Exercise 6.1
Let $P$ be a program, $HB_P$ the Herbrand base associated to $P$. An Herbrand interpretation is defined as a subset of $HB_P$; the set of all possible Herbrand interpretations of $P$ is denoted by $2^{HB_P}$ (i.e. the powerset of $HB_P$).
Show that the set of all Herbrand interpretations of $P$, together with the set inclusion ($\subseteq$), forms a complete partially ordered set.

Exercise 6.2
Let $P$ be a program. The operator of immediate consequences of $P$, denoted as $T_P$, is defined as follows:

$$T_P(I) = \{ A \in HB_P \mid A \leftarrow B_1, \ldots, B_n \in \text{ground}(P) \text{ and } \{B_1, \ldots, B_n\} \subseteq I \}.$$ 

Prove that
1. $T_P$ is continuous;
2. $T_P$ is monotonic.

Exercise 6.3
Let $P$ be the following disjunctive program: \{p(a) \lor p(b)\}. Find its Herbrand models; show that their intersection is not a Herbrand model of $P$.

Exercise 6.4
Consider the following program $P$:

\begin{align*}
p(0, X, X). \\
p(f(X), Y, f(Z)) :&- p(X, Y, Z).
\end{align*}

Find its least Herbrand model.