TeamOne

MEMBERS

- JAY TURAKHIA
- SHLOK GANDHI
- CHIRAYU DESAI

WHAT?
HOW?
WHY?

WHAT ?

Vehicle Routing Problem

Proposed by Dantzig and Ramser in 1959

Combinatorial optimization, Integer Linear Programming

Constraints for the proble

Flavors

- Capacitated VRP **
- VRP with pick up and delivering
- Stochastic VRP
- VRP with time windows

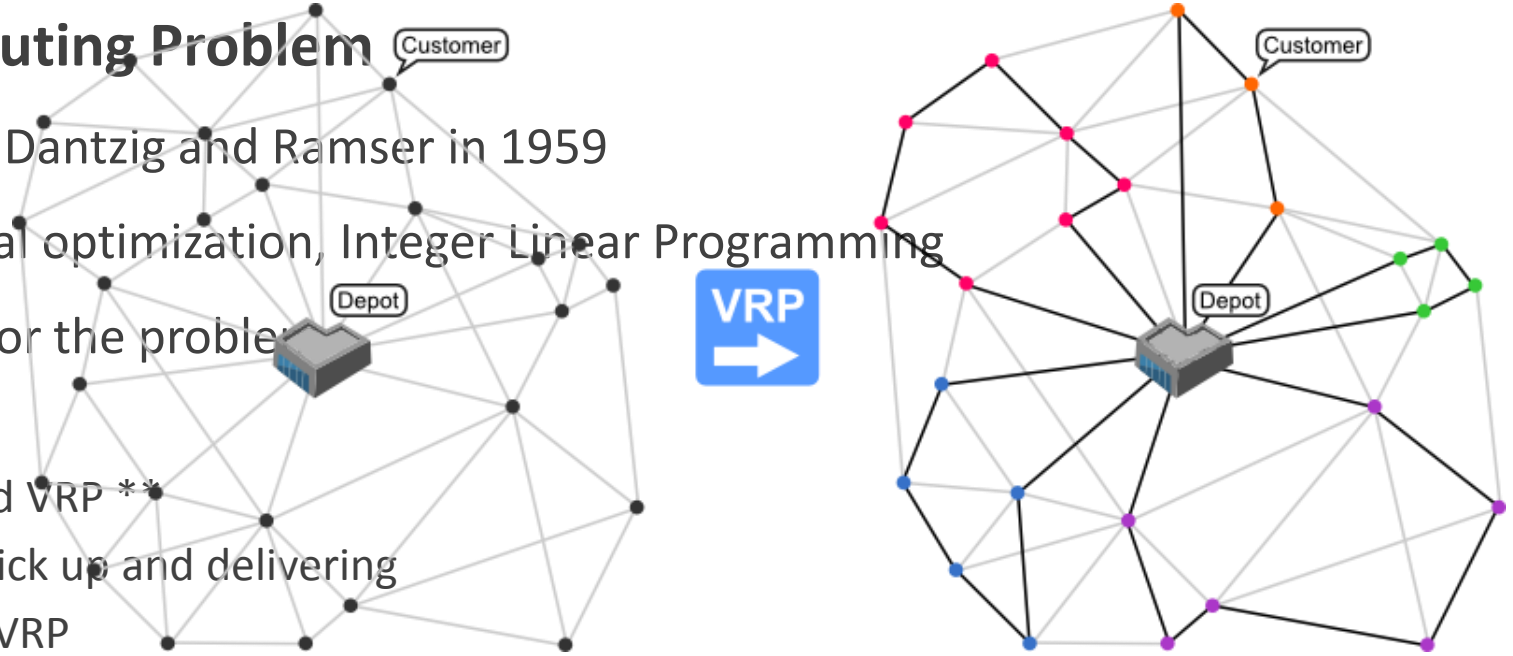


Image Source - http://neo.lcc.uma.es/vrp/vehicle-routing-problem/

WHAT ?

Vehicle Routing Problem

The objective - To deliver a set of customers with known demands on minimum-cost vehicle routes originating and terminating at a depot. (with necessary restrictions or relaxations)

HOW?

Exact Approach

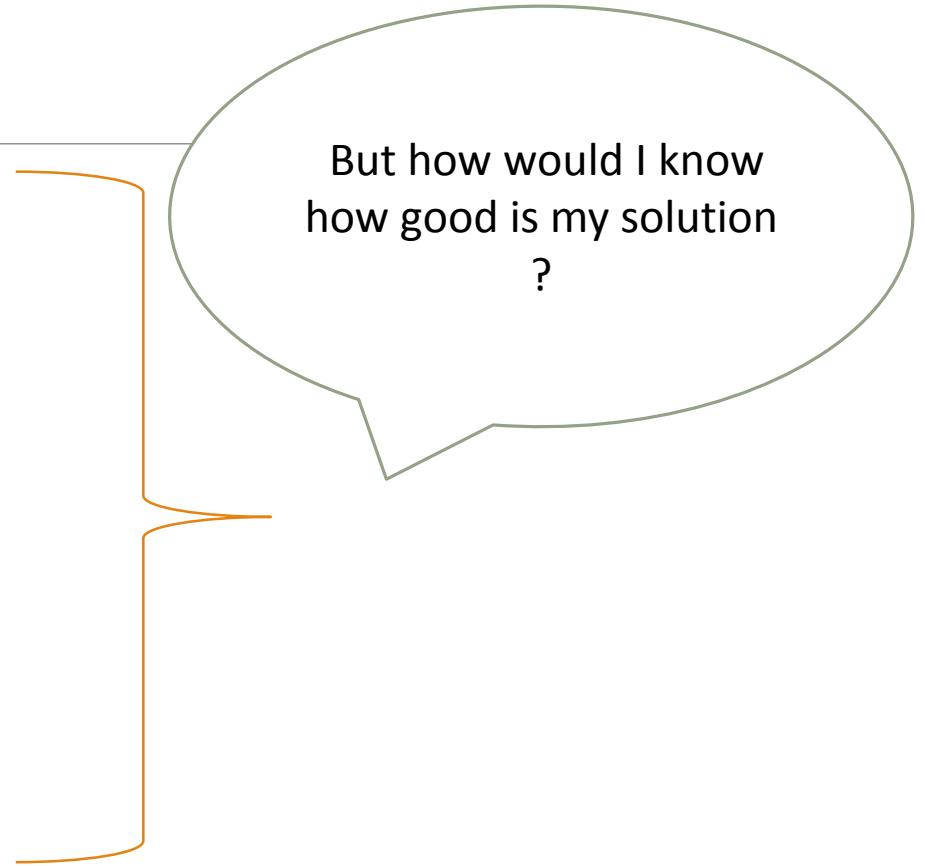
- TSP
- Branch and Bound

Heuristics

- Savings: Clark and Wright
- Extension: Holmes and Parker

Meta Heuristics

- Genetic Algorithm
- Constraint Satisfaction Problem



WHY ?


Emirates


SCANDINAVIAN EXPRESS
SCANIA


DHL
DHL

PROPOSED PLAN OF ACTION

Jay – Designing the heuristic function

Shlok – Modifying the Genetic Algorithm so that it suits our case

Chirayu – Work on constraints and the optimized values required for the problem

References

http://www.orcomplete.com/computer/sertalpbilal/solving-vehicle-routing-problem

http://neo.lcc.uma.es/vrp/vehicle-routing-problem/

http://www.jstor.org/stable/2627477?origin=JSTOR-pdf

- G. Clarke and J. Wright “Scheduling of vehicles from a central depot to a number of delivery points”, Operations Research, 12 #4, 568-581, 1964.
- Holmes RA & Parker RG, 1976, A vehicle scheduling procedure based upon savings and a solution perturbation scheme, Journal of the Operational Research Society, 27(1), pp. 83–92
- P. Shaw. “Using Constraint Programming and Local Search Methods to Solve Vehicle Routing Problems”, Proceedings of the Fourth International Conference on Principles and Practice of Constraint Programming (CP ’98), M. Maher and J.-F. Puget (eds.), Springer-Verlag, 417-431. 1998
- Alba, E., Dorronsoro, B. “Solving the Vehicle Routing Problem by Using Cellular Genetic Algorithms”, Conference on Evolutionary Computation in Combinatorial Optimization, EvoCOPâ04, LNCS vol. 3004, pp 11-20, Portugal, Springer-Verlag. 2004