Last name **Name** **ID**

Generic Competence EDA

- *This exercise must be submitted via El Racó.*
- *Write your full name and ID.*
- *Write your answers within the reserved space.*
- *When giving a reference to a source (book, journal, website, etc.), follow the style "ISO-690 (author-date, English)". You can generate references in this format at:*
  `www.citethisforme.com/guides/iso690-author-date-en`
- *When giving an URL, please write **clearly** and use, for example:*
  `https://shorturl.at`

(a) Explain which problem is solved with Floyd-Warshall's algorithm.

(b) Which is its asymptotic cost in time and space in the worst case?

(c) Let *INF* be an integer constant with a large enough value. The *weight matrix M* of a weighted directed graph $G = (\{0, .., n-1\}, E)$ is the matrix $n \times n$ defined as: M_{uv} is the weight of the edge (u, v) if $(u, v) \in E$, and *INF* otherwise.

Implement in C++ a function

vector<*vector*<**int**>> *floyd_warshall*(**const** *vector*<*vector*<**int**>>& *M*);

which, given the weight matrix of a weighted directed graph, returns the matrix obtained after applying Floyd-Warshall's algorithm.

(d) Cite the sources you have used to answer the previous questions.