

## Oblig 6 – IN3060

### 1.1 DL Axioms

3. Every horse is an animal:

$$\text{Horse} \subseteq \text{Animal}$$

4. Every animal is a male or a female:

$$\text{Animal} \equiv \text{Male} \vee \text{Female}$$

5. Nothing is both a male and a female

$$\exists X (\text{male}.X \vee \text{female}.X) \subseteq \perp$$

13. Every monté horse is a race horse which has only competed in monté races.

$$\text{MonteHorse} \equiv \forall \text{hasCompeted}. \text{MonteRace} \rightarrow x$$

14. A superhorse is by definition a race horse which has won more than 100 horse races:

$$\text{SuperHorse} \equiv \text{RaceHorse} \vee \geq 100 \text{ hasWon}. \text{HorseRace}$$

15. You must compete in a race to win a race:

$$\forall \text{hasWon}. \text{HorseRace} \subseteq \text{hasCompeted}. \text{HorseRace}$$

19. Every race horse has at least one trainer which is a person:

$$\text{RaceHorse} \subseteq \geq 1 \text{ hasTrainer}. \text{Person}$$

21. If a horse has a trainer, then this trainer trains the horse:

$$\text{Horse} \vee \text{hasTrainer}. (\text{Person} \vee \text{trains}. \text{Horse})$$

About individuals:

1. The horse called "Rex Rodney" is a superhorse. Its trainer is "Kjell Håkonsen", and it won the race Elitloppet (in 1986, use the identifier :Elitloppet1986). Its sire has the name "Doctor Rodney":

Horse.

$$\{\text{«Rex Rodney»}\} \equiv \text{SuperHorse} \vee \text{hasTrainer}. \{\text{«Kjell Håkonsen»}\} \vee \text{hasWon}. \{\text{«:Elitloppet1986»}\} \vee \text{sire}. \{\text{«Doctor Rodney»}\}$$

2. Elitloppet is not a Monté race:

$$\{\text{Elitloppet:1986}\} \subseteq \neg \text{MonteRace}$$

3. The horse called «Steady, Ready, Go» is a filly and monté horse:

$$\{\text{«Steady, Ready, Go»}\} \subseteq (\text{Filly} \vee \text{MonteHorse})$$

### 1.2 Questions

1. Unknown.

2. Yes. Kjell Håkonsen trains Rex Rodney and Rex Rodney hasWon (and hasCompeted) in :Elitloppet1986.

3. Unknown. Don't know the age.

4. Unknown.

5.

6. No. A Filly is less than 4 years old.