CS6852: Theory and Applications of Ontologies
Description of the Course Assignments

Course Assignments Weightage: 30%
Teams: 12 groups of 7 members each

Assignment 1: XML
Group task:
Pick a domain of your choice and explain the various entities involved in the domain and what pieces of data would be captured by the "data model". A plain text description of the data model is required to be submitted (PDF file). Create an XML schema representing the elements of the domain as per your description above. The XML schema document is required to be submitted. Create a (large) XML file which complies with the XML Schema created by you. Validate the XML file for its compliance using a validating parser. A brief presentation (max 10 minutes) would be required to be done by a randomly chosen group member on the data model and its purpose.
Files to be submitted: Plain text description of the domain (PDF), XML Schema, XML file.

Individual task:
In this task, each student is required to demonstrate the skill of programmatically picking up selected portions of the XML data prepared by the group and display the data in a HTML page. The data model should be the one submitted above.

Files to be submitted: Code, HTML file
Languages that may be used: Javascript/Java/C++/Python
Mode of evaluation: Class Presentation and Individual viva.

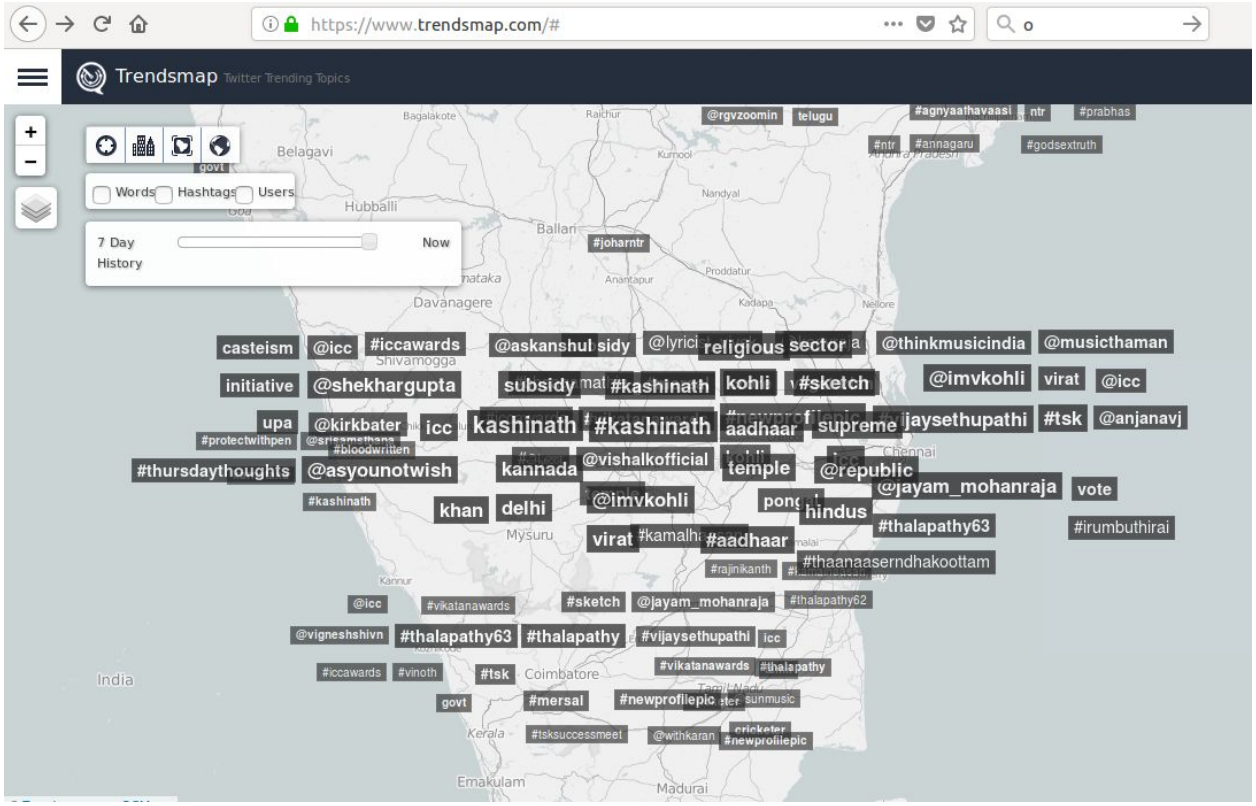
Assignment 2: Create a Mash-up using Web APIs
Group task:
Pick a domain of your choice (can be the same as that chosen in Assignment 1). Extract information about an entity from two or more Web APIs regarding that domain, merge the information and render it into a HTML page. Aim to retrieve some information from one source that can be fed to one or more other sources so that related information can be obtained. An example mash-up is given below.

Files to be submitted: Textual description of the domain chosen, details of the APIs, Code, HTML file.
Languages that may be used: Java/Python/Languages supported by the APIs.

Mode of evaluation: Class presentation.

Example of a mashup:
https://www.trendsmap.com/ is a mashup of google maps with twitter trends.

Output can be seen in the picture below:



Example Web APIs:
Amazon Product Advertising API:
https://docs.aws.amazon.com/AWSECommerceService/latest/DG/Welcome.html

Google Maps API:
https://developers.google.com/maps/documentation/

Assignment 3: LOD based integration

Group work:
Extract related information (RDF triples) about an entity from two or more linked open data (LOD) datasets using SPARQL endpoints, merge them and render the information into a HTML page.
For example, you can collect publications of a famous researcher from DBLP dataset and his/her other details from DBpedia dataset.
Files to be submitted: Textual description of the domain chosen, Code, HTML file

Mode of evaluation: Class presentation.

List of available SPARQL endpoints can be found at https://www.w3.org/wiki/SparqlEndpoints

Assignment 4: Ontologies

Part 1:

Group work:

Study an existing ontology. Summarize it giving the important features/aspects of the ontology and add appropriate remarks on the design after a critical review/discussion on the ontology within your group.

Files to be submitted: Report of the summary.

Mode of evaluation: Class Presentation

Part 2:

Group work:

Install Protege tool.

Design an ontology of the domain of your choice. Write a report on the important features of the domain captured in the ontology. Add ABOX data as well as TBOX axioms. Ensure that your ontology is logically consistent by running the reasoners provided along with Protege on your ontology.

Individual task:

Write SPARQL queries on the ontology.

Files to be submitted: Report containing the textual description of the domain chosen, SPARQL queries. OWL file.