

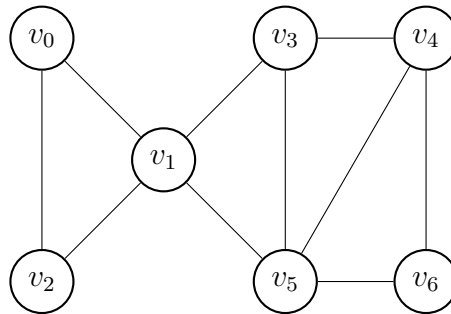
CS-472: Design Technologies for Integrated Systems

Exercise Problem Set 1

Date: 12/09/2024

Problem 1

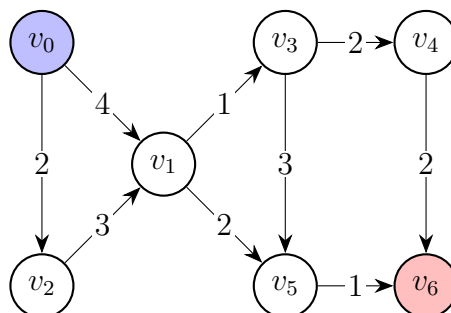
Given the graph $G(V, E)$ below:



- (a) Color the graph with the smallest number of colors.
- (b) Show a minimum clique cover.
- (c) Show a minimum clique partition.
- (d) Is G a *perfect graph*? Why or why not?
- (e) Draw the complement graph.
- (f) Color the complement graph with the smallest number of colors.

Problem 2

Given the directed acyclic graph $G(V, E, W)$ below:



Find the shortest path from the *source* v_0 to the *sink* v_6 by applying the following algorithms:

- (a) Dijkstra algorithm.
- (b) Bellman-Ford algorithm.