

Lab 4 (31 Jan 2019)

Problem 1 [Graduating Quickly]: Write a linear time program to compute the minimum number of semesters required to complete a university curriculum. The input to your program is a DAG, where each vertex represents a unique course and a directed edge from vertex u to vertex v means that course u is a pre-requisite for course v . Also print the courses to be taken in each semester. (Assume that you can register for any number of courses in a given semester).

Problem 2: [Majority Wins]: Write a $O(n \log n)$ program to find if an array A (of size n) has a *majority element* in A . A majority element is an element that occurs more than $n/2$ times in A . You **can not** order (compare or sort) elements of A , you can only check if two elements are equal. Can you find a linear time program to solve this problem?