

## Laboratory practice No. 2

### Brute force or Exhaustive search

**Juan Camilo Guerrero Alarcón**

Universidad Eafit  
Medellín, Colombia  
jcguerrera@eafit.edu.co

**Juan José Escudero Valencia**

Universidad Eafit  
Medellín, Colombia  
jjescuderv@eafit.edu.co

**Santiago Pulgarín Vasquez**

Universidad Eafit  
Medellín, Colombia  
spulgarinv@eafit.edu.co

### 3) Practice for final project defense presentation

**3.1** The algorithm is generally responsible for finding all the permutations of the vertex by means of a recursive call that is responsible for reviewing between these vertices the cost between them executing each of the successors and updating each time it finds the minimum cost until it is the lowest. The complete graph and return the minimum required cost data.

**3.2** The complexity of the algorithm is  $O(V * E)$

**3.3** The algorithm performed in point 1, is applicable to the problem, since it is related, we can calculate the minimum distance quickly from the complete graph of 50 clients, in addition to efficiently solving the problem posed. The execution time is approximately 80 ms.

**3.4** The algorithm uses Backtracking to analyze every possible way to place the given n queens on the board.

The algorithm starts reading the number of queens and the number of holes on the board, creates a  $n*n$  matrix to know where the holes are and then uses an array to represent the board, using the index as columns and the elements in the array as rows. Finally, the algorithm starts trying to find every possible solution using DFS by recursive calls.

**3.5**  $T(n) = n*(n-1)*(n-2)...$  The complexity of the algorithm is  $O(n!)$ .

**3.6** "n" is the number of queens to place.

### 4) Practice for midterms

**4.1**

**4.1.1** maximo  $\leq$  actual

**4.1.2**  $O(n^2)$

**4.2** [Opc]

**PhD. Mauricio Toro Bermúdez**

Professor | School of Engineering | Informatics and Systems

Email: mtorobe@eafit.edu.co | Office: Building 19 – 627

Phone: (+57) (4) 261 95 00 Ext. 9473

**ESTRUCTURA DE DATOS 2**  
**Código ST0247**

**4.3**

**4.3.1**  $i - m;$

**4.3.2**  $n;$

**4.3.3**  $O(n \cdot m)$

**4.4**

**4.4.1**  $\text{temp} \% 10$

**4.4.2**  $O(N-M) \times \log(10)$

**4.5**

**4.5.1**  $i + 1$

**4.5.2**  $\text{left} = \text{right}$

**PhD. Mauricio Toro Bermúdez**

Professor | School of Engineering | Informatics and Systems

Email: mtorobe@eafit.edu.co | Office: Building 19 – 627

Phone: (+57) (4) 261 95 00 Ext. 9473

