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Algorithms

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Data Structure:

My code is greatly influence by “Finding a Maximum Planar Subset of a Set of Nets in a Channel” by Kenneth Supowit. The list of elements of MIS(i,j) need not be explicitly stored when is computed in the body of the interior loop; rather MIS(i,j) may be represented by pointers to MIS(i, k-1) and to MIS(k+1, j-1) if the condition is true, and by a pointer to MIS(i,j-1) if the condition is false. Then the last step of the algorithm is to explicitly enumerate the elements of MIS(0,2N-1), which can be done in O(N) time by traversing back from MIS(0,2N-1) along these pointers. We must store the cardinality of MIS(i,j) when it is computed in the body of the interior loop; this is an O(1) operation since we have explicitly stored the sized of MIS(i,k-1), of MIS(k+1, j-1), and of MIS(i,j-1). Therefore, the body of the main interior loop of my code can be implemented in O(1) time, and, hence, the entire code can be run in O(N^2) time.

Thoughts:

This assignment is extremely hard and took me quite a while to complete. But after completing this I have a better understanding on this subject. Also, this assignment helped me brushed up my C++ coding skills that I learned back in freshman year.