Exercise 12

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1 Lower Bound for the k-Server Problem

Argue that every online deterministic algorithm for the k-server problem has competitive ratio at least k.

2 Extending Double Coverage to Trees

Prove that the natural extension of the double coverage algorithm to trees gives a k-competitive online algorithm for the k-server problem.

3 Lower Bounds for Online Bipartite Matching

Argue that no deterministic online bipartite matching algorithm can achieve a competitive ratio better than 1/2.