Indian Institute of technology, Guwahati
Department of Computer Science and Engineering
Data Structure Lab: (CS210)
Lab Assignment: 5

Date: 16th October, 2017 **Total Marks: 20**

1. There are two types of professional wrestlers: **"Good Guys"** and **"Bad Guys".** Between any pair of professional wrestlers, there may or may not be rivalry. Suppose we have **n** professional wrestlers and we have a **list of r pairs** of wrestlers for which there are rivalries. Give an **O(n + r)** time algorithm that determines whether it is possible to designate some of the wrestlers as good guys and the remainder as bad guys such that each rivalry is between a good guy and a bad guy. If it is possible to perform such a designation, your algorithm should produce it, **"Not Possible"** otherwise.

   Input: First line will contain two numbers n and r. Each of the following r will contain 2 numbers denoting wrestlers who are rival.
   Output: Two disjoint sets Good Guys and Bad Guys, "Not Possible" otherwise.

Test1: Input: 6 5 2 3 2 1 2 4 2 5 2 6 Output: Good Guys: 2 Bad Guys: 1 3 5 4 6	**Test2:** Input: 8 7 1 5 2 5 2 7 2 6 3 6 4 6 4 8 Output: Good Guys: 1 2 3 4 Bad Guys: 5 6 7 8
Test3: Input: 5 5 1 2 1 3 2 3 3 4 4 5 Output: Not Possible	