CS548 - Homework 6

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"I, Apurv Upasani, declare that the submitted work is original and adheres to all University policies and acknowledge the consequences that may result from a violation of those rules"

1) Query for Part 2

```
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX dbontology: <http://dbpedia.org/ontology/>
PREFIX res: <http://dbpedia.org/resource/>
PREFIX dbprop: <http://dbpedia.org/property/>
PREFIX geo: <http://www.w3.org/2003/01/geo/wgs84_pos#>
PREFIX dbpprop: <http://dbpedia.org/property/>

SELECT ?univ ?name ?loc str(?lat) as ?lati str(?long) as ?longi WHERE  {
?univ dbontology:state <http://dbpedia.org/resource/California> .
?univ dbontology:type ?type .
?univ rdfs:label ?name  +FILTER(LANG(?name)=\en\) .
OPTIONAL {?univ dbontology:city ?loc} .
OPTIONAL{?univ dbprop:location ?loc}.
OPTIONAL{?univ geo:lat ?lat}.
OPTIONAL {?univ geo:long ?long} .
filter(?type = res:Private_university).
}
ORDER BY (?univ)
LIMIT 500
```

2) Explanation for Part 4

- The program first queries the repository "Homework 6" at "http://localhost:6655/openrdf-sesame" using following query:

```
PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
PREFIX xsd:<http://www.w3.org/2001/XMLSchema#>
Select ?univ ?univname ?c ?lat ?long
WHERE{
?univ <https://schema.org/name> ?univname .
?univ <https://schema.org/location> ?b .
?b <https://schema.org/address> ?c .
?b <https://schema.org/latitude> ?lat .
?b <https://schema.org/longitude> ?long .
}
```

  Here it fetches the university URI, university name, city, latitude and longitude from the triple store.
- Each row returned is mapped to a class "GeoPoint" in the program. Since, we already know the details for UCLA, we create a separate GeoPoint for it.

- We parse the ResultSet for each retrieved row and create a GeoPoint for each college/university.
- We then compute the distance between the university and UCLA using "Haversine distance" . We use "calculateHaverSineDistance(GeoPoint g1, GeoPoint g2)" method for computing the distance.
- We then compare whether the returned distance value is less than 200 miles. If so, we add it to a TreeMap. We use the TreeMap structure as it eliminates duplicate keys. I found for 2 URIs, there existed 2 rdfs:label of @en type. Hence there were 2 extra entries in the output. To eliminate extra entries, TreeMap is used.
- Finally, we iterate over TreeMap to print output details.

3. List of universities

University URI	Distance from UCLA (miles)
http://dbpedia.org/resource/Abraham_Lincoln_University	19.15473
http://dbpedia.org/resource/American_Sports_University	61.20598
http://dbpedia.org/resource/Anaheim_University	63.90257
http://dbpedia.org/resource/Antioch_University_Santa_Barbara	34.16707
http://dbpedia.org/resource/Art_Center_College_of_Design	20.06337
http://dbpedia.org/resource/Azusa_Pacific_University	61.25766
http://dbpedia.org/resource/Brandman_University	67.92175
http://dbpedia.org/resource/California_InterContinental_University	20.40747
http://dbpedia.org/resource/California_Southern_Law_School	61.80962
http://dbpedia.org/resource/California_Western_School_of_Law	111.9459
http://dbpedia.org/resource/Chapman_University	64.31486
http://dbpedia.org/resource/Chapman_University_School_of_Law	64.31486
http://dbpedia.org/resource/College_of_Osteopathic_Medicine_of_the_Pacific	61.21321
http://dbpedia.org/resource/Glendale_University_College_of_Law	19.69197
http://dbpedia.org/resource/Graziadio_School_of_Business_and_Management	20.40747
http://dbpedia.org/resource/KGI_School_of_Pharmacy	61.19183
http://dbpedia.org/resource/Latin_American_Bible_Institute,_California	61.27066
http://dbpedia.org/resource/Loma_Linda_University_School_of_Allied_Health_Professions	61.21321
http://dbpedia.org/resource/Loma_Linda_University_School_of_Public_Health	61.21321
http://dbpedia.org/resource/Loyola_Law_School	19.26743
http://dbpedia.org/resource/Loyola_Marymount_University	20.40747
http://dbpedia.org/resource/McMillan_Academy_of_Law	109.642
http://dbpedia.org/resource/NewSchool_of_Architecture_and_Design	112.5251
http://dbpedia.org/resource/Pacific_Coast_University	27.83995
http://dbpedia.org/resource/Pacific_States_University	19.26743
http://dbpedia.org/resource/People's_College_of_Law	19.19873
http://dbpedia.org/resource/Pepperdine_University	19.36056
http://dbpedia.org/resource/Pepperdine_University_School_of_Law	19.26743
http://dbpedia.org/resource/Platt_College_(San_Diego)	109.642
http://dbpedia.org/resource/Point_Loma_Nazarene_University	112.5251
http://dbpedia.org/resource/San_Diego_Christian_College	135.0361
http://dbpedia.org/resource/San_Joaquin_College_of_Law	191.3555

http://dbpedia.org/resource/Santa_Barbara_&_Ventura_Colleges_of_Law	34.16707
http://dbpedia.org/resource/Southern_California_Institute_of_Law	27.55805
http://dbpedia.org/resource/Southwestern_Law_School	19.15473
http://dbpedia.org/resource/The_Art_Institute_of_California_%E2%80%93_Hollywood	19.15473
http://dbpedia.org/resource/Thomas_Jefferson_School_of_Law	112.5251
http://dbpedia.org/resource/Trinity_Law_School	64.9835
http://dbpedia.org/resource/USC_Marshall_School_of_Business	19.47776
http://dbpedia.org/resource/USC_School_of_Dramatic_Arts	19.47776
http://dbpedia.org/resource/USC_Viterbi_School_of_Engineering	19.47776
http://dbpedia.org/resource/University_of_La_Verne	61.20598
http://dbpedia.org/resource/University_of_La_Verne_College_of_Law	61.19616
http://dbpedia.org/resource/University_of_San_Diego	109.0693
http://dbpedia.org/resource/University_of_San_Diego_School_of_Law	109.0693
http://dbpedia.org/resource/University_of_Santa_Monica	19.36056
http://dbpedia.org/resource/University_of_Southern_California	19.47776
http://dbpedia.org/resource/Vanguard_University_of_Southern_California	67.62463
http://dbpedia.org/resource/Western_Sierra_Law_School	106.7928
http://dbpedia.org/resource/Western_University_College_of_Podiatric_Medicine	61.21321
http://dbpedia.org/resource/Western_University_College_of_Veterinary_Medicine	61.21321
http://dbpedia.org/resource/Western_University_of_Health_Sciences	61.21321
http://dbpedia.org/resource/Whittier_College	20.40747
http://dbpedia.org/resource/Whittier_Law_School	66.76822

Program for Query 4 produces University URI, University Name, City and distance from UCLA on standard output.

Notes:

- Source files for Query 4 is named as Homework6QueryRepository.java
- I have not added Java files for fetching data from DBPedia and putting data into triple store.
- In output for Part 2, all the fields whose value was returned null from sesame API was converted to “NA” for future processing. The values were changed to “” while storing triples in repository.
- I have used 6655 port for Tomcat. Hence I have used the same while accessing the repository. Please make the necessary changes while executing the code.