

# SPARQL Lab Report

## Timesheet

Task	Time Spent (hh:mm)	Comments
Exploring and retrieving predicates for continents	00:45	- There were multiple instances of the same continent, but with different names - Area was missing for some of them
Exploring and retrieving predicates for countries	02:00	- Had many former countries, and unrecognised states - Faced issues with namespaces -

## 1 Continent

### 1.1 Exploration

```
SELECT DISTINCT ?continent
WHERE {
    ?continent rdf:type dbo:Continent.
    ?continent rdfs:label ?continentN.
    FILTER (lang(?continentN) = "en")
    BIND(REPLACE(?continentN, "@en", "" ) AS ?cName)
    FILTER(?cName in ("North America", "South America", "Oceania", "Asia", "Europe", "Africa"))
}
```

### 1.2 Retrieval

```
SELECT DISTINCT ?Name ?Area
WHERE {
    ?continent rdf:type dbo:Continent.
    ?continent rdfs:label ?continentN.
    FILTER(lang(?continentN) = "en")
    BIND(REPLACE(?continentN, "@en", "" ) AS ?Name)
    FILTER(?Name in ("North America", "South America", "Oceania", "Asia", "Europe", "Africa"))
    OPTIONAL{?continent dbo:areaTotal ?AreaTotal}
    BIND(?AreaTotal / 1000000 AS ?Area)
}
```

## 2 Country

### 2.1 Retrieval

```
PREFIX dcterms: <http://purl.org/dc/terms/>
SELECT DISTINCT
  ?Name
  ?Name AS ?Code
  (SAMPLE(?capitalCity) AS ?Capital)
  (SAMPLE(?ProvinceValue) AS ?Province)
  (xsd:integer(COALESCE(?cPop, ?popEst, ?popCen)) AS ?Population)
  (xsd:integer(SAMPLE(?cArea) / 1000) AS ?Area)
WHERE {
  ?country rdf:type dbo:Country.
  ?country dcterms:subject dbc:Member_states_of_the_United_Nations.
  ?country rdfs:label ?countryN.
  FILTER(lang(?countryN) = "en")
  BIND(REPLACE(?countryN, "@en", "") AS ?Name)
  FILTER(?Name != "Member states of the United Nations")
  OPTIONAL{?country dbo:populationTotal ?cPop}
  OPTIONAL{?country dbp:populationEstimate ?popEst}
  OPTIONAL{?country dbp:populationCensus ?popCen}
  OPTIONAL{?country dbo:area ?cArea}
  OPTIONAL{
    ?country dbo:capital ?capitalC.
    ?capitalC rdfs:label ?capitalCN.
    FILTER(lang(?capitalCN) = "en")
    BIND(REPLACE(?capitalCN, "@en", "") AS ?capitalCity)
    OPTIONAL{
      ?capitalC dbo:subdivision ?capitalSubdivisionEntity.
      ?capitalSubdivisionEntity rdfs:label ?capitalSubdivisionN.
      FILTER(lang(?capitalSubdivisionN) = "en")
      BIND(REPLACE(?capitalSubdivisionN, "@en", "") AS ?capitalSubdivision)}
  }
  OPTIONAL {
    ?country dbp:capital ?capitalC2.
    ?capitalC2 rdfs:label ?capitalCN2.
    FILTER(lang(?capitalCN2) = "en")
    BIND(REPLACE(?capitalCN2, "@en", "") AS ?capitalCity)
    OPTIONAL {
      ?capitalC2 dbo:subdivision ?capitalSubdivisionEntity2.
      ?capitalSubdivisionEntity2 rdfs:label ?capitalSubdivisionN2.
      FILTER(lang(?capitalSubdivisionN2) = "en")
      BIND(REPLACE(?capitalSubdivisionN2, "@en", "") AS ?capitalSubdivision)}
  }
  BIND(COALESCE(?capitalSubdivision, ?Name) AS ?ProvinceValue)
}
GROUP BY ?Name ?cPop ?popEst ?popCen
```

## 3 City

### 3.1 Retrieval

```
PREFIX dcterms: <http://purl.org/dc/terms/>
SELECT DISTINCT ?Name ?Country SAMPLE(?ProvinceValue) AS ?Province
?Population SAMPLE(?Lat) AS ?Latitude
SAMPLE(?Long) AS ?Longitude SAMPLE(?Elev) AS ?Elevation
WHERE {
    ?countryN rdf:type dbo:Country;
        dcterms:subject dbc:Member_states_of_the_United_Nations;
        rdfs:label ?countryLbl.
    ?cityN rdf:type schema:City;
        dbo:country ?countryN;
        rdfs:label ?cityLbl.
    FILTER(lang(?countryLbl) = "en" && lang(?cityLbl) = "en")
    BIND(REPLACE(?countryLbl, "@en", "") AS ?Country)
    BIND(REPLACE(?cityLbl, "@en", "") AS ?Name)
    OPTIONAL{
        ?cityN dbo:subdivision ?subDiv.
        ?subDiv rdfs:label ?subDivLbl .
        FILTER(lang(?subDivLbl) = "en")
        BIND(REPLACE(?subDivLbl, "@en", "") AS ?citySubDiv)}
    BIND(COALESCE(?citySubDiv, ?Country) AS ?ProvinceValue)
    OPTIONAL{?cityN geo:lat ?Lat}
    OPTIONAL{?cityN geo:long ?Long}
    OPTIONAL{?cityN dbp:elevationM ?Elev}
    OPTIONAL{?cityN dbp:populationTotal ?Population}
}
GROUP BY ?Country ?Name ?Population
```

## 4 Province

### 4.1 Retrieval

```
PREFIX dcterms: <http://purl.org/dc/terms/>
SELECT DISTINCT ?Name ?Country xsd:integer(?population) AS ?Population
xsd:integer(SAMPLE(?totalArea) / 1000) AS ?Area ?Capital ?Name AS ?CapProv
WHERE {
    ?countryP rdf:type dbo:Country ;
        dcterms:subject dbc:Member_states_of_the_United_Nations ;
        rdfs:label ?countryName .

    ?region a dbo:AdministrativeRegion ;
        dbo:country ?countryP ;
        rdfs:label ?regionName .

    FILTER NOT EXISTS {
        FILTER (CONTAINS(LCASE(?regionName), "archdiocese") ||
```

```

        CONTAINS(LCASE(?regionName), "diocese"))
    }

    OPTIONAL { ?region dbo:areaTotal ?totalArea }
    OPTIONAL { ?region dbo:populationTotal ?population }

    OPTIONAL{ ?region dbo:capital ?capitalCity .
        ?capitalCity rdfs:label ?capitalLabel .
        FILTER (lang(?capitalLabel) = "en")}
    OPTIONAL { ?region dbo:largestCity ?largestCity .
        ?largestCity rdfs:label ?largestCityLabel .
        FILTER (lang(?largestCityLabel) = "en") }

    FILTER (lang(?countryName) = "en" && lang(?regionName) = "en")

    BIND(STR(?countryName) AS ?Country)
    BIND(STR(?regionName) AS ?Name)
    BIND(COALESCE(STR(?capitalLabel), STR(?largestCityLabel)) AS ?Capital)
}
GROUP BY ?Name ?Country ?population ?Capital

```

## 5 Organization

### 5.1 Retrieval

```

PREFIX dcterms: <http://purl.org/dc/terms/>
SELECT DISTINCT ?Abbreviation ?Name
    SAMPLE(?HQCity) AS ?City SAMPLE(?HQCountry) AS ?Country
    SAMPLE(?HQProvince) AS ?Province SAMPLE(?Established) AS ?Established
WHERE {
    ?org rdf:type dbo:Organisation ;
        rdfs:label ?orgName .
    ?org dcterms:subject ?category .
    FILTER(?category IN (
        dbc:Political_organizations, dbc:International_political_organizations,
        dbc:Economic_organizations, dbc:Trade_associations,
        dbc:Intergovernmental_organizations, dbc:International_economic_organizations,
        dbc:United_Nations))
    FILTER NOT EXISTS{
        ?org dcterms:subject ?excludeCategory .
        ?excludeCategory rdfs:label ?excludeLabel .
        FILTER (CONTAINS(LCASE(?excludeLabel), "school") ||
            CONTAINS(LCASE(?excludeLabel), "club"))}
    OPTIONAL { ?org dbp:abbreviation ?abbreviation . }
    OPTIONAL { ?org dbp:nickname ?nickname . }
    OPTIONAL { ?org dbp:establishedDate ?establishedDate. }
    OPTIONAL { ?org dbp:formation ?formation . }
    OPTIONAL { ?org dbo:foundingYear ?established . }
    OPTIONAL { ?org dbo:headquarter ?hq .

```

```

OPTIONAL {
    ?hq rdf:type dbo:City .
    ?hq rdfs:label ?hqLabel . FILTER (lang(?hqLabel) = "en")
    OPTIONAL { ?hq dbo:country ?hqCountry .
        ?hqCountry rdfs:label ?hqCountryName .
        FILTER (lang(?hqCountryName) = "en") }
    OPTIONAL { ?hq dbo:subdivision ?hqRegion .
        ?hqRegion rdfs:label ?hqRegionName .
        FILTER (lang(?hqRegionName) = "en") }
    OPTIONAL { ?hq rdfs:label ?hqCityName .
        FILTER (lang(?hqCityName) = "en") }}
OPTIONAL {
    ?hq rdf:type dbo:Country .
    ?hq rdfs:label ?hqCountryName .
    FILTER (lang(?hqCountryName) = "en")}}
FILTER (lang(?orgName) = "en")
BIND(STR(?orgName) AS ?Name)
BIND(COALESCE(STR(?abbreviation), STR(?nickname)) AS ?Abbreviation)
BIND(COALESCE(STR(?hqCityName)) AS ?HQCITY)
BIND(COALESCE(STR(?hqRegionName)) AS ?HQProvince)
BIND(COALESCE(STR(?hqCountryName), STR(?hqLabel)) AS ?HQCOUNTRY)
BIND(COALESCE(STR(?establishedDate), STR(?formation), STR(?established)) AS ?Established)
}
GROUP BY ?Name ?Abbreviation

```

## 6 Language

### 6.1 Retrieval

```
PREFIX dcterms: <http://purl.org/dc/terms/>
SELECT DISTINCT ?Country ?Name
((SAMPLE(?LSpeakers) / ?Population) * 100) AS ?Percentage
WHERE {
    ?country rdf:type dbo:Country ;
        dcterms:subject dbc:Member_states_of_the_United_Nations ;
        rdfs:label ?countryName .

    OPTIONAL { ?country dbo:populationTotal ?population . }

    {
        ?country dbo:language ?language .
        ?language rdfs:label ?languageLabel .
        OPTIONAL { ?language dbp:speakers ?speakers . }
    } UNION {
        ?country dbo:officialLanguage ?language .
        ?language rdfs:label ?languageLabel .
        OPTIONAL { ?language dbp:speakers ?speakers . }
    }
    FILTER (lang(?languageLabel) = "en")
    FILTER (lang(?countryName) = "en")
    FILTER (datatype(?speakers) = xsd:integer || datatype(?speakers) = xsd:decimal)
    BIND(STR(?countryName) AS ?Country)
    BIND(STR(?languageLabel) AS ?Name)
    BIND(xsd:integer(?population) AS ?Population)
    BIND(xsd:integer(?speakers) AS ?LSpeakers)
}
GROUP BY ?Country ?Name ?Population
```