Problem 7.1
Give a logic program \( P \) and its completion \( C_C(P) \) such that the following holds:

\[
\{ \neg A \mid \neg A \in C(P) \} \neq \{ \neg A \mid \neg A \in C_C(P) \}
\]

(Justify your answer.)

Problem 7.2
Find non-stratifiable programs \( K_1 \) and \( K_2 \) such that

- \( C_C(K_1) \) is satisfiable, and
- \( C_C(K_2) \) is unsatisfiable.

Problem 7.3
Consider the language \( L(R, F, V) \) with \( R = \{p/1\} \) and \( F = \{a/0, b/0, c/0\} \).
Let \( G \) be the formula \( \neg (\forall X)(p(X) \rightarrow X \approx a \lor X \approx b) \lor (\forall X)(p(X) \rightarrow X \approx a \lor X \approx c) \).

- Determine \( \text{Circ}(G, p) \).
- Find two instantiations \( G_1 \) and \( G_2 \) of \( \text{Circ}(G, p) \) such that

\[
\{G, G_1, G_2\} \models (\forall X)(p(X) \rightarrow X \approx a \lor X \approx b) \lor (\forall X)(p(X) \rightarrow X \approx a \lor X \approx c).
\]

Hint: Combine the ideas from Exercise 1 (slides 23-24) and Exercise 2 (slides 26-27) from the lecture.