The itinerary requests arrive over the decision horizon \(\{1, \ldots, \tau\}\). The probability of having a request for itinerary \(j\) at time period \(t\) is \(p_{jt}\). The capacity on flight leg \(i\) is \(c_i\). The revenue associated with itinerary \(j\) is \(r_j\). We assume that there are no group arrivals.

In all of the test problems, we consider an airline network that serves \(N\) spokes out of a single hub. Associated with each spoke, there are two flight legs, one of which is to the hub and the other one is from the hub. There is a high-fare and a low-fare itinerary that connects each origin-destination pair. Consequently, we have \(2N\) flight legs and \(2N(N + 1)\) itineraries, \(4N\) of which involve one flight leg and \(2N(N - 1)\) of which involve two flight legs. The revenues associated with the high-fare itineraries are \(\kappa\) times larger than the revenues associated with the low-fare itineraries. We write \(i \in j\) if itinerary \(j\) uses flight leg \(i\). Since \(\sum_t \sum_j p_{jt} 1(i \in j)\) is the total expected demand for the capacity on flight leg \(i\), we measure the tightness of the leg capacities by

\[
\alpha = \frac{\sum_i \sum_t \sum_j p_{jt} 1(i \in j)}{\sum_i c_i},
\]

where \(1(\cdot)\) is the indicator function.

For all of the test problems, the names of the input files are of the form \(rm - \tau - N - \alpha - \kappa.txt\), where \(\tau\), \(N\), \(\kappa\) and \(\alpha\) are as defined above. The locations are indexed by \(\{0, 1, \ldots, N\}\), where 0 corresponds to the hub and \(\{1, \ldots, N\}\) correspond to the spokes.

- The first section in the input files gives the value of \(\tau\).
- The second section in the input files gives the flight legs. Each line lists the origin location, destination location and capacity on the flight leg \((c_i)\). The first line of the second section gives the number of flight legs.
- The third section in the input files gives the itineraries. Each line lists the origin location, destination location, fare class (0 for cheap, 1 for expensive) and the fare \((r_j)\) associated with the itinerary. We note that if the itinerary starts from a spoke and ends at a spoke, then this itinerary is a two-leg itinerary with a connection at the hub. If the itinerary starts from or ends at the hub, then this itinerary is a single-leg itinerary. The first line of the third section gives the number of itineraries.
- The fourth section in the input files gives the probability of having a particular itinerary request at a particular time period. Each line first lists the time period, and then, lists the probability of having a request for a particular itinerary at that time period. The triplets \([a, b, c]\) in this section correspond to an itinerary starting from location \(a\), ending at location \(b\) and corresponding to fare class \(c\). The number following the triplet is the probability of having a request for this itinerary \((p_{jt})\). The probabilities in a particular line may not add up to 1, whenever there is a chance of having no itinerary requests at a particular time period.