UNIVERSIDAD POLITECNICA SALESIANA

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Similitud de Coseno

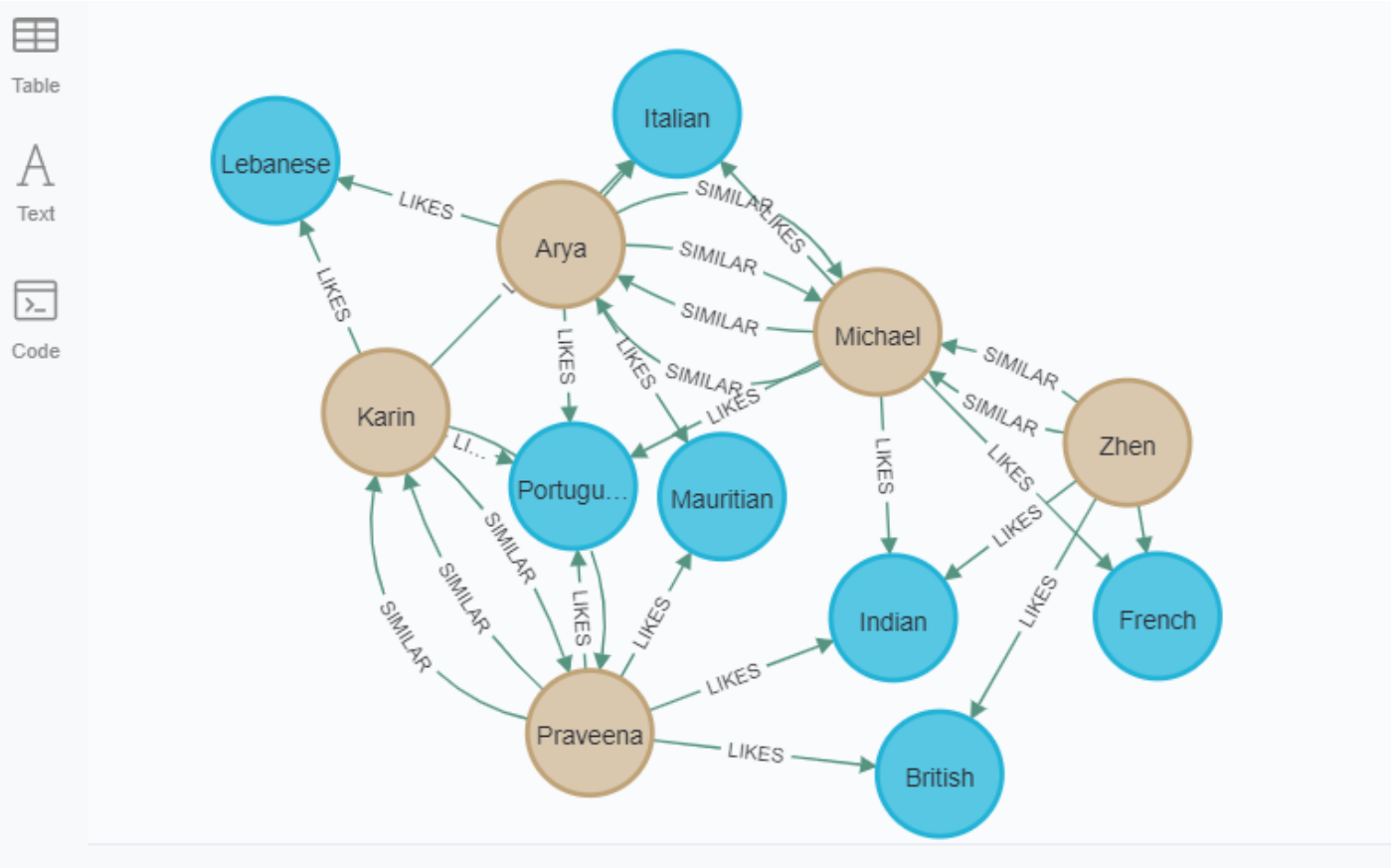
In [4]:
```
from neo4j import GraphDatabase
username = ('neo4j')
password = ('egfa2209')
uri = "bolt://localhost:7687"
driver = GraphDatabase.driver(uri, auth=(username, password))
session2= driver.session()
cocina =session2.run("CREATE (french:Cuisine {name:'French'}), (italian:Cuisin
e {name:'Italian'}),  (indian:Cuisine {name:'Indian'}), (lebanese:Cuisine {nam
e:'Lebanese'}), (portuguese:Cuisine {name:'Portuguese'}),(british:Cuisine {nam
e:'British'}),  (mauritian:Cuisine {name:'Mauritian'})")
persona = session2.run("CREATE (zhen:Person {name: 'Zhen'}), (praveena:Person
 {name: 'Praveena'}), (michael:Person {name:'Michael'}), (arya:Person {name:
 'Arya'}), (karin:Person {name: 'Karin'})")
relacion = session2.run("CREATE (praveena)-[:LIKES {score: 9}]->(indian),  (pr
aveena)-[:LIKES {score: 7}]->(portuguese), (praveena)-[:LIKES {score: 8}]->(br
itish), (praveena)-[:LIKES {score: 1}]->(mauritian)")
relacion2= session2.run ("CREATE (zhen)-[:LIKES {score: 10}]->(french), (zhen)
-[:LIKES {score: 6}]->(indian), (zhen)-[:LIKES {score: 2}]->(british)")
relacion3= session2.run (" CREATE (michael)-[:LIKES {score: 8}]->(french), (mi
chael)-[:LIKES {score: 7}]->(italian), (michael)-[:LIKES {score: 9}]->(india
n), (michael)-[:LIKES {score: 3}]->(portuguese)")
relacion4 = session2.run (" CREATE (arya)-[:LIKES {score: 10}]->(lebanese),
 (arya)-[:LIKES {score: 10}]->(italian),  (arya)-[:LIKES {score: 7}]->(portugu
ese),  (arya)-[:LIKES {score: 9}]->(mauritian)")
relacion5 = session2.run (" CREATE (karin)-[:LIKES {score: 9}]->(lebanese), (k
arin)-[:LIKES {score: 7}]->(italian), (karin)-[:LIKES {score: 10}]->(portugues
e)")

session2.close()
driver.close()
```

In [5]:

```
#obtener similitud entre los gustos de la persona
gustos = session2.run(" MATCH (p:Person), (c:Cuisine)OPTIONAL MATCH (p)-[like
s:LIKES]->(c) WITH {item:id(p), weights: collect(coalesce(likes.score, gds.uti
l.NaN()))} AS userData WITH collect(userData) AS data CALL gds.alpha.similarit
y.cosine.write({data: data,topK: 1, similarityCutoff: 0.1}) YIELD nodes, simil
arityPairs, writeRelationshipType, writeProperty, min, max, mean, stdDev, p25,
p50, p75, p90, p95, p99, p999, p100 RETURN nodes, similarityPairs, writeRelati
onshipType, writeProperty, min, max, mean, p95")
print (gustos)
for c in gustos:
    print (c, 'ln')
print (' ')
print (' ')
print (' ')
similitudGustos = session2.run (" MATCH (p:Person), (c:Cuisine)  OPTIONAL MATC
H (p)-[likes:LIKES]->(c) WITH {item:id(p), weights: collect(coalesce(likes.sco
re, gds.util.NaN()))} AS userData  WITH collect(userData) AS data  CALL gds.al
pha.similarity.cosine.stream({data: data})  YIELD item1, item2, count1, count
2, similarity  RETURN gds.util.asNode(item1).name AS from, gds.util.asNode(ite
m2).name AS to, similarity  ORDER BY similarity DESC ")
for c2 in similitudGustos:
    print (c2, "\n")


totalsimilitud= session2.run(" MATCH (p:Person), (c:Cuisine)  OPTIONAL MATCH
 (p)-[likes:LIKES]->(c)  WITH {item:id(p), weights: collect(coalesce(likes.sco
re, gds.util.NaN()))} AS userData   WITH collect(userData) AS data  CALL gds.a
lpha.similarity.cosine.write({ data: data,topK: 1,similarityCutoff: 0.1})  YIE
LD nodes, similarityPairs, writeRelationshipType, writeProperty, min, max, mea
n, stdDev, p25, p50, p75, p90, p95, p99, p999, p100  RETURN nodes, similarityP
airs, writeRelationshipType, writeProperty, min, max, mean, p95")
for re in   totalsimilitud:
    print (re, "\n")
```

```
<neo4j.work.result.Result object at 0x000002767F86C2C8>
<Record nodes=5 similarityPairs=5 writeRelationshipType='SIMILAR' writeProper
ty='score' min=0.9542236328125 max=1.0000038146972656 mean=0.9824020385742187
p95=1.0000038146972656> ln



<Record from='Praveena' to='Karin' similarity=1.0>

<Record from='Karin' to='Praveena' similarity=1.0>

<Record from='Michael' to='Arya' similarity=0.9788908326303921>

<Record from='Arya' to='Michael' similarity=0.9788908326303921>

<Record from='Arya' to='Karin' similarity=0.9610904115204073>

<Record from='Karin' to='Arya' similarity=0.9610904115204073>

<Record from='Zhen' to='Michael' similarity=0.9542262139256075>

<Record from='Michael' to='Zhen' similarity=0.9542262139256075>

<Record from='Praveena' to='Michael' similarity=0.9429903335828895>

<Record from='Michael' to='Praveena' similarity=0.9429903335828895>

<Record from='Zhen' to='Praveena' similarity=0.9191450300180579>

<Record from='Praveena' to='Zhen' similarity=0.9191450300180579>

<Record from='Karin' to='Michael' similarity=0.8498063272285821>

<Record from='Arya' to='Praveena' similarity=0.7194014606174091>

<Record from='Zhen' to='Arya' similarity=0.0>

<Record nodes=5 similarityPairs=5 writeRelationshipType='SIMILAR' writeProper
ty='score' min=0.9542236328125 max=1.0000038146972656 mean=0.9824020385742187
p95=1.0000038146972656>
```

Arbol de nodos



Bibliografia

https://neo4j.com/docs/graph-algorithms/current/labs-algorithms/cosine/ (https://neo4j.com/docs/graph-algorithms/current/labs-algorithms/cosine/)

In [ ]: