15.082J & 6.855J & ESD.78J Visualizations

Dijkstra’s Algorithm with two levels of buckets
Initialize distance labels

Initialize buckets.

Select the first nonempty lower bucket. Then select an element of the bucket.
Scan arcs out of node 1 and update data structures
Find Min Lower Bucket

Find min non-empty lower bucket. Select a node in the bucket.
Scan arcs out of node 2 and update distance labels and buckets.
Find Min Lower Bucket

Scan lower bucket for first non-empty bucket. If none exist, then go to scanning upper buckets.
Find Min Upper Bucket

Scan upper buckets to find the first non-empty bucket.
Move contents down

Adjust bucket numbers of lower buckets and move contents of upper bucket to lower buckets.
Find Min Lower Bucket

Find the first nonempty lower bucket and select a node in the bucket.
Update

Scan arcs out of node 5 and update distance labels and buckets.
Find Min Lower Bucket

Find the first nonempty lower bucket and select a node in the bucket.
Scan arcs out of node 3 and perform updates.
Find Min Lower Bucket

Scan lower buckets looking for a non-empty bucket.
Find Min Upper Bucket

Scan upper buckets looking for a non-empty bucket.
Adjust bucket numbers of lower buckets and move contents of upper bucket to lower buckets.
Find Min Lower Bucket

Select the min non-empty lower bucket. Select an element from the bucket.
Scan arcs out of node 4 and perform all updates.
Find Min Lower Bucket

Scan lower buckets looking for a non-empty bucket. Select a node of the bucket.
Scan arcs out of node 6, and perform updates.
All nodes are permanent. The algorithm terminates with the optimal shortest path tree.