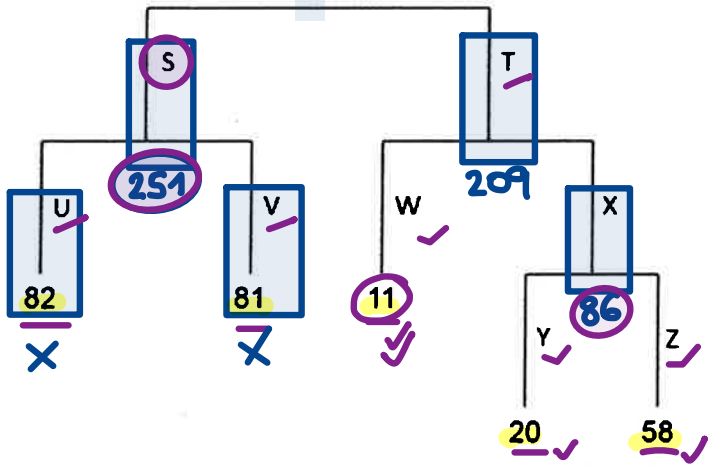
M339G: April 2nd, 2025.

38:

You are given the following unpruned decision tree:



The values at each terminal node are the residual sums of squares (RSS) at that node. The table below gives the RSS at nodes S, T, and X if the tree was pruned at those nodes:

Node	RSS
S	251
T	209
X	86

The RSS for the null model is 486. You use the cost complexity pruning algorithm with the tuning parameter, α, equal to 9 in order to evaluate the following pruning strategies.

I. No nodes pruned $82+81+11+20+58+9\cdot 5 = 297$

II. Prune node S only $251+11+20+58+9\cdot 4 = 376$

III. Prune node T only $82+81+209+9\cdot 3 = 399$

IV. Prune node X only $82+81+11+86+9\cdot 4 = 296$

V. Prune both nodes S and X $251+11+86+9\cdot 3 = 375$

Determine which pruning strategy is selected.

A. I
B. II
C. III
D. IV
E. V

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