DSCI 558: Building Knowledge Graphs

Quiz 12 (8 minutes)

**Question 1 (6 points):**

Consider the OWL ontology:

(1)   HappyParent ≡ Person ⨅ ∀hasChild.Doctor  ⨅ ≥ 2 hasChildren

(2)   Nurse ⊑ ¬ Doctor

(3)   Nurse ⊑ Person

(4)   Doctor ⊑ Person

(5)   SatisfiedParent ≡ Person ⨅ ∃hasChild.Doctor

Assume the following instance data:

(6)   hasChild(Joe, Jill)

(7) Nurse(Jill)

(8)   hasChild(Joe, Jack)

(9)   Doctor(Jack)

(10) Person(Joe)

(11)  HappyParent(John)

(12)  hasChild(John, Susan)

True or False

1. HappyParent(Joe) F
2. Doctor(Susan) T
3. Nurse(Susan) F
4. Person(Jill) T
5. SatisfiedParent(Joe) T
6. Person(Jack) T

**Question 2 (4 points)**

HardWorkingStudent **⊓** LazyStudent **⊑** **⊥**

**∃**hasGoodGrades.T **⊑** HardWorkingStudent

HardWorkingStudent **≡** Student **⊓** **∀**friend.HardWorkingStudent

LazyStudent **≡** Student **⊓** **∀**friend.LazyStudent

And all assertions in a knowledge base:

1. LazyStudent(John)

2. hasGoodGrades(John, DSCI 558)

3. hasGoodGrades(Peter, DSCI 552)

4. Friend(Peter, John)

Assuming John is a HardWorkingStudent, what is the minimal set of assertions you need to remove to make the knowledge base consistent?

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Assuming Peter is a LazyStudent, what is the minimal set of assertions you need to remove to make the knowledge base consistent?

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