Minimizing expected cost [Gil & Itai – J. Algs.]

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- $O(B^2N)$ dynamic program
- $O(BN)$ subproblems:
  - root r of subtree of interest
  - remaining capacity C of root block (block with r)
    $1 \le C \le B$
- Binary trees:
  - root block contains r
    + i nodes from left subtree(r)
    + j nodes from right subtree(r)

    where $i + j + \underbrace{1}_{\text{cost}(r)} = C$
  - take best choice of i ~ $O(B)$ time per subproblem
- Nonbinary trees: standard DP trick.
  - too many partitions to enumerate them all
  - split nonbinary node (degree $d > 2$) into complete binary tree with d leaves & internal nodes have cost 0.
  - N goes up by only const. factor $\Rightarrow$ runtime same.

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