Module: **ALSDD**   Academic year: **2024/2025**
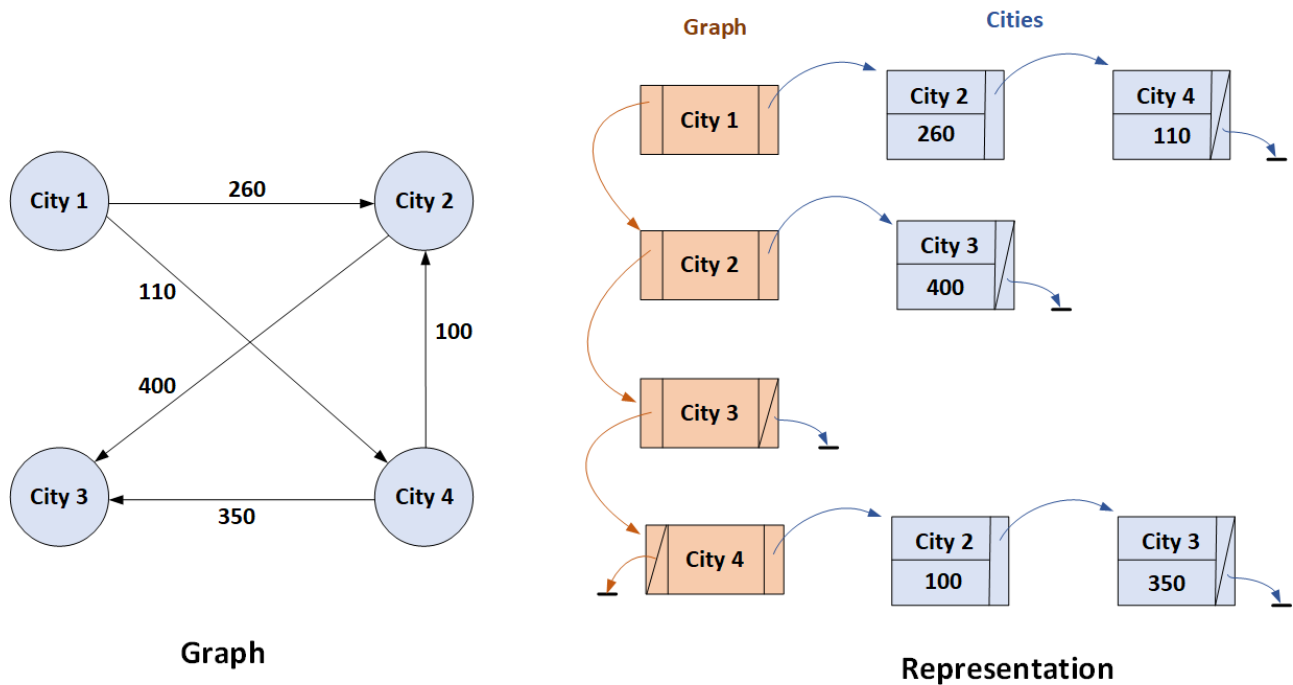 Level: **1ˢᵗ Year CPI**   Groups: **G05**, **G09**

Lab1: Representation of a graph of cities

- Using the linked lists -

Statement:

The aim of this lab is to represent and implement a road map using linked lists as follows:

Figure 1: Illustration of the desired structure.

Based on the proposed structure, this lab intends also to develop a program that offers the functionalities listed below.

1. Display the graph of cities.
2. Show the cities that can be reached from a given city.
3. Check if there is a path between two cities.
4. From a given city, determine the best path to reach another city. For example, the best path from City 1 to City 2 is: City 1 -- > City 4 -- > City 2.
5. Add a city.
6. Add a path from one city to another.
7. Delete a city.

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Required work:

1) Define the used data structures.
2) Implement the associated abstract machine to these structures.
3) Construct the graph using linked lists from text file/files to avoid typing from the keyboard every time.
4) Implement the functionalities described in the lab statement.

Notes:

- The work is carried out in pairs. A shared file will be sent to define the members of each pair.
- The program must be written in C language.
- The written code must be clear and commented.
- Deadline: 29/03/2025. Late submissions will be penalized.
- A form will be sent subsequently for submitting the lab (codes and the used text files).