# Artificial Intelligence for Robotics - Assignment 09

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For this assignment, you can work in a team of two. Each one in the team should be able to present all submitted material.

1. Assume a robot that needs to deliver packages to different cities with certain constraints (time deadline to reach). The robot gets a list of packages and positions together with their associated constraints. Based on the current position, the robot has to determine a delivery order for the packages such that the constraints are met.

   The following assumptions are allowed,

   - Start time is 0
   - The robot can move on straight line to the different positions
   - Package drop off takes zero time
   - Robot can move only one unit per cycle

   Your task is to:

   (a) Implement an appropriate solver for the given *constraint satisfaction problem*, e.g. depth-first-search with backtracking.

   (b) Implement the following three ordering strategies for the successor function:
      i. Line number in the list
      ii. Euclidean distance
      iii. Time to deadline

   (c) Evaluate the performance of the algorithm and the different ordering strategies. For example, the number of evaluations, path length for each of the given scenario etc.

   In LEA, you will find different scenarios which need to be solved. The format of each scenario file is:

   ```
   <robot initial X position> <robot initial Y position>
   <delivery X position #1> <delivery Y position #1> <package deadline #1>
   <delivery X position #2> <delivery Y position #2> <package deadline #2>
   ...
   <delivery X position #n> <delivery Y position #n> <package deadline #n>
   ```

   Please deliver a brief report with your results for each implemented ordering strategy.