Test PDF File

Let G = V, E denote the n-vertex path graph with edges
v% , v& , v& , v' , … , v()& , v()% , v()% , v(and a nonnegative weight w* for each vertex v* ∈ V.

Case 1 v(∉ S: We can delete the last element and the problem we need to focus on is finding MWIS of G()%

Case 2 v(∈ S: because it is an independent set, then we can ‘remove’ G()% from the potential nodes of S. If the final node is included, Then our solution is the MWIS of the graph G()& supplemented with the final vertex v(.

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The total weight of an MWIS of G! is

W" = max{W"#$, W" #& + W" }

where,

W"#$ is derived from case1 and

W" #& + W" comes from case2

The algorithm works but it is (as is) comparable
to an exhaustive search.

• If we have to (re)compute the solution to each
subproblem every time we encounter it we are wasting resources.
• Solution: create a globally visible variable that can store the solution
to the individual (smaller) subproblems
• The ability to “remember” the solution to previous
subproblems is called memoization.