

MACM day 6 - Graphs

Summary

Graphs can be bipartite graphs. A graph can have subgraphs. These subgraphs can be spanning meaning they include every vertex. An induced subgraph must have all the edges connecting the vertices that the original graph has.

Terminology

Bipartite graph

A graph $G=(V,E)$ is bipartite if we can partition the vertices into two sets V_1 and V_2 such that

1. $V_1 \cap V_2 = \text{empty set}$
2. $V_1 \cup V_2 = V$

Subgraph

Let $G = (V,E)$ and $G' = (V',E')$ be two graphs.

G' is a Subgraph of G if V' is a subset of V and E' is a subset of E

if $V'=V$ then we call G' a spanning subgraph of G

A spanning tree has all edges connected

Note: A spanning subgraph can have no edges

G is a subgraph of itself

Path

- if P is a subgraph of G that is a path we call P a path of G

Cycle

- if C is a subgraph of G that is a cycle we call C a cycle of G

Induced subgraph

- if the edge exists between the vertices you plot it in the induced subgraph