Problem Solving and Search in AI
Tutorial 6 (on June 11th)

Sarah Gaggl, Lucía Gómez Álvarez

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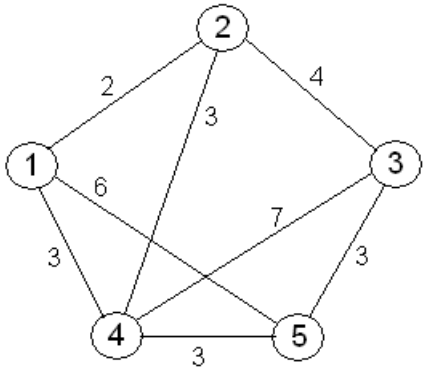
Exercise 6.1:
Design an Evolutionary Algorithm for the Travelling the Salesman Problem, which asks the following question: "Given a list of cities and the distances between each pair of cities, what is the shortest possible route that visits each city and returns to the origin city?".



Consider the following questions.

a) What are the choices that you must make with regards to the population? Consider different issues, such as the size and whether you will mix the population of several generations. After testing with different inputs, what decisions did you make?

b) Describe your strategies for mutation and/or recombination of the population.

c) Describe your strategy for selecting the individuals for the next generation. Would you deterministically select the best individuals? Why?

Exercise 6.2:
Consider again the Maze Problem of Exercise 1.1. Can you think of an Evolutionary Algorithm to solve it? How?

Exercise 6.3:
In light of your work on the previous exercises, discuss what you think are advantages and disadvantages of using Evolutionary Algorithms in contrast to other AI search techniques.