

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.

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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