Report Spain Map

# Explanation of the problem

**Give the representation of a solution (answer) of the problem, as explained during the course.**

The spain map is represented by several cities that in some way are connected to each other.

X = {*x1, x2, x3*…*xi…*.*xn* } where *n* represents the number of cities and *i* represents one city.

The goal with the Spain map is to calculate the shortest distance from the initial city to the goal city.

d = represents the distance

xj = represents the goal city, which is Valladolid

xi = represents the initial city, which is Malaga

kj = represents the distance from the current city to the next city to go to

knj = represents the distance from previously visited cities and the goal city, which is Valladolid

**Give the equation of f(n)used in Gready Best-first Search (or Explain how to calculate f(n))**

The equation for gready best-first is f(n) = h(n), where *n* represents the current city. h(n) is a function which uses a straight-line method. The straight-line method in this equation represents the distance between the current city and the goal city.

**Give the equation of f(n)used in A\* (or Explain how to calculate f(n)).**

The equation for A\* is f(n) = g(n) + h(n). *n* represents the start node, h(n) represents the cheapest estimated path cost from n to the goal, g(n) represents the path cost so far ( from start node to *n*), and f(n) represents the total estimated cheapest path cost from n to our goal.

**Explain both algorithms and the differences between them.**

In gready best-first we are looking for the best first city to go to. So for each city we go to we only check the shortest path from that city to the goal. But within A\* we are looking for the optimal path.