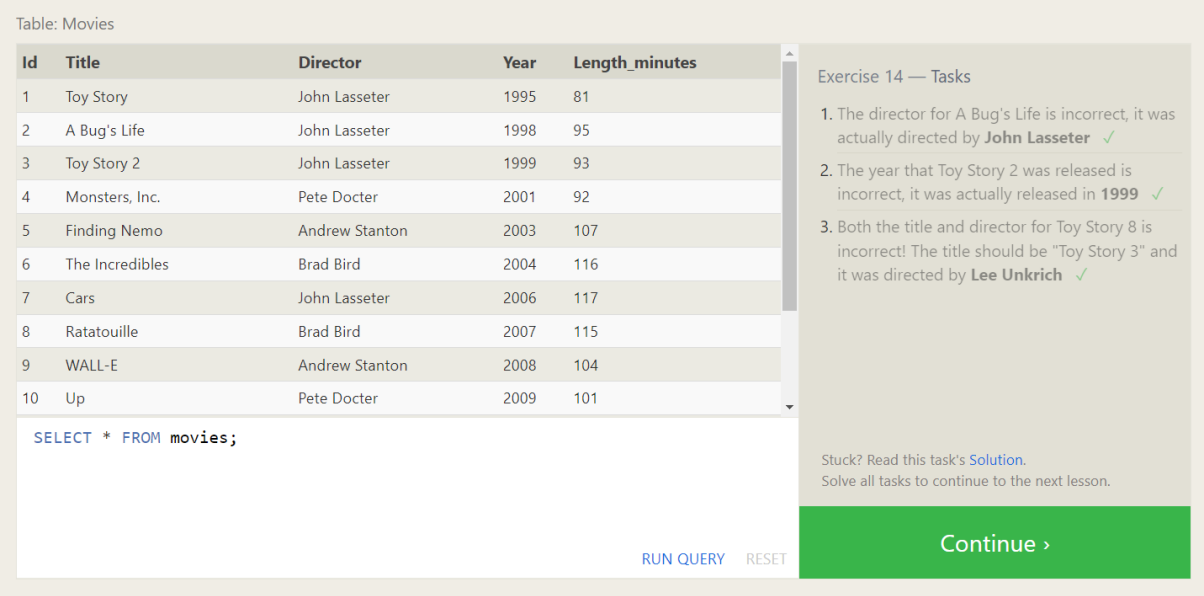


Table: Movies

Id	Title	Director	Year	Length_minutes
1	Toy Story	John Lasseter	1995	81
2	A Bug's Life	John Lasseter	1998	95
3	Toy Story 2	John Lasseter	1999	93
4	Monsters, Inc.	Pete Docter	2001	92
5	Finding Nemo	Andrew Stanton	2003	107
6	The Incredibles	Brad Bird	2004	116
7	Cars	John Lasseter	2006	117
8	Ratatouille	Brad Bird	2007	115
9	WALL-E	Andrew Stanton	2008	104
10	Up	Pete Docter	2009	101

```
SELECT * FROM movies;
```

RUN QUERY RESET

Exercise 14 — Tasks

1. The director for A Bug's Life is incorrect, it was actually directed by **John Lasseter** ✓
2. The year that Toy Story 2 was released is incorrect, it was actually released in **1999** ✓
3. Both the title and director for Toy Story 8 is incorrect! The title should be "Toy Story 3" and it was directed by **Lee Unkrich** ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

1) The director for A Bug's Life is incorrect, it was actually directed by John Lasseter

Ans : UPDATE movies SET director='John Lasseter' WHERE id=2;

2) The year that Toy Story 2 was released is incorrect, it was actually released in 1999

Ans : UPDATE movies SET year=1999 WHERE title='Toy Story 2';

3) Both the title and director for Toy Story 8 is incorrect! The title should be "Toy Story 3" and it was directed by Lee Unkrich

Ans : UPDATE movies

SET title = "Toy Story 3", director = "Lee Unkrich"

WHERE id = 11;

SQL Lesson 15: Deleting rows

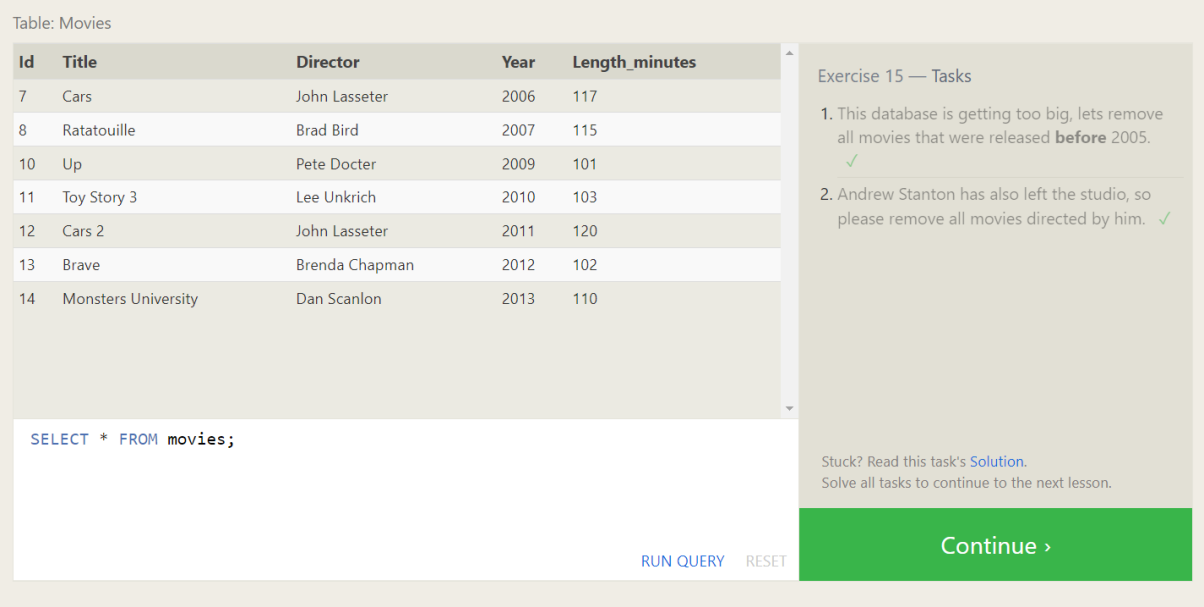


Table: Movies

Id	Title	Director	Year	Length_minutes
7	Cars	John Lasseter	2006	117
8	Ratatouille	Brad Bird	2007	115
10	Up	Pete Docter	2009	101
11	Toy Story 3	Lee Unkrich	2010	103
12	Cars 2	John Lasseter	2011	120
13	Brave	Brenda Chapman	2012	102
14	Monsters University	Dan Scanlon	2013	110

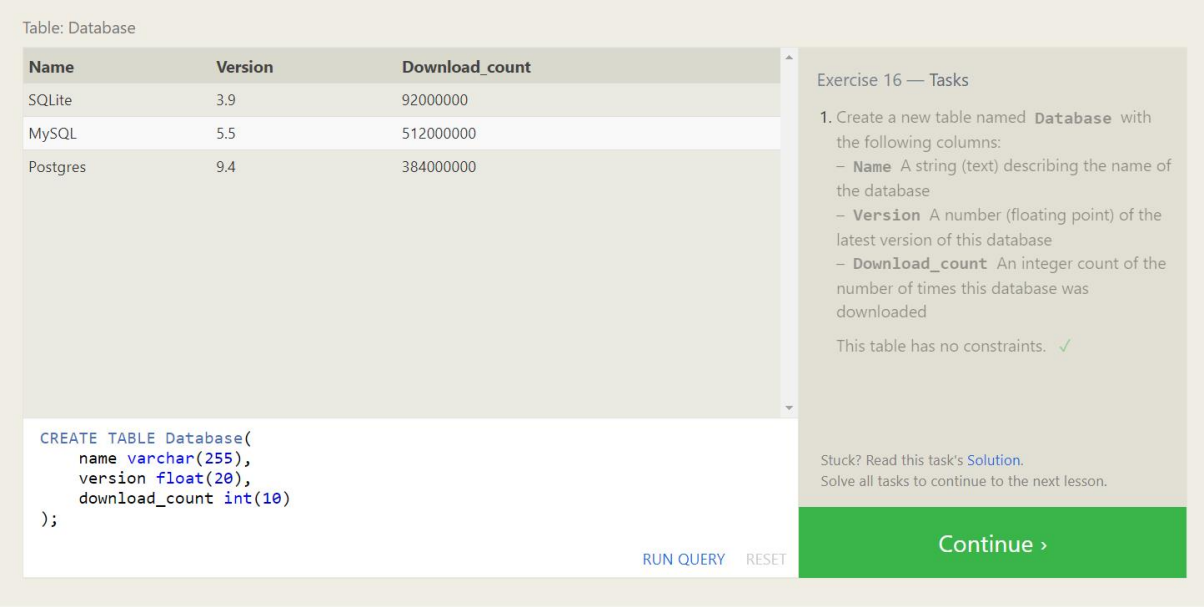
1) This database is getting too big, lets remove all movies that were released before 2005.

Ans : DELETE from movies WHERE year<2005;

2) Andrew Stanton has also left the studio, so please remove all movies directed by him.

Ans : DELETE from movies WHERE director='Andrew Stanton';

SQL Lesson 16: Creating tables



1) Create a new table named Database with the following columns:

– Name A string (text) describing the name of the database

– Version A number (floating point) of the latest version of this database

– Download_count An integer count of the number of times this database was downloaded

This table has no constraints.

Ans :

```
CREATE TABLE Database(
    name varchar(255),
    version float(20),
    download_count int(10)
);
```

SQL Lesson 17: Altering tables

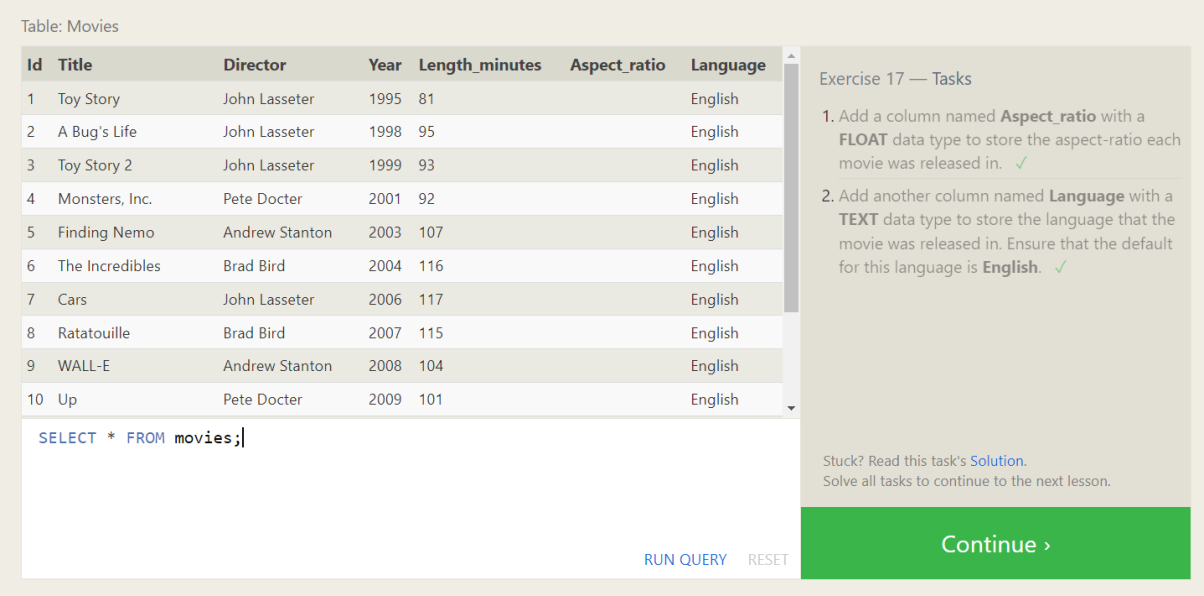


Table: Movies

Id	Title	Director	Year	Length_minutes	Aspect_ratio	Language
1	Toy Story	John Lasseter	1995	81		English
2	A Bug's Life	John Lasseter	1998	95		English
3	Toy Story 2	John Lasseter	1999	93		English
4	Monsters, Inc.	Pete Docter	2001	92		English
5	Finding Nemo	Andrew Stanton	2003	107		English
6	The Incredibles	Brad Bird	2004	116		English
7	Cars	John Lasseter	2006	117		English
8	Ratatouille	Brad Bird	2007	115		English
9	WALL-E	Andrew Stanton	2008	104		English
10	Up	Pete Docter	2009	101		English

```
SELECT * FROM movies;
```

RUN QUERY RESET

Exercise 17 — Tasks

1. Add a column named **Aspect_ratio** with a **FLOAT** data type to store the aspect-ratio each movie was released in. ✓
2. Add another column named **Language** with a **TEXT** data type to store the language that the movie was released in. Ensure that the default for this language is **English**. ✓

Stuck? Read this task's Solution.
Solve all tasks to continue to the next lesson.

Continue ›

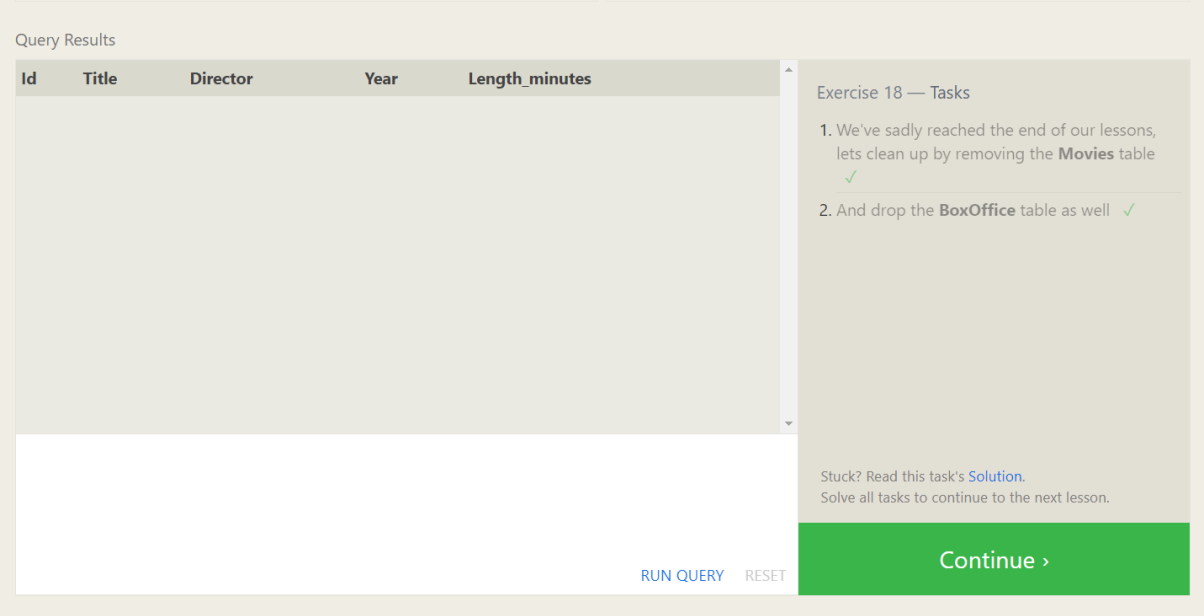
1) Add a column named Aspect_ratio with a FLOAT data type to store the aspect-ratio each movie was released in.

Ans : ALTER TABLE movies ADD COLUMN Aspect_ratio FLOAT;

2) Add another column named Language with a TEXT data type to store the language that the movie was released in. Ensure that the default for this language is English.

Ans : ALTER TABLE movies ADD COLUMN Language TEXT default 'English';

SQL Lesson 18: Dropping tables



1) We've sadly reached the end of our lessons, lets clean up by removing the Movies table

Ans : DROP table movies

2) And drop the BoxOffice table as well

Ans : DROP table boxoffice