Handin - Neo4j

Load file with relations into database:

Create players, actions and teams with their relationships:

```
CALL apoc.load.json("Sample_Game_3_events.json")
YIELD value
UNWIND value.data AS data
MERGE (p:Player {id: data.from.id, name: data.from.name})
MERGE (a:Action{name: data.type.name, ballTime:data.end.time - data.start.time })
MERGE(t:Team {id: data.team.id, name: data.team.name})
MERGE (p)-[:plays_for]->(t)
MERGE (p)-[:has_action] ->(a)
```

Find all the passes in the match between the players and create relationships:

```
CALL apoc.load.json("Sample_Game_3_events.json")
YIELD value
UNWIND value.data AS data with data WHERE data.type.name = "PASS"
MATCH (p:Player{id: data.from.id})
MATCH(b:Player{id: data.to.id})
CREATE (p)-[:pass_to]->(b)
```

Questions:

Who is the most active player (in terms of passing and receiving the ball)?

```
Match(p:Player) -[r1:pass_to]-> (b:Player)
WITH b, COUNT(r1) AS PassCount
MATCH(p:Player) - [r2:has_action]-> (a:Action) WHERE a.name = "PASS"
WITH b, p , PassCount, Count(r2) AS RecieveCount
RETURN p, PassCount + RecieveCount AS sumCount ORDER BY sumCount DESC
```

Answer:

p	sumCount
{ "identity": 3706, "labels": ["Player"], "properties": { "name": "Player 24", "id": "P3591" } }	125

The following query will state that player 24 is the most active player regarding passing and receiving the ball.

Which players have attempted to score?

```
MATCH (p:Player)-[r]->(a)
WHERE a.name = "SHOT"
RETURN p.name, COUNT(r) AS NumberOfShots
ORDER BY NumberOfShots DESC
```

Answer:

p.name	NumberOfShots
"Player 27"	3
"Player 22"	3
"Player 24"	2
"Player 10"	2
"Player 6"	2
"Player 7"	1
"Player 2"	1
"Player 26"	1
"Player 16"	1
"Player 18"	1
"Player 5"	1
"Player 1"	1
"Player 32"	1

Which team has kept the ball longer?

```
MATCH (p:Player) -[:plays_for]-> (:Team{name: "Team A"}), (p)-[:has_action]->
(a1:Action)
WITH sum(a1.ballTime) as TeamASum
MATCH(p:Player)-[:plays_for]-> (:Team{name: "Team B"}), (p)-[:has_action]->
(a2:Action)
WITH TeamASum, sum(a2.ballTime) AS TeamBSum
RETURN TeamASum, TeamBSum
```

Answer:

TeamA Sum	TeamB Sum
1782.4800000000093	1755.6000000000026

Team A has had the ball the longest during the match.

Is there any close 'societies' between players (passing the ball to each other)?

```
MATCH(p:Player) -[r:pass_to]-> (b:Player),
 (p) -[:plays_for]-> (t1:Team),
 (b)-[:plays_for]->(t2:Team)
RETURN  p.name,b.name,t1.name,t2.name,  COUNT(r)  AS  NumOfPasses  ORDER  BY
NumOfPasses DESC
```

Answer:

	p.name	b.name	t1.name	t2.name	NumOfPasses
1	"Player 1"	"Player 5"	"Team A"	"Team A"	17
2	"Player 2"	"Player 1"	"Team A"	"Team A"	13
3	"Player 5"	"Player 7"	"Team A"	"Team A"	13
4	"Player 5"	"Player 1"	"Team A"	"Team A"	12
5	"Player 21"	"Player 24"	"Team B"	"Team B"	12
6	"Player 6"	"Player 7"	"Team A"	"Team A"	11
7	"Player 20"	"Player 21"	"Team B"	"Team B"	11
8	"Player 13"	"Player 1"	"Team A"	"Team A"	10

Yes there is, players on the same team mostly pass the ball to each other. On Team A has passed the ball mostly to Player 5.

How close is the connection between two specific players?

```
MATCH(p:Player{name:"Player 1" }) -[r:pass_to]-> (b:Player{name: "Player 5"})
WITH p, b, COUNT(r) AS NumOfPassesPlayer1
MATCH(b)-[r:pass_to]->(p)
RETURN  NumOfPassesPlayer1,COUNT(r) AS NumOfPassesPlayer5
```

Answer:

NumOfPassesPlayer1	NumOfPassesPlayer5
17	12

Player 1 passes the ball 17 times to Player 5 and Player 5 passes the ball to player 1 12 times.