Assignment 5 - Question 1

due Monday, February 28, 2022

(exercise 18 from chap 11 of Er)
Faced with budget cuts, Potemkin University (PU), has decided to hire actors to sit in on classes as
“students” to ensure that every class they offer is completely full. Because actors are expensive, the
university wants to hire as few of them as possible. So here, the administrators at PU have given
you a directed acyclic graph $G = (V, E)$ whose vertices represent classes and where each edge $i \rightarrow j$
indicates that the same “student” can attend class $i$ and then later attend class $j$. In addition,
you are also given an array $\text{cap}[1 \ldots V]$ listing the maximum number of “students” who can take
each class. Describe and analyze an algorithm to compute the minimum number of “students” that
would allow every class to be filled to capacity.