**Assignment 3**

**Course:** DSA555 (Data Structures and Algorithms)

**Professor:** Bradly Hoover

**Topic:** Dijkstra's algorithm

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**Outline:**

1. Intro

* Plan of presentation **[ Olga ]**
* History **[ Steve ]**
* The problem statement and real life examples. **[Konstantin]**

1. The Algorithm Explanation

* Audience will pick up nodes with weight **[ Steve ]**
* Terminology / Initialization / Algorithm **[ Steve ]**
* Solve the problem step by step with graph **[ Steve ]**
* Show code and Graph  **[ Olga ]**
* Analyze runtime **[ Konstantin ]**
* Advantages / Disadvantages
* Improvements (Implementation using heap/priority queue + use adjacency list) **[ Konstantin ]**

1. Sources

* Ahuja, Ravindra K.; Mehlhorn, Kurt; Orlin, James B.; Tarjan, Robert E. "Faster Algorithms for the Shortest Path Problem". Journal of Association for Computing Machinery (ACM). 37 (1990): 213–223. Web.
* Knuth, D.E. "A Generalization of Dijkstra's Algorithm". Information Processing Letters. 6 (1977): 1–5. Web.
* Misa, Thomas J. "An Interview with Edsger W. Dijkstra." Communications of the ACM Commun. ACM 53.8 (2010): 41-43. Web.
* Schrijver, Alexander. “Combinatorial Optimization — Polyhedra and Efficiency” Algorithms and Combinatorics. 24 (2004): 103. Web.
* Thorup, Mikkel. "On RAM priority Queues". SIAM Journal on Computing. 30.1 (2000): 86–109. Web.
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