Problem Statement:

There are two optimization problems:

1. Optimize Path:

Provide an optimum path for the trucks such that the task can be accomplished in minimum possible time.

Here, the task refers to the job of visiting prescribed number of nodes and returning to the base location.

1. Optimize Number of Trucks:

For the overall problem of visiting all the nodes, calculate an optimum number of trucks such that the each truck achieves its task in optimum time (viz. above mentioned optimization) and the overall time required to visit all the nodes is optimum.

* 1. Sub-problems:
     1. While deciding the optimum number of trucks, we need to consider the time criteria. For explanation, let’s assume that there is an upper bound in terms of the time by which a certain node has to be visited. Thus,
        + We need to select the number of trucks such that all the nodes are visited within each node’s upper bound.
        + For each of the selected truck the job distribution, i.e. the nodes that it is required to visit, should be selected such that the overall time is minimized.
        + After deciding the number of trucks to accomplish the complete task and after dividing the task for each truck, ensure that each trucks’ tour is optimum

Note: The upper bound can also be in terms of the maximum distance that each truck can travel in 1 round trip