Greedy Algorithm

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We will Discuss

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2. Introduction to Greedy Algorithm
3. Problem with Greedy algorithm
4. Applications

A real life scenario

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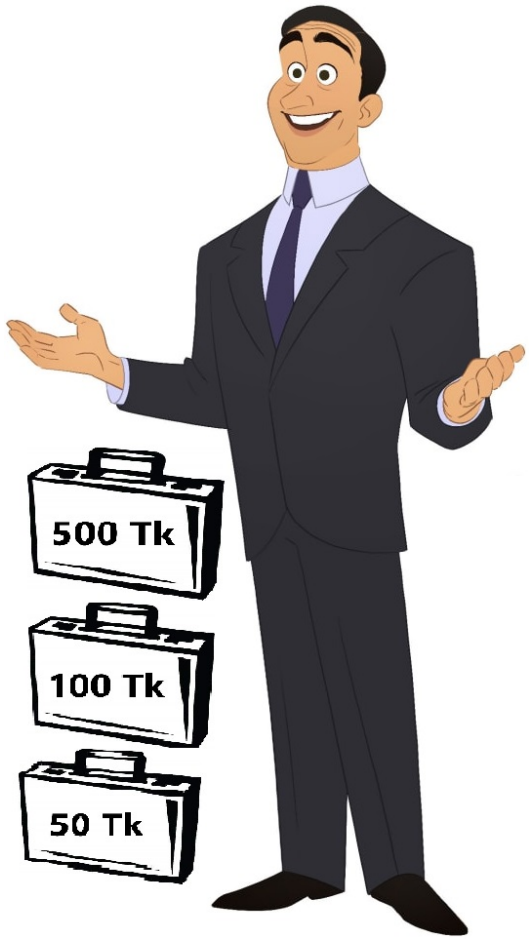
He has a friend who needs some money.
He asks for 650 Taka but in minimum number of notes.

Real Scenario



Some possible ways to give money

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Actually this is Greedy Algorithm

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Greedy Algorithm

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Let's see it's Pros and Cons

- Simple,easy to implement and runs fast
- But very often they don't provide a globally optimum.

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Problems with Greedy Approach

Find a path from root to leaf having maximum sum

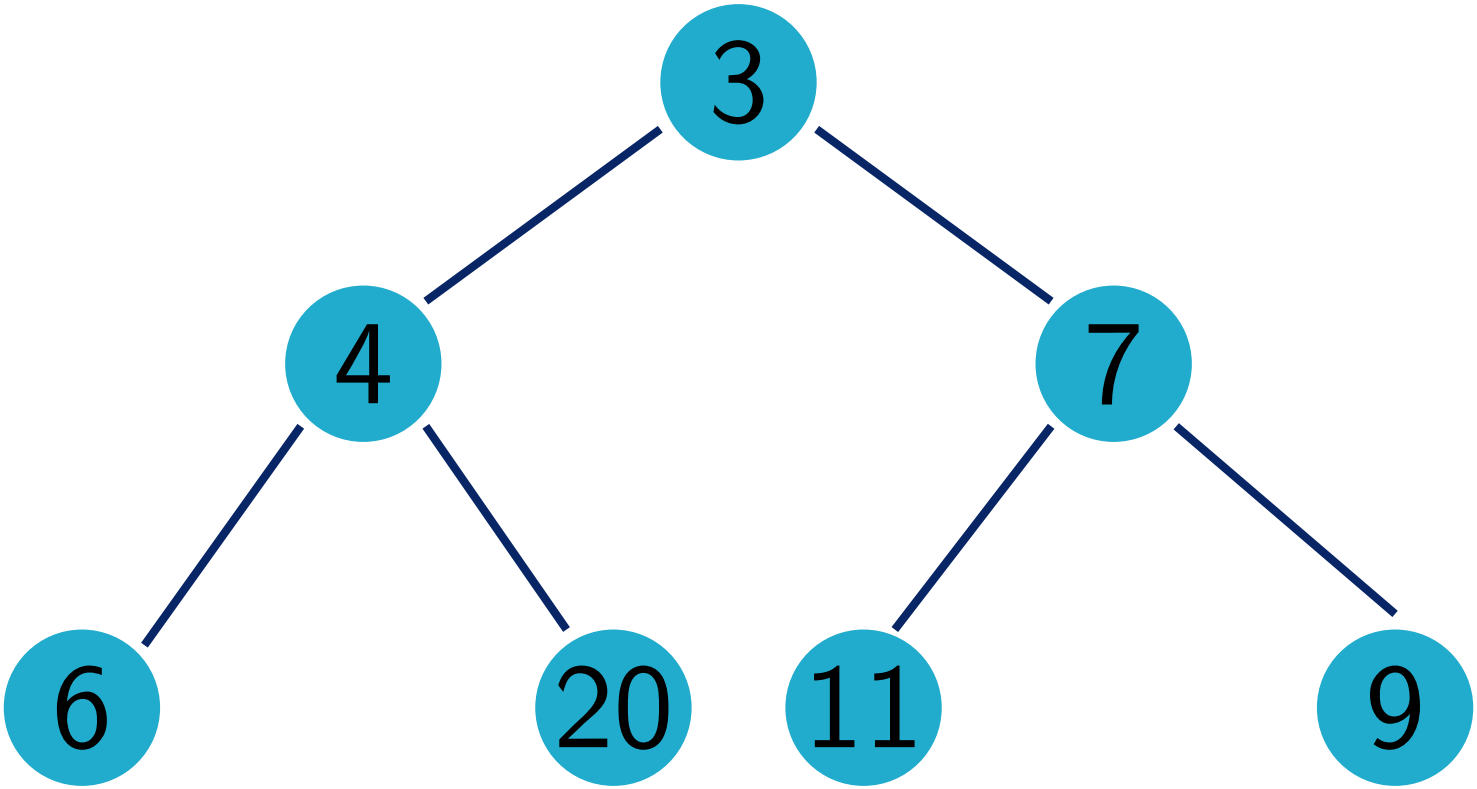

Figure: Graph

figures/GreedySolution.tex figures/RightSolution.tex

Problems with Greedy Approach

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figures/Graph.tex

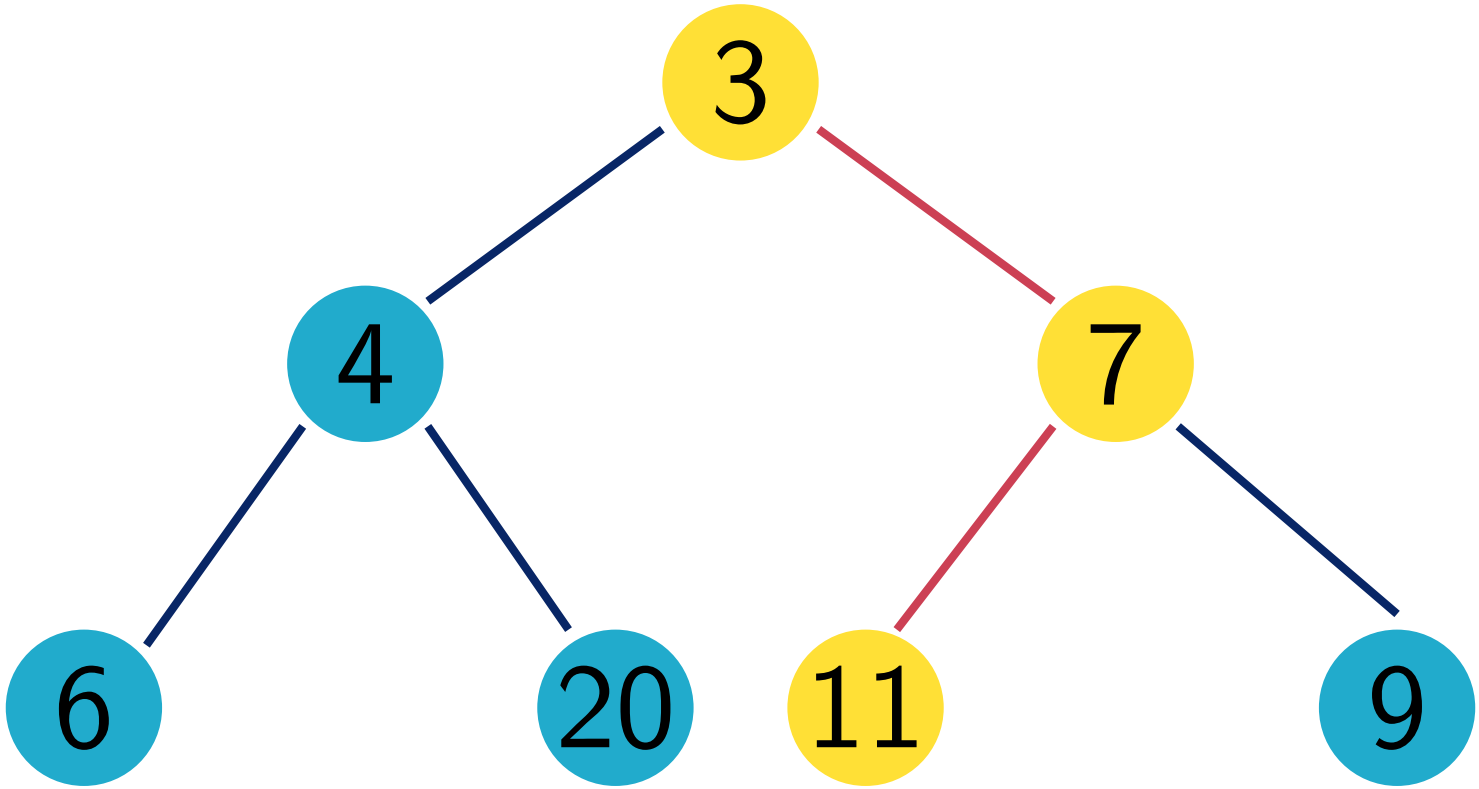

Figure: Found path with Greedy Algorithm

Problems with Greedy Approach

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figures/Graph.tex figures/GreedySolution.tex

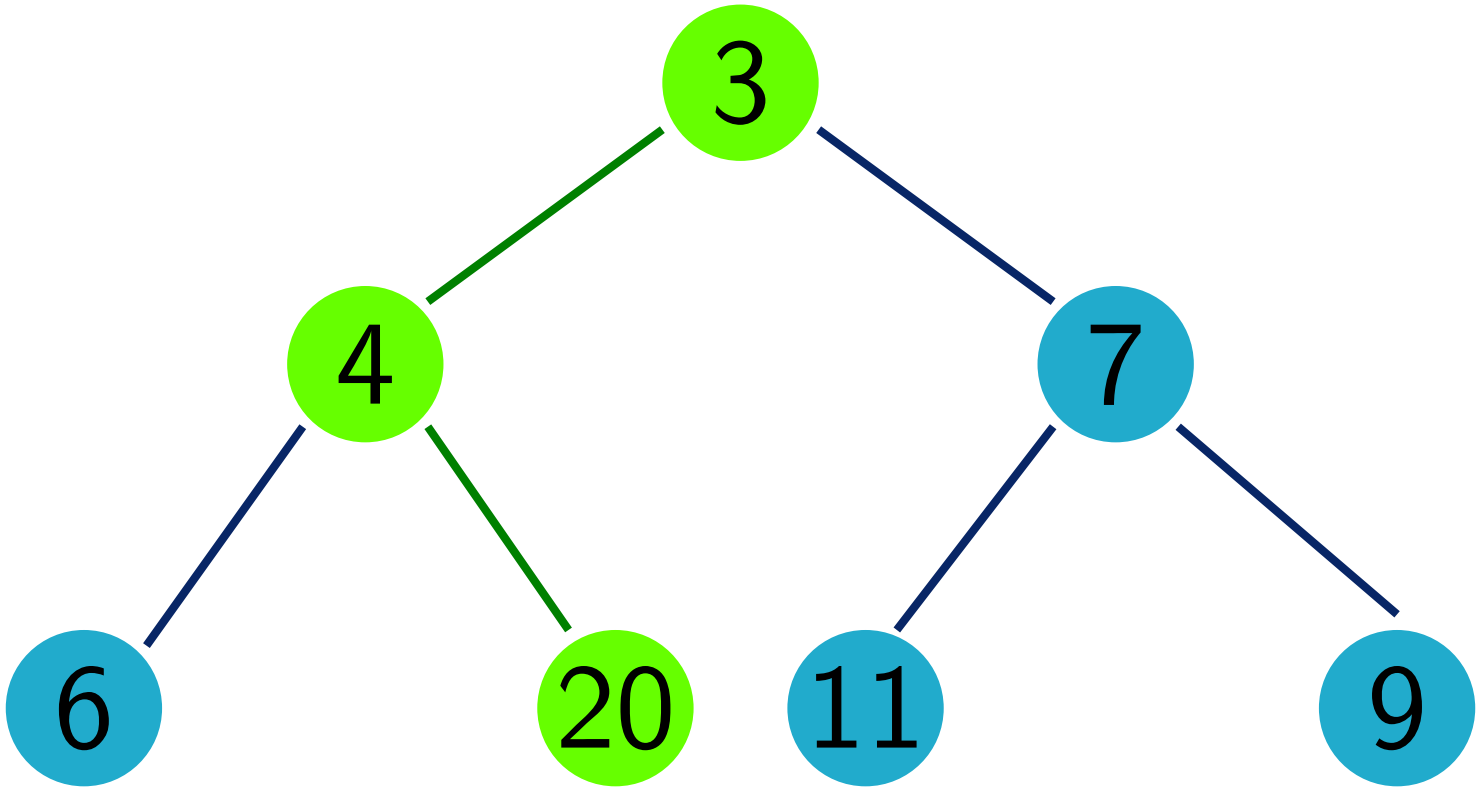

Figure: Actual Solution to the problem

Problem characteristics to use this algorithm

Problems on which greedy approach work has two properties

1. **1.Greedy-choice property**
   - A global optimum can be arrived at by selecting a local optimum.
2. **2.Optimum substructure property**
   - An optimum solution to the problem contains an optimum solution to the subproblems.

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3. Prim's Minimum Spanning Tree
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