North South University

Department of Electrical and Computer Engineering
CSE 373: Design and Analysis of Algorithms
Spring 2018
Assignment 02

Problem description:

Suppose, we have a number of professional wrestlers where some pairs of wrestlers have rivalries between them. Assume that, we have **n** professional wrestlers and we have a list of **r** pairs of wrestlers for which there are rivalries. We want to classify the wrestlers into two categories; "elves" ("good guys") and "orcs" ("bad guys"), such that there is no rivalry between two elves or two orcs. In other words, each rivalry must be between an elf and an orc Write a **C program** that determines whether it is possible to produce such a classification for a given set of wrestlers and rivalries. The running time of your program must not exceed $O(n^2)$ time.

Input and output specification:

The input begins with an integer **n** which represents the number of wrestlers. The next integer **r** represents the number of rivalries. The next **r** pairs of integers represent each rivalry. The output of your program is "yes" if it is possible to make a classification and "no" otherwise.

Sample input:

```
6   5

1   2

1   3

1   4

1   5

1   6
```

Sample output: yes

Sample input:

```
5   5

1   2

1   3

1   4

1   5

2   3
```

Sample output: no

Submission instructions:

Please read carefully the following instructions on how to submit your assignment. If you make any mistake at all in the submission process, your assignment will not be marked.

Suppose your NSU student ID is 1234567890. After you complete the assignment, rename your source file (let's say main.c for example) as "1234567890.c" and upload this file on Google Classroom in assignment section. Do not send assignments as message attachment. Do not upload any additional file.

Any form of cheating will be penalized heavily. Duplicate codes (no matter if full or partial) will not be marked regardless of which one the original is.