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

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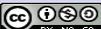
Connected Components

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

Connected Components

13 12 26 16 66

E17

10 4 8

East Campus

E25
Med Center
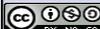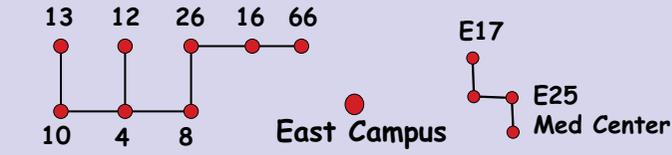
Infinite corridor

3 connected components

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

Connected Components

The connected component
of vertex v ::=
$\{w \mid v$ and w are connected$\}$

$$= E^*(v)$$

walk relation

Connected Components

So a graph is connected
iff it has only
1 connected component

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Spring 2015