This document is part of the paper "RDF^M: An Alternative Approach for representing and maintaining meta-knowledge in Web of Data". It presents the graphical representation of the experiments described in the paper. This document is devided in six parts: Part 1 shows Experiment 1, Part 2 shows Experiment 2, Part 3 describes Experiment 3, Part 4 shows Experiment 4, Part 5 describes Experiment 5, and Part 6 describes Experiment 6.

Part I

Experiment 1: Number of Edges

Figure 1 presents the number of edges generated by each approach in representing the MK in case of BKR dataset. The figure shows that without updation value R requires 162%; SP1 requires 50%; SP2 requires 200%; PaCE-C1 requires 7%; PaCE-C2 requires 41%; PaCE-C3 requires 68%; NR1 requires 150%; NR2 requires 50%, and CP requires 150% more number of edges than RDF^M. NG takes same number of edges as RDF^M. The figure also shows that with updation value R requires 212%, SP1 requires 100%; SP2 requires 300%; NG requires 50%; NR1 requires 200%; NR2 requires 100%, and CP requires 200% more number of edges than RDF^M.
Figure 2 presents the results for the Gov-track dataset. The figure shows that without updation value R requires 13%; SP1 requires 9%; SP2 requires 118%; NG requires 5%; NR1 requires 18%; NR2 requires 9%, and CP requires 18% more number of edges than RDF^M. The figure also shows that with updation value R requires 18%; SP1 requires 13%; SP2 requires 127%; NG requires 9%; NR1 requires 22%; NR2 requires 13%, and CP requires 22% more number of edges than RDF^M.
Figures 3 and 4 present the results for Synthetic dataset. Figure 3 shows the results without nested MK, and Figure 4 shows the results with nested MK. Figure 3 shows that without updation value R requires 44%; SP1 requires 33%; SP2 requires 167%; PaCE-C1 requires 22%; PaCE-C2 requires 33%; PaCE-C3 requires 44%; NG requires 22%; NR1 requires 56%; NR2 requires 33%, and CP requires 56% more number of edges than RDF^M. The figure

also shows that with updation value R requires 56%; SP1 requires 44%; SP2 requires 189%; NG requires 33%; NR1 requires 67%; NR2 requires 44%, and CP requires 67% more number of edges than RDF^M. PaCE-C1, PaCE-C2, and PaCE-C3 do not support the representation of MK other than the source. Figure 4 shows that without updation value R requires 75% and NG requires 13% more number of edges than RDF^M. The figure also shows that with updation value R requires 88% and NG requires 25% more number of edges than RDF^M.
Figure 5 presents the results for the Dataset4. The figure shows that without updation value R requires 43%; SP1 requires 20%; SP2 requires 139%; NR1 requires 65%; NR2 requires 22%, and CP requires 65% more number of edges than RDF^M. NG takes the same number of edges as RDF^M. The figure also shows that with updation value R requires 65%, SP1 requires 41%; SP2 requires 182%; NG requires 22%; NR1 requires 86%; NR2 requires 43%, and CP requires 86% more number of edges than RDF^M.

Part II

Experiment 2: Number of Statements

Figure 6 presents the results for the BKR dataset. The figure shows that without updation value R requires 162%; SP1 requires 50%; SP2 requires 50%; PaCE-C1 requires 7%; PaCE-C2 requires 41%; PaCE-C3 requires 68%; NR1 requires 150%; NR2 requires 50%, and CP requires 150% more number of statements than RDF^M. NG takes same number of statements as RDF^M and RDF* requires 50% less number of statements than RDF^M. The figure also shows that with updation value R requires 212%; SP1 requires 100%; SP2 requires 100%; NG requires 50%; NR1 requires 200%; NR2 requires 100%, and CP requires 200% more number of statements than RDF^M. RDF* takes same number of statements as RDF^M.
Figure 7 presents the results for the Gov-track dataset. The figure shows that without updation value R requires 13%; SP1 requires 9%; SP2 requires 9%; NG requires 5%; NR1 requires 18%; NR2 requires 9%; CP requires 18%, and RDF* requires 0.5% more number of statements than RDF^M. The figure also shows that with updation value R requires 18%; SP1 requires 13%; SP2 requires 13%; NG requires 9%; NR1 requires 22%; NR2 requires 13%; CP requires 22%, and RDF* requires 5% more number of statements than RDF^M.

Figures 8 and 9 present the results for the Synthetic dataset. Figure 8 shows the results without nested MK, and Figure 9 shows the results with nested MK. Figure 8 shows that without updation value R requires 44%; SP1 requires 33%; SP2 requires 33%; PaCE-C1 requires 22%; PaCE-C2 requires 33%; PaCE-C3 requires 44%; NG requires 22%; NR1 requires 56%; NR2 requires 33%; CP requires 56%, and RDF* requires 11% more number of statements than RDF^M. The figure also shows that with updation value R requires 56%; SP1 requires 44%; SP2 requires 44%; NG requires 33%; NR1 requires 67%; NR2 requires 44%; CP requires 67%, and RDF* requires 22% more number of statements than RDF^M.

Figure 9 shows that without updation value R requires 75% and NG requires 13% more number of statements than RDF^M. RDF* requires 12% less number of statements than RDF^M. The figure also shows that with updation value R requires 88%, and NG requires 25% more number of statements than RDF^M. RDF* takes the same number of statements as RDF^M.

Figure 10 presents the results for the Dataset4. The figure shows that without updation value R requires 43%; SP1 requires 20%; SP2 requires 20%; NR1 requires 65%; NR2 requires 22%, and CP requires 65% more number of statements than RDF^M. NG takes the same number of statements as RDF^M. The figure also shows that with updation value R requires 65%; SP1 requires 41%; SP2 requires 41%; NG requires 22%; NR1 requires 86%; NR2 requires 43%, and CP requires 86% more number of statements than RDF^M.

Part III

Experiment 3: Resource redundancy

Figure 11 shows the redundancy generation of the approaches in case of the BKR dataset. CP produces the maximum redundant resources. The figure shows that SP1 50%; NR1 50%; PaCE-C1, PaCE-C2 and PaCE-C3 99%, 83%, and 83%, respectively produce less redundant resources than CP.

Figure 12 shows the redundancy generation of the approaches in case of the Gov-track dataset. NR1 and CP produce maximum redundant resources. The figure shows that SP1 produces 50% less redundant resources than NR1 and CP.

Figure 13 shows the redundancy generation of the approaches in case of the Synthetic dataset without nested MK. NR1 and CP hold maximum redun-

dancy. The figure shows that SP1 and PaCE-C1 produce 50%; PaCE-C2 and PaCE-C3 produce 25% less redundant resources than NR1 and CP.
Figure 14 shows the redundancy generation of the approaches in case of the Synthetic dataset with nested MK. Only R produces the redundant resources.
Figure 15 shows the redundancy generation of the approaches in the case of the Dataset4. The figure shows that SP1 produces 41% less redundant resources than NR1 and CP.

So, the overall observation is there are no redundant resources for R, SP2, NR2, NG, RDF*, and RDF^M.

Part IV

Experiment 4: Storage space requirement

Figure 16 presents the results with respect to storage space for the BKR dataset. The figure shows that without updation value R requires 99%; SP requires 80%; PaCE-C1 requires 16%; PaCE-C2 requires 53%; PaCE-C3 requires 84%; NG requires 37%; NR1 requires 113%; NR2 requires 26%, and CP requires 147% more storage space than RDF^M. RDF* requires 23% less storage space than RDF^M. The figure also shows that with updation value R requires 116%; SP requires 120%; NG requires 53%; NR1 requires 136%; NR2 requires 49%; CP requires 171%, and RDF* requires 36% more storage space than RDF^M.
Figure 17 presents the results concerning storage space for the Gov-track dataset. The figure shows that without updation value R requires 8%; SP requires 8%; NG requires 8%; NR1 requires 15%; NR2 requires 8%; CP requires 23%, and RDF* requires 8% more storage space than RDF^M. The figure also shows that with updation value R requires 15%; SP requires 23%; NG requires 15%; NR1 requires 31%; NR2 requires 15%; CP requires 38%, and RDF* requires 15% more storage space than RDF^M.
Figures 18 and 19 present the results with respect to storage space for Synthetic dataset. Figure 18 shows the results without nested MK, and Figure 19 shows the results with nested MK. Figure 18 shows that without updation value R requires 18%; SP requires 27%; PaCE-C2 requires 9%; PaCE-C3 requires 18%; NG requires 27%; NR1 requires 36%; NR2 requires 18%; CP requires 45%, and RDF* requires 27% more storage space than RDF^M. PaCE-C1 requires same storage space as RDFM. The figure also shows that

with updation value R requires 27%; SP requires 36%; NG requires 26%; NR1 requires 45%; NR2 requires 27%; CP requires 55%, and RDF* requires 45% more storage space than RDF^M.

Figure 19 shows that without updation value R requires 515% and NG requires 41% more storage space than RDF^M. RDF* requires 1% less storage space than RDF^M. The figure also shows that with updation value R requires 61%; NG requires 51%, and RDF* requires 21% more storage space than RDF^M.

Figure 20 presents the results for the Dataset4. The figure shows that without updation value R requires 32%; SP requires 13%; NR1 requires 48%; NR2 requires 13%, and CP requires 58% more storage space than RDF^M. NG requires 3% less storage space than RDF^M. The figure also shows that with updation value R requires 45%; SP requires 35%; NG requires 13%; NR1 requires 61%; NR2 requires 26%, and CP requires 71% more storage space than RDF^M.

Part V

Experiment 5: Query response time

Figure 21A represents the experimental result of running queries **Q1-Q7** on Gov-track dataset and Blazegraph engine for the approaches R, SP, NR1, NR2, NG, and CP. A SPARQL^M engine is developed to run the queries for RDF^M. All the approaches except NR2 take more time when compared to RDF^M. NR2 takes less time than RDF^M. Figure 21B represents the experimental result of running queries **Q1-Q7** on Gov-track dataset and Apache Jena engine for the approaches R, SP, NR1, NR2, NG, and CP. All the approaches take more time when compared to RDF^M.

Figure 21C represents the experimental result of running queries **Q8-Q14** on BKR dataset and Blazegraph engine for the approaches R, SP, NR1, NR2, NG, and CP. All the approaches except NR2 take more time when compared to RDF^M. NR2 takes less time than RDF^M. Figure 21D represents the experimental result of running queries **Q8-Q14** on BKR dataset and Apache Jena engine for the approaches R, SP, NR1, NR2, NG, and CP. All the approaches except SP, NR1, NR2 take more time when compared to RDF^M. SP, NR1, NR2 take less time than RDF^M.

Figure 21E represents the experimental result of running queries **Q15-Q18** on Synthetic dataset and Blazegraph engine for the approaches R, SP, NR1, NR2, NG, and CP. All the approaches take more time when compared to RDF^M. Figure 21F represents the experimental result of running queries **Q15-Q18** on Synthetic dataset and Apache Jena engine for the approaches R, SP, NR1, NR2, NG, and CP. All the approaches take more time when compared to RDF^M.

Figure 21G represents the experimental result of running queries **Q19-Q21** on Synthetic dataset with nested MK and Blazegraph engine for the approaches R and NG. All the approaches take more time when compared to RDF^M. Figure 21H represent the experimentals result of running queries **Q19-Q21** on Synthetic dataset with nested MK and Apache Jena engine for the approaches R and NG. All the approaches take more time when compared to RDF^M.

Figure 21I represents the experimental result of running queries **Q22-Q25** on Dataset4 and Blazegraph engine for the approaches R, SP, NR1, NR2, NG, and CP. All the approaches take more time when compared to RDF^M.

Figure 21J represents the experimental result of running queries **Q22-Q25** on Dataset4 and Apache Jena engine for the approaches R, SP, NR1, NR2, NG, and CP. All the approaches take more time when compared to RDF^M.

Part VI

Experiment 6: Query length

Figure 22 represents the experimental result of required query length by the approaches R, SP, NR1, NR2, NG, CP, and RDF^M for **Q1-Q7** on BKR dataset. It is evident that all the approaches except NG take more query length when compared to RDF^M. NG takes same query length for Q1-Q4 and Q7.

Figure 23 represents the experimental result of required query length by the approaches R, SP, NR1, NR2, NG, CP, and RDF^M for **Q8-Q14** on Gov-track dataset. It is evident that all the approaches take more query length when compared to RDF^M.

Figure 24 represents the experimental result of required query length by the approaches R, SP, NR1, NR2, NG, CP, and RDF^M for **Q15-Q18** on Synthetic dataset. It is evident that all the approaches except NG for Q15 take more query length when compared to RDF^M.

Figure 25 represents the experimental result of required query length by the approaches R, NG and RDF^M for **Q19-Q21** on Synthetic dataset with nested

MK. All the approaches except NG for Q20 take more query length when compared to RDF^M.

Figure 26 represents the experimental result of required query length by the approaches R, NG and RDF^M for **Q22-Q25** on Dataset4. It is evident that all the approaches except NG for Q23-Q24 takes more query length when compared to RDF^M.

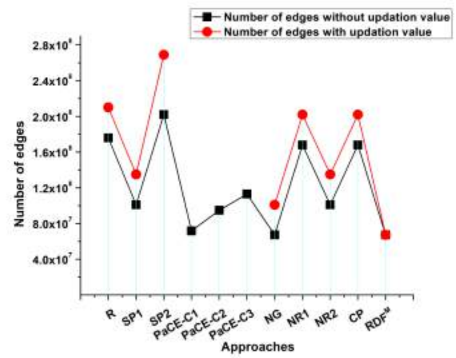

Figure 1: Number of edge creation for the BKR dataset

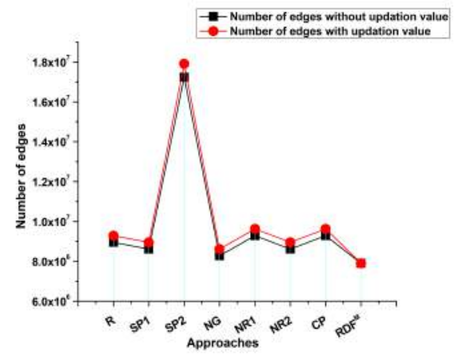

Figure 2: Number of edge creation for the Gov-track dataset

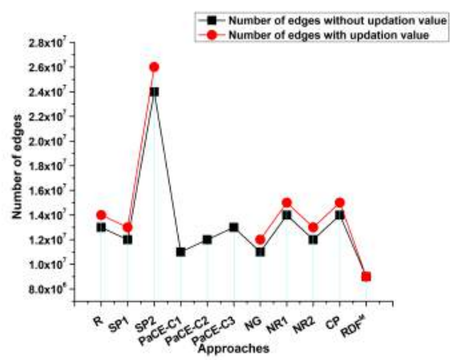

Figure 3: Number of edge creation for the Synthetic dataset

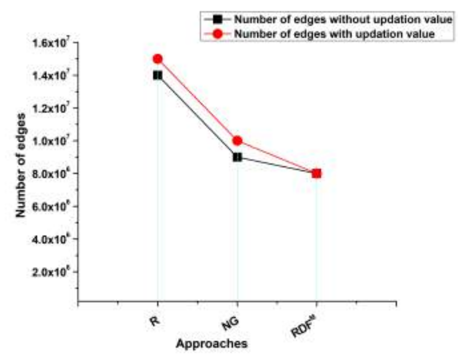

Figure 4: Number of edge creation for the Synthetic dataset with nested MK

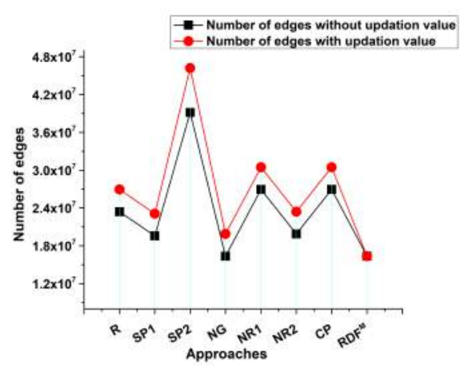

Figure 5: Number of edge creation for the Dataset4

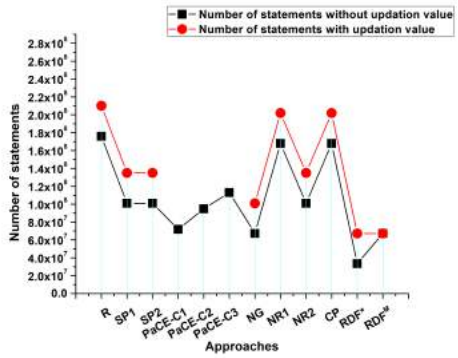

Figure 6: Number of statement's generation for the BKR dataset

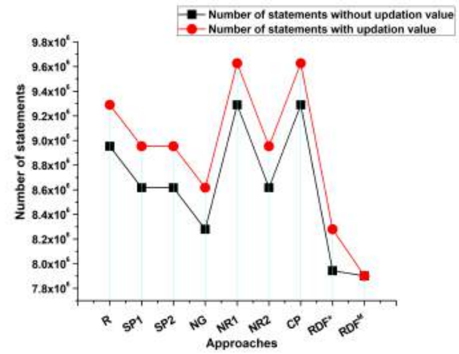

Figure 7: Number of statement's generation for Gov-track dataset

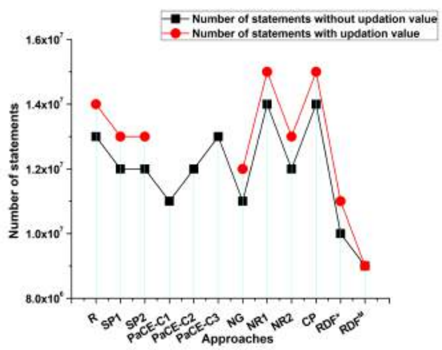

Figure 8: Number of statement's generation for the Synthetic dataset

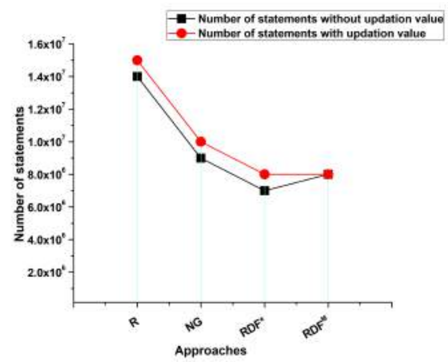

Figure 9: Number of statement's generation for Synthetic dataset with nested MK

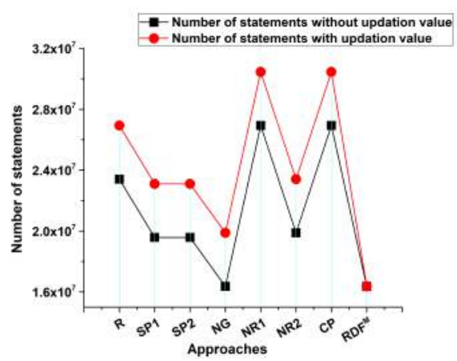

Figure 10: Number of statement's generation for the Dataset4

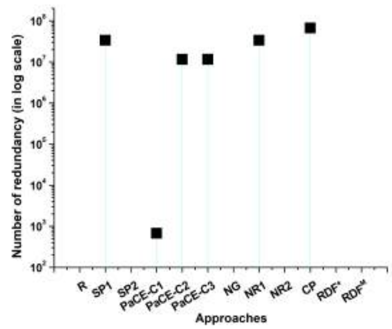

Figure 11: Redundancy creation for the BKR dataset

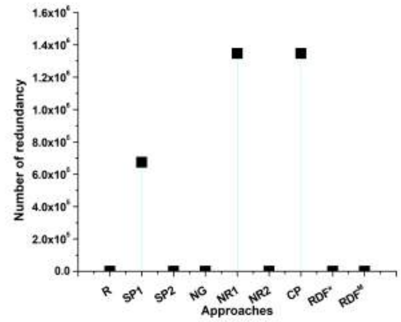

Figure 12: Redundancy creation for the Govtrack dataset

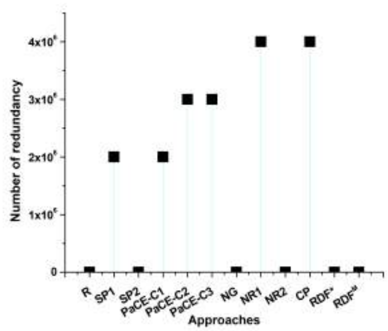

Figure 13: Redundancy creation for the Synthetic dataset

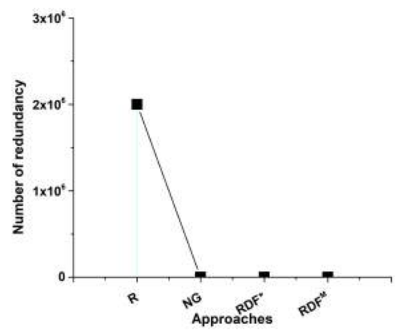

Figure 14: Redundancy creation for the Synthetic dataset with nested MK

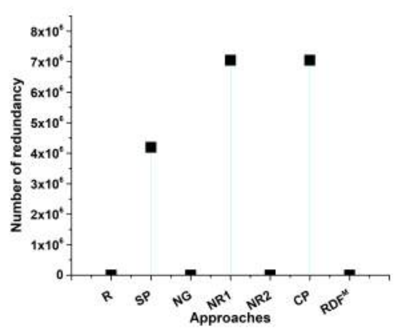

Figure 15: Redundancy creation for the Dataset4

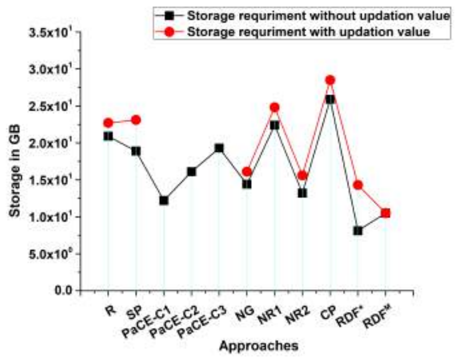

Figure 16: Storage space requirement for the BKR dataset

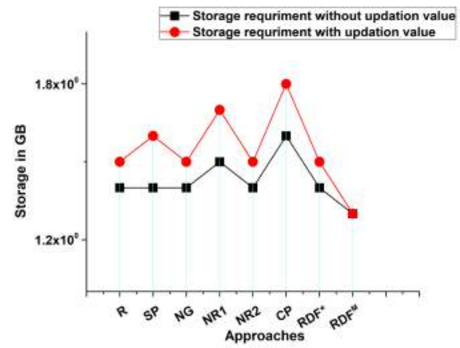

Figure 17: Storage space requirement for the Gov-track dataset

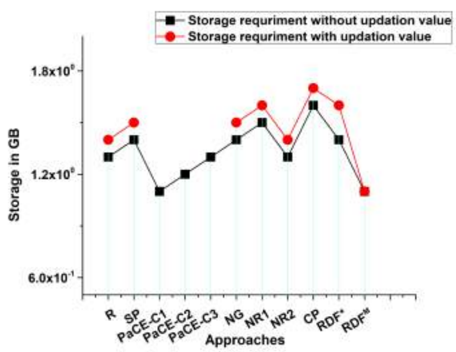

Figure 18: Storage space requirement for the Synthetic dataset

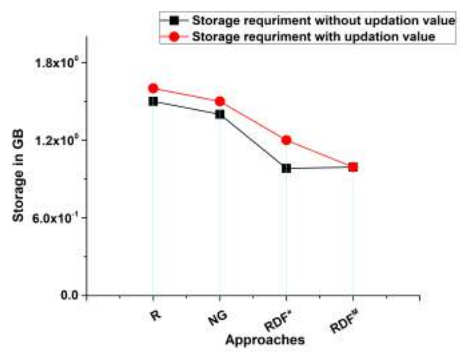

Figure 19: Storage space requirement for the Synthetic dataset with nested MK

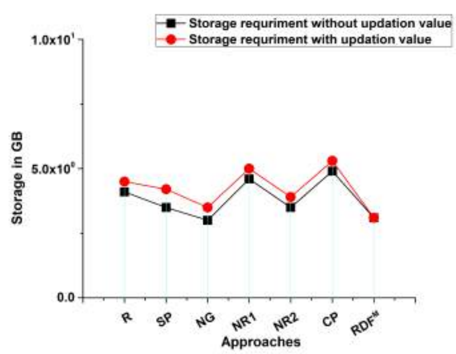

Figure 20: Storage space requirement for the Dataset4

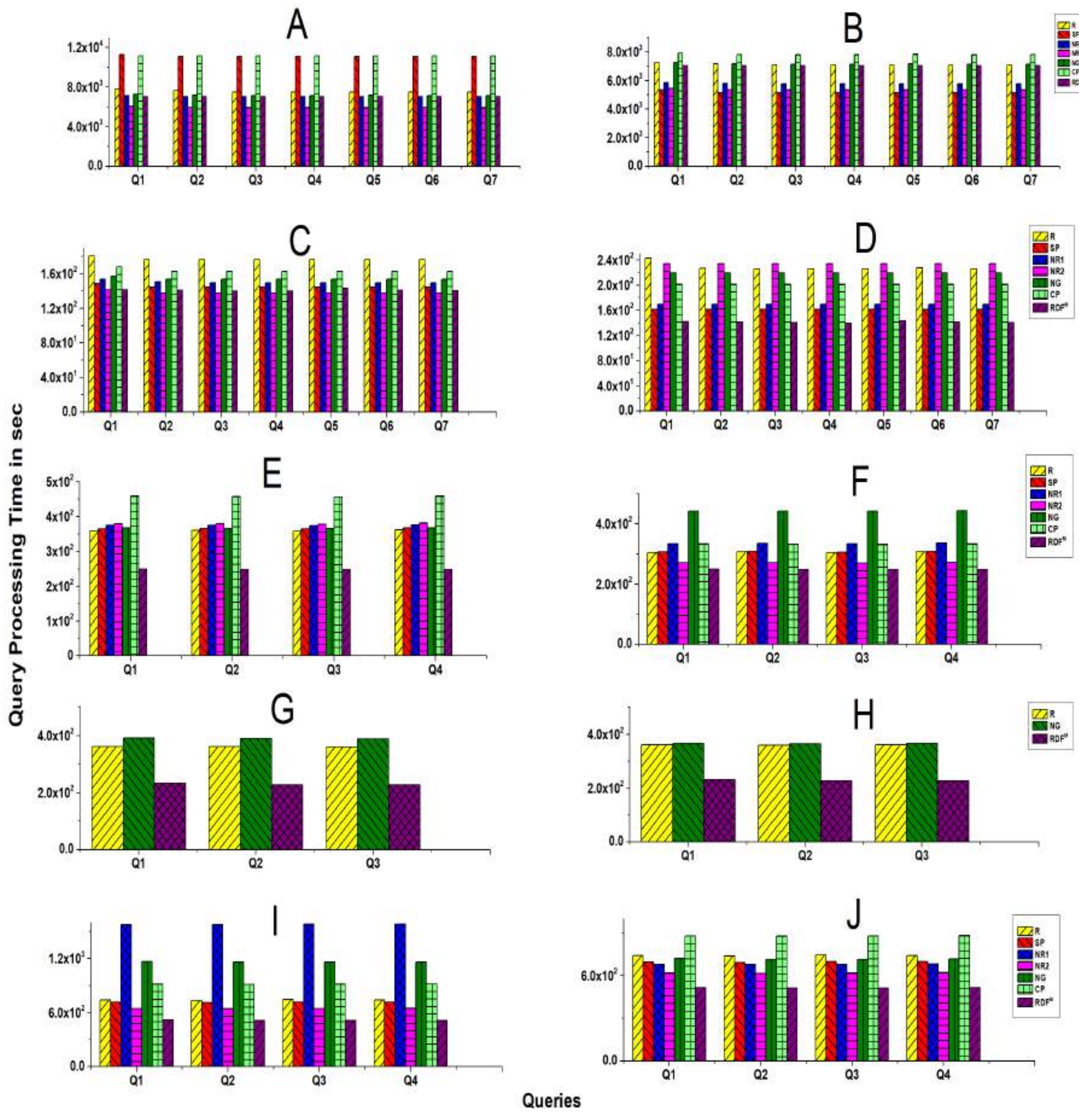

Figure 21: Comparison of Query Response Time

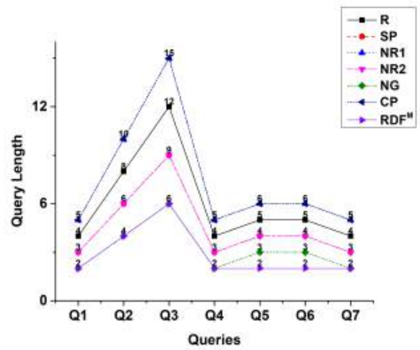

Figure 22: Required query length by the approaches for the BKR dataset

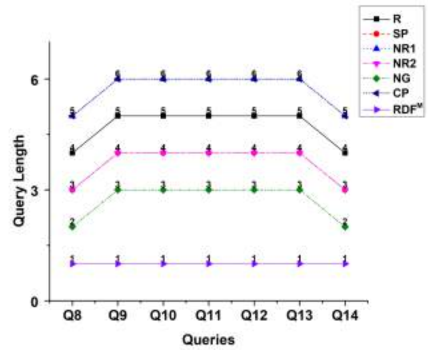

Figure 23: Required query length by the approaches for the Gov-track dataset

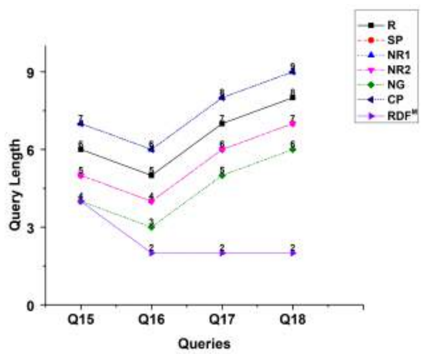

Figure 24: Required query length by the approaches for the Synthetic dataset

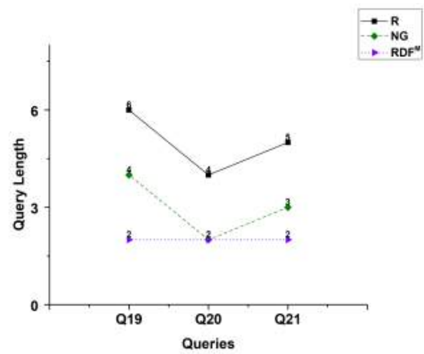

Figure 25: Required query length by the approaches for the Synthetic dataset with nested MK

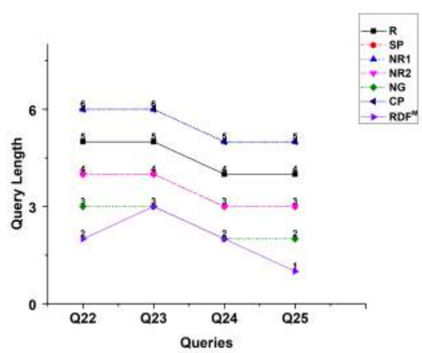

Figure 26: Required query length by the approaches for the Dataset4