G53KRR exercise on descripton logic.

- State a definition of a concept C which is: a person who has a daughter and a son. Assume that you have concepts $Person$, $Female$ and a role $Child$.

  Answer. $\exists Child.Female \sqcap \exists Child.\neg Female$ (I translated a son as a non-female child).

- Is it always true that $\exists R.C \sqsubseteq \forall R.C$?

  Answer. No. $\exists R.C$ describes objects which have an R-edge to some object which is in C. For example, $\exists Child.Female$ describes people who have a daughter. $\forall R.C$ describes objects where all R-links (if they exist) lead to a C object. For example, $\forall Child.Female$ describes people who only have female children, if they have any children at all. Clearly the set of people who have a daughter (and maybe sons as well) is not included in the set of people who only have female children.

- Is it always true that $\exists R.(C_1 \sqcap C_2) \sqsubseteq \exists R.C_1$?

  Answer. Yes. If an object has an R-link to something in C_1 and in C_2, then it has (the same) link to something which is in C_1.