# Implement Iterative Deepening Search (IDS) (Uninformed Search)

- 1. You are given an undirected or bidirected graph and a source from which you will start your journey. You have to find and print the list of vertices you can go from the source vertice given as input.
- a. First will have the total number of nodes (n) and the total number of edges (m).
- b. Next m lines will be followed by m pairs of integers denoting the bi-directional edges.

i. a b

- 1. It means there is a connection from **a to b** and
- 2. Also, a connection from **b** to a.
- c. Then a single integer **s** denoting the source.
  - 2. Use the idea of Graph traversal to solve the problem. Use **Recursion** for this task.
  - 3. Outputs:
- . Print the nodes in the order they are getting explored starting from the source node including in which depth level they were explored for different depth limit
- a. The highest depth limit should be 9

Input #1	Output#1
14 12 0 1 0 4 0 2 1 3 1 4 3 5 5 6 5 7	When depth limit: 0  Explored o at depth o  When depth limit: 1  Explored o at depth o  Explored 1 at depth 1  Explored 4 at depth 1
6 8 2 11 11 10 9 13 <b>0</b>	Explored 2 at depth 1  When depth limit: 2  Explored 0 at depth 0  Explored 1 at depth 1  Explored 2 at depth 2
	Explored 3 at depth 2 Explored 4 at depth 2

Explored 2 at depth 1 Explored 11 at depth 2

# When depth limit: 3

Explored o at depth o
Explored 1 at depth 1
Explored 3 at depth 2
Explored 5 at depth 3
Explored 4 at depth 2
Explored 2 at depth 1
Explored 11 at depth 2
Explored 10 at depth 3

#### When depth limit: 4

Explored o at depth o
Explored 1 at depth 1
Explored 3 at depth 2
Explored 5 at depth 3
Explored 6 at depth 4
Explored 7 at depth 4
Explored 4 at depth 2
Explored 2 at depth 1
Explored 11 at depth 2
Explored 10 at depth 3

#### When depth limit: 5

Explored o at depth o
Explored 1 at depth 1
Explored 3 at depth 2
Explored 5 at depth 3
Explored 6 at depth 4
Explored 8 at depth 5
Explored 7 at depth 4
Explored 4 at depth 2
Explored 2 at depth 1
Explored 11 at depth 2
Explored 10 at depth 3

#### When depth limit: 6

Explored o at depth o Explored 1 at depth 1 Explored 3 at depth 2 Explored 5 at depth 3 Explored 6 at depth 4 Explored 8 at depth 5 Explored 7 at depth 4 Explored 4 at depth 2 Explored 2 at depth 1 Explored 11 at depth 2 Explored 10 at depth 3

# When depth limit: 7

Explored o at depth o
Explored 1 at depth 1
Explored 3 at depth 2
Explored 5 at depth 3
Explored 6 at depth 4
Explored 8 at depth 5
Explored 7 at depth 4
Explored 4 at depth 2
Explored 2 at depth 1
Explored 11 at depth 2
Explored 10 at depth 3

## When depth limit: 8

Explored o at depth o
Explored 1 at depth 1
Explored 3 at depth 2
Explored 5 at depth 3
Explored 6 at depth 4
Explored 8 at depth 5
Explored 7 at depth 4
Explored 4 at depth 2
Explored 2 at depth 1
Explored 11 at depth 2
Explored 10 at depth 3

# When depth limit: 9

Explored o at depth o
Explored 1 at depth 1
Explored 3 at depth 2
Explored 5 at depth 3
Explored 6 at depth 4
Explored 8 at depth 5
Explored 7 at depth 4
Explored 4 at depth 2
Explored 2 at depth 1
Explored 11 at depth 2
Explored 10 at depth 3

Input #2

Output#2

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0 2	Explored 4 at depth o
0 4	Explored 4 at depth o
	**** 1 .1 1! '.
13	When depth limit: 1
14	
2 11	Explored 4 at depth o
3 5	Explored o at depth 1
67	Explored 1 at depth 1
8 9	Explored 1 at depth 1
10 13	TATIL J I it . o
4	When depth limit: 2
4	
	Explored 4 at depth o
	Explored o at depth 1
	Explored 1 at depth 2
	Explored 2 at depth 2
	747h J 11 12 2
	When depth limit: 3
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	Explored o at depth 1
	Explored 1 at depth 2
	Explored 3 at depth 3
	Explored 2 at depth 2
	Explored 11 at depth 3
	Explored 11 at depth 3
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	when depth nime. 4
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	Explored 4 at depth o
	Explored o at depth 1
	Explored 1 at depth 2
	Explored 3 at depth 3
	Explored 5 at depth 4
	Explored 2 at depth 2
	Explored 11 at depth 3
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	Explored 4 at depth o
	Explored o at depth 1
	Explored 1 at depth 2
	Explored 3 at depth 3
	Explored 5 at depth 4
	Explored 2 at depth 2
	Explored 11 at depth 3
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	When depth limit: 6
	The septiment of
	Explored 4 at depth o
	Emploted 4 at depth o

	Explored o at depth 1
	Explored 1 at depth 2
	Explored 3 at depth 3
	Explored 5 at depth 4
	Explored 2 at depth 2
	Explored 11 at depth 3
	Explored 11 at depth 3
	When depth limit: 7
	Explored 4 at depth o
	Explored o at depth 1
	Explored 1 at depth 2
	Explored 3 at depth 3
	Explored 5 at depth 4
	Explored 2 at depth 2
	Explored 11 at depth 3
	Explored II at depth 3
	TIT 1 11 11 11 0
	When depth limit: 8
	Explored 4 at depth o
	Explored o at depth 1
	Explored 1 at depth 2
	Explored 3 at depth 3
	Explored 5 at depth 4
	Explored 2 at depth 2
	Explored 11 at depth 3
	I a sa s
	When depth limit: 9
	When depth mint. 9
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	Explored 4 at depth o
	Explored o at depth 1
	Explored 1 at depth 2
	Explored 3 at depth 3
	Explored 5 at depth 4
	Explored 2 at depth 2
	Explored 11 at depth 3
Input #3	Output#3
11tput #3	<del>Ошриі#3</del>
75	When depth limit: o
12	
14	Explored 6 at depth o
25	
36	When depth limit: 1
06	
6	Final and Cat double a
ľ	Explored 6 at depth o
	Explored 3 at depth 1
	Explored o at depth 1
	Explored o at depth 1

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1

When depth limit: 3

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1

When depth limit: 4

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1

When depth limit: 5

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1

When depth limit: 6

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1

When depth limit: 7

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1

When depth limit: 8

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1

When depth limit: 9

Explored 6 at depth 0 Explored 3 at depth 1 Explored 0 at depth 1