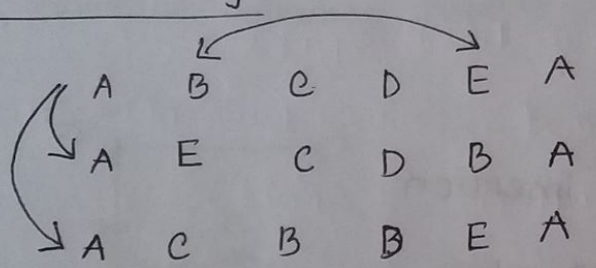
10.12.18

TSP

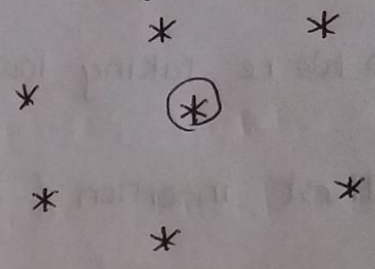
Improvement heuristics

- Node exchange
- K-opt
  - 2-opt
  - 3-opt

Node exchange



Neighbourhood.

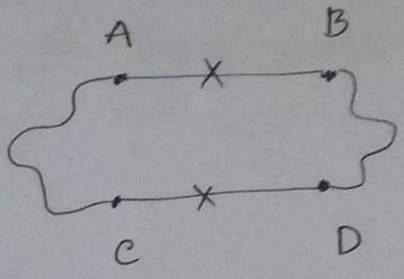


Generating neighbours of solution and choosing best neighbour by exchanging nodes until solution is found.

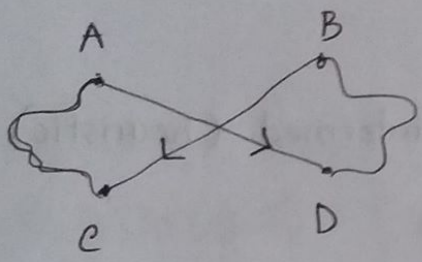
K-opt

— 2-opt.

We will remove 2 connections and establish 2 new connections. We must establish valid connections (so that there is only one loop)



We're removing AB and CD



See, we can't establish connection AC and BD. that would be invalid (2 loops!)

* Only one valid connection for 2-opt
* Seven valid connections for 3-opt.

* Q Difference between BFS / DFS and local search?

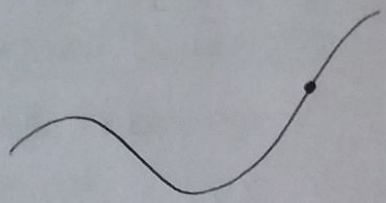
⇒ ~~In~~ BFS / DFS are systematic search. Searches, all possible nodes.

Local search concerns with neighbours.

* We can't say that there is a solution or not in local search.

• Random choice of neighbourhood is one variation of local search.

• Simulated Annealing .



We've read so far

~~Chapter 3~~

Ch-3 : Uninformed search and informed (heuristic) search.

Ch-7 : Logic (Propositional logic)

Ch-10 : Planning (Take advantage of the structure of a problem to construct complex plan of actions)

→ Combines ch-3 & ch-7 .

→ We will start next .

• state space graph