

CS340 - Registrar Project

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1 Checkpoint 1

1.1 Description

Let M denote an $n \times n$ 2-D matrix, where n is the number of classes. Initialize M such that all values are 0. Iterate over the teacher-class list. For each pair of classes (c, c') taught by the same teacher, set $M[c][c']$ to *Infinity*. Iterate over each student's preference list. For each class pair (c_i, c_j) in a given student's preference list, (where i and j represent indices/preferences) increment $M[c_i][c_j]$ by $((4-i) + (4-j))$. In other words, compute the effective *cost* to each student of overlapping two courses. If i is 0 and j is 1, the student prefers both of those classes highly and their overlap will be a cost of 7, much higher than if i were 2 and j were 3 (cost of 3). Classes taught by the same teacher mustn't, by definition, occur at the same time, so their overlap cost is infinite. Assemble each class into its own disjoint set in a collection of sets S . While the size of $S >$ the number of class times, merge sets with the minimum overlap cost, according to M . When a merge takes place between two sets s and s' to form set s'' , for each class pair c and c' in s'' , for each class c'' in $M[c]$, increment $M[c][c'']$ by $(M[c][c'] + M[c''] [c'])$ and for each class c''' in $M[c']$, increment $M[c'][c''']$ by $(M[c][c'] + M[c'''] [c])$. Distribute classes such that merged sets occur during the same time slot.

1.2 Pseudocode

Function `foo(arg1, list1, list2)`

1.3 Time Analysis

Time Analysis goes here. $O(n^2)$

1.4 Discussion

Collaboration

Name1, Name2, ...