

Assignment 12

▼ Question R-6.4

Bob loves foreign languages and wants to plan his course schedule to take the following nine language courses: LA15, LA16, LA22, LA31, LA32, LA126, LA127, LA141, and LA169. The course prerequisites are:

- LA15: (none)
- LA16: LA15
- LA22: (none)
- LA31: LA15
- LA32: LA16, LA31
- LA126: LA22, LA32
- LA127: LA16
- LA141: LA22, LA16
- LA169: LA32

Find a sequence of courses that allows Bob to satisfy all the prerequisites.

LA15 → LA22 → LA16 → LA31 → LA32 → LA126 → LA141 → LA127 → LA169

▼ Question R-6.7

Would you use the adjacency list structure or the adjacency matrix structure in each of the following cases? Justify your choice.

- The graph has 10,000 vertices and 20,000 edges, and it is important to use as little space as possible.
- The graph has 10,000 vertices and 20,000,000 edges, and it is important to use as little space as possible.
- You need to answer the query `areAdjacent` as fast as possible, no matter how much space you use

Case	Use	Justification
(a)	Adjacency List	Sparse graph, adjacency matrix wastes space
(b)	Adjacency List	Still uses less space than matrix
(c)	Adjacency Matrix	Fastest <code>areAdjacent(u, v)</code> query time