

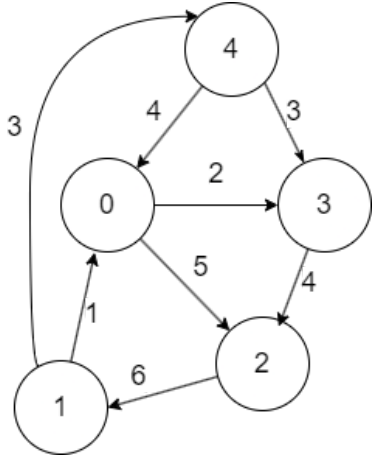
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### Question 1 [15 Points]

Given a directed weighted graph, a starting vertex  $s$  and total available points  $p$ , traverse the graph, always choosing the outgoing edge with the **maximum weight at each step**. When traversing an edge with weight  $w$ , expend  $w$  points from total available points.

**Determine the last vertex** you can reach from  $s$  before running out of points. If you reach a **dead end (no outgoing edges)** before using all your points, that vertex is the last reachable vertex.

**Note:** You can solve using either adjacency matrix or adjacency list. Assume that the **Graph** is already created.

Given Graph & Sample Input	Sample Output
<p>graph =</p>  <p><math>s = 0</math> <math>p = 15</math></p> <p><code>findMinPath( graph, s, p )</code></p> <p>Here, the “graph” parameter is a square Matrix if you’re using the Adjacency Matrix. Otherwise, it is an array of singly Nodes if you’re using Adjacency List.</p>	<p>Last reachable vertex = 4</p>
	<p><b>Explanation:</b></p> <p>Choosing max weight edge from the starting point <math>s = 0</math>,</p> <p>i) vertex 0 <math>\rightarrow</math> vertex 2 cost = 5, points available = <math>15 - 5 = 10</math></p> <p>ii) vertex 2 <math>\rightarrow</math> vertex 1 cost = 6, points available = <math>10 - 6 = 4</math></p> <p>iii) vertex 1 <math>\rightarrow</math> vertex 4 cost = 3, points available = <math>4 - 3 = 1</math></p> <p>Cannot go any further with available points.</p> <p>Therefore, last reachable vertex = 4</p>