Maximum Cardinality Bipartite Matching

The Problem

Given a bipartite graph with N vertices in one bipartition and M vertices in the other and a set of edges that connect the bipartitions, calculate the cardinality of the maximum matching for the graph.

The Input

The first line of input will be the number of test cases, *T*, to follow.

This will be followed by a line containing three integers – *N*, *M* and *E* – *N* is the number of vertices in one bipartition, *M* is the number of vertices in the other bipartition, and *E* is the number of edges between them. $0 \leq M, N \leq 10{,}000$ and $0 \leq E \leq 500{,}000$.

The following *E* lines contain two integers, being the endpoints, *u* and *v*, of the edge *e*. $0 \leq u < N$ and $N \leq v < N + M$.

The Output

For each test case, output the data as formatted in the Sample Output below.

Sample Input	Sample Output
2 6 6 11 0 6 0 7 0 10 1 6 1 9 2 7 3 8 3 10 4 8 5 8 5 11 4 1 4 0 4 1 4 2 4 3 4	Test 1: Maximum cardinality = 6 Test 2: Maximum cardinality = 1