

Presentation Feedback and Suggestions

Task 1. Give meaningful names to reasoning/inferred classes. (Example: NOT CQ1 or CQ2...)

Task 2. Can the one course be in two categories?

After the feedback and suggestions:

Task 1

CQ1- Recommend top rating courses which are free with certificates.

→ **HighRatingCertificateFreeCourses**

CQ 2- List some of the courses for learners who want a certificate after attending the course without having to do assignments, quiz, and exam.

→ **CertificateCoursesWithoutAssessment**

CQ 3- Mrs. B is working in an organization and does not have time to attend online live courses on Data Science, recommend some courses for her which are not live session courses.

→ **RecordedCourses**

CQ 4- Mr. A is from a management background, and he wants to learn some computer networking related courses, ontology shall recommend some courses for him.

→ **ComputerNetworkingCourses**

CQ 5- Mr. C is a new project manager in K-Bank, and he has to develop an information system for ATM machines. What are the courses that will help him to manage the project well?

→ **ManagementCourses**

CQ 6- Mrs. D wants to apply for a job and for that job she needs a Software Training course certificate, and the deadline of the job application is in 1 month. List some of the Software Training courses with certificates that she can obtain within a month (20 hours).

→ **ShortSoftwareCoursesWithCertificates**

CQ 7- Which is the highest rated course of Author XYZ which is free of cost?

➔ **FreeHighRatingCoursesOfAuthor**

CQ 8- If I take the ABC course, what are some of the prerequisite courses that I need to attend?

➔ **PrerequisiteCourses**

CQ 9- List some of the advanced/recommended courses after completing a particular course.

➔ **AdvancedCourses**

CQ 10- Mrs. E has some budget limitation; recommend some courses which are below or equal to 100 Euro to her.

➔ **CoursesWithLowFee**

Task 2:

Can the one course be in two categories?

Yes, one course can be in two categories because the courses that are offered are not disjoint. As shown in the figure 1 the course Applied Data Science can fall under two categories which are Data Science and Software Engineering.

In addition, as shown in the figure 2, we have run the SPARQL query to check if Applied Data Science can fall under Data Science and Software or not. The result shows Applied Data Science can fall under both of the course categories (where two instances of Applied Data Science is in two categories).

Therefore, we can conclude one course can fall under several course categories.

Ontology-Based Recommender System of Online Courses

Active ontology x Entities x Individuals by class x OWL Viz x DL Query x SPARQL Query x

Classes Object properties Data properties Annotation properties Datatypes Individuals

Class hierarchy: Applied_Data_Science

Inferred

Applied_Data_Science — <http://www.semanticweb.org/y>

Annotations Usage

Annotations: Applied_Data_Science

Annotations +

Description: Applied_Data_Science

Equivalent To +

SubClass Of +

- CourseOffered
- hasCategory some Data_Science
- hasCategory some Software_Engineering
- DataScienceCategoryCourses
- SoftwareEngineeringCategoryCourses

General class axioms +

SubClass Of (Anonymous Ancestor)

- Course and (hasCategory some Data_Science)
- Course and (hasCategory some Software_Engineering)

Instances +

- DS1
- DS2

Target for Key +

Disjoint With +

Figure 1. Rule applied to have same courses under different categories

Active ontology x Entities x Individuals by class x OWL Viz x DL Query x SPARQL Query x

Snap SPARQL Query: Snap SPARQL Query:

```
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX oc: <http://www.semanticweb.org/yountentshering/ontologies/2021/6/untitled-ontology-20#>
SELECT ?CourseCategory ?Name WHERE {
  ?CourseCategory rdf:type oc:DataScienceCategoryCourses.
  ?CourseCategory oc:CourseName ?Name
}
Order by ?CourseCategory
```

Execute

?CourseCategory	?Name
oc:DS1	Applied Data Science with Python^xsd:string
oc:DS2	Python for Data Science and Machine Learning Bootcamp^xsd:string
oc:DS3	Introduction to Data Science^xsd:string
oc:DS4	Micromasters Statistics and Data Science^xsd:string

```
PREFIX owl: <http://www.w3.org/2002/07/owl#>
PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
PREFIX oc: <http://www.semanticweb.org/yountentshering/ontologies/2021/6/untitled-ontology-20#>
SELECT ?CourseCategory ?Name WHERE {
  ?CourseCategory rdf:type oc:SoftwareEngineeringCategoryCourses.
  ?CourseCategory oc:CourseName ?Name
}
Order by ?CourseCategory
```

Execute

?CourseCategory	?Name
oc:DS1	Applied Data Science with Python^xsd:string
oc:DS2	Python for Data Science and Machine Learning Bootcamp^xsd:string
oc:SE1	Software Engineering Training^xsd:string
oc:SE2	Information System Design and Management^xsd:string
oc:SE3	Learn Software Design and Development^xsd:string
oc:SE4	Software Architecture and Design^xsd:string

Figure 2. SPARQL query showing DS1 and DS2 in two categories