

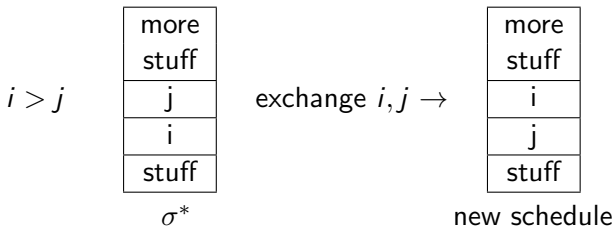


Algorithms: Design
and Analysis, Part II

Greedy Algorithms

A Scheduling Application:
Correctness Proof Part II

Cost-Benefit Analysis, Part I



Question: What is the effect of this exchange on the completion time of (1) a job k other than i or j , (2) the job i , (3) the job j ?

- A) Not enough info/goes up/goes down
 - B) Not enough info/goes down/goes up
 - C) Unaffected/ goes up / goes down
 - D) Unaffected/goes down/goes up
- by j
- by i

Cost-Benefit Analysis, Part II

Upshot:

1. Cost of exchange w_i/l_j . [C_i goes up by l_j]
2. Benefit of exchange is w_j/l_i . [C_j goes down by l_i]

Note: $i > j \Rightarrow w_i/l_i < w_j/l_j \Rightarrow w_i/l_j < w_j/l_i \Rightarrow \text{COST} < \text{BENEFIT}$
 \Rightarrow Swap improves σ^* , contradicts optimality of σ^* .

QED!