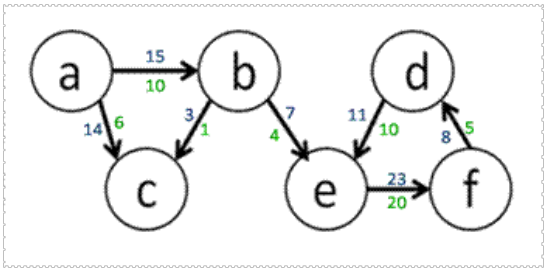
PROBLEM 1: CREATING THE DATA STRUCTURE REPRESENTATION

In this problem set, we are dealing with edges that have different weights. In the figure below, the blue numbers show the cost of traversing an edge in terms of total distance traveled, while the green numbers show the cost of traversing an edge in terms of distance spent outdoors. Note that the distance spent outdoors for a single edge is always less than or equal to the total distance it takes to traverse that edge. Now the cost of going from "a" to "b" to "e" is a total distance traveled of 22 meters, where 14 of those meters are spent outdoors. These weights are important when comparing multiple paths because you want to look at the weights associated with the edges in the path instead of just the number of edges traversed.



(/static/content-mit-600x~2012_Fall/files/ps10_files/ps10_weightedWithContraint.2d31668013d5.gif)

In `graph.py`, you'll find the `Digraph`, `Node`, and `Edge` classes, which do not store information about weights associated with each edge.

Extend the classes so that it fits our case of a weighted graph. Think about how you can modify the classes to store the weights shown above. Make modifications directly in `graph.py`.

Hint: subclass the provided classes to add your own functionality to the new classes. Deciding what representation to use in order to build up the graph is the most challenging part of the problem set, so think through the problem carefully.

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