

C. Jamie and Interesting Graph

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Jamie has recently found undirected weighted graphs with the following properties very *interesting*:

- The graph is connected and contains exactly n vertices and m edges.
- All edge weights are integers and are in range $[1, 10^9]$ inclusive.
- The length of shortest path from 1 to n is a prime number.
- The sum of edges' weights in the minimum spanning tree (MST) of the graph is a prime number.
- The graph contains no loops or multi-edges.

If you are not familiar with some terms from the statement you can find definitions of them in notes section.

Help Jamie construct any graph with given number of vertices and edges that is *interesting*!

Input

First line of input contains 2 integers n, m — the required number of vertices and edges.

Output

In the first line output 2 integers $sp, mstw$ ($1 \leq sp, mstw \leq 10^{14}$) — the length of the shortest path and the sum of edges' weights in the minimum spanning tree.

In the next m lines output the edges of the graph. In each line output 3 integers u, v, w ($1 \leq u, v \leq n, 1 \leq w \leq 10^9$) describing the edge connecting u and v and having weight w .

Examples

input
4 4
output
7 7 1 2 3 2 3 2 3 4 2 2 4 4

input
5 4
output
7 13 1 2 2 1 3 4 1 4 3 4 5 4

Note

The graph of sample 1: Shortest path sequence: $\{1, 2, 3, 4\}$. MST edges are marked with an asterisk (*).

Definition of terms used in the problem statement:

A **shortest path** in an undirected graph is a sequence of vertices (v_1, v_2, \dots, v_k) such that v_i is adjacent to v_{i+1} $1 \leq i < k$ and the sum of weight is minimized where $w(i, j)$ is the edge weight between i and j . (https://en.wikipedia.org/wiki/Shortest_path_problem)

A **prime number** is a natural number greater than 1 that has no positive divisors other than 1 and itself. (https://en.wikipedia.org/wiki/Prime_number)

A **minimum spanning tree (MST)** is a subset of the edges of a connected, edge-weighted undirected graph that connects all the vertices together, without any cycles and with the minimum possible total edge weight. (https://en.wikipedia.org/wiki/Minimum_spanning_tree)

https://en.wikipedia.org/wiki/Multiple_edges