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Q1:

A:

i:

```
LOAD CSV WITH HEADERS FROM  
'file:///Users/chuqi wang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-  
assignment4/Users.csv' AS row
```

```
MERGE (u:User {user_id: row.user_id})
```

```
ON CREATE SET
```

```
    u.email = row.email,  
    u.joined_date = date(row.joined_date),  
    u.nickname = row.nickname,  
    u.street = row.street,  
    u.city = row.city,  
    u.state = row.state,  
    u.zip = toInteger(row.zip),  
    u.genres = split(row.genres, ",");
```

```
LOAD CSV WITH HEADERS FROM  
'file:///Users/chuqi wang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-  
assignment4/Listeners.csv' AS row
```

```
MERGE (u:User {user_id: row.user_id})
```

```
SET u:Listener,
```

```
    u.subscription = row.subscription,  
    u.first_name = row.first_name,  
    u.last_name = row.last_name;
```

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Artists.csv' AS row
```

```
MERGE (u:User {user_id: row.user_id})
```

```
SET u:Artist,
```

```
    u.bio = row.bio,
```

```
    u.stagename = row.stagename;
```

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Records.csv' AS row
```

```
MERGE (r:Record {record_id: row.record_id})
```

```
ON CREATE SET
```

```
    r.title = row.title,
```

```
    r.genre = row.genre;
```

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Albums.csv' AS row
```

```
MERGE (r:Record {record_id: row.record_id})
```

```
SET r:Album,
```

```
    r.description = row.description;
```

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Singles.csv' AS row
```

```
MATCH (r:Record {record_id: row.record_id})
```

```
SET r:Single,
```

```
    r.video_url = row.video_url;
```

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Reviews.csv' AS row
```

```
MERGE (r:Review {review_id: row.review_id})
```

```
ON CREATE SET
```

```
    r.rating = toInteger(row.rating),
    r.body = row.body;
```

ii:

```
CREATE INDEX user_id_index FOR (u:User) ON (u.user_id);
```

```
CREATE INDEX record_id_index FOR (r:Record) ON (r.record_id);
```

iii:

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Artists_Releases_Record.csv' AS row
```

```
MATCH (a:Artist {user_id: row.artist_user_id})
```

```
MATCH (r:Record {record_id: row.record_id})
```

```
MERGE (a)-[:RELEASE {release_date: date(row.release_date)}]->(r);
```

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Users_Post_Reviews.csv' AS row
```

```
MATCH (u:User {user_id: row.user_id})
```

```
MATCH (r:Review {review_id: row.review_id})
```

```
MERGE (u)-[:POSTED_AT {posted_at: datetime(replace(row.posted_at, " ", "T"))}]->(r);
```

```
LOAD CSV WITH HEADERS FROM
'file:///Users/chuqiwang/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-
assignment4/Reviews_About_Record.csv' AS row
```

```
MATCH (r:Review {review_id: row.review_id})
```

```
MATCH (rec:Record {record_id: row.record_id})
```

```
MERGE (r)-[:ABOUT]->(rec);
```

```
LOAD CSV WITH HEADERS FROM
```

```
'file:///Users/chuqiwan/Desktop/UCI/CS224P/assignments/HW4/zot-music-dataset-assignment4/Upvotes.csv' AS row
```

```
MATCH (u:User {user_id: row.user_id})
```

```
MATCH (r:Review {review_id: row.review_id})
```

```
MERGE (u)-[:UPVOTED]->(r);
```

B:

i:

The image shows a Neo4j Cypher query interface. At the top, the query `neo4j$ CALL db.relationshipTypes;` is entered. Below the query, there are three view options: Table, Text, and Code. The 'Table' view is selected, and the results are displayed in a table with one column, 'relationshipType'. The results are: 'RELEASE', 'POSTED_AT', 'ABOUT', and 'UPVOTED'. At the bottom, there is a slider for 'MAX COLUMN WIDTH'.

relationshipType
"RELEASE"
"POSTED_AT"
"ABOUT"
"UPVOTED"

ii:

```
neo4j$ CALL db.labels;
```

label
"User"
"Listener"
"Artist"
"Record"
"Album"
"Single"
"Review"

Q2:

Query:

```
MATCH (r:Record)
```

```
WITH r LIMIT 1000
```

```
UNWIND keys(r) AS recordKeys
```

```
RETURN DISTINCT recordKeys;
```

Results (screenshot below):

```
1 MATCH (r:Record)
2 WITH r LIMIT 1000
3 UNWIND keys(r) AS recordKeys
4 RETURN DISTINCT recordKeys;
```

Table	recordKeys
Text	"record_id"
Code	"title"
	"genre"
	"video_url"
	"description"

Q3 A:

Query:

```
MATCH (u:User)
```

```
RETURN u
```

```
ORDER BY u.joined_date DESC
```

```
LIMIT 5;
```

Results (screenshot below):

neo4j\$ MATCH (u:User) RETURN u ORDER BY u.joined_date DESC LIMIT 5;

Graph

Table

Text

Code

```

u

[(:User:Listener:Artist {stagename: "jeffrey87",joined_date: "2022-12-18",user_id: "user_nyIhrD99",genres: ["Disco", "R&B", "Classical"],street: "28448 Smith Causeway Apt. 891",nickname: "josephrangel",last_name: "Graham",bio: "Citizen forward try authority man future yourself. Control and recognize yeah how very party.\nEnter face season response. Draw huge fire trouble. Candidate performance never better.",state: "Virginia",subscription: "free",first_name: "Brittany",email: "josephrangel@college.edu"})]

[(:User:Listener {joined_date: "2022-12-12",user_id: "user_cWptaV9B",city: "Ramseyside",genres: ["Latin", "Hip-Hop", "Country", "Gospel"],street: "03158 Evans Via Suite 281",nickname: "duranjoshua",last_name: "Booth",state: "Virginia",subscription: "free",first_name: "Susan",email: "duranjoshua@hotmail.com"})]

[(:User:Listener {zip: 30240,joined_date: "2022-12-10",user_id: "user_OldjtiH5",city: "Simonshire",genres: ["Disco", "Metal", "Rock", "Techno", "Soul", "Jazz", "Blues", "Hip-Hop"],street: "2402 Anderson Glens Apt. 163",nickname: "milesjoshua",last_name: "Wilkerson",state: "Montana",subscription: "yearly",first_name: "Rebekah",email: "milesjoshua@protonmail.com"})]

[(:User:Listener {zip: 85977,joined_date: "2022-11-16",user_id: "user_EtKq93oS",city: "South Debrafurt",genres: ["Rock", "R&B"],street: "755 Carrillo Spur",nickname: "barroyo",last_name: "Hardy",state: "West Virginia",subscription: "yearly",first_name: "Meghan",email: "barroyo@protonmail.com"})]

[(:User:Listener:Artist {zip: 21224,joined_date: "2022-11-06",city: "Timothyberg",last_name: "Torres",bio: "Size why develop have relate chair since. Both chair night character. Play movement against.",subscription: "yearly",user_id: "user_geMlolwT",genres: ["Rock", "Latin", "R&B", "Pop", "Jazz", "Reggae"],street: "7038 Sellers Gardens Apt. 132",nickname: "smithhelen",state: "Louisiana",first_name: "Nathan",email: "smithhelen@protonmail.com"})]

```

Q3 B:

Query:

MATCH (u:User {user_id: "user_WKWGxIa"})-[rel:RELEASE]->(r:Record)

RETURN r, rel.release_date

ORDER BY r.record_id ASC;

Results (screenshot below):

```

1 MATCH (u:User {user_id: "user_WKWGxLZa"})-[:rel:RELEASE]->(r:Record)
2 RETURN r, rel.release_date
3 ORDER BY r.record_id ASC;
4
5

```

Graph
Table
Text
Code

r	rel.release_date
(:Record:Single {record_id: "record_1487gZZ9",video_url: "http://www.williams.net/",genre: "Indie",title: "Civil government find"})	"2020-08-08"
(:Album:Record {record_id: "record_696_41KT",genre: "Techno",description: "Result notice as Congress fact recentl y safe. Behavior hear what.\nOthers often worker make notice. Security affect picture tell matter tax example tea ch.",title: "Hope there scientist"})	"2022-12-26"
(:Album:Record {record_id: "record_9PGDade0",genre: "Gospel",title: "Bring official"})	"2020-07-04"
(:Record:Single {record_id: "record_9WSnH7xj",video_url: "https://www.romero.com/",genre: "Indie",title: "Become better"})	"2022-01-07"
(:Record:Single {record_id: "record_9i6Xv840",video_url: "http://www.wright-campos.com/",genre: "Folk",title: "Im pact wind true"})	"2022-04-11"
(:Album:Record {record_id: "record_rjS126-",genre: "Gospel",description: "Mouth thousand vote price employee mem ber. Region just record face floor sport ball. Method scene low building buy we however.",title: "Whom"})	"2023-11-09"
(:Album:Record {record_id: "record_dVCTabgv",genre: "Rock",description: "Forget order hundred light successful. C areer participant agree. Light detail one threat clear. Hold action treatment firm difference feeling.\nCertainly major person road along board field you.",title: "Court relate"})	"2023-05-21"
(:Album:Record {record_id: "record_ffeLJn0d",genre: "Techno",description: "Care four use always act. Edge compare occur real. Unit answer take involve white administration item.",title: "Professional than"})	"2021-06-01"
(:Album:Record {record_id: "record_pCcJKFJf",genre: "Blues",description: "Position thus look billion movement dis cuss. Discuss early time mention feeling better future again.",title: "Edge lay"})	"2023-08-01"

Q3 C:

Query:

MATCH (l:Listener)

WHERE NOT (l)-[:POSTED_AT]->(:Review)

RETURN COUNT(l) AS count_of_listeners_without_reviews;

Results (screenshot below):


```

1 MATCH (l:Listener)
2 WHERE NOT (l)-[:POSTED_AT]->(:Review)
3 RETURN COUNT(l) AS count_of_listeners_without_reviews;
4

```

Table	count_of_listeners_without_reviews
Text	10
Code	

Q3 D:

Query:

```
MATCH (l:Listener)-[:POSTED_AT]->(r:Review)-[:ABOUT]->(rec:Record {title: "Audience star apply"})
```

```
WHERE r.rating = 5
```

```
RETURN DISTINCT l.first_name, l.last_name
```

```
ORDER BY l.first_name ASC;
```

Results (screenshot below):

```

1 MATCH (l:Listener)-[:POSTED_AT]->(r:Review)-[:ABOUT]->(rec:Record {title: "Audience star apply"})
2 WHERE r.rating = 5
3 RETURN DISTINCT l.first_name, l.last_name
4 ORDER BY l.first_name ASC;
5

```

Table	l.first_name	l.last_name
Text	"Doris"	"Baker"
Code	"Mark"	"Allen"

Q3 E:

Query:

```
MATCH (rec:Record)<-[:ABOUT]-(r:Review)
```

```
WITH rec, COUNT(r) AS review_count  
WHERE review_count > 25  
RETURN rec.record_id, rec.title, review_count  
ORDER BY review_count DESC;
```

Results (screenshot below):

```
1 MATCH (rec:Record)←[:ABOUT]-(r:Review)  
2 WITH rec, COUNT(r) AS review_count  
3 WHERE review_count > 25  
4 RETURN rec.record_id, rec.title, review_count  
5 ORDER BY review_count DESC;  
6
```

Table	
Text	
Code	

rec.record_id	rec.title	review_count
"record_51zx5w5v"	"Focus idea defense"	26

Q3 F:

Query:

```
MATCH (l:Listener)-[:POSTED_AT]->(r:Review)  
WITH l, COUNT(r) AS review_count  
WHERE review_count > 60  
MATCH (l)-[:UPVOTED]->(u:Review)  
WITH l, review_count, COUNT(u) AS upvote_count  
WHERE upvote_count > 500  
RETURN l.user_id
```

ORDER BY l.user_id ASC

LIMIT 5;

Results (screenshot below):

```
1 MATCH (l:Listener)-[:POSTED_AT]→(r:Review)
2 WITH l, COUNT(r) AS review_count
3 WHERE review_count > 60
4 MATCH (l)-[:UPVOTED]→(u:Review)
5 WITH l, review_count, COUNT(u) AS upvote_count
6 WHERE upvote_count > 500
7 RETURN l.user_id
8 ORDER BY l.user_id ASC
9 LIMIT 5;
10
```

Table	l.user_id
Text	"user_RFwrYnro"
Code	"user_V0VNPkG9"
	"user_kH57AloB"
	"user_s20mtRZS"
	"user_vJ-Cm6Mk"

Q3 G:

Query:

```
MATCH (l1:Listener)-[:POSTED_AT]→(r1:Review)-[:ABOUT]→(rec:Record)<-[:ABOUT]-(r2:Review)<-[:POSTED_AT]-(l2:Listener)
```

```
WHERE l1 <> l2 AND r1.rating = r2.rating AND id(l1) < id(l2)
```

```
RETURN DISTINCT l1.last_name AS listener1_last_name, l2.last_name AS listener2_last_name,  
rec.record_id
```

```
ORDER BY rec.record_id ASC
```

```
LIMIT 10;
```

Results (screenshot below):

```
1 MATCH (l1:Listener)-[:POSTED_AT]-(r1:Review)-[:ABOUT]-(rec:Record)←[:ABOUT]-(r2:Review)←  
[:POSTED_AT]-(l2:Listener)  
2 WHERE l1 <> l2 AND r1.rating = r2.rating AND id(l1) < id(l2)  
3 RETURN DISTINCT l1.last_name AS listener1_last_name, l2.last_name AS listener2_last_name,  
  rec.record_id  
4 ORDER BY rec.record_id ASC  
5 LIMIT 10;  
6
```

listener1_last_name	listener2_last_name	rec.record_id
"Wyatt"	"Young"	"record_--4_Ht0N"
"Myers"	"Sanders"	"record_--4_Ht0N"
"Sanders"	"Gallegos"	"record_--4_Ht0N"
"Myers"	"Gallegos"	"record_--4_Ht0N"
"Mullins"	"Sherman"	"record_--4_Ht0N"
"Copeland"	"Sherman"	"record_--4_Ht0N"
"Mullins"	"Copeland"	"record_--4_Ht0N"
"Brown"	"Wright"	"record_-2WQnP0g"
"Copeland"	"Wright"	"record_-2WQnP0g"
"Allen"	"Taylor"	"record_-2WQnP0g"

Q3 H:

Query:

```
MATCH (a:User)-[:POSTED_AT]->(r1:Review)-[:ABOUT]->(rec1:Record)<-[:RELEASE]-(b:User),
```

```
      (b)-[:POSTED_AT]->(r2:Review)-[:ABOUT]->(rec2:Record)<-[:RELEASE]-(a)
```

```
WHERE id(a) < id(b)
```

```
WITH DISTINCT a.nickname AS user_a_nickname, b.nickname AS user_b_nickname
```

```
RETURN user_a_nickname, user_b_nickname
```

ORDER BY user_a_nickname ASC

LIMIT 10;

Results (screenshot below):

1

MATCH

(a:User)-[:POSTED_AT]→(r1:Review)-[:ABOUT]→(rec1:Record)←[:RELEASE]-(b:User),

2

|

(b)-[:POSTED_AT]→(r2:Review)-[:ABOUT]→(rec2:Record)←[:RELEASE]-(a)

3

WHERE

id(a) < id(b)

4

WITH DISTINCT

a.nickname AS user_a_nickname, b.nickname AS user_b_nickname

5

RETURN

user_a_nickname, user_b_nickname

6

ORDER BY

user_a_nickname ASC

7

LIMIT

10;

8

	user_a_nickname	user_b_nickname
1	"amandawatkins"	"velasquezmargaret"
2	"amandawatkins"	"nataliecoffey"
3	"amandawatkins"	"smithhelen"
4	"anthony59"	"chelsealawson"
5	"anthony59"	"smithhelen"
6	"anthony59"	"zjohnson"
7	"anthony59"	"courtney36"
8	"anthony59"	"candace45"
9	"bettyhahn"	"freemanlaurie"
10	"bettyhahn"	"sandersjanet"

Q3 I:

i

Query:

```

MATCH (start:Artist {user_id: "user_0ZleALBX"}), (target:Artist)

WHERE start <> target

WITH shortestPath((start)-[*]-(target)) AS path

WHERE path IS NOT NULL

RETURN MIN(length(path)) AS min_shortest_path_length;

```

Results (screenshot below):

1	MATCH (start:Artist {user_id: "user_0ZleALBX"}), (target:Artist)
2	WHERE start <> target
3	WITH shortestPath((start)-[*]-(target)) AS path
4	WHERE path IS NOT NULL
5	RETURN MIN(length(path)) AS min_shortest_path_length;
6	
7	

Table	min_shortest_path_length
1	3
Text	
Warn	
Code	

ii

Query:

```

MATCH (start:Artist {user_id: "user_0ZleALBX"}), (target:Artist)

WHERE start <> target

WITH shortestPath((start)-[*]-(target)) AS path, target

WHERE length(path) = 6

RETURN target.user_id AS artist_user_id

ORDER BY artist_user_id ASC

LIMIT 5;

```

Results (screenshot below):

```
1 MATCH (start:Artist {user_id: "user_0ZIeALBX"}), (target:Artist)
2 WHERE start <-> target
3 WITH shortestPath((start)-[*]-(target)) AS path, target
4 WHERE length(path) = 6
5 RETURN target.user_id AS artist_user_id
6 ORDER BY artist_user_id ASC
7 LIMIT 5;
8
```

	artist_user_id
1	"user_-2ljew-e"
2	"user_-EzOnF9o"
3	"user_AQrv2BCA"
4	"user_ByXkfiU9"
5	"user_D5t1hYVg"