1 **Description logics – appetizer**

(Odile Papini) Give the representation in description logics of the following concepts:

1. People who have neither a dog nor a cat.
2. Vegetarian people who live in the countryside.
3. People who do not like cats.

2 **Description logics – main course: first part**

For each of the following concepts, build a suitable ALC concept description, using only the concept names:

```
Person, Happy, Animal, Cat, Old, Fish
```

and the role name `owns`.

1. happy person
2. happy pet owner
3. person who owns only cats
4. unhappy pet owners who own an old cat
5. pet owners who only own cats and fish

3 **Description logics – main course: second part**

For each of the concepts formulated as answers of Exercise 2, draw an interpretation.

4 **Subsumption**

Which of the following statements is true?

1. $A \sqcap \neg A$ is subsumed by $B$
2. $B$ is subsumed by $A \sqcup \neg A$

3. $A \sqcap \exists r. B$ is subsumed by $A \sqcap \exists r. T$

4. $A \sqcap \exists r. (B \sqcap C)$ is subsumed by $A \sqcap \exists r. B$

5. $A \sqcap \exists r. (B \sqcup C)$ is subsumed by $A \sqcap \exists r. B$

6. $A \sqcap \forall r. B$ is subsumed by $A \sqcap \exists r. B$

7. $A \sqcap \exists r. B$ is subsumed by $A \sqcap \forall r. B$

8. $A \sqcap \exists r. A \sqcap \forall r. B$ is subsumed by $A \sqcap \exists r. B$

5. **Back to FCA**

Extract all the formal concepts from the formal context table constructed during the last exercises sessions.