INF273 - Assignment 1

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1 - a

For the linear shipping routing problem I think a solution representation could be the order of mother nodes visited, together with the order of daughter routes visited. For the solution in the slide it would be represented as:
[6, 4], [[6, 7, 8], [6, 5], [4, 3, 2, 1]]
To calculate the objective function and check the feasibility one could access in the following way:

```
j = 0
for mother_node in mother_route:
    // Do something for each mother node
    while daughter_routes[j][0] == mother node:
        for daughter_node in daughter_routes[j]:
            // Do something for daughter nodes

        j++
```

This solution is not constant size. One could convert the identifier of the node to the index and give number 1.. n nodes to the index. But it would still vary size by the number of daughter routes. Are daughter routes constant? made by the routing algorithm or given?

1 - b

For the truck with two drones problem I think a solution representation could be the order of nodes visited by the truck, followed by 2 arrays describing the drones behaviour with the order of visited nodes in each trip away from the truck. For the solution in the slide it would be represented as:
[0, 10, 9, 8, 7, 3, 5, 6, 0], // Truck
[[0, 11, 9], [3, 1, 5]], // Drone 1
[[10, 12, 9], [7, 4, 3], [3, 2, 5]] // Drone 2

This is not fixed size, since now the arrays vary length by how much work the drones does, one could use a array of length of n nodes and give order by index. The solution above would then be represented as:
[1, 0, 0, 6, 0, 7, 8, 5, 4, 3, 2, 0, 0], // Truck
[1, 5, 4, 4, 6, 0, 0, 0, 3, 0, 0, 2, 0], // Drone 1
[0, 0, 7, 6, 5, 8, 0, 4, 0, 3, 1, 0, 2] // Drone 2