Task 2. Missing Bridges

On Fig. 1 a scheme of 4 islands, presented by points and labeled from 1 to 4, and 7 bridges, presented by lines, each of them connecting 2 different points, are shown. Each bridge could be traversed in both directions. The task is to start from some island, to pass on each of the bridges **exactly once**, and to return at the starting point. Such walk is called *all-bridges-walk*.

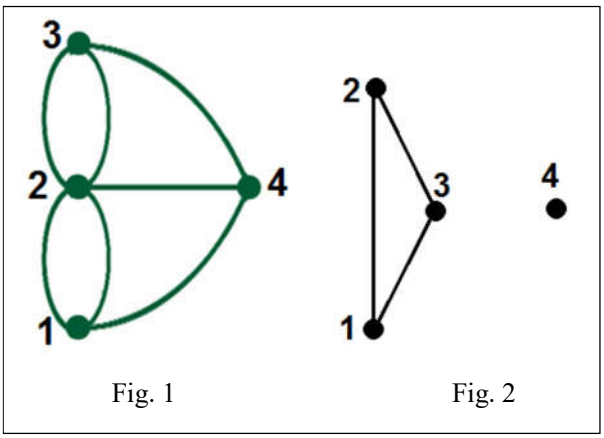

Fig. 1 Fig. 2

To do this with the islands and bridges on Fig. 1 is impossible. But, if some new bridges are built, then the asked walk could be made – for example with new bridges that connect island 4 with island 1 and island 2 with island 3. On Fig. 2 a region with four islands and three bridges is shown. If the all-bridges-walk for this region is asked, then two bridges from point 3 to point 4 will be enough for doing the walk.

It is given a country with *N* islands and *M* bridges. Write a program **bridges** to find the smallest number of bridges to build in order to have an all-bridges-walk in the country.

Input. First line of the standard input will contain the numbers *N* and *M* ($N \leq 1000$, $M \leq 10000$). On the each of the next *M* lines the two ends of a bridge will be given.

Output. On the first line of the standard output the program has to print the number *K* of the necessary new bridges. Each of the next *K* lines has to contain the two ends of a new bridge. Any set of new bridges that guaranties all-bridges-walk is acceptable as solution. If new bridges are not necessary, the program has to print just 0.

Sample 1	**Sample 2**
Input	**Input**
4 7 1 2 2 3 3 2 2 1 1 4 2 4 3 4	4 5 1 2 2 3 3 1 3 4 3 4
Output	**Output**
2 1 4 2 3	0