Mathematics for Computer Science
MIT 6.042J/18.062J

Simple Graphs: Connectivity

Connected Vertices

two vertices are connected iff there is a path between them

Connected Graphs

A graph is connected iff all its vertices are connected to each to other

Connected Components

Every graph consists of separate connected pieces (subgraphs) called connected components

1

Connected Components

13   12   26   16   66   E17
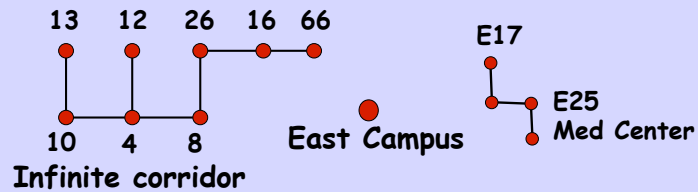
                                        E25
                                        Med Center
10   4   8   East Campus
Infinite corridor

3 connected components

the more connected components,
the more "broken up" the graph is.

Albert R Meyer,   April 5, 2013   connect.5

Connected Components

The **connected component**

of vertex **v** ::=

$\{$ **w** $\mid$ **v** and **w** are connected $\}$

$$= E^*(v)$$

walk relation

Albert R Meyer,   April 5, 2013   connect.6

Connected Components

So a graph is connected

iff it has only

1 connected component

Albert R Meyer,   April 5, 2013   connect.7