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# Even and Odd

Problem Code: DSAEO

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All submissions for this problem are available. You are given a **simple, undirected, connected** graph with  $n$  nodes numbered from 1 to  $n$  and  $m$  edges and a starting node  $r$ .

You have to simulate a modified DFS:

For each node  $u$ , if  $u$  is at an odd distance from  $r$ , then visit  $u$ 's neighbours in ascending order (in terms of their node number) else visit them in descending order.

Distance is defined as the number of edges between the current node and  $r$  in the DFS tree i.e. the current depth of DFS with the depth of  $r$  being 0.

**Note** -  $r = 1$  for all test cases.

## Input:

The first line contains two space separated integers  $n$  and  $m$  denoting the number of vertices and the number of edges respectively.

The next  $m$  lines are in the format  $x\ y$  denoting an edge between node  $x$  and node  $y$ .

## Output:

Print the nodes in the order they are visited in Modified DFS. The nodes should be separated by a space.

## Constraints

$$1 \leq n \leq 10^6$$

$$n + m \leq 5 * 10^6$$

## Subtasks

- 50 points :  $1 \leq n + m \leq 6 * 10^3$
- 50 points :  $1 \leq n + m \leq 5 * 10^6$

## Sample Input:

6 8

1 5

1 6

1 2

My Submissions

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All Submissions

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Successful Submissions



2 4

6 4

5 4

4 3

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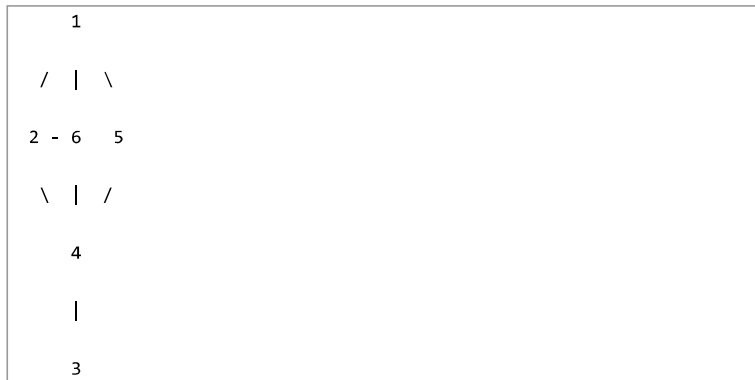
### Sample Output:

1 6 2 4 3 5

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### EXPLANATION:

The graph given is -



We start at Node 1. It is at 0 distance from Node 1(itself), so we traverse its neighbours 2,5 and 6 in descending order and visit 6 first.

At 6 we are at an odd distance(1) from 1. So we traverse its neighbours 1, 2 and 4 in ascending order and visit 2.(Node 1 is already visited, so we skip that)

At 2 we are at an even distance(2) from 1. So we traverse its neighbours 1,4 and 6 in descending order. (Node 1 and 6 are already visited, so we skip them)

At 4 we are at an odd distance(3) from 1. So we traverse its neighbours 2,3,5 and 6 in ascending order.(Node 2 and 6 are already visited, so we skip that)

At 3 and 5 we find all their neighbours visited.

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Tags: [sarthak\\_123 \(/tags/problems/sarthak\\_123/\)](/tags/problems/sarthak_123/)

Date Added: 11-04-2019

Time Limit: 1 secs

Source Limit: 50000 Bytes

Languages: C, CPP14, JAVA, PYTH, PYTH 3.6, PYPY, CS2, PAS fpc, PAS gpc, RUBY, PHP, GO, NODEJS, HASK, rust, SCALA, swift, D, PERL, FORT, WSPC, ADA, CAML, ICK, BF, ASM, CLPS, PRLG, ICON, SCM qobi, PIKE, ST, NICE, LUA, BASH, NEM, LISP sbcl, LISP clisp, SCM guile, JS, ERL, TCL, kotlin, PERL6, TEXT, SCM chicken, PYP3, CLOJ, R, COB, FS

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