

Cities

Ivancho sold the revolutionary software product developed by him during the summer and bought the newest sports car manufactured by Merrari. He started to travel and one day he found himself in the city A at the country X. He opened his laptop and found that at city B of the same country there is interesting museum of computer science. He decided to visit it.

Ivancho doesn't like driving in the cities and wants to know what is the smallest possible number of cities that he has to drive in so that he can go from city A to city B. Assume that in the county X consist of N cities and between M pairs of them there are highways.

Note that city A and B are counted as cities Ivancho has to drive in.

Input

From the first line of the input file **cities.in** are entered – N и M representing the number of cities and the number of highways.

On the second line are given also 2 numbers – A – the city from which Ivancho starts and B – the target city.

On the next M lines are entered two numbers. Each line means two cities between which there is highway.

Изход

On the only line of the output file **cities.out** you must print the smallest possible number of cities which Ivancho has to pass so that he can visit the target city B. If there is no path between A and B print -1.

Constrains

$$1 \leq N \leq 1000$$

$$1 \leq M \leq (N * (N - 1)) / 2$$

$$1 \leq A, B \leq N$$

Example

Input	Output
6 5 3 5 4 5 4 2 4 6 2 6 6 3	4