Greedy Scheduling

If we get rid of the assumption that all w_i/t_i are unique, what changes? Which change(s) make the proof fail?

Knapsack

- If S is optimal solution to $K_{n,W}$, and $n \notin S$, then ____ is optimal solution to $K_{\_,\_}$
- If S is optimal solution to $K_{n,W}$, and $n \in S$, then ____ is optimal solution to $K_{\_,\_}$

- Prove each statement. Start: For contradiction, assume ____ is not optimal solution to $K_{\_,\_}$

Knapsack

- If S is optimal solution to $K_{n,W}$, and $n \notin S$, then S is optimal solution to $K_{n-1\,,W}$
- If S is optimal solution to $K_{n,W}$, and $n \in S$, then $S - \{n\}$ is optimal solution to $K_{n-1\,,W-w_n}$

Knapsack

- If S is optimal solution to $K_{n,W}$, and $n \in S$, then $S - \{n\}$ is optimal solution to $K_{n-1\,,W-w_n}$

Suppose for contradiction $S - \{n\}$ is not the optimal solution to $K_{n-1\,,W-w_n}$. Then the optimal solution S' to $K_{n-1\,,W-w_n}$ has $V(S') > V(S)$. But then $S' \cup \{n\}$ is a solution to $K_{n,W}$ with $V(S' \cup \{n\}) > V(S)$, so S is not optimal for $K_{n,W}$, a contradiction.