Neo4j with R

-- Workshop 3

Xiaowei & Songqing

2019.8.30

Neo4j & GREG

-- Workshop 1

- ✓ **Install neo4j**
- ✓ **GREG**
- ✓ **basic Cypher commands**
  - Retrieve nodes
  - Retrieve relationships
  - multiple-relationship queries
  - Fuzzy query
  - Subgraphs

The Neo4j Graph Algorithms

-- Workshop 2

- ✓ Shortest Paths
  - Shortest Path
  - All Pairs Shortest Path
- ✓ Clustering
  - Triangles
  - Local Clustering Coefficient
  - Strongly Connected Components
  - Connected Components
  - Label Propagation
  - Louvain
- ✓ Centralities
  - Degree Centrality
  - Closeness Centrality
  - PageRank
  - Betweenness Centrality
- ✓ Network alignment
  - Jaccard index

Neo4j's R driver

Allows people to read and write data from/to neo4j directly from R environment

- RNeo4j
- neo4jshell
- neo4r

connect

-Always the first step to drive neo4j

RNeo4j

```
graph = startGraph("http://localhost:7474/db/data/", username="neo4j",
                   password="xiaowei")
```

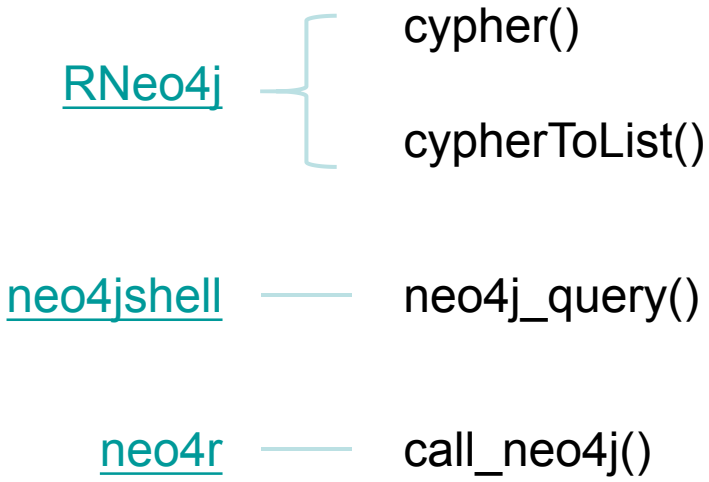
neo4jshell

```
GREG <- list(address = "bolt://localhost", uid = "neo4juser", pwd = "xiaowei")
SHELL_LOC = path.expand("F:/June28/GREG/bin/cypher-shell.bat")
```

neo4r

```
con <- neo4j_api$new(url = "http://localhost:7474",user = "neo4j",
                     password = "xiaowei")
```

Cypher query with R



RNeo4j

- cypher(graph, query, ...)
- cypherToList(graph, query, ...)

graph	A graph object.
query	A character string.
...	A named list. Parameters to pass to the query in the form key = value, if applicable.

```
graph = startGraph("http://localhost:7474/db/data/", username="neo4j",
                   password="xiaowei")
query = " MATCH (n) RETURN distinct labels(n)"
cypher(graph,query)  #get a data.frame
cypherToList(graph,query) #get a list
```

neo4jshell

- neo4j_query(con = list(address = NULL, uid = NULL, pwd = NULL),qry = NULL, shell_path = "cypher-shell")

con	List containing three objects: bolt address, uid, pwd as character strings providing connection to the Neo4J server
qry	Character string of the query or queries to be sent to Neo4J. Read queries should be single queries.
shell_path	If cypher-shell is not in the PATH system variable, the full local path to cypher-shell executable (eg '/Users/username/neo4j-community-3.5.8/bin/cypher-shell').

```
GREG <- list(address = "bolt://localhost", uid = "neo4juser", pwd = "xiaowei")
SHELL_LOC = path.expand("F:/June28/GREG/bin/cypher-shell.bat")
query <- "MATCH (n) RETURN distinct labels(n)"
neo4j_query(con = GREG, qry = query,shell_path = SHELL_LOC)
```

neo4r

- call_neo4j(query, con, type = c("row", "graph"), output = c("r", "json"), include_stats = FALSE, include_meta = FALSE)

query	The cypher query
con	A NEO4JAPI connection object
type	Return the result as row or as graph
output	Use "json" if you want the output to be printed as JSON
include_stats	tShould the stats about the transaction be included?
include_meta	tShould the stats about the transaction be included?

```
con <- neo4j_api$new(url = "http://localhost:7474",user = "neo4j",
                     password = "xiaowei")
query <- "MATCH (n) RETURN distinct labels(n)"
  call_neo4j(con, query=query,type = "row")
```

Let's study!