Let $n > 3$ be an integer. Let Ω be the set of all triples of distinct elements of $\{1, 2, ..., n\}$. Let m denote the minimal number of colours which suffice to colour Ω so that whenever $1 \leq a < b < c < d \leq n$, the triples $\{a, b, c\}$ and $\{b, c, d\}$ have different colours. Prove that

$$\frac{1}{100} \log \log n \leq m \leq 100 \log \log n.$$