Graph Modelling – Transportation Networks. We can use graphs to model many different types of transportation networks, including road, air, and rail networks, as well shipping networks.

Airline Routes. We can model airline networks by representing each airport by a vertex. In particular, we can model all the flights by a particular airline each day using a directed edge to represent each flight, going from the vertex representing the departure airport to the vertex representing the destination airport. The resulting graph can be a directed multigraph, as there may be multiple flights from one airport to some other airport during the same day or we can allocate weights on these edges to represent the multiple flights from one airport to some other airport. In our example below we will allocate weights on the edges to show the same.

Example problem: Draw graph model, to represent airline routes where on this day there are four flights from Taziz to Nadir , two flights from Nadir to Taziz , three flights from Nadir to Greene, two flights from Greene to Nadir, one flight from Nadir to GrassLands, two flights from GrassLands to Nadir, three flights from Nadir to Princeton, two flights from Princeton to Nadir, and one flight from Princeton to Greene.

NB/ These are my own fictional city names. We assume departure and destination airports are in these cities.