QUERIES:

All the queries are in the file queries.cypher.

## BASIC QUERIES:

1 - Find all patients older than 60 together with their cases and description

*MATCH (p:Patient)-[:HAS\_CASE]->(c:Case)*

*WHERE p.age > 60*

*RETURN p.name AS name, p.age AS age, c.description AS description;*

|  |  |  |
| --- | --- | --- |
| **Name** | **Age** | **Description** |
| “Mario” | 89 | “Hypertension check” |
| “Lucas” | 75 | “Asthma follow-up” |

2 - Find the number of patients assigned to each doctor

*MATCH (d:Doctor)<-[:ASSIGNED\_TO]-(c:Case)<-[:HAS\_CASE]-(p:Patient)*

*RETURN d.name AS doctor\_name, COUNT(p) AS num\_patients;*

|  |  |
| --- | --- |
| **doctor\_name** | **num\_patients** |
| “Paco” | 3 |
| “Javier” | 2 |
| “Juana” | 5 |
| “Carmen” | 1 |
| “Ramón” | 1 |

## INTERMEDIATE QUERIES:

1 - Obtain a list of doctors along with the diseases diagnosed in 'Open' cases assigned to them, as well as the total number of open cases per doctor in the list.

*MATCH (d:Doctor)<-[:ASSIGNED\_TO]-(c:Case)-[:HAS\_APPOINTMENT]->(appointment)-[:DIAGNOSED]->(dis:Disease)*

*WHERE c.status = 'Open'*

*RETURN d.name AS Doctor,*

*collect(DISTINCT dis.scientific\_name) AS diseases\_diagnosed,*

*count(DISTINCT c) AS open\_cases;*

|  |  |  |
| --- | --- | --- |
| **Doctor** | **diseases\_diagnosed** | **open\_cases** |
| “Paco” | ["Hypertension", "Diabetes Mellitus", "Plasmodium"] | 3 |
| “Juana” | ["Asthma", "Bronchitis", "Pneumonia"] | 4 |
| “Carmen” | ["Diabetes Mellitus"] | 1 |

2 - Patients treated with the same medicament for different diseases

*MATCH (d1:Disease)-[:TREATED\_WITH]->(t:Treatment)<-[:TREATED\_WITH]-(d2:Disease)*

*WHERE d1 <> d2*

*WITH t, collect(DISTINCT d1.scientific\_name) AS diseases*

*MATCH (a:Appointment)-[:USED\_TREATMENT]->(t)<-[:TREATED\_WITH]-(d:Disease)*

*MATCH (p:Person:Patient)-[:HAS\_CASE]->(:Case)-[:HAS\_APPOINTMENT]->(a)*

*RETURN t.name AS Med, diseases AS Diseases, collect(DISTINCT p.name) AS Patients*

*ORDER BY Med;*

|  |  |  |
| --- | --- | --- |
| **Med** | **Diseases** | **Patients** |
| “Antibiotics” | ["Pneumonia", "Bronchitis", "Mycobacterium tuberculosis"] | ["Miguel", "Carlos"] |

## ADVANCED QUERIES:

1 - Find all the doctors who have treated patients diagnosed with the same disease as patients referred by Dr. Paco.

*MATCH (drPaco:Doctor {name: 'Paco'})-[:REFERRED\_TO]-(c:Case)-[:HAS\_APPOINTMENT]->(a:Appointment)-[:DIAGNOSED]->(disease:Disease)*

*MATCH (c2:Case)-[:HAS\_APPOINTMENT]->(a2:Appointment)-[:DIAGNOSED]->(disease)*

*MATCH (c2)-[:ASSIGNED\_TO]->(otherDoctor:Doctor)*

*WHERE NOT otherDoctor = drPaco*

*RETURN DISTINCT otherDoctor.name AS doctor, disease.scientific\_name AS disease*

|  |  |
| --- | --- |
| **doctor** | **disease** |
| “Juana” | “Asthma” |
| “Carmen” | “Diabetes Mellitus” |

2- Finds the minimum path between a patient and a doctor where he was referred, going through cases, apointments and diagnosis

*MATCH path = shortestPath((p:Person:Patient)-[:HAS\_CASE|HAS\_APPOINTMENT|DIAGNOSED|REFERRED\_TO\*]-(d:Person:Doctor))*

*RETURN p.name AS Patient, d.name AS Doctor, length(path) AS Path\_length, nodes(path) AS Nodes, relationships(path) AS Relationships*

*ORDER BY Path\_length ASC LIMIT 10;*

|  |  |  |
| --- | --- | --- |
| **Patient** | **Doctor** | **Path\_length** |
| “Pepe” | “Javier” | 2 |
| “Sofia” | “Javier” | 2 |
| “Ana” | “Paco” | 2 |
| “Maria” | “Paco” | 2 |
| “Laura” | “Juana” | 2 |

A diagram of a network

Description automatically generated