

2.a there are three actors with the first name Ed. The answer is the same for SQL and Excel. I found it easier to use SQL because the process was faster once the program functioned properly.

The screenshot shows the pgAdmin 4 interface. On the left, the Object Explorer displays the database structure for 'Rockbuster/postgres@PostgreSQL 15'. The 'Schemas' folder is selected. The main pane shows a SQL query:

```
1 SELECT COUNT(*)
2 FROM actor
3 WHERE first_name = 'Ed';
```

The 'Data Output' tab shows the results of the query in a table:

count
3

The status bar at the bottom indicates 'Total rows: 1 of 1' and 'Query complete 00:00:00.096'.

The screenshot shows an Excel spreadsheet with the results of the SQL query. The data is as follows:

actor_id	first_name	last_name	last_update
3	Ed	Chase	47:57.6
136	Ed	Mansfield	47:57.6
179	Ed	Guinness	47:57.6

3.a payment_id, customer_id, staff_id, rental_id, amount, payment_date.

pgAdmin 4

File Object Tools Help

Object Explorer

- Servers (1)
 - PostgreSQL 15
 - Databases (2)
 - Rockbuster
 - Cast
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas
 - Subscriptions
 - postgres
 - Cast
 - Catalogs
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas
 - Subscriptions
 - Login/Group Roles
 - Tablespaces

Dashboard Properties SQL Statistics Dependencies Dependents Processes Rockbuster/postgres@PostgreSQL 15*

Rockbuster/postgres@PostgreSQL 15

No limit

Data Output Messages Notifications

	table_catalog	table_schema	table_name	table_type	self_referencing_column_name	reference_generation	user_defined_type_catalog	user_define
1	Rockbuster	public	actor	BASE TABLE	[null]	[null]	[null]	[null]
2	Rockbuster	public	store	BASE TABLE	[null]	[null]	[null]	[null]
3	Rockbuster	public	address	BASE TABLE	[null]	[null]	[null]	[null]
4	Rockbuster	public	category	BASE TABLE	[null]	[null]	[null]	[null]
5	Rockbuster	public	city	BASE TABLE	[null]	[null]	[null]	[null]
6	Rockbuster	public	country	BASE TABLE	[null]	[null]	[null]	[null]
7	Rockbuster	public	customer	BASE TABLE	[null]	[null]	[null]	[null]
8	Rockbuster	public	film_actor	BASE TABLE	[null]	[null]	[null]	[null]
9	Rockbuster	public	film_category	BASE TABLE	[null]	[null]	[null]	[null]
10	Rockbuster	public	inventory	BASE TABLE	[null]	[null]	[null]	[null]
11	Rockbuster	public	language	BASE TABLE	[null]	[null]	[null]	[null]
12	Rockbuster	public	rental	BASE TABLE	[null]	[null]	[null]	[null]
13	Rockbuster	public	staff	BASE TABLE	[null]	[null]	[null]	[null]
14	Rockbuster	public	payment	BASE TABLE	[null]	[null]	[null]	[null]
15	Rockbuster	public	film	BASE TABLE	[null]	[null]	[null]	[null]

Total rows: 15 of 15 Query complete 00:00:00.176 Ln 3, Col 30

3.c another way to list all of the names of tables it to go to Object Explorer-> Databases-> Rockbuster-> Schemas-> Tables

File Object Tools Help

Object Explorer

- Databases (2)
 - Rockbuster
 - Cast
 - Catalogs (2)
 - Event Triggers
 - Extensions
 - Foreign Data Wrappers
 - Languages
 - Publications
 - Schemas (1)
 - public
 - Aggregates
 - Collations
 - Domains
 - FTS Configurations
 - FTS Dictionaries
 - FTS Parsers
 - FTS Templates
 - Foreign Tables
 - Functions
 - Materialized Views
 - Operators
 - Procedures
 - Sequences
 - Tables (15)
 - actor
 - address
 - category
 - city
 - country

Dashboard Properties SQL Statistics Dependencies Dependents Processes Rockbuster/postgres@PostgreSQL 15*

Rockbuster/postgres@PostgreSQL 15

No limit

Query Query History Scratch Pad

```

1 SELECT * FROM information_schema.tables
2 WHERE table_schema = 'public'
3 AND table_type = 'BASE TABLE'
  
```

Data Output Messages Notifications

	table_catalog	table_schema	table_name	table_type	self_referencing_column_name	reference_generation	user_defined_type_catalog	user_def
1	Rockbuster	public	actor	BASE TABLE	[null]	[null]	[null]	[null]
2	Rockbuster	public	store	BASE TABLE	[null]	[null]	[null]	[null]
3	Rockbuster	public	address	BASE TABLE	[null]	[null]	[null]	[null]
4	Rockbuster	public	category	BASE TABLE	[null]	[null]	[null]	[null]
5	Rockbuster	public	city	BASE TABLE	[null]	[null]	[null]	[null]
6	Rockbuster	public	country	BASE TABLE	[null]	[null]	[null]	[null]
7	Rockbuster	public	customer	BASE TABLE	[null]	[null]	[null]	[null]
8	Rockbuster	public	film_actor	BASE TABLE	[null]	[null]	[null]	[null]

Total rows: 15 of 15 Query complete 00:00:00.131 Ln 3, Col 1

pgAdmin 4

File Object Tools Help

Object Explorer

- Foreign Tables
- Functions
- Materialized Views
- Operators
- Procedures
- Sequences
- Tables (15)
 - actor
 - address
 - category
 - city
 - country
 - customer
 - film
 - film_actor
 - film_category
 - inventory
 - language
 - payment
 - rental
 - store
 - staff
- Trigger Functions
- Types (1)
 - mpaa_rating
- Views
- Subscriptions
- postgres
 - Casts
 - Catalogs

Dashboard Properties SQL Statistics Dependencies Dependents Processes Rockbuster/postgres@PostgreSQL 15*

Rockbuster/postgres@PostgreSQL 15

Query Query History

```

1 SELECT * FROM information_schema.tables
2 WHERE table_schema = 'public'
3 AND table_type = 'BASE TABLE'

```

Scratch Pad

Data Output Messages Notifications

	table_catalog	table_schema	table_name	table_type	self_referencing_column_name	reference_generation	user_defined_type_catalog	user_def
8	Rockbuster	public	film_actor	BASE TABLE	[null]	[null]	[null]	[null]
9	Rockbuster	public	film_category	BASE TABLE	[null]	[null]	[null]	[null]
10	Rockbuster	public	inventory	BASE TABLE	[null]	[null]	[null]	[null]
11	Rockbuster	public	language	BASE TABLE	[null]	[null]	[null]	[null]
12	Rockbuster	public	rental	BASE TABLE	[null]	[null]	[null]	[null]
13	Rockbuster	public	staff	BASE TABLE	[null]	[null]	[null]	[null]
14	Rockbuster	public	payment	BASE TABLE	[null]	[null]	[null]	[null]
15	Rockbuster	public	film	BASE TABLE	[null]	[null]	[null]	[null]

Total rows: 15 of 15 Query complete 00:00:00.131 Ln 3, Col 1

3.d most films are rented for 6 days.

pgAdmin 4

File Object Tools Help

Object Explorer

- Foreign Tables
- Functions
- Materialized Views
- Operators
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- Sequences
- Tables (15)
 - actor
 - address
 - category
 - city
 - country
 - customer
 - film
 - film_actor
 - film_category
 - inventory
 - language
 - payment
 - rental
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Dashboard Properties SQL Statistics Dependencies Dependents Processes Rockbuster/postgres@PostgreSQL 15*

Rockbuster/postgres@PostgreSQL 15

Query Query History

```

1 SELECT rental_duration AS "rented for (in days)", COUNT(*) AS "number of films"
2 FROM film
3 GROUP BY 1
4 ORDER BY 2

```

Scratch Pad

Data Output Messages Notifications

	rented for (in days)	number of films
1	3	191
2	5	191
3	4	203
4	3	203
5	6	212

Total rows: 5 of 5 Query complete 00:00:00.086 Ln 4, Col 1

4.a OLAP: Suitable for handling lots of data READ operations; Analytical and Data Mining System; Use case: ecommerce site, answering business questions like how many units were sold last month or how many items are left in stock

OLTP: Suitable for handling lots of data insertion, deletion, and update requests; Transactional System; Use case: ecommerce site recording and updating interactions like storing new customer order details or updating order shipment status.

5.a the data in the provided invoice is structured because it can be easily organized into respective columns (i.e., Item Number, Quantity, Description, Price, Customer Name, Invoice, and Address)

5.b

Invoice Data

Invoice_#	First_Name	Last_Name	Customer_Addresses	Item_#	QTY	Description	Price
2019001	Timothy	Walker	40 Sheila La Sparks, NV	001	01	New Video Collection Licensing	\$730

Payment Information

Invoice_#	Organization	Org_Address	Account_Name	Account_#
2019001	Oaklanders Sound Studio	4826 Norma Avenue Anderson, TX	Mike Santo	4929331999575422