Theory and Application of Ontologies(CS6852)

COURSES ONTOLOGY REPORT

Rahul Kejriwal (CS14B023)
Ajmeera Balaji Naik (CS14B034)
Bikash Gogoi (CS14B039)

Table of Contents:

Introduction:

Our ontology is the “COURSES ONTOLOGY”. The ultimate aim of this is to capture information about courses offered in various departments in different views based on user.

This ontology manifests information/knowledge about courses and classifies them semester wise, slot wise, credit wise, course type wise (core/elective) as well as department wise. It also models prerequisites of courses and equivalences among them.

Concepts and Properties:

1. Class Hierarchy:
    a. Course
        i. Core
        ii. Elective
        iii. Lab

    b. Department
        i. CSE
        ii. EE
        iii. MA

    c. Semester
        i. JUL-NOV-2014
        ii. JAN-MAY-2015
        iii. JUL-NOV-2015
        iv. JAN-MAY-2016
        v. JUL-NOV-2016
        vi. JAN-MAY-2017

    d. Slot
        i. ASlot
        ii. BSlot
        iii. CSlot

iv. DSlot
v. ESlot
vi. FSlot
vii. GSlot
viii. HSlot
ix. ISlot
x. JSlot
xi. KSlot
xii. LSlot
xiii. PSlot
xiv. QSlot
xv. RSlot
xvi. SSlot
xvii. TSlot

e. BranchOfStudy:
    i. Data_Science
    ii. Systems_Engineering
    iii. Theoretical_Computer_Science

f. NoOfCredits:
    i. 2Credits
    ii. 3Credits
    iii. 4Credits

2. Object Properties:
    i. isEquivalentTo
    ii. isPrerequisiteOf
    iii. Prerequisite

3. Data Properties:
    a. hasCredit
    b. SemNo
    c. taughtBy

Axioms:

1. On Classes:
    a. Core, Lab and Elective form a partition of the Course domain and are hence, disjoint.
    b. All department subclasses are mutually disjoint as the same course cannot be offered by multiple departments.
    c. All BranchOfStudy subclasses are mutually disjoint as the same course cannot be of multiple fields/branches.
    d. All NoOfCredits subclasses are mutually disjoint as the same course cannot be of multiple different no. of credits.
    e. Subclasses of semester class are not mutually disjoint. Each course may be offered multiple semesters.
    f. Subclasses of slot class are not mutually disjoint. A course may be offered in multiple slots (Ex: courses offered in R+T Slot).

2. On Object Properties:
    a. isEquivalentTo is an object property whose domain as well as range is class Course. This property satisfies equivalence relation (reflexive, symmetric and transitive).
    b. isPrerequisiteOf is an object property whose domain as well as range is class Course. It is the inverse property of Prerequisite. It satisfies transitivity.
    c. Prerequisite is an object property whose range as well as domain is class Course. It is inverse property of isPrerequisiteOf. It satisfies transitivity.

3. On Data Properties:
    a. SemNo is a data property whose domain is class Course and range is set of valid strings.
    b. taughtBy is a data property whose domain is class Course and range is set of strings representing professors.