Graph Data Modeling for Political Communication on Twitter

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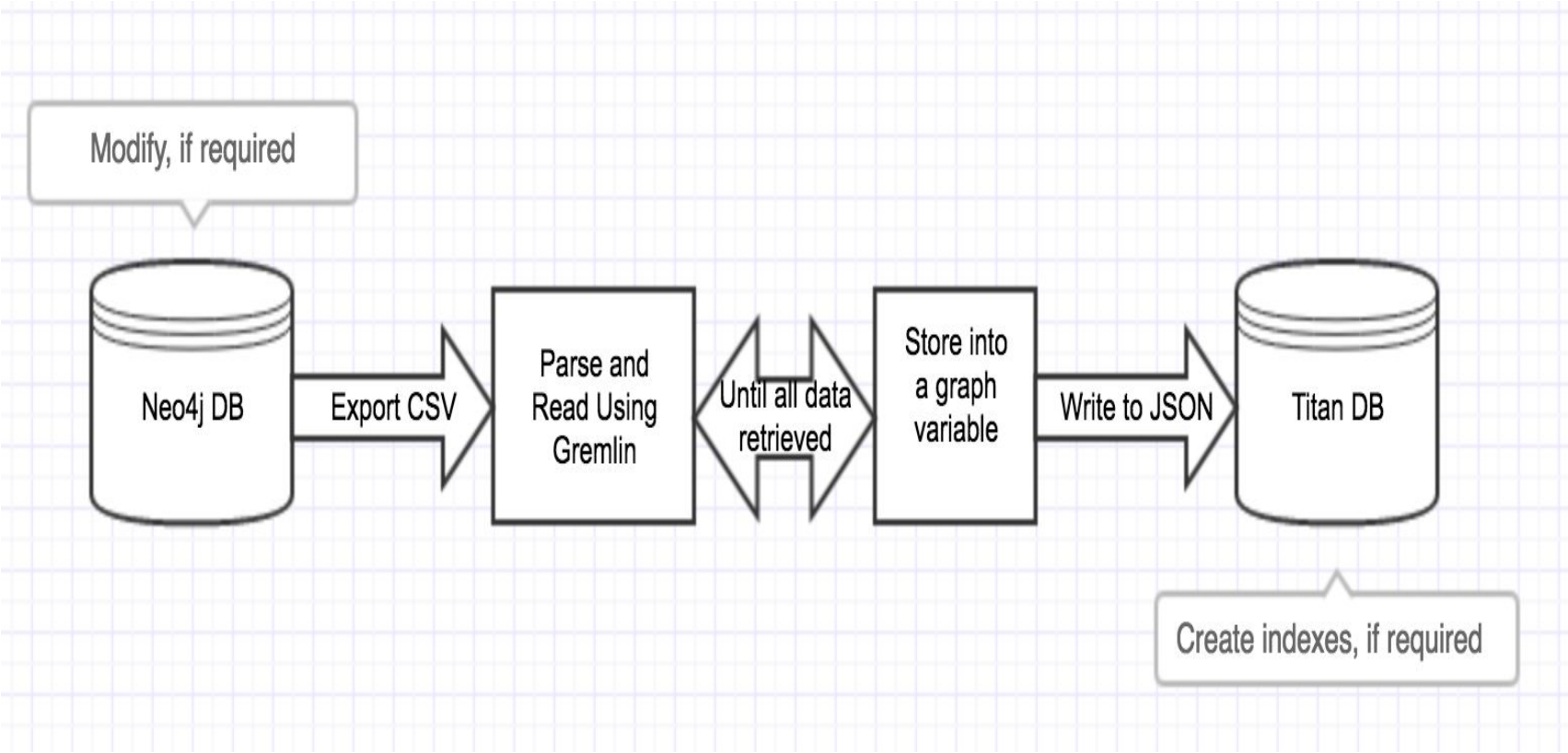
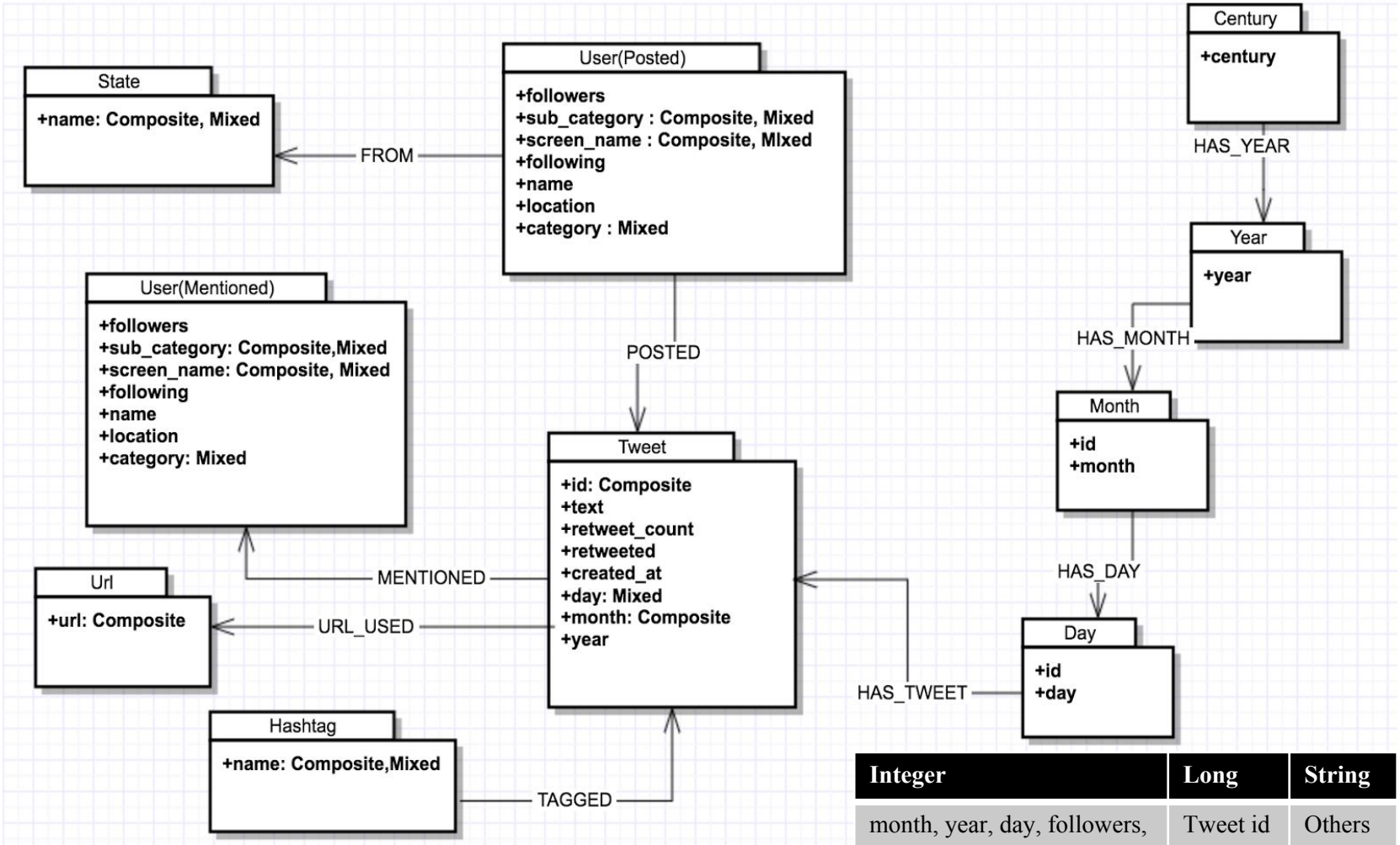
Loading Data into Titan

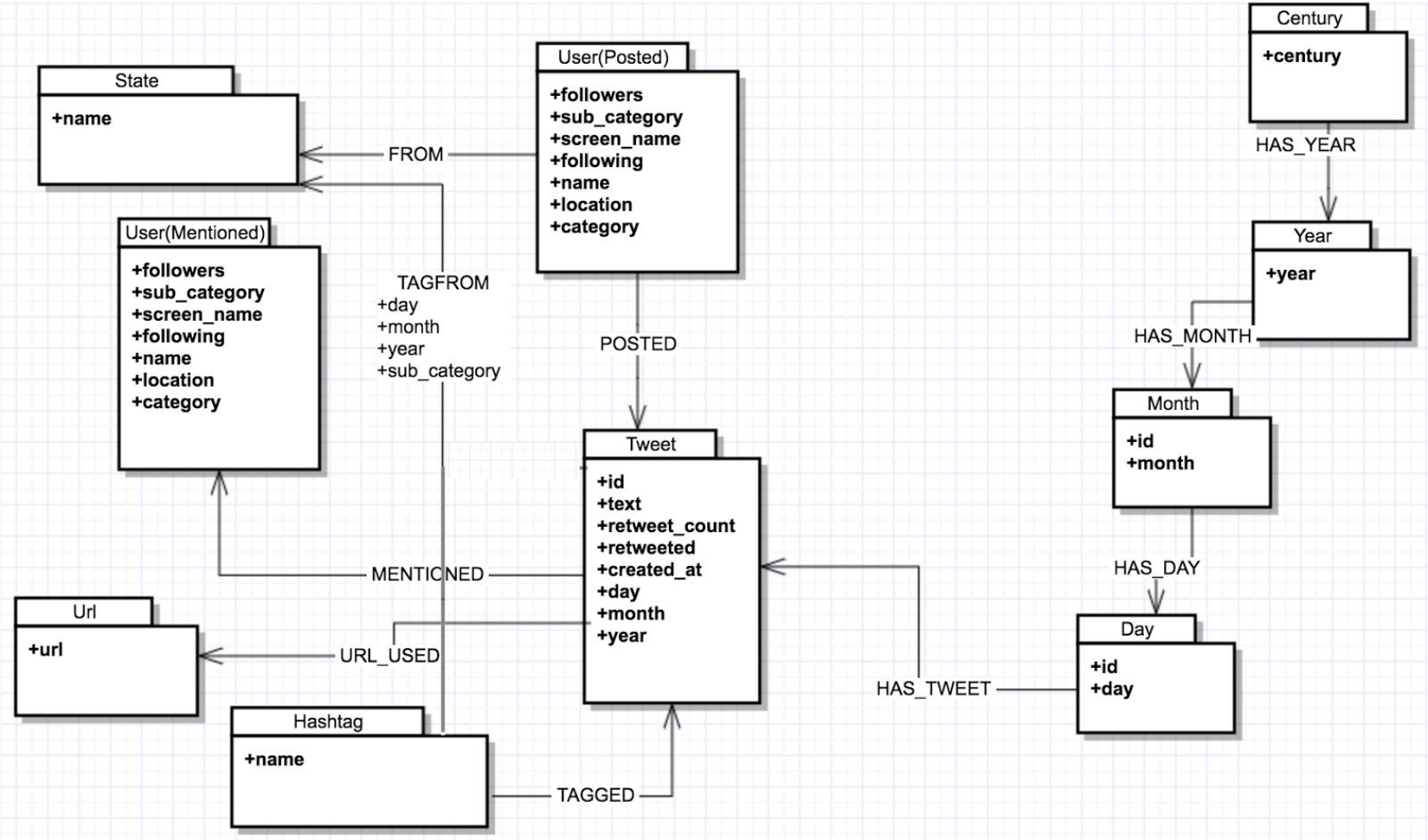


Indexed Model

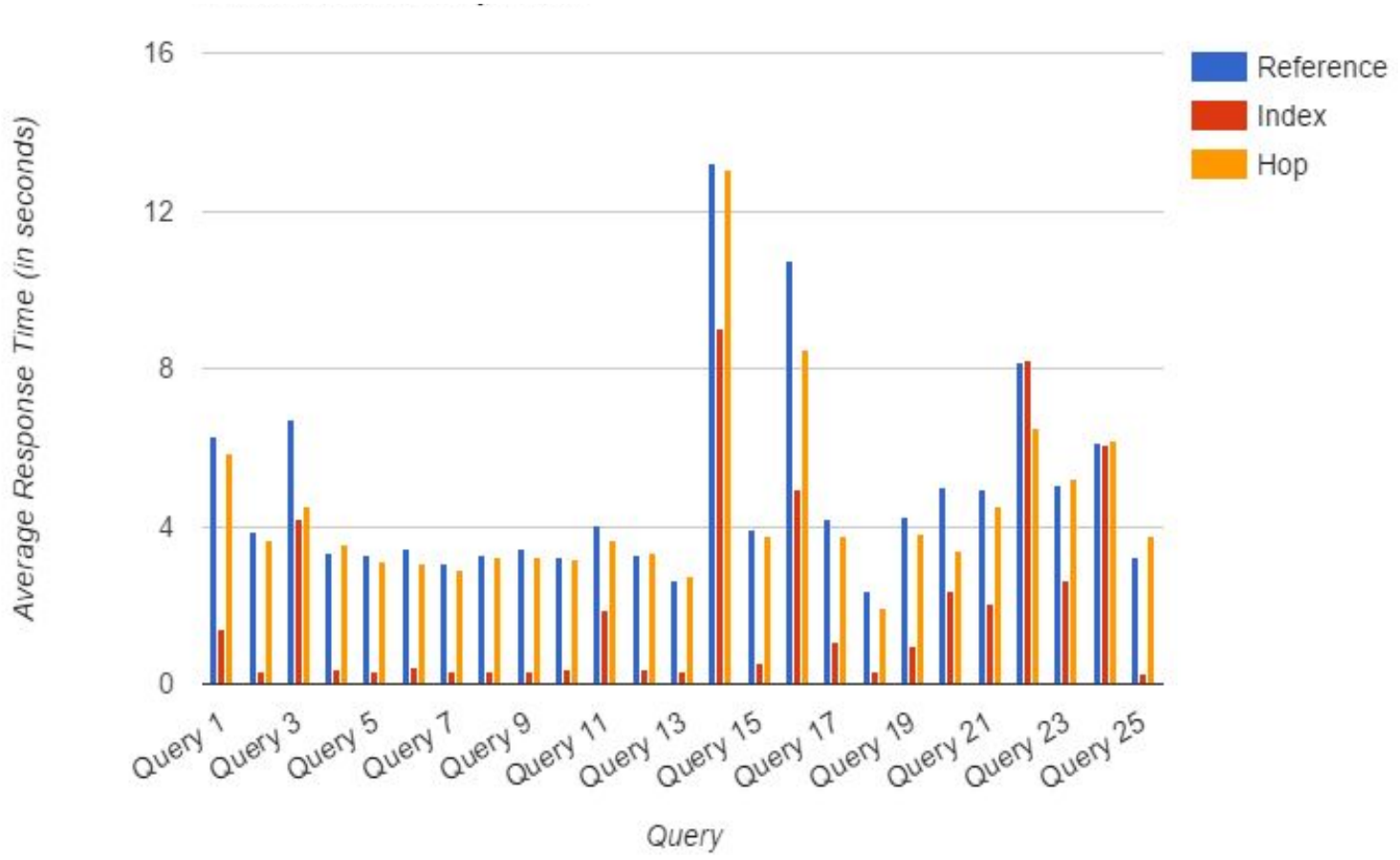


Integer	Long	String
month, year, day, followers, following, retweeted_count	Tweet id	Others

Reduced Hop Model



Performance Comparison



% Change in the Query Response Times for Best Model w.r.t. Reference Model

Query	% Change
Q1	-77.66
Q2	-91.52
Q3	-37.33
Q4	-88.94
Q5	-90.57
Q6	-87.92
Q7	-89.91
Q8	-89.58
Q9	-90.8
Q10	-88.71
Q11	-52.87
Q12	-88.29

Query	% Change
Q13	-87.19
Q14	-31.67
Q15	-85.59
Q16	-54.11
Q17	-75.06
Q18	-85.8
Q19	-77.75
Q20	-53.2
Q21	-58.52
Q22	0.53
Q23	-48.18
Q24	-1.38
Q25	-91.21

Important Findings

- Clock(int) {Query.iterate()} vs. System.currentTimemillis()
- Loading data was little time consuming but reliable and does not cause any system crashes.
- Reduced hop model with indexes performs far better than the proposed models but it is out of scope of the project!!

References

- Arijit Khan *et al.*, “Neighborhood Based Fast Graph Search in Large Networks” in ACM SIGMOD, Greece, pp. 901-912, June 12-16, 2011
- Konstantinos Xirogiannopoulos *et al.*, “GraphGen: Exploring Interesting Graphs in Relational Data” in VLDB, Hawaii, Vol 8. pp. 2032-2035, August 31- September 4, 2015.
- Florian Holzschuher,Rene Peinl, “Performance of graph query languages: Comparison of cypher, gremlin and native access in Neo4j”, in EDBT, Italy, pp. 195-204, March 18-22, 2013