Knowledge representation (INFO0049-1)
## Exercise session 9
28 Apr 2015

1. Basic search strategies

- depth-first search
- depth-first acyclic search
- depth-first depth-limited search
- depth-first iterative deepening
- breadth-first search

2. Train problem

You are a train driver. Your train is represented by a list of the form [c1, c2, ..., cn], where ci are the cars. The locomotive is supposed to be on the left of the car c1 but is not explicitly represented. You are in a marshaling yard and your task is to rearrange the cars in a specific order. The marshaling yard has two sorting tracks where you can push or remove cars. 1 Here is a example of the rearrangement of the train [a, b, c] to [b, c, a].

(a)   (b)   (c)

(d)   (e)
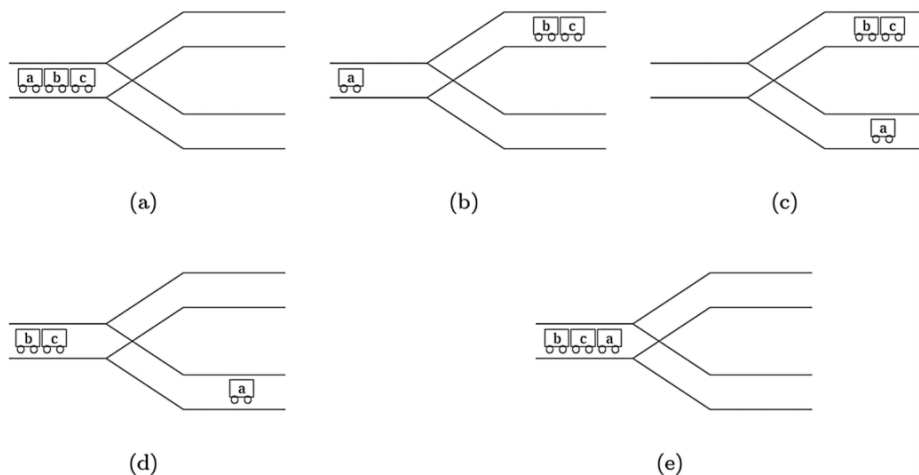
Write a prolog program to compute the movements necessary to rearrange a train.

3. Missionaries and cannibals

Suppose 3 missionaries and 3 cannibals are walking together through the forest. They arrive at a river they have to cross, but there is only one boat, and that boat can carry at most 2 people. Of course, for the boat to cross the river, there should be at least one person (missionary or cannibal) in the boat (to row the boat). The problem is that if there are more cannibals than missionaries at any place, they will eat the missionaries.

Write a program that finds a strategy for the six people to cross the river without a missionary being eaten. As usual it is important to think about a good representation for the problem. You can choose the representation for the input and output of the problem yourself, but make sure that, given the output of your program, it is clear how to solve the problem.