

ICPC Challenge 2020: Practice

A1. Sort the Numbers

time limit per test: 15 seconds
memory limit per test: 1024 megabytes
input: standard input
output: standard output

You are given a sequence of integer numbers. Sort them in non-decreasing order and submit the result. You do not need to send the source code of a solution, just provide the sorted sequence.

This problem does not imply partial solutions. If you answer correctly, you will get n points, where n is the size of the input.

Input

Download the input data by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/sort.zip>.

The first line of the input contains integer n : the size of the input. Then n integer numbers follow.

Output

Submit the sequence of n numbers: the given numbers in non-decreasing order.

B1. Maximal Independent Set

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph $G = (V, E)$. Your task is to find such a maximal subset of vertices that no two vertices in the subset are connected with an edge from E . You don't need to find the optimal solution: the more the result found, the more points you will receive.

The number of scored points is equal to the size of the returned independent set of vertices. You do not need to send the source code of a solution, just provide an independent set of vertices.

Input

Download the input data by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

The problem consists of 4 subtasks called B1, B2, B3 and B4. They differ only by given graphs. Download the inputs by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

Each input starts with a line containing a pair of integers n, m : the number of vertices, and the number of edges in the graph. Then m lines follow. Each of them describes one edge: it contains a pair of integers a_i, b_i ($1 \leq a_i, b_i \leq n$).

Given graphs don't contain self-loops (i.e. $a_i \neq b_i$) and multiple edges (there is at most one edge between any pair of vertices).

Output

You should submit the output, not the source code.

The first line of the output should contain k : the size of found independent vertex subset. The second line should contain a separated by spaces sequence of integers x_1, x_2, \dots, x_n ($0 \leq x_i \leq 1$), where $x_i = 1$ if the vertex i belongs to the returned independent set and $x_i = 0$ otherwise.

The number of scored points is equal to the size of the returned independent set of vertices.

B2. Maximal Independent Set

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph $G = (V, E)$. Your task is to find such a maximal subset of vertices that no two vertices in the subset are connected with an edge from E . You don't need to find the optimal solution: the more the result found, the more points you will receive.

The number of scored points is equal to the size of the returned independent set of vertices. You do not need to send the source code of a solution, just provide an independent set of vertices.

Input

Download the input data by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

The problem consists of 4 subtasks called B1, B2, B3 and B4. They differ only by given graphs. Download the inputs by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

Each input starts with a line containing a pair of integers n, m : the number of vertices, and the number of edges in the graph. Then m lines follow. Each of them describes one edge: it contains a pair of integers a_i, b_i ($1 \leq a_i, b_i \leq n$).

Given graphs don't contain self-loops (i.e. $a_i \neq b_i$) and multiple edges (there is at most one edge between any pair of vertices).

Output

You should submit the output, not the source code.

The first line of the output should contain k : the size of found independent vertex subset. The second line should contain a separated by spaces sequence of integers x_1, x_2, \dots, x_n ($0 \leq x_i \leq 1$), where $x_i = 1$ if the vertex i belongs to the returned independent set and $x_i = 0$ otherwise.

The number of scored points is equal to the size of the returned independent set of vertices.

B3. Maximal Independent Set

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph $G = (V, E)$. Your task is to find such a maximal subset of vertices that no two vertices in the subset are connected with an edge from E . You don't need to find the optimal solution: the more the result found, the more points you will receive.

The number of scored points is equal to the size of the returned independent set of vertices. You do not need to send the source code of a solution, just provide an independent set of vertices.

Input

Download the input data by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

The problem consists of 4 subtasks called B1, B2, B3 and B4. They differ only by given graphs. Download the inputs by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

Each input starts with a line containing a pair of integers n, m : the number of vertices, and the number of edges in the graph. Then m lines follow. Each of them describes one edge: it contains a pair of integers a_i, b_i ($1 \leq a_i, b_i \leq n$).

Given graphs don't contain self-loops (i.e. $a_i \neq b_i$) and multiple edges (there is at most one edge between any pair of vertices).

Output

You should submit the output, not the source code.

The first line of the output should contain k : the size of found independent vertex subset. The second line should contain a separated by spaces sequence of integers x_1, x_2, \dots, x_n ($0 \leq x_i \leq 1$), where $x_i = 1$ if the vertex i belongs to the returned independent set and $x_i = 0$ otherwise.

The number of scored points is equal to the size of the returned independent set of vertices.

B4. Maximal Independent Set

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given an undirected graph $G = (V, E)$. Your task is to find such a maximal subset of vertices that no two vertices in the subset are connected with an edge from E . You don't need to find the optimal solution: the more the result found, the more points you will receive.

The number of scored points is equal to the size of the returned independent set of vertices. You do not need to send the source code of a solution, just provide an independent set of vertices.

Input

Download the input data by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

The problem consists of 4 subtasks called B1, B2, B3 and B4. They differ only by given graphs. Download the inputs by the link <https://assets.codeforces.com/files/6f8518a9aaa619e7/mis.zip>.

Each input starts with a line containing a pair of integers n, m : the number of vertices, and the number of edges in the graph. Then m lines follow. Each of them describes one edge: it contains a pair of integers a_i, b_i ($1 \leq a_i, b_i \leq n$).

Given graphs don't contain self-loops (i.e. $a_i \neq b_i$) and multiple edges (there is at most one edge between any pair of vertices).

Output

You should submit the output, not the source code.

The first line of the output should contain k : the size of found independent vertex subset. The second line should contain a separated by spaces sequence of integers x_1, x_2, \dots, x_n ($0 \leq x_i \leq 1$), where $x_i = 1$ if the vertex i belongs to the returned independent set and $x_i = 0$ otherwise.

The number of scored points is equal to the size of the returned independent set of vertices.