

Participated Charlests Toronto

A. P. SHAH INSHHUHE OF TECHNOLOGY

(Approved by AECTE New Bellsi & Covt. of Maharuchtra, Affiliated to University of Mumbal)

Subject :- ADSAA

SEM -V (I.T)

Module-4

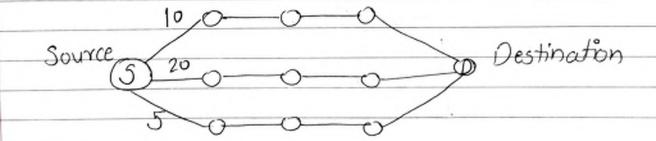
Greedy Algorithms

Introduction: -

Greedy algorithms are the algorithms that follows lucal optimal choice of each stage with intend of finding global optimum.

It is we go to or we select best possible solution in every stage of solving a problem.

Example



So in this case where we need to find the minimum cost path from source to destination in first step from source we have three edges 10, 20 65 out of which 5 is selected in first step.

We ware following local optimal choice of each stage.

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And by finding local optimal choice at each stage finally we reach to Destination with minimian cost path. which is global optimum.

we have a solution space and we need to find out the feasible solution based on some selection criteria

For example, a 12th passed student have multiple options career options like engineering, medical, banking sector, government sector, etc.

If the student has completed 11th & 12th in arts section engineering & medical is not an option

So bes based on some selection criteria which is 11th & 12th is completed in arts we got a few options like banking sector, government sector, business, etc. These options are nothing but feasible solutions.

Now from the feasible solutions we need to find the optimal solution.

Greedy method is totally based on optimal

Optimal solution focuses on minimal cost. Like in first step from source to destination we have selected edge with weight 5 as optimal

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solution.

For a student in selecting coreer path, he will be have optimal solution based on all feasible solutions with the criteria that college fees should be minimum.

The optimal solution focuses on moximizing the profit along with minimum cost.

For student, he needs to find out a correer path with higher pay packages with minimum college fees.

This means we are greedy regarding profit.

During sale we go to the shop with the minimum mase mum discount is an example of greedy method. Regardless of quality of product. So future we may feel that this is not the local best solution.

But locally at this stage we are getting the best solution.

Now the third criteria we have his minimum risk. while investing money we choose the option with minimum risk.

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So at each stage greedy algorithm gives local optimum solution on the bases of

If (Minimum Cost (Travelling from Source to Destination problem)

2) Maximum profit (Buying a product with maximum discount problem)

(Anvesting money in market with minimum arisk problem) 3 Minimum Risk

Regardless of final solution I global optimum.

Applications of greedy method:

- 1) Knapsack problem
 2) Job sequencing
 3) Minimum spanning tree
 4) Optimal merge pattern
 5) Dijskstra's Algorithm.

We focus on the current stage to find the best result.