1a. query command
SELECT film_id, title FROM film;

1b
Old query

Seq Scan on film (cost=0.00..64.00
rows=1000 width=388)

Data output | Messages | Notifications

Successfully run. Total query runtime: 397 msec.
1 rows affected.

new query

Seq Scan on film (cost=0.00..64.00
rows=1000 width=19)

Data output | Messages | Notifications

Successfully run. Total query runtime: 99 msec.
1 rows affected.

Difference: The cost from both queries is the same 0.00-64.00. However, the actual query runtime differs that the new query takes faster than the original one.

2a. query Command
SELECT title, release_year, rental_rate
FROM film
ORDER BY title, release_year, rental_rate DESC;

Data output   Messages   Notifications

	title character varying (255)	release_year integer	rental_rate numeric (4,2)
1	Academy Dinosaur	2006	0.99
2	Ace Goldfinger	2006	4.99
3	Adaptation Holes	2006	2.99
4	Affair Prejudice	2006	2.99
5	African Egg	2006	2.99
6	Agent Truman	2006	2.99
7	Airplane Sierra	2006	4.99
8	Airport Pollock	2006	4.99
9	Alabama Devil	2006	2.99
10	Aladdin Calendar	2006	4.99
11	Alamo Videotape	2006	0.99
12	Alaska Phantom	2006	0.99
13	Ali Forever	2006	4.99
14	Alice Fantasia	2006	0.99
15	Alien Center	2006	2.99
16	Alley Evolution	2006	2.99
17	Alone Trip	2006	0.99
18	Alter Victory	2006	0.99
19	Amadeus Holy	2006	0.99
20	Amelie Hellfighters	2006	4.99
21	American Circus	2006	4.99
22	Amistad Midsummer	2006	2.99
23	Anaconda Confessions	2006	0.99
24	Analyze Hoosiers	2006	2.99
25	Angels Life	2006	2.99
26	Annie Identity	2006	0.99
27	Anonymous Human	2006	0.99
28	Anthem Luke	2006	4.99
29	Antitrust Tomatoes	2006	2.99
30	Anything Savannah	2006	2.99

Total rows: 1000 of 1000   Query complete 00:00:17.949

3a. query command
SELECT rating, AVG(rental_rate) FROM film GROUP BY rating;

	rating mpaa_rating	avg numeric
1	PG	3.051855670
2	NC-17	2.970952380
3	R	2.938717948
4	G	2.888876404
5	PG-13	3.034843049

3b. maximum rental durations for each rating category
Query command:
SELECT rating, MAX(rental_duration) FROM film GROUP BY rating;

	rating mpaa_rating	max smallint
1	PG	7
2	NC-17	7
3	R	7
4	G	7
5	PG-13	7

Minimum rental durations for each rating category
Query command:
SELECT rating, MIN(rental_duration) FROM film GROUP BY rating;

	rating mpaa_rating	min smallint
1	PG	3
2	NC-17	3
3	R	3
4	G	3
5	PG-13	3

4a. The first step is extract which involves collecting the data from user behavior data sources; then converted extracted data into another format that we are using; last inserting/loading the transformed data into new database. Usually, Data Engineer is one who are responsible for this.

4b. The data probably will not be in the same format or linked to current data in the data warehouse. It would make the process very manual and time consuming.

BOUNES

```sql
1   SELECT rating, MIN (replacement_cost), MAX(replacement_cost)
2   FROM film GROUP BY rating
3   ORDER BY CASE WHEN rating='G' then 1
4   WHEN rating='PG' then 2
5   WHEN rating ='PG-13' then 3
6   WHEN rating = 'R' then 4
7   ELSE 5
8   END
```

Data output   Messages   Notifications

	rating mpaa_rating 🔒	min numeric 🔒	max numeric 🔒
1	G	9.99	29.99
2	PG	9.99	29.99
3	PG-13	9.99	29.99
4	R	9.99	29.99
5	NC-17	9.99	29.99