
Alumno: Carlos Andrade

Docente: Ing. Diego Quisi.

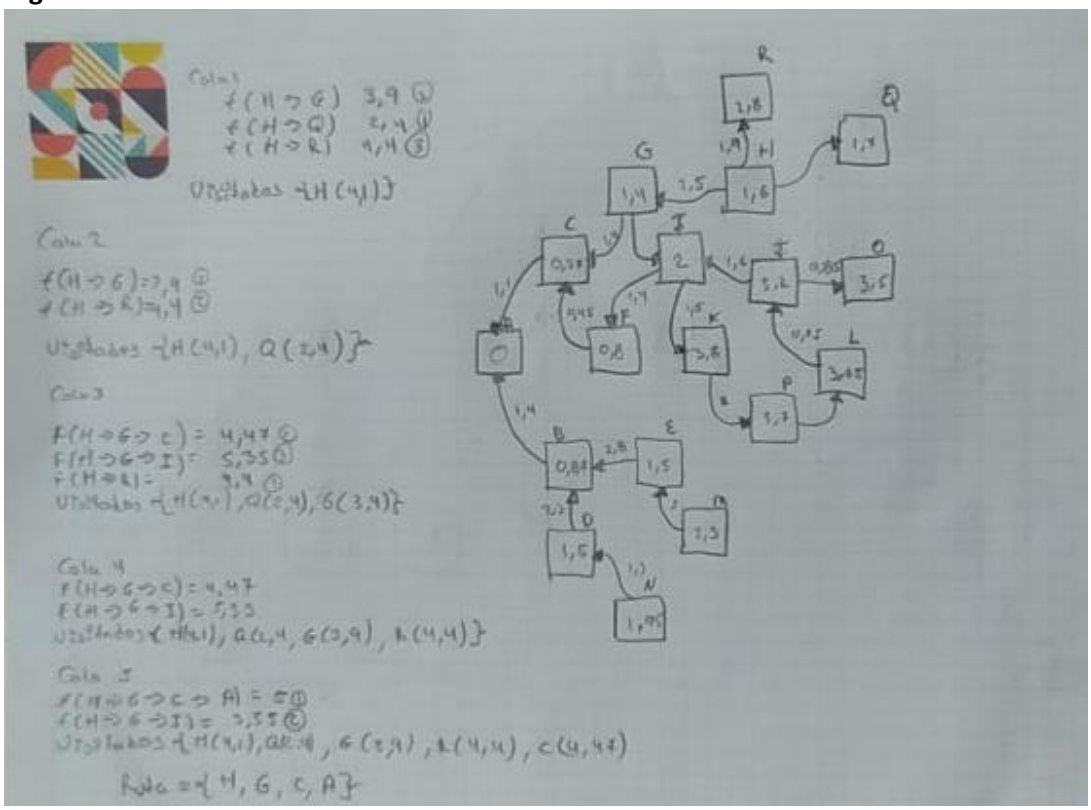
Materia: IA

Ciclo: 9no

Fecha: 15/05/2020

| Nombre del nodo | nombre nuevo | h(n) | camino real g(n) |
|---|---|---|---|
| Esc. El sol | c | 570 | 1100 |
| U.E.P COREL | b | 870 | 1400 |
| C. Latinoamericano | e | 1500 | 2800 |
| U.E Kennedy | d | 1500 | 2300 |
| U.A de agricultira | n | 1900 | 1300 |
| U.E Andres F. Cordova | m | 2300 | 3000 |
| Esc. Avelardo Tamariz | f | 800 | 450 |
| C. Herlinda Toral | g | 1400 | 1400 |
| Esc. CDI | i | 2000 | 1900 |
| CFA PACES | h | 1700 | 2500 |
| C. Interandino | q | 2800 | 850 |
| C.E.P Carlos Crespi II | r | 3100 | 1900 |
| U.E Maria Auxiliadora | k | 3200 | 1500 |
| C. a distacia Atlantico | j | 3600 | 1600 |
| U.E misioneros Oblatos | l | 3500 | 750 |
| Esc. Sagrado Corazon Todosantos | o | 3700 | 850 |
| C. Octavio Cordero Palacios | p | 1000 | 1000 |
| casa | a | 0 | 0 |

**Algoritmo A* a mano**

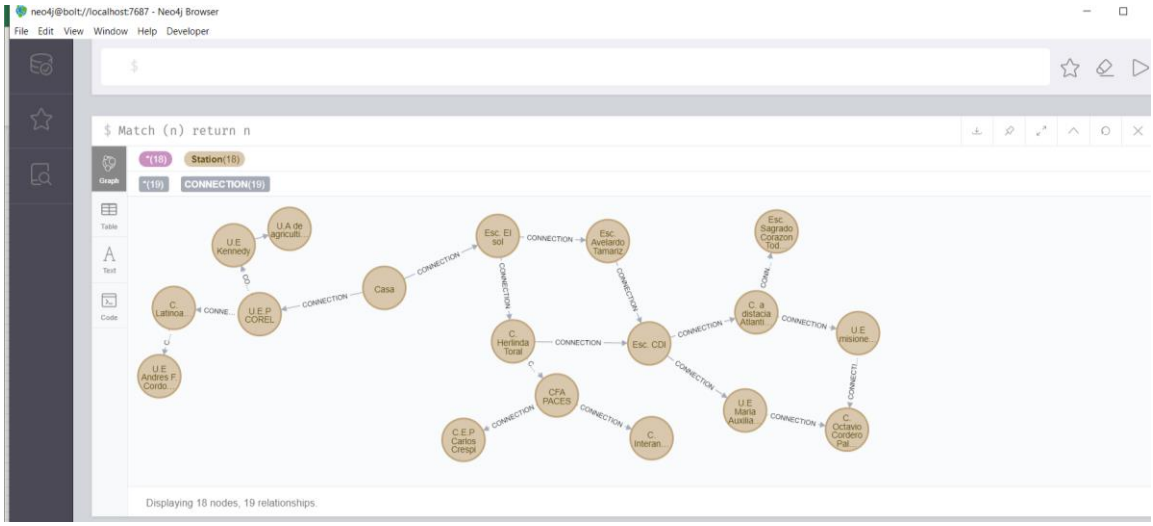


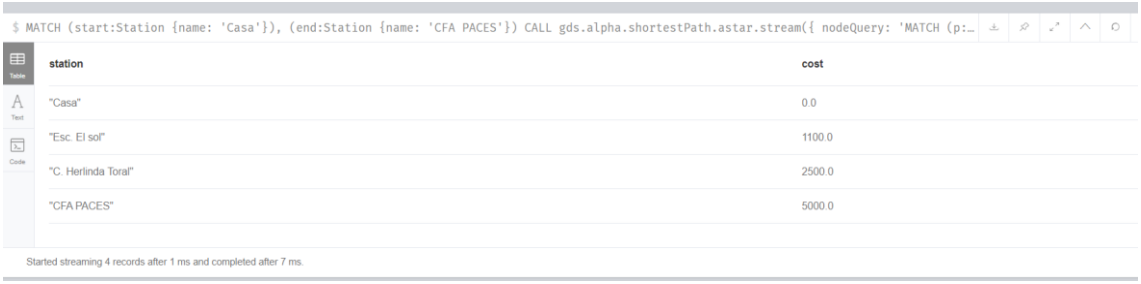
## Algoritmo A* En Neo4j

```
MERGE (c:Station{name:"Esc. El sol"})
SET c.latitude = -2892014,c.longitude = -78974009
MERGE (b:Station{name:"U.E.P COREL "})
SET b.latitude = -2893401,b.longitude = -78969983
MERGE (e:Station{name:"C. Latinoamericano"})
SET e.latitude = -2895694,e.longitude = -78963445
MERGE (d:Station{name:"U.E Kennedy"})
SET d.latitude = -2884590,d.longitude = -78961435
MERGE (n:Station{name:"U.A de agricultira "})
SET n.latitude = -2879532,n.longitude = -78957315
MERGE (m:Station{name:"U.E Andres F. Cordova"})
SET m.latitude = -2903120,m.longitude = -78961958
MERGE (f:Station{name:"Esc. Avelardo Tamariz "})
SET f.latitude = -2894132,f.longitude = -78975818
MERGE (g:Station{name:"C. Herlinda Toral"})
SET g.latitude = -2893614,g.longitude = -78985093
MERGE (i:Station{name:"Esc. CDI"})
SET i.latitude = -2895805,i.longitude = -78987612
MERGE (h:Station{name:"CFA PACES"})
SET h.latitude = -2886520,h.longitude = -78989141
MERGE (q:Station{name:"C. Interandino"})
SET q.latitude = -2882406,q.longitude = -78987649
MERGE (r:Station{name:"C.E.P Carlos Crespi II"})
SET r.latitude = -2878288,r.longitude = -78998344
MERGE (k:Station{name:"U.E Maria Auxiliadora"})
SET k.latitude = -2897943,k.longitude = -78999625
MERGE (j:Station{name:"C. a distacia Atlantico"})
SET j.latitude = -2897129,j.longitude = -79000612
MERGE (l:Station{name:"U.E misioneros Oblatos"})
SET l.latitude = -2901131,l.longitude = -79003800
MERGE (o:Station{name:"Esc. Sagrado Corazon Todosantos"})
SET o.latitude = -2903143,o.longitude = -79001200
MERGE (p:Station{name:"C. Octavio Cordero Palacios"})
SET p.latitude = -2894726,p.longitude = -79005503
MERGE (a:Station{name:"casa"})
SET a.latitude = 2886647,a.longitude = -78974388
```

```
MERGE (c)-[:CONNECTION{time:1100}]->(a)
MERGE (b)-[:CONNECTION{time:1400}]->(a)
MERGE (e)-[:CONNECTION{time:2800}]->(b)
MERGE (d)-[:CONNECTION{time:2300}]->(b)
MERGE (n)-[:CONNECTION{time:1300}]->(d)
MERGE (m)-[:CONNECTION{time:3000}]->(e)
MERGE (f)-[:CONNECTION{time:450}]->(c)
MERGE (g)-[:CONNECTION{time:1400}]->(c)
MERGE (i)-[:CONNECTION{time:1900}]->(f)
MERGE (g)-[:CONNECTION{time:850}]->(i)
MERGE (h)-[:CONNECTION{time:2500}]->(g)
MERGE (h)-[:CONNECTION{time:850}]->(q)
MERGE (h)-[:CONNECTION{time:1900}]->(r)
MERGE (i)-[:CONNECTION{time:1500}]->(k)
MERGE (j)-[:CONNECTION{time:1600}]->(i)
MERGE (l)-[:CONNECTION{time:750}]->(j)
MERGE (j)-[:CONNECTION{time:850}]->(o)
MERGE (k)-[:CONNECTION{time:2000}]->(p)
MERGE (p)-[:CONNECTION{time:1000}]->(l);

MATCH (start:Station {name: "Casa"}), (end:Station {name: "CFA PACES"})
CALL gds.alpha.shortestPath.astar.stream({
 nodeQuery: 'MATCH (p:Station) RETURN id(p) AS id',
 relationshipQuery: 'MATCH (p1:Station)-[r:CONNECTION]->(p2:Station)
RETURN id(p1) AS source, id(p2) AS target, r.time AS weight',
 startNode: start,
 endNode: end,
 relationshipWeightProperty: 'weight',
 propertyKeyLat: 'latitude',
 propertyKeyLat: 'longitude'
})
YIELD nodeId, cost
RETURN gds.util.asNode(nodeId).name AS station, cost
```



```
$ MATCH (start:Station {name: 'Casa'}), (end:Station {name: 'CFA PACES'}) CALL gds.alpha.shortestPath.astar.stream({ nodeQuery: 'MATCH (p:…
```

| station | cost |
|---|---|
| "Casa" | 0.0 |
| "Esc. El sol" | 1100.0 |
| "C. Herlinda Toral" | 2500.0 |
| "CFA PACES" | 5000.0 |

Started streaming 4 records after 1 ms and completed after 7 ms.

**Conclusión:**

Mediante el uso de h(n) podemos tener una mayor precisión acerca del mejor camino ayudando a encontrar el camino mas corto de manera más rápida sin tener que probar rutas cortas que no llevan al destino deseado.