CS F364
Design & Analysis of Algorithms

Algorithm Design: Greedy Technique

Spanning Trees

Baruvka's Algorithm and its significance

Minimum Spanning Trees: Baruvka's Algorithm

- Outline:
  - Given G=(V,E,w), let T=(V,E'), E' = {}
  - while (|E'| < n-1) {
  - for each connected component C[i] of T {
    - Find the smallest-weight edge (v,u)
      - such that v is in C[i] but u is not in C[i]
    - E' = E U { (v,u) }
  - }
  - }
  - return T

Baruvka's Algorithm

- Exercise:
  i. Argue the correctness of this algorithm
  ii. Analyze the time complexity of this algorithm.
- Advantage:
  - Clustering can be parallelized
- Exercise:
  - Write a parallel version of this algorithm.