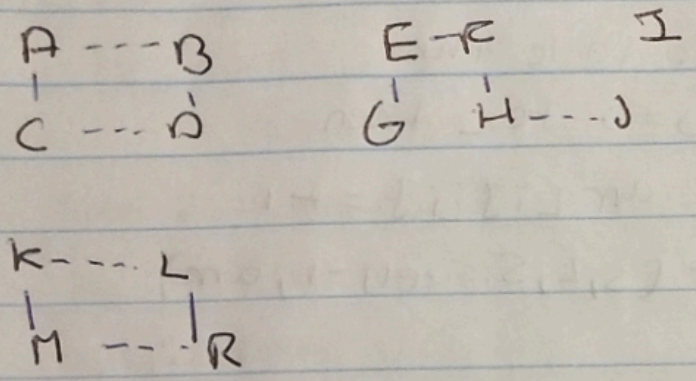
R-6.1, Draw a simple undirected graph G that has 12 vertices, 18 edges, and 3 connected components. Why would it be impossible to draw G with 3 connected componets if G had 66 edges?



in this Graph are conected (A,B,C,D), (E,F) and (I, G, H, J).

but when and try to draw its imposible

- if there are three components connected, must have at least one vertex.

$V_1 + V_2 + V_3 = 12$

and the maximun number of edges is $\frac{V * (V-1)}{2}$

where Max Edges:

$$\frac{V_1 \times (V_1 - 1)}{2} + \frac{V_2 \times (V_2 - 1)}{2} + \frac{V_3 \times (V_3 - 1)}{2} = 66$$

if we thy to compute $V1 + V2 + V3 = 12$ an Max edges $= 66$ we find that there are no integers solution.

- max Edges $m \leq \frac{n(n-1)}{2} = m \leq \frac{12(11)}{2} = \frac{66}{3} = 22$

R-6-4:

1) LA15 has not prerequisites
2) LA22 has not prerequisite
3) LA 16 bob can take this after LA 15, LA16, [redacted]
4) LA 31 bob can take this after LA15, LA16, LA32
5) LA 32 bob can take this after LA15, LA16, LA31
6) LA 141 take after LA15, LA16, LA22
7) LA 126 take after LA15, LA16, LA22, LA32
8) LA 169 take after LA15, LA16, LA22, LA32
9) LA 127 take after LA15, LA16, LA22, LA141

R-6.7.

Would you use the adjacency list structure or the adjacency matrix structure in each of the following cases?

a) Adjacency List

- An adjancency matrix allocates entries for 100 000 000 edges while the graph has only 20000 edges
- An adjaceny list would have about 20.000 nodes whereas the adjaceny matrix wouldrequire 10000 x 10000 = 100000000 booleans

b) both are preferable

- Adjacency list as well as Adjacency matrix both structures work well in this case, and matrix structure is much better for the operation are Adjacent(), is better than insertVertex can remove Vertex

c) Adjacency matrix

- Adjacency matrix structure support the operation and is adjacent in O(1) time, finding search by row i to j is O(n)