

Mini HW #7

Due Time: 2017/11/30 (Thu.) 17:20

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There are two type of ADA's students: "Love ADA" and "Enjoy ADA". Between any pair of students, they may or may not hate each other. Suppose there are n students, m pairs of students who hate each other and we don't know any student's type.

(1). Please complete the pseudo code below to determine whether it is possible to classify student into "Love ADA" and "Enjoy ADA" such that the hatred is only between the different type students. The code should runs in $O(n + m)$ -time.

(2). Briefly explain why the code is correct and runs in $O(n + m)$ -time.

```
1 reverse(type):
2     if type = "Love_ADA":
3         return "Enjoy_ADA"
4     return "Love_ADA"
5
6 determine(x, type):
7     types[x] = type
8     for y in hates[x]: //hates[x] store the students who is hated by x
9         if types[y] is UNKNOWN:
10            // part A
11        else if types[y] == types[x]:
12            // part B
13        //part C
14
15 main():
16     for student = 1 to n:
17         types[student] = UNKNOWN
18     for student = 1 to n:
19         if types[student] is UNKNOWN:
20             if determine(student, "Love_ADA") = False:
21                 return False
22     return True
```

Notes on homeworks:

- With TA's discretion, too complicated answers will be counted as wrong
- The tidiness of your homework contributes to your grade.