



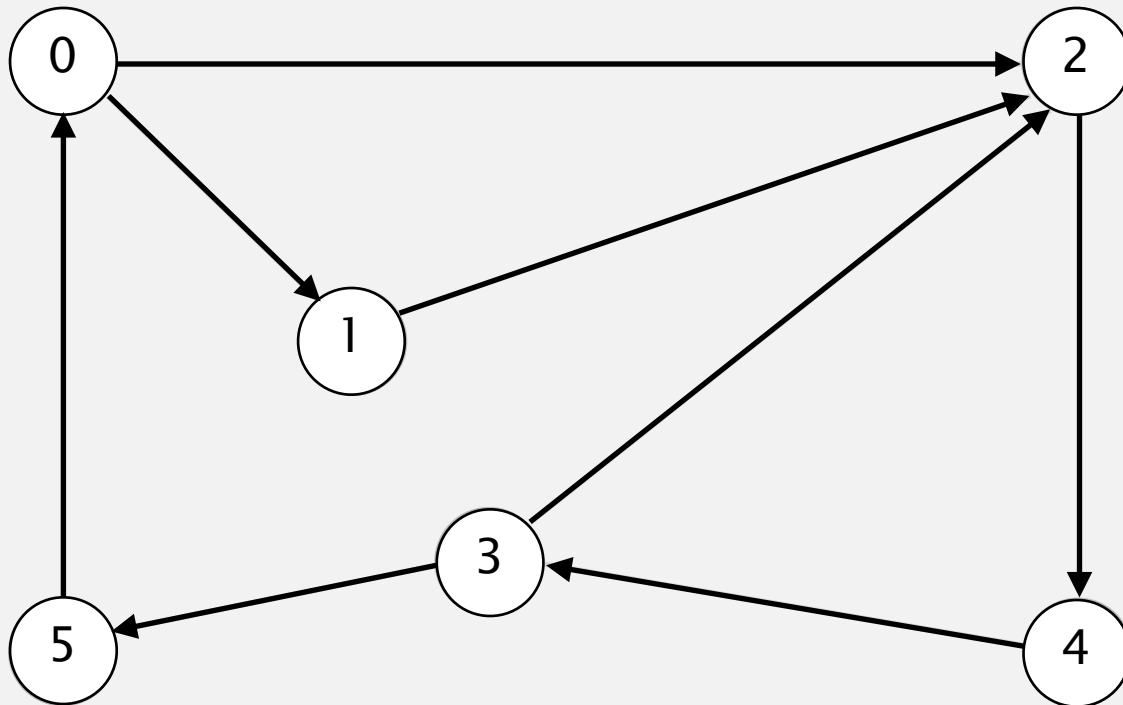
<http://algs4.cs.princeton.edu>

4.2 DIRECTED BFS DEMO

Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



tinyDG2.txt

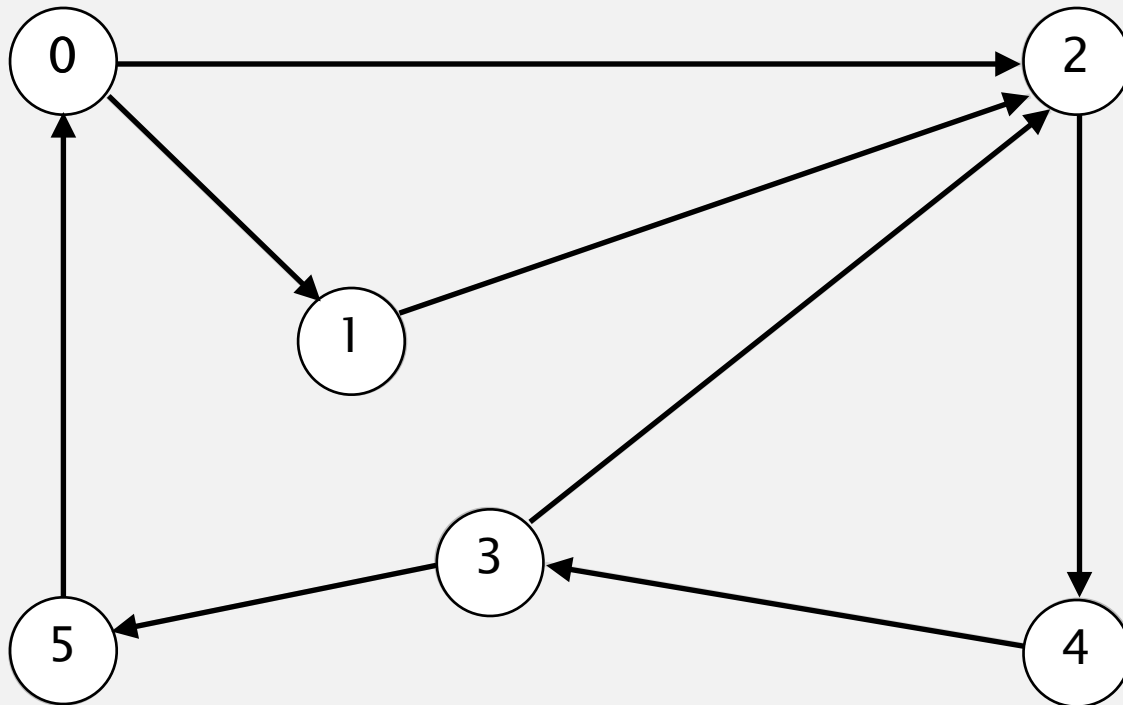
V	E
6	
8	
5	0
2	4
3	2
1	2
0	1
4	3
3	5
0	2

graph G

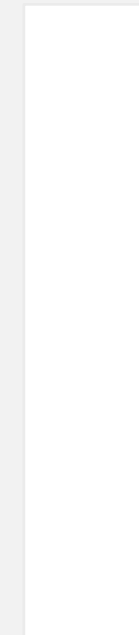
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



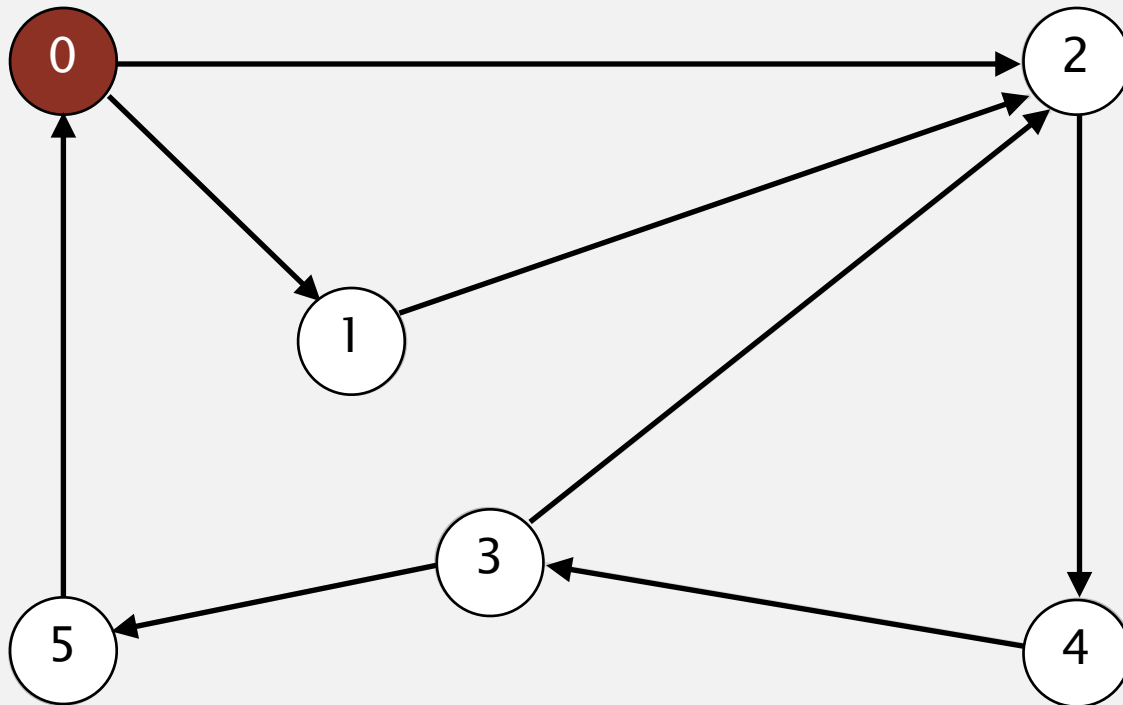
v	edgeTo[]	distTo[]
0	–	0
1	–	–
2	–	–
3	–	–
4	–	–
5	–	–

add 0 to queue

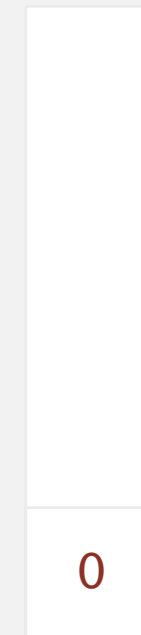
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



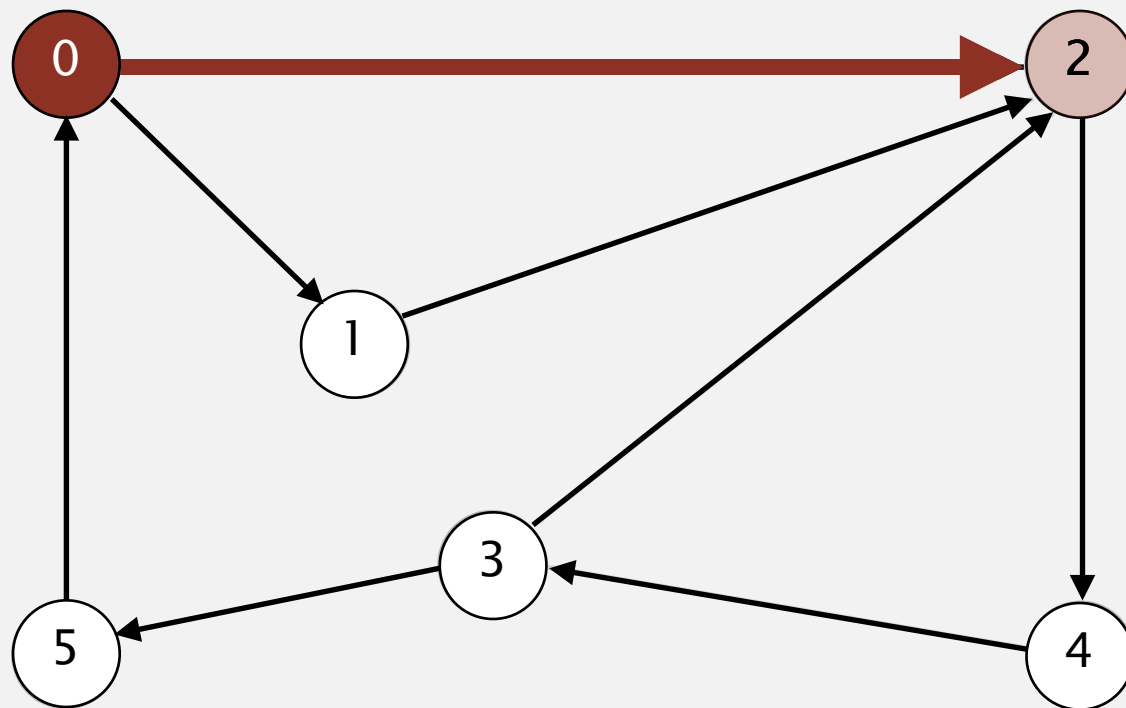
v	edgeTo[]	distTo[]
0	–	0
1	–	–
2	–	–
3	–	–
4	–	–
5	–	–

dequeue 0

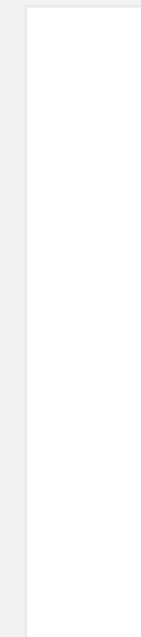
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



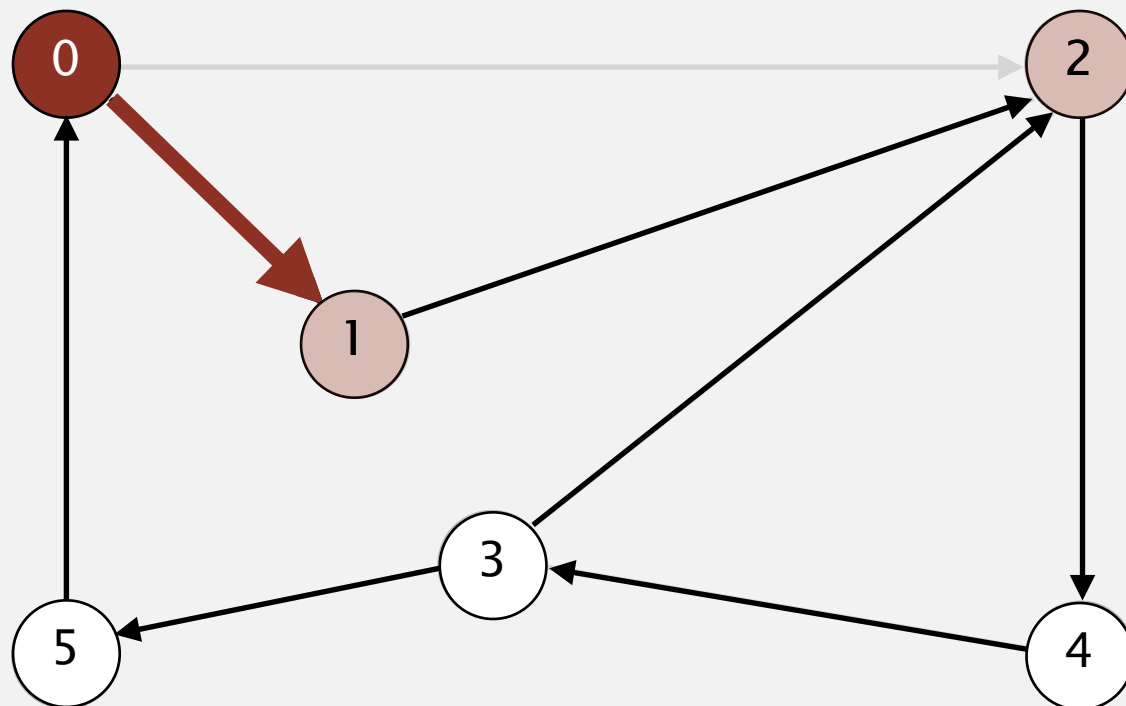
v	edgeTo[]	distTo[]
0	–	0
1	–	–
2	0	1
3	–	–
4	–	–
5	–	–

dequeue 0: check 2 and check 1

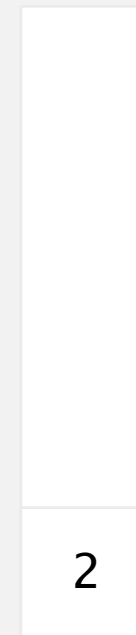
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



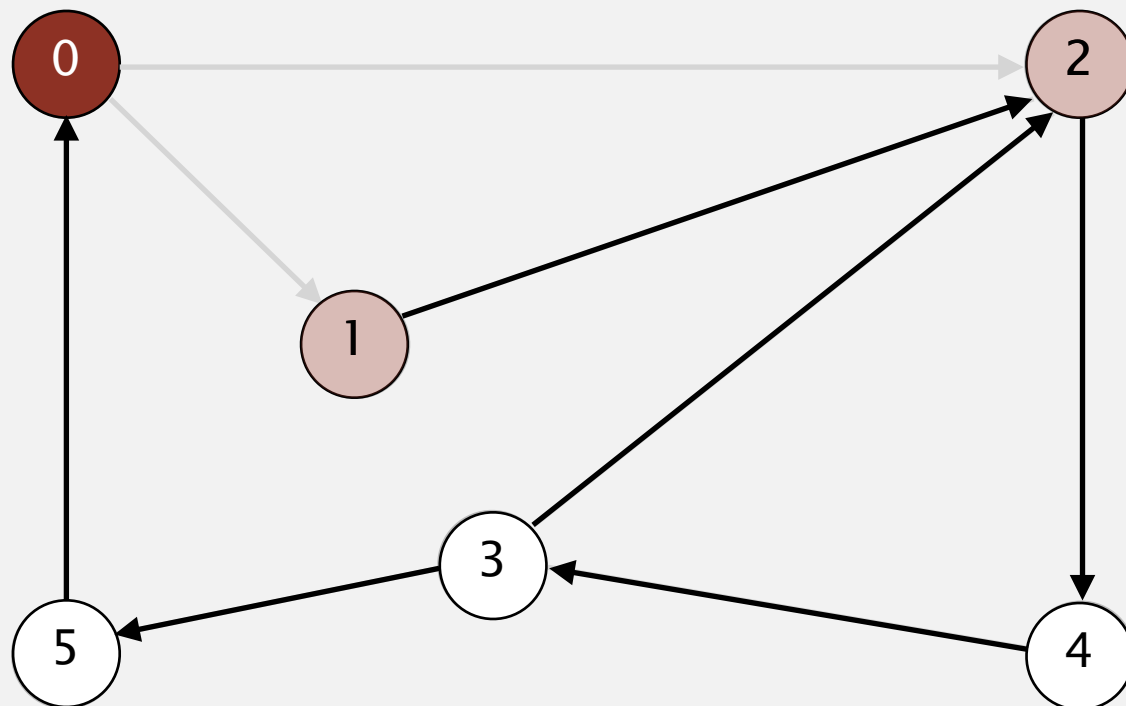
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	–	–
5	–	–

dequeue 0: check 2 and **check 1**

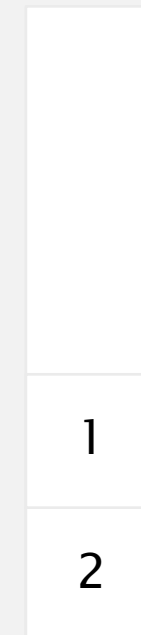
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



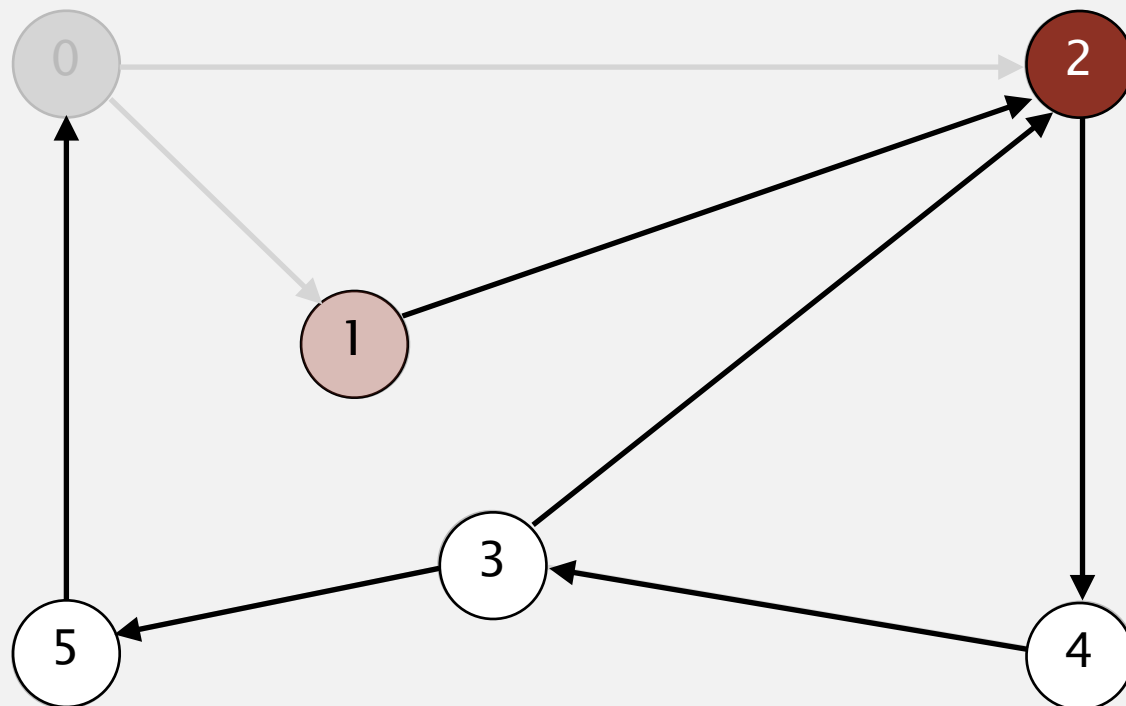
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	–	–
5	–	–

0 done

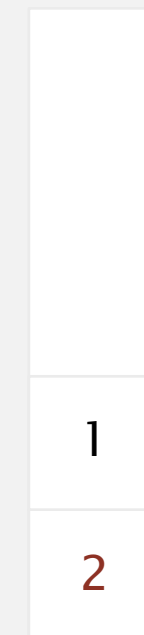
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



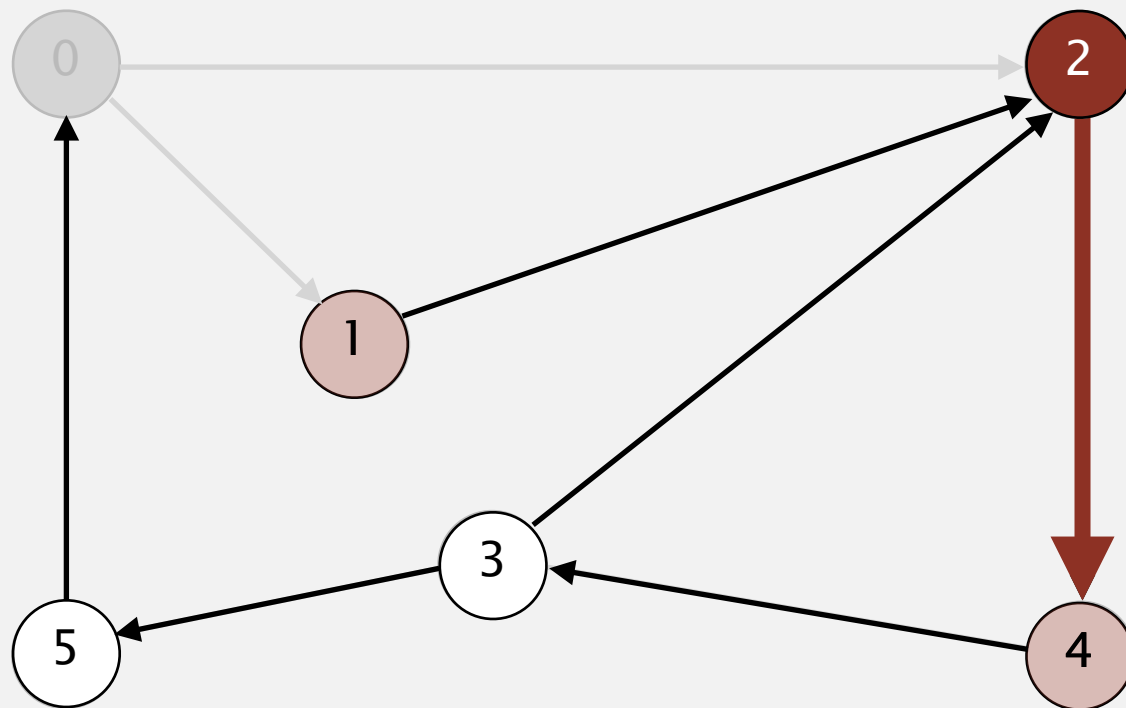
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	–	–
5	–	–

dequeue 2

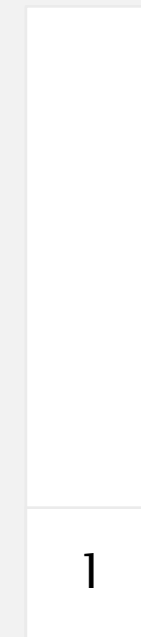
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



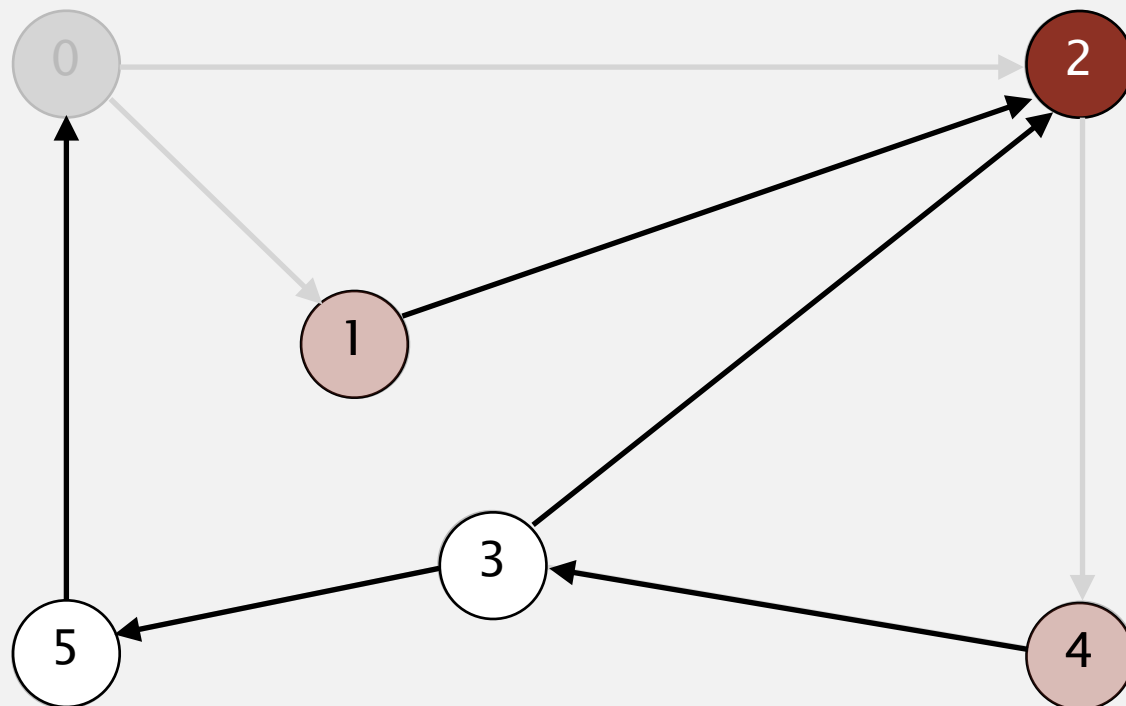
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	2	2
5	–	–

dequeue 2: check 4

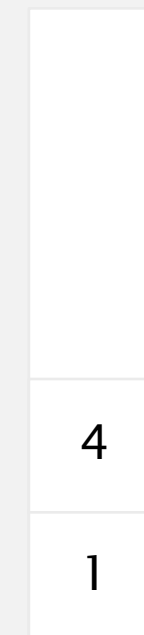
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



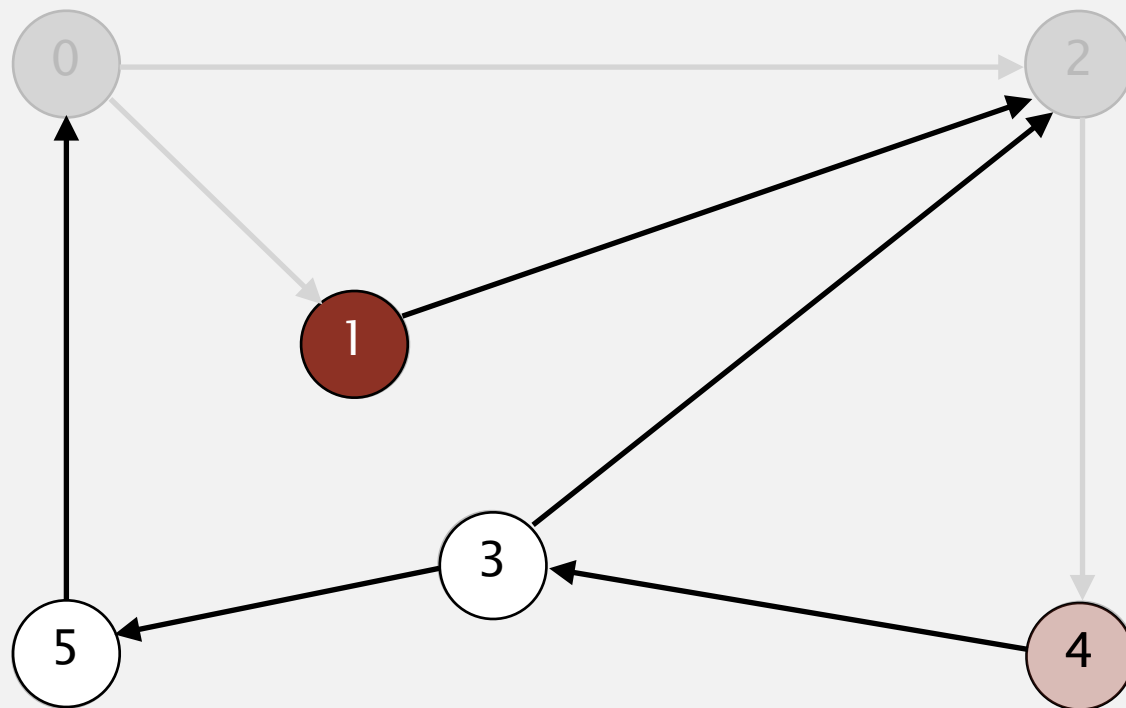
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	2	2
5	–	–

2 done

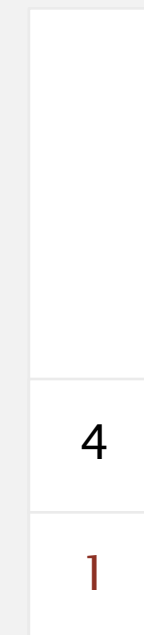
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



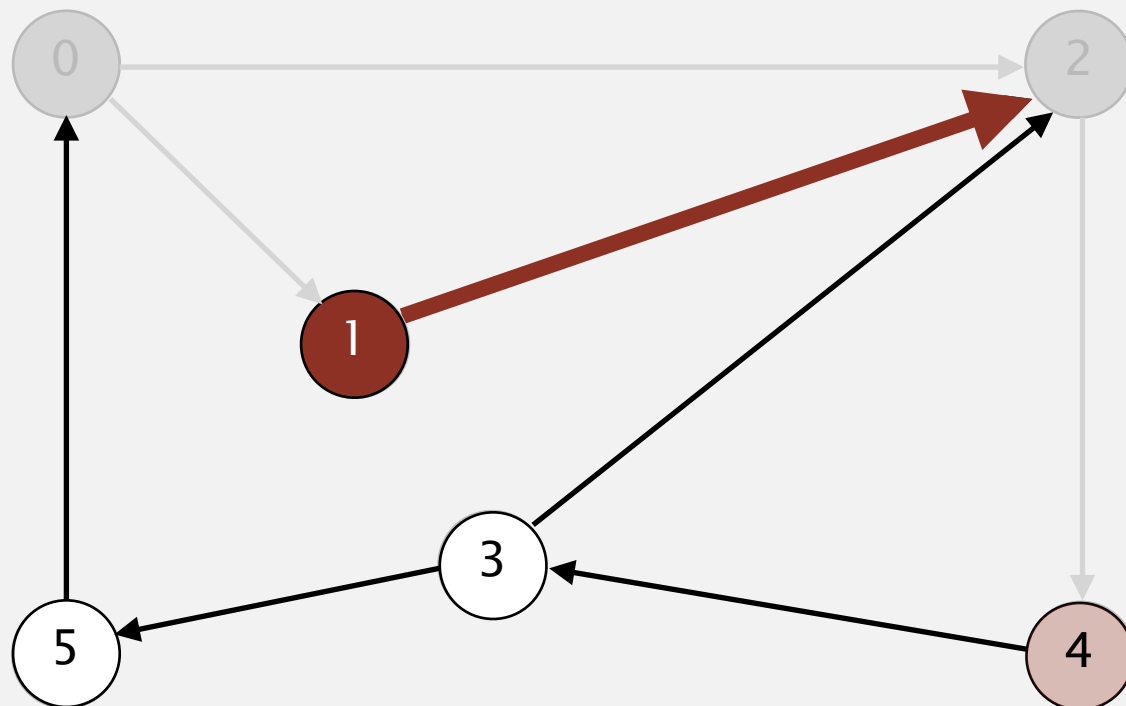
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	2	2
5	–	–

dequeue 1

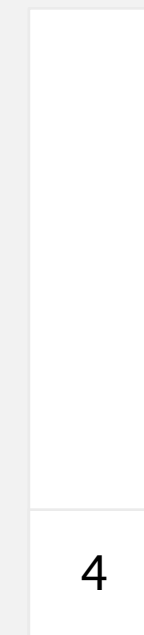
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



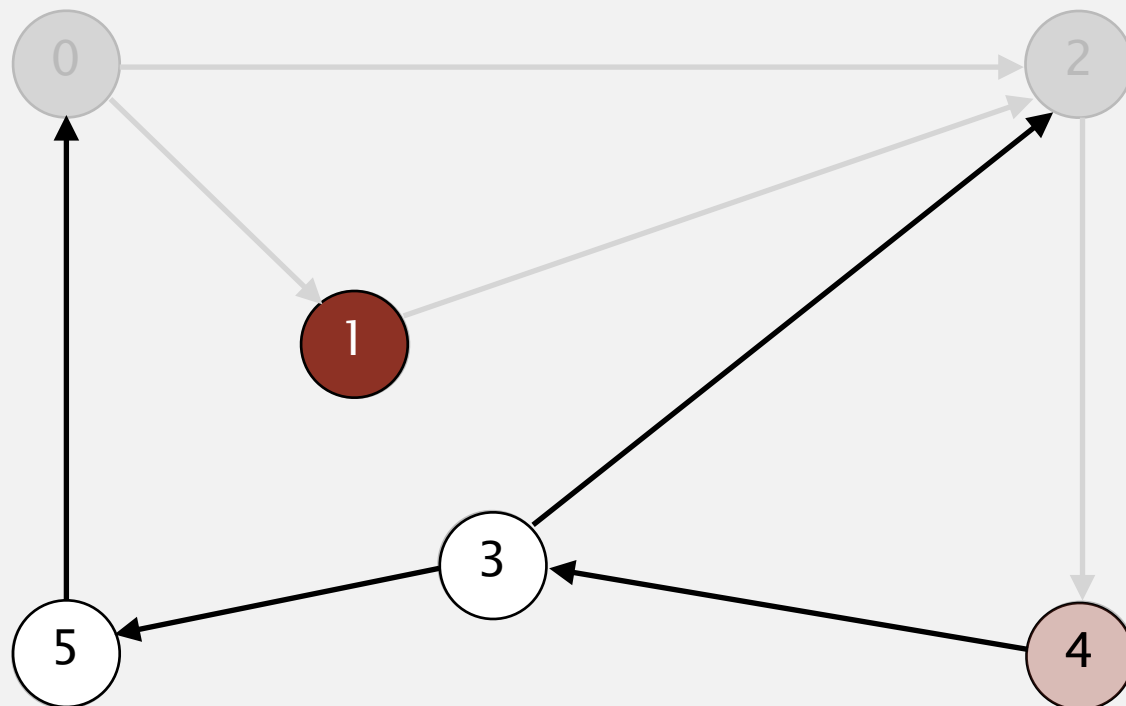
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	2	2
5	–	–

dequeue 1; check 2

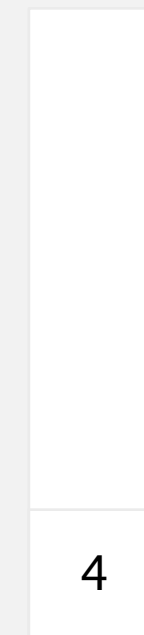
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



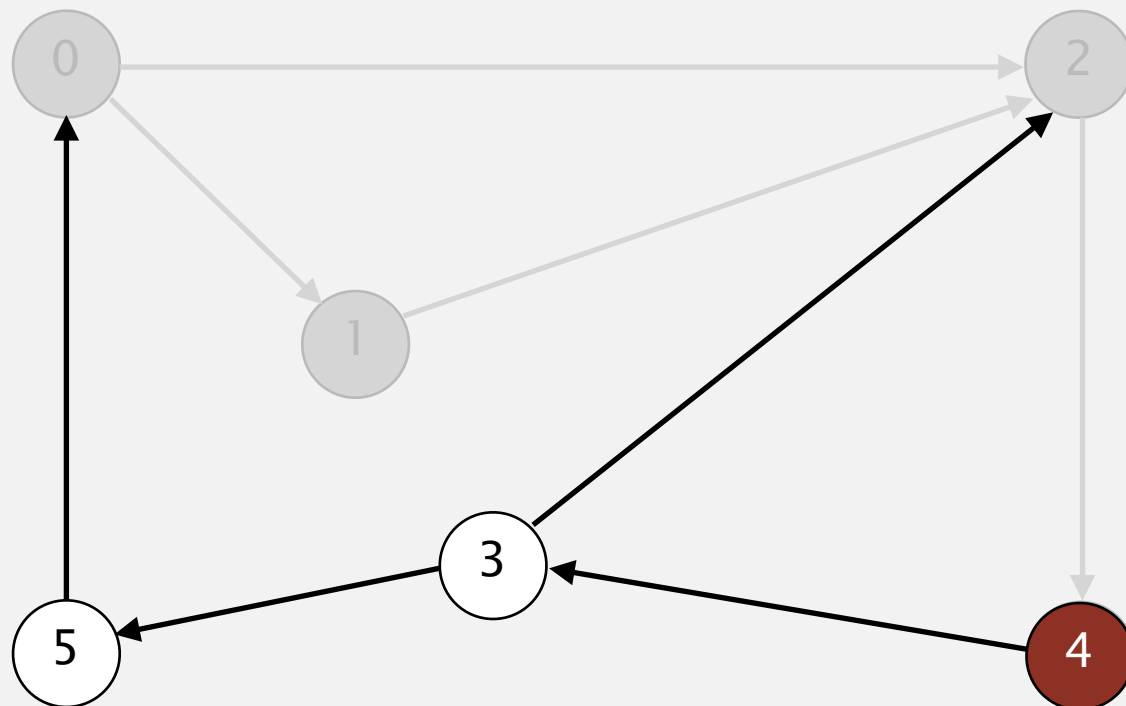
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	2	2
5	–	–

1 done

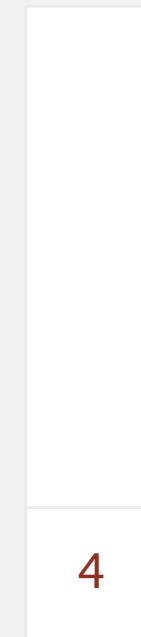
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



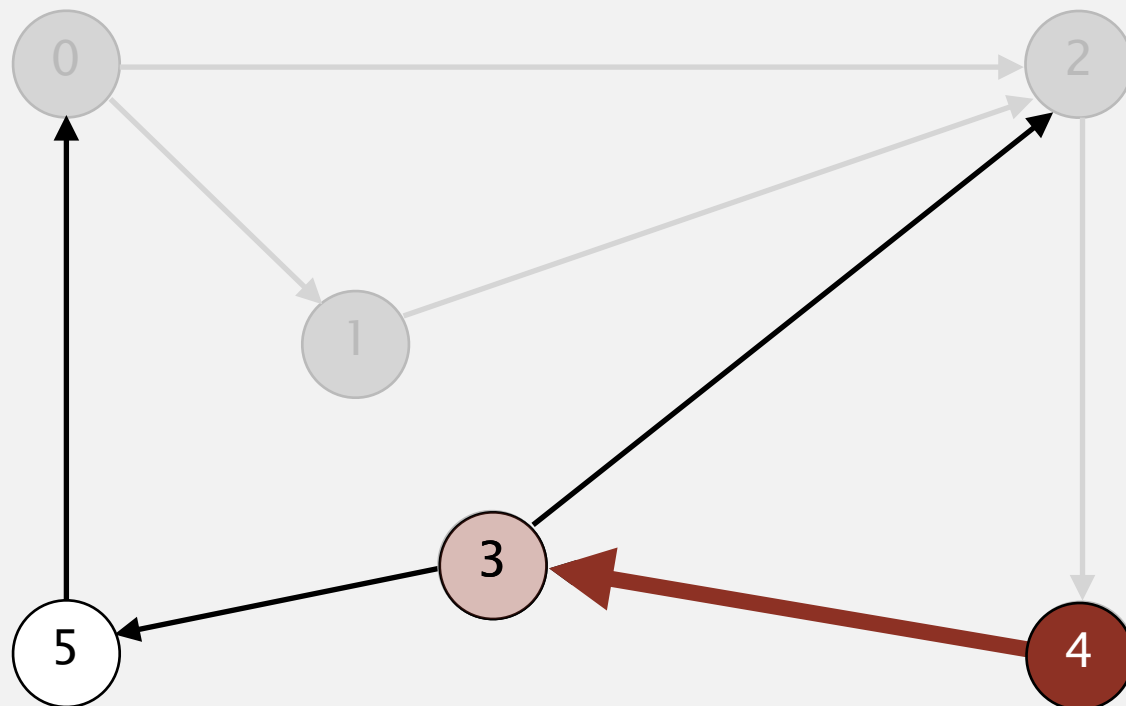
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	–	–
4	2	2
5	–	–

dequeue 4

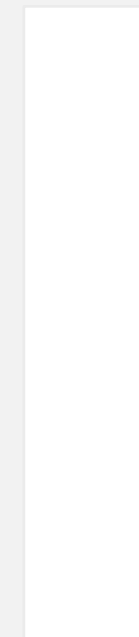
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



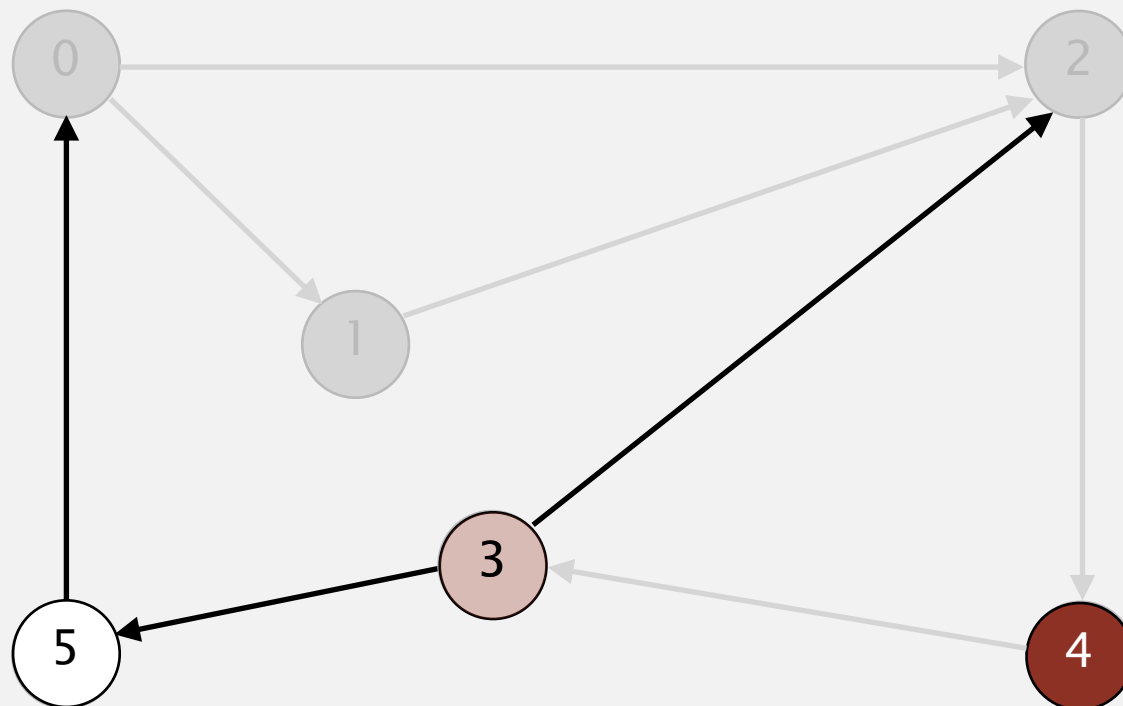
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	–	–

dequeue 4: check 3

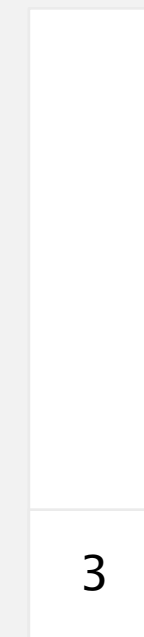
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



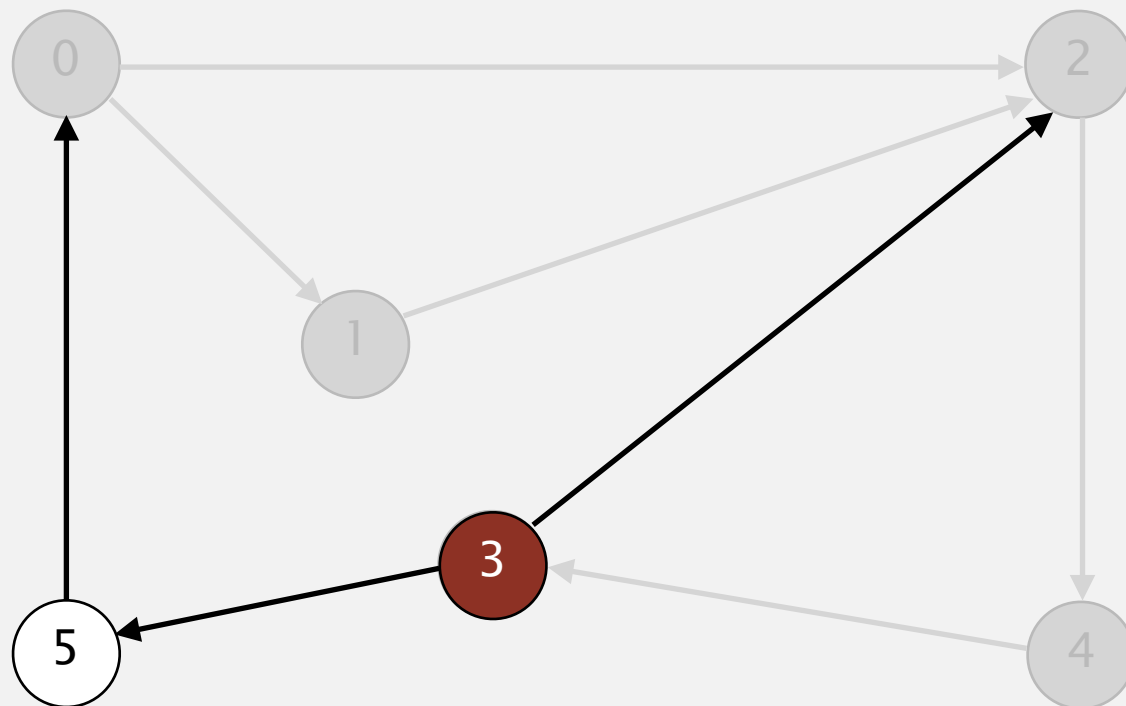
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	–	–

4 done

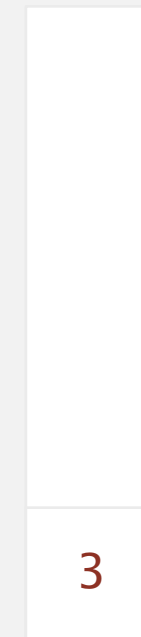
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



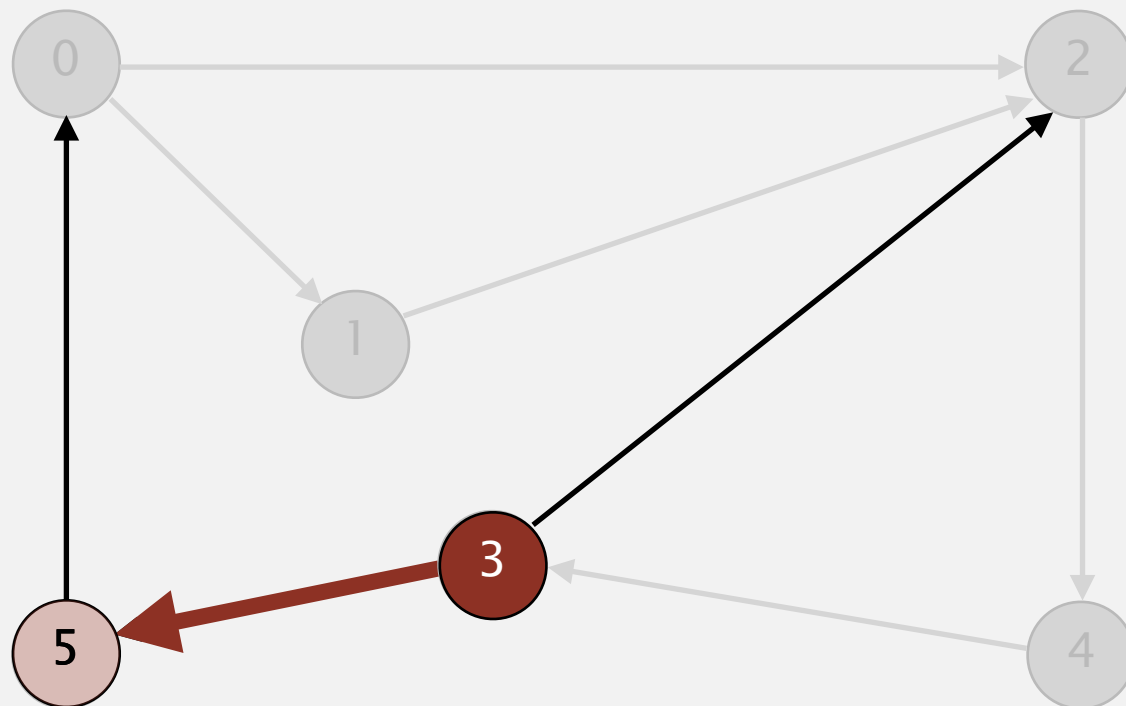
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	–	–

dequeue 3

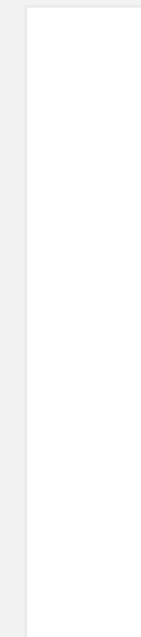
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



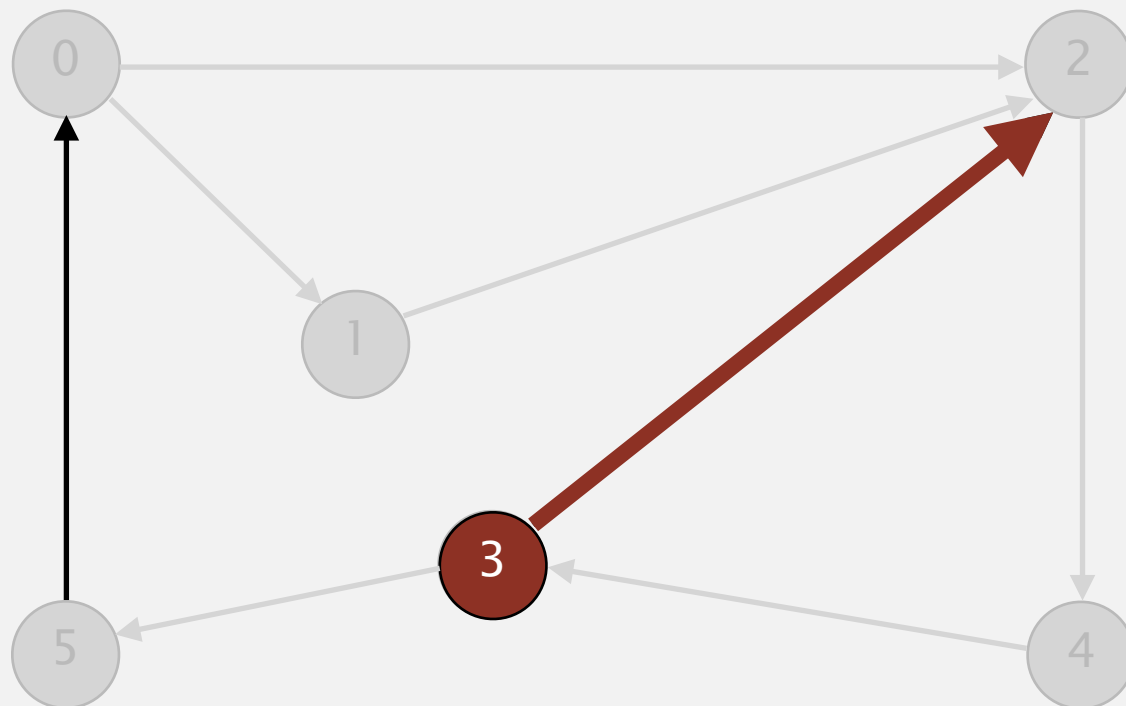
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	3	4

dequeue 3: check 5 and check 2

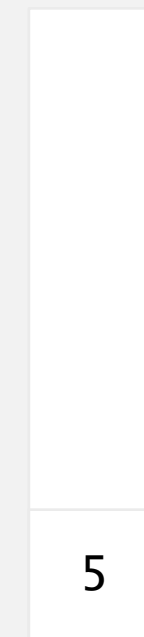
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



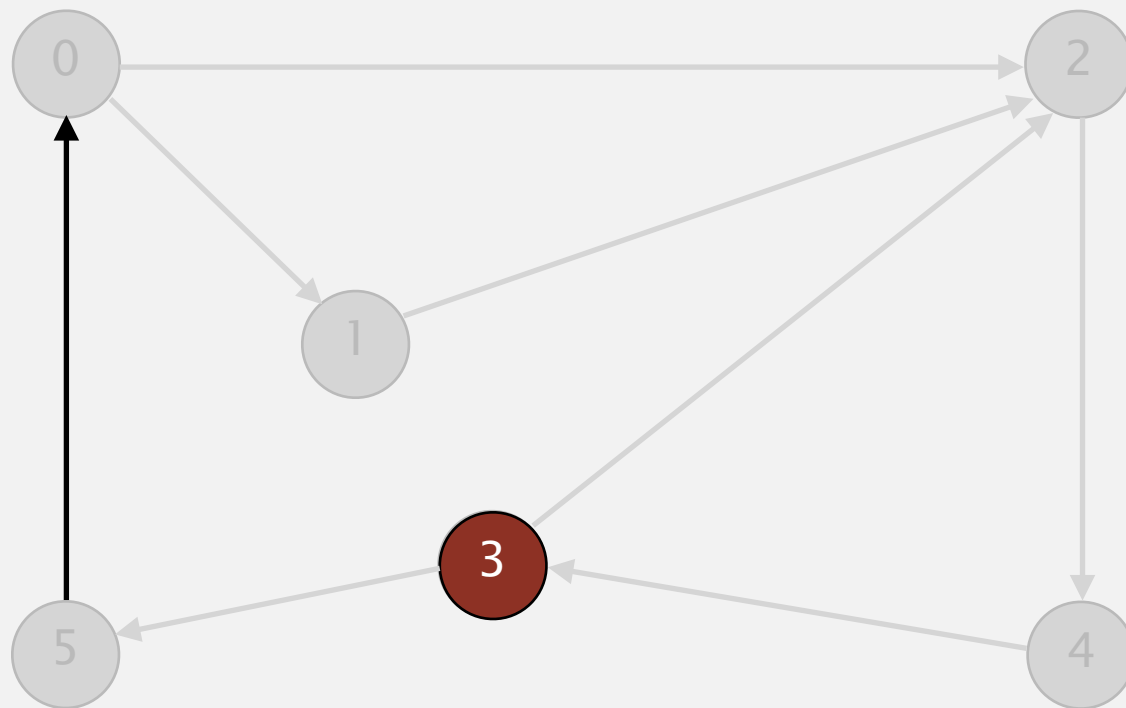
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	3	4

dequeue 3: check 5 and **check 2**

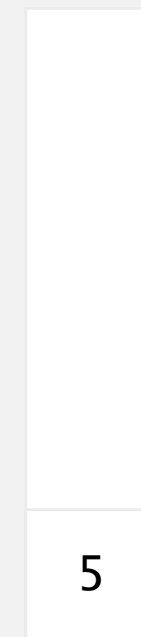
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



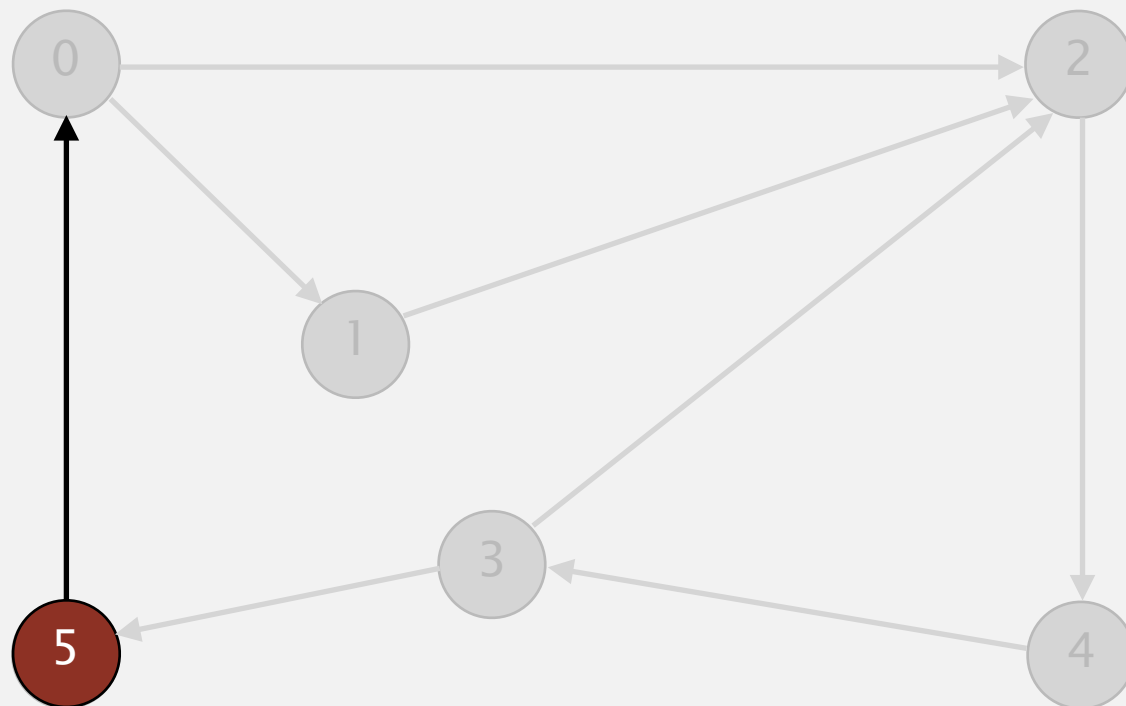
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	3	4

3 done

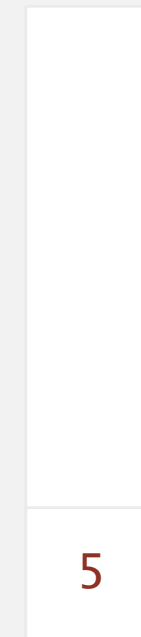
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



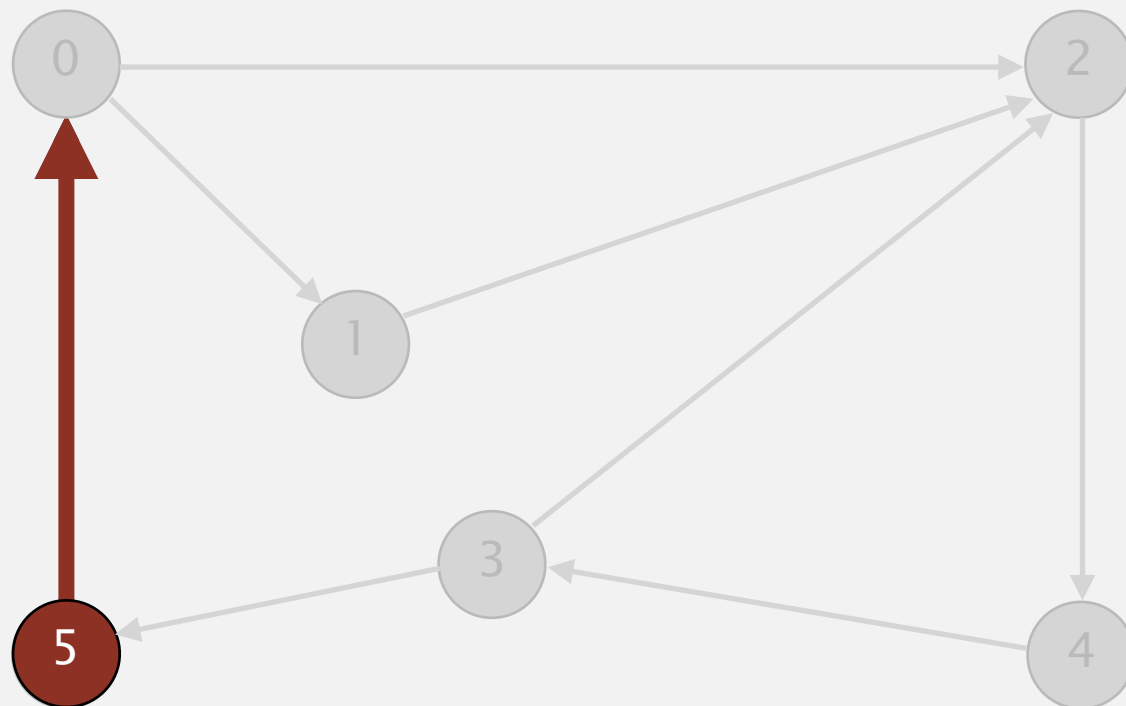
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	3	4

dequeue 5

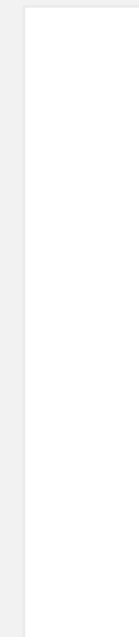
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



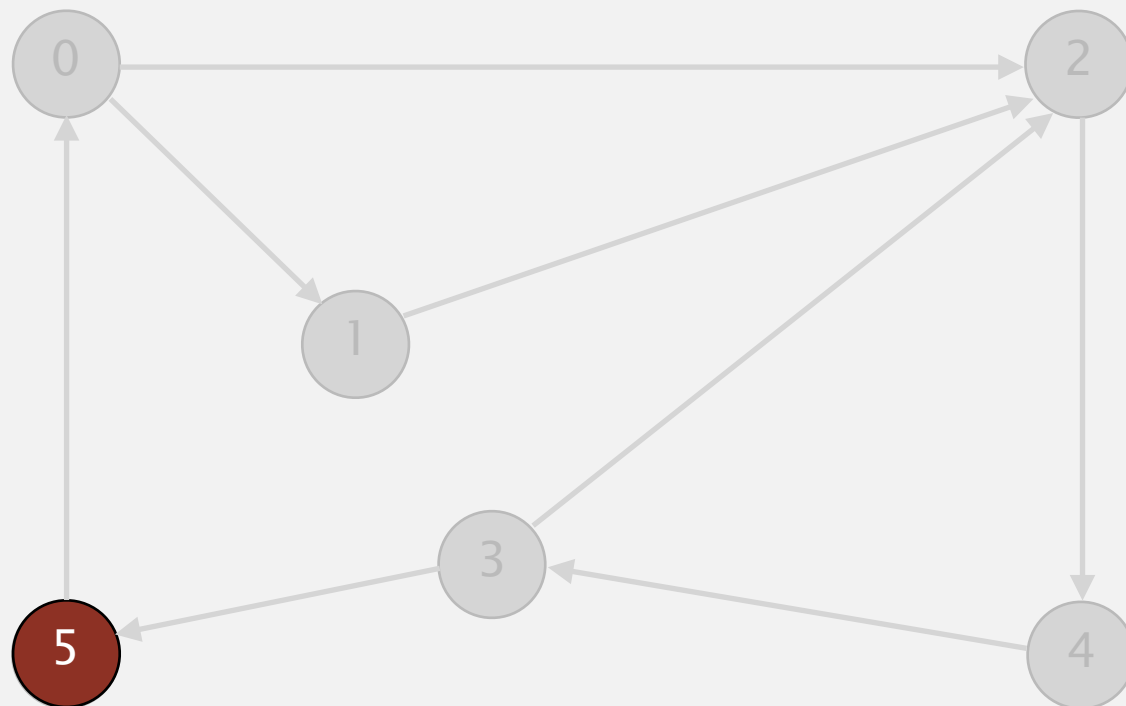
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	3	4

dequeue 5: check 0

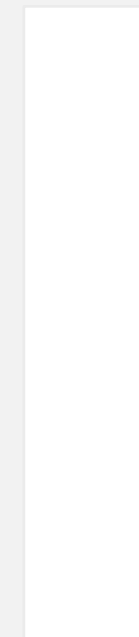
Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



queue



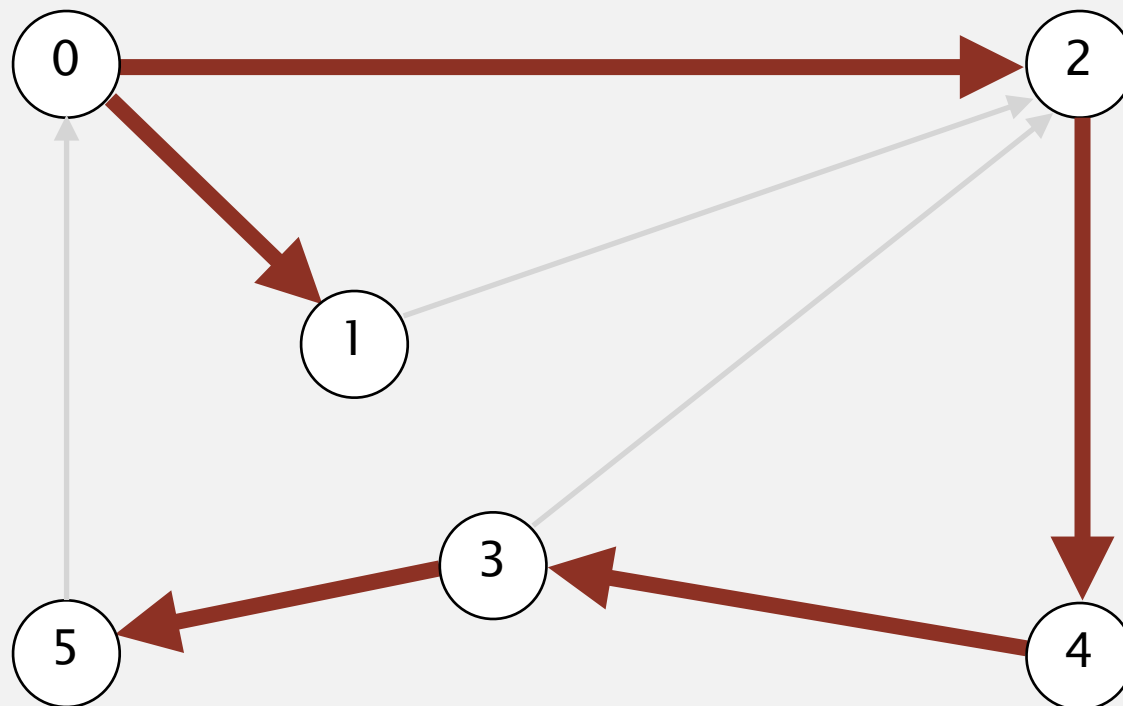
v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	3	4

5 done

Directed breadth-first search demo

Repeat until queue is empty:

- Remove vertex v from queue.
- Add to queue all unmarked vertices pointing from v and mark them.



v	edgeTo[]	distTo[]
0	–	0
1	0	1
2	0	1
3	4	3
4	2	2
5	3	4

done