Problem 1

Convert the following ER diagram into a relational database schema

![ER Diagram for Company Database](image)

Figure 1: ER diagram for Company Database

Problem 2

Consider figure 2. Show scenarios where insertion, deletion, and modification anomalies may be present in the relation.
Problem 3

Prove Armstrong’s axioms (reflexive rule, augmentation rule, and transitive rule).

Problem 4

Consider a schema with attributes X={A, B, C, D, E, F, G, H}. Determine \( \{A, B, F\}^+ \), the closure of \{A, B, F\}. The following FDs are provided:

\[
\begin{align*}
A, C & \rightarrow D \\
D, H, G & \rightarrow E \\
A, B & \rightarrow G \\
F, B, G & \rightarrow C
\end{align*}
\]