This miniproject asks you to work with a partial ordering on a Cartesian product.

Suppose that (A, \leq_1) , (B, \leq_2) , and (C, \leq_3) are posets. Show that $(A \times B \times C, \leq)$ is a poset where $(a, b, c) \leq (d, e, f)$ if and only if $a \leq_1 d$, $b \leq_2 e$, and $c \leq_3 f$.