Problem 7 (due Monday, May 11)

Let \$S\$ be a finite set with \$n\$ elements. What is the largest possible number \$k\$ such that one can choose \$k\$ non-empty subsets of \$S\$ so that for any two of these subsets, either they are disjoint or one is contained in the other.

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This problem was solved by only one participant: Yuqiao Huang. The answer to the problem is \$2n-1\$. Both our original solution and Yuqiao's solution prove this by induction on \$n\$, but the inductive arguments are different. Detailed solutions are discussed in the following link Solution

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