# Probset: Proving Greedy Algorithms

## Veteran Track

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# Problem 1

In **Linova and Kingdom**, show that if a node is picked, then everything in its subtree must be picked. No need to be overly formal. As long as you convince me, it's fine ^^

# Problem 2

There are $n$ chess matches to be scheduled in the PSHS-MC ASTB. Each chess match has a starting time $s_i$ and an ending time $e_i$. Two chess matches $i$ and $j$ are said to be in conflict if they occur simultaneously for some time $t$. Specifically, they are in conflict if $[s_i, e_i] \cap [s_j, e_j] \neq \varnothing$ (you may clarify this in the Discord server).

You must schedule a subset of these chess matches such that none of them are in conflict with one another. What is the maximum number of chess matches that you could schedule?

Your task: **Describe** an algorithm that solves this problem in linear or linearithmic ( $O(n \log n)$) time. Then, prove the correctness of your algorithm using the ideas discussed in this week's lesson. You may refer to section 3 of this learning guide.