Laboratory practice No. 5: Divide to conquer and Dynamic programming

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3) Practice for final project defense presentation

3.1
The designed algorithm is implemented from a matrix which is used as a data structure in this problem; the number of rows represents the destination and passes through said matrix, starting with subsets that are empty and progressively begins to fill it, by means of the path that has already traveled previously. The shortest path length would be in the last column.

3.2
The worst-case time complexity of this algorithm is O(2^n . n ^ 2). Therefore if our graph contains 50 vertex, it would have to make a total of (2.8 x 10 ^ 18) executions

3.3
The algorithm seeks to pass through the points where we have to deliver the address, since it would be inefficient to go through the entire graph. The distance between two delivery points is calculated by the distance in the space where these points are located, however this is facilitated if you have the graph.

3.4
First of all, the algorithm creates a complete graph using Karolina and each waste as vertices. Then, it uses Held-Karp's algorithm to find the shortest path where Karolina can pick up each waste and then go to its initial position.

3.5
O(2^n * n^2) which is Held-Karp algorithm's complexity.

3.6
Being n the number of vertices.

4) Practice for midterms

4.2

*4.2.1 O(lenx*leny);*
4.2.2 table[lenx][leny];

4.5

4.5.1 T(n) = T(n/2) + C que es O(log n)
4.5.2 a[mitad]
4.5.3 a, mitad +1, de, z

4.6

4.6.1 scm [i] = 1;
4.6.2 scm[i] = 1 + scm[j];
4.6.3 max = scm[i];
4.6.4 O(n^2);

4.7

4.7.1 d[i][j] ;
4.7.2 d[k][j];
4.7.3 d[i][k];
4.7.4 O(n^3);

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