4.2 TOPOLOGICAL SORT DEMO

http://algs4.cs.princeton.edu

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.
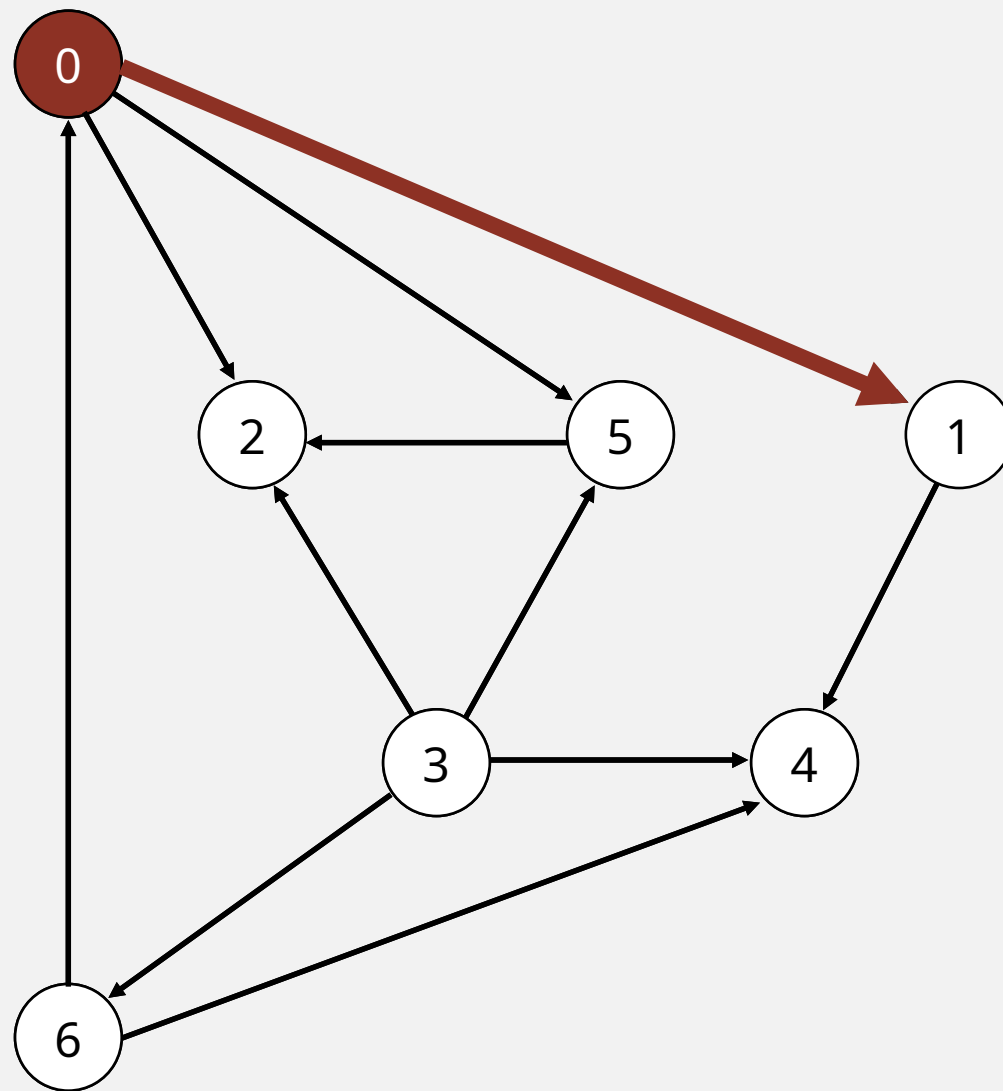

a directed acyclic graph

tinyDAG7.txt

```
7
11
 0  5
 0  2
 0  1
 3  6
 3  5
 3  4
 5  2
 6  4
 6  0
 3  2
```

Topological sort demo

▢ Run depth-first search.

▢ Return vertices in reverse postorder.
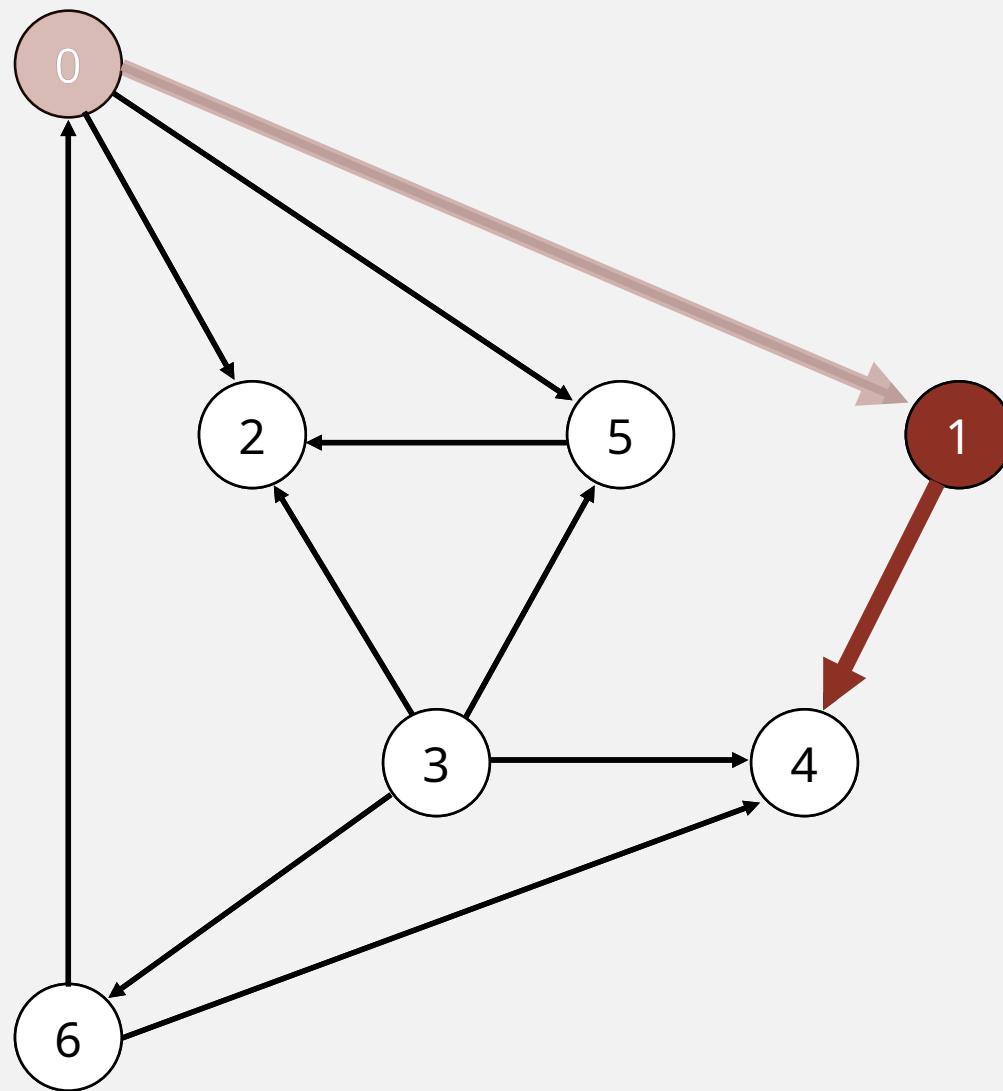
postorder

v	marked[]
0	T
1	F
2	F
3	F
4	F
5	F
6	F

visit 0: check 1, check 2, and check 5

Topological sort demo

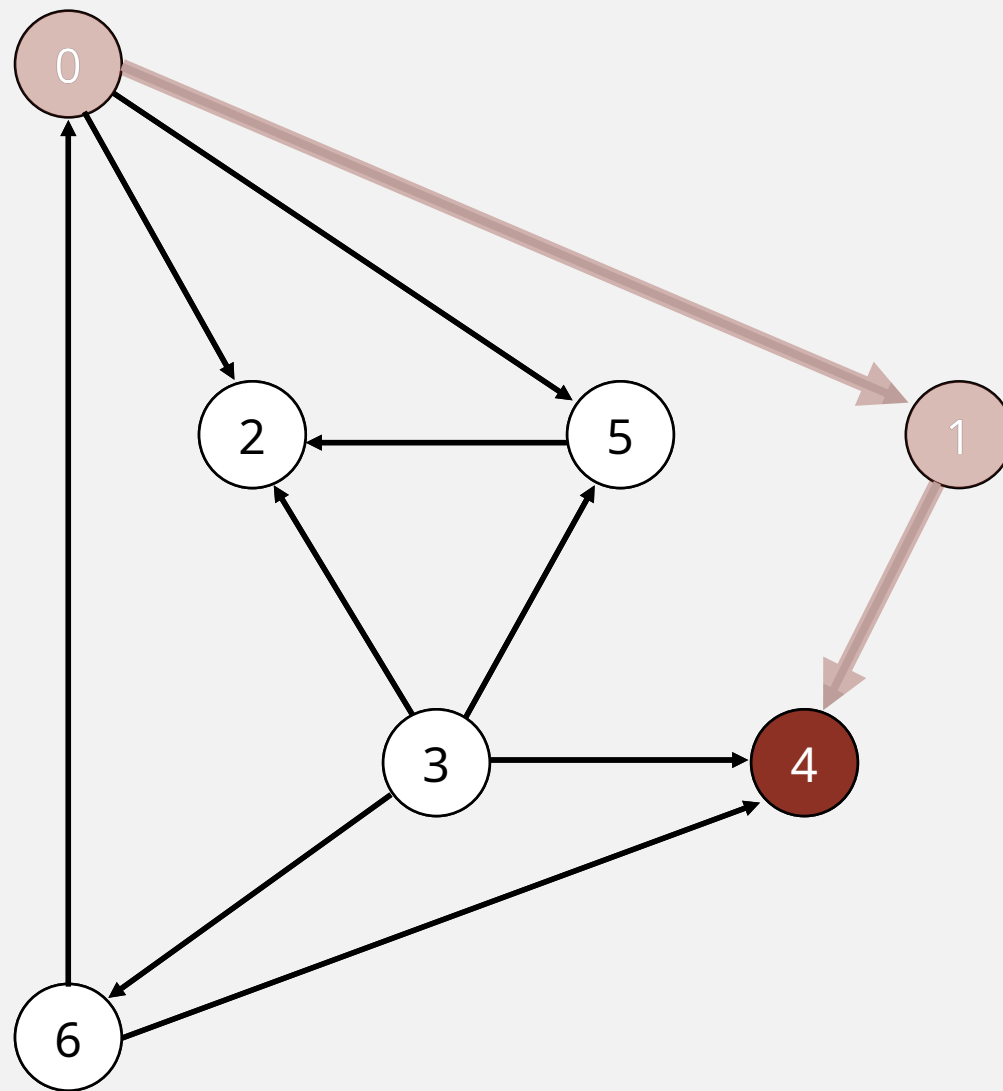☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

v	marked[]
0	T
1	T
2	F
3	F
4	F
5	F
6	F

visit 1: check 4

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

v	marked[]
0	T
1	T
2	F
3	F
4	T
5	F
6	F

visit 4

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.
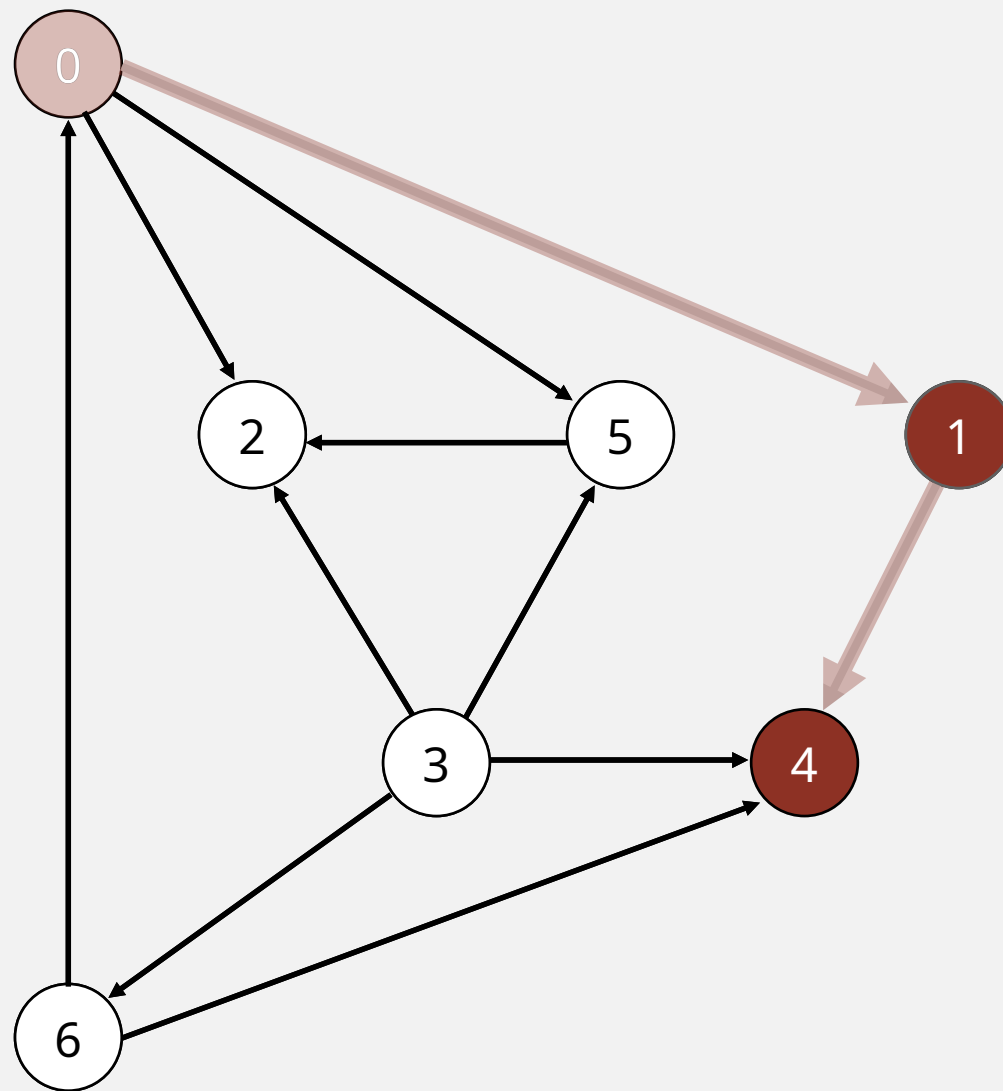
postorder

4

v	marked[]
0	T
1	T
2	F
3	F
4	T
5	F
6	F

4 done

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1
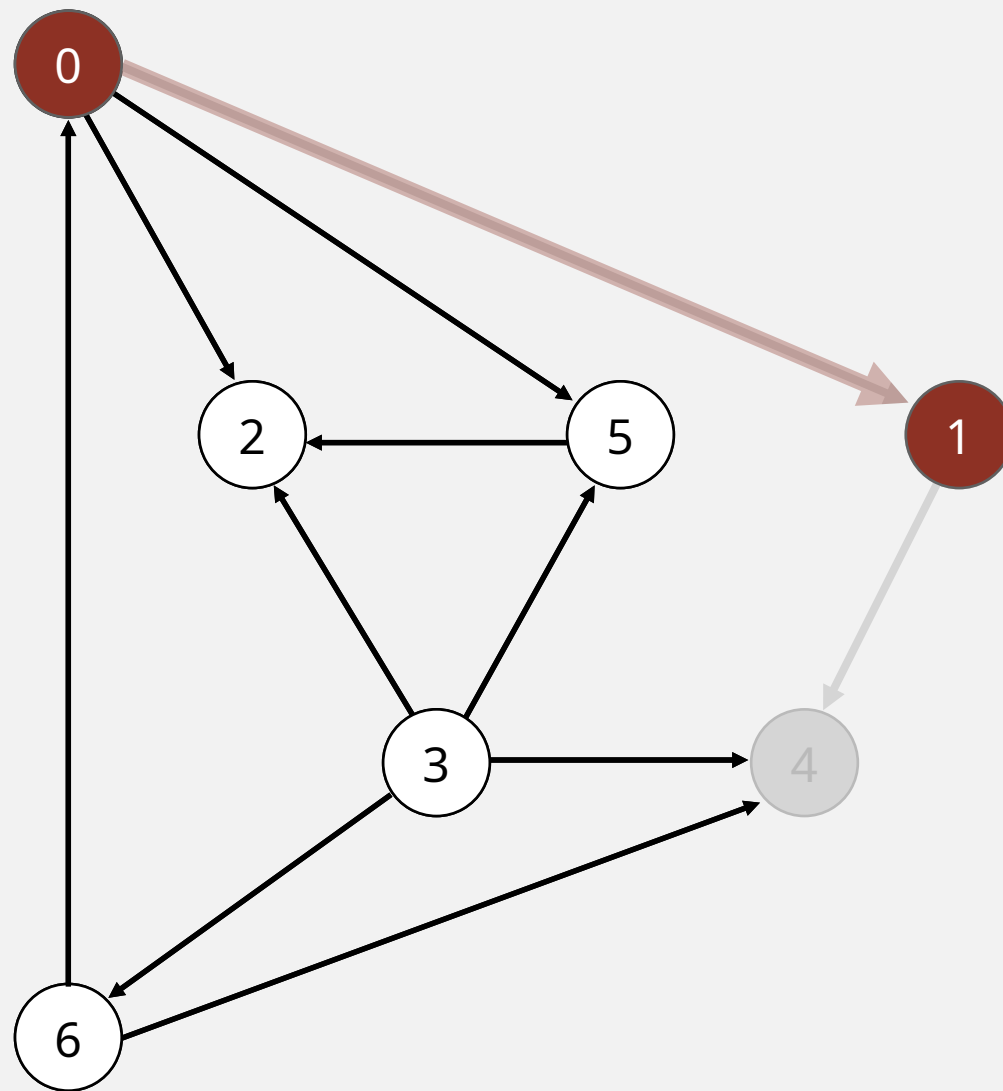
v	marked[]
0	T
1	T
2	F
3	F
4	T
5	F
6	F

1 done

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1

v	marked[]
0	T
1	T
2	F
3	F
4	T
5	F
6	F

visit 0: check 1, **check 2**, and check 5

Topological sort demo

☐ Run depth-first search.
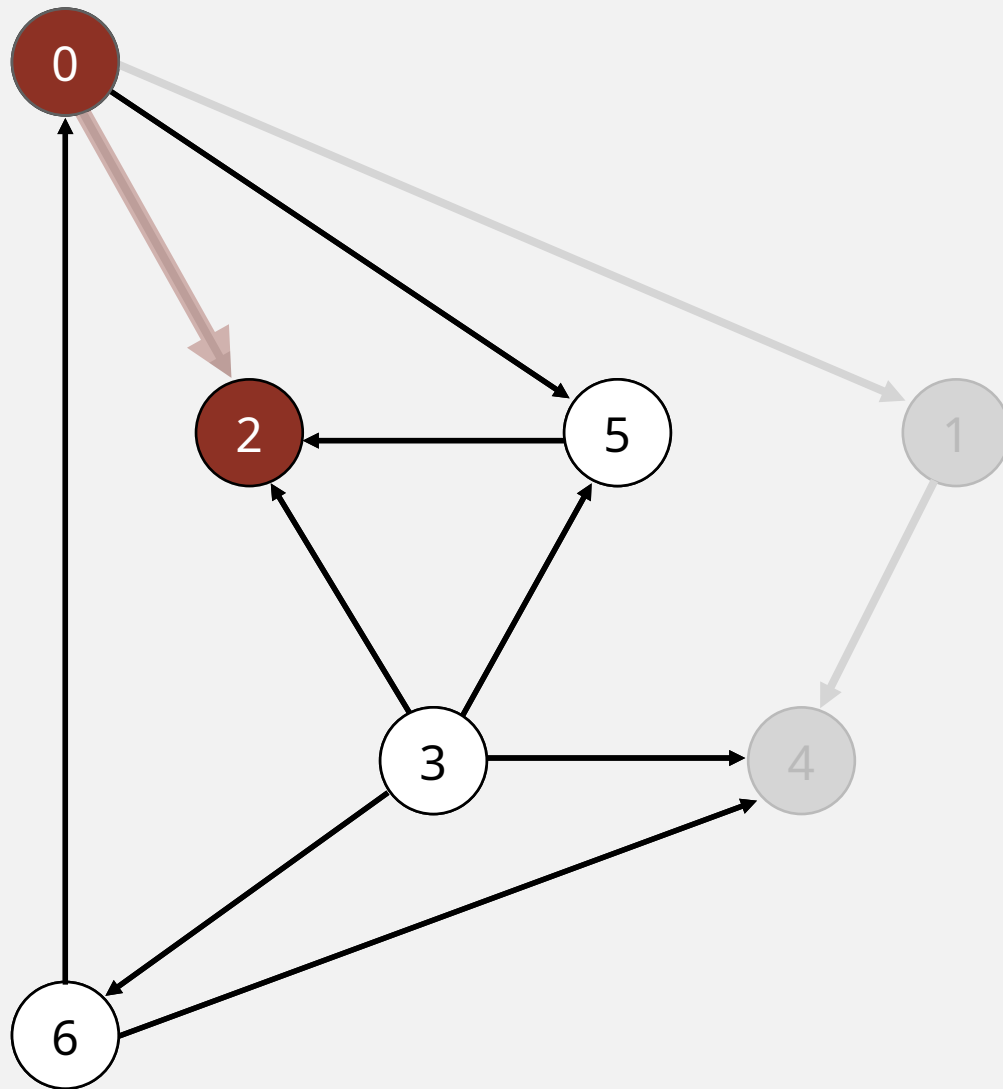☐ Return vertices in reverse postorder.
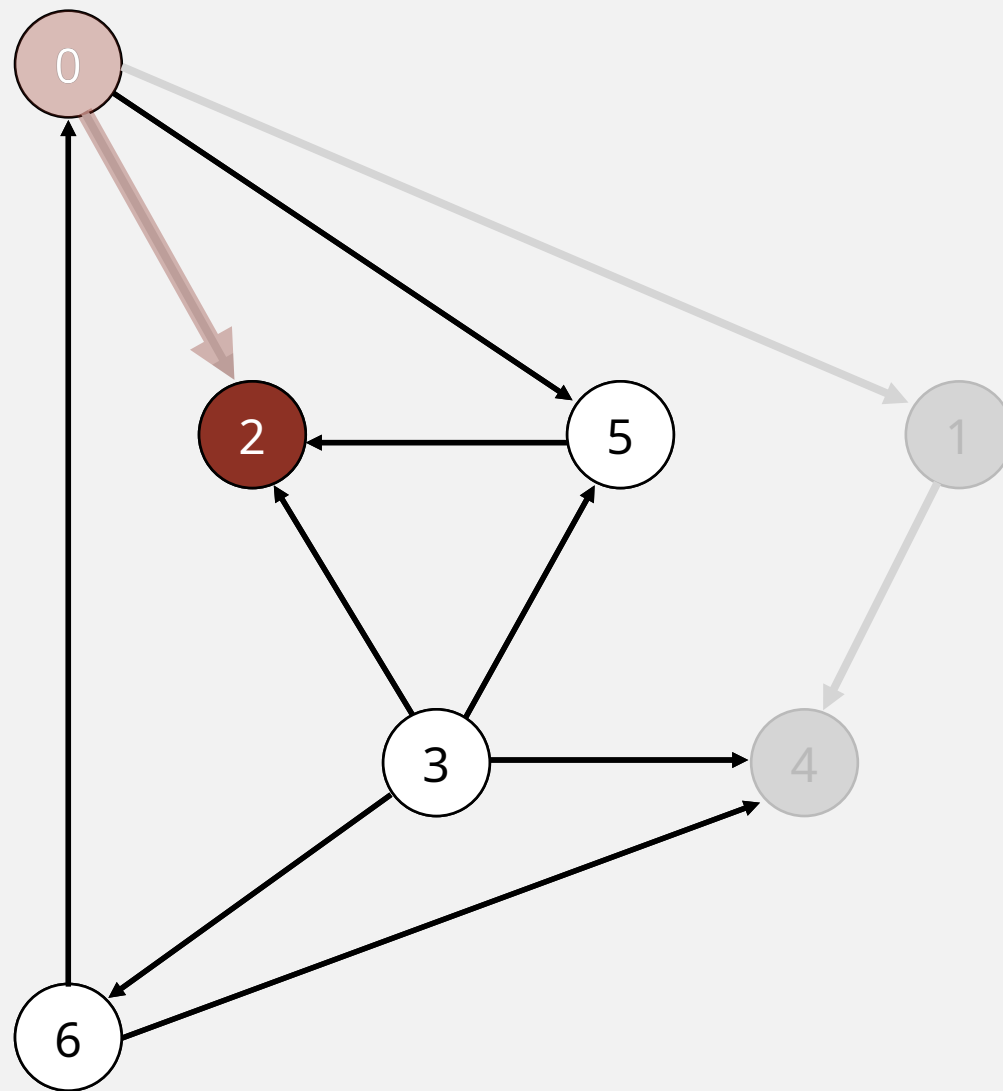
postorder

4   1

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	F
6	F

visit 2

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1 2

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	F
6	F

2 done

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1 2

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	F
6	F

visit 0: check 1, check 2, and **check 5**

Topological sort demo

☐ Run depth-first search.
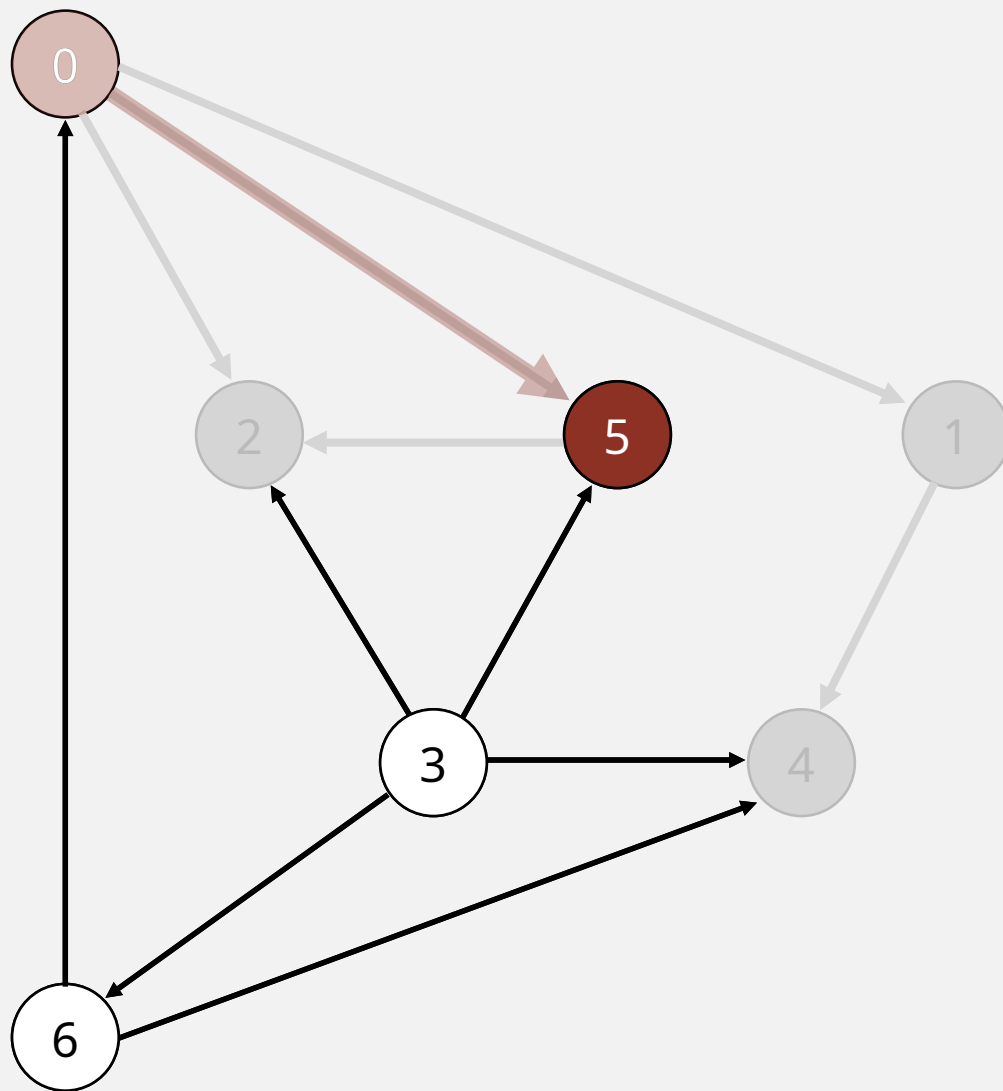
☐ Return vertices in reverse postorder.

postorder

4 1 2
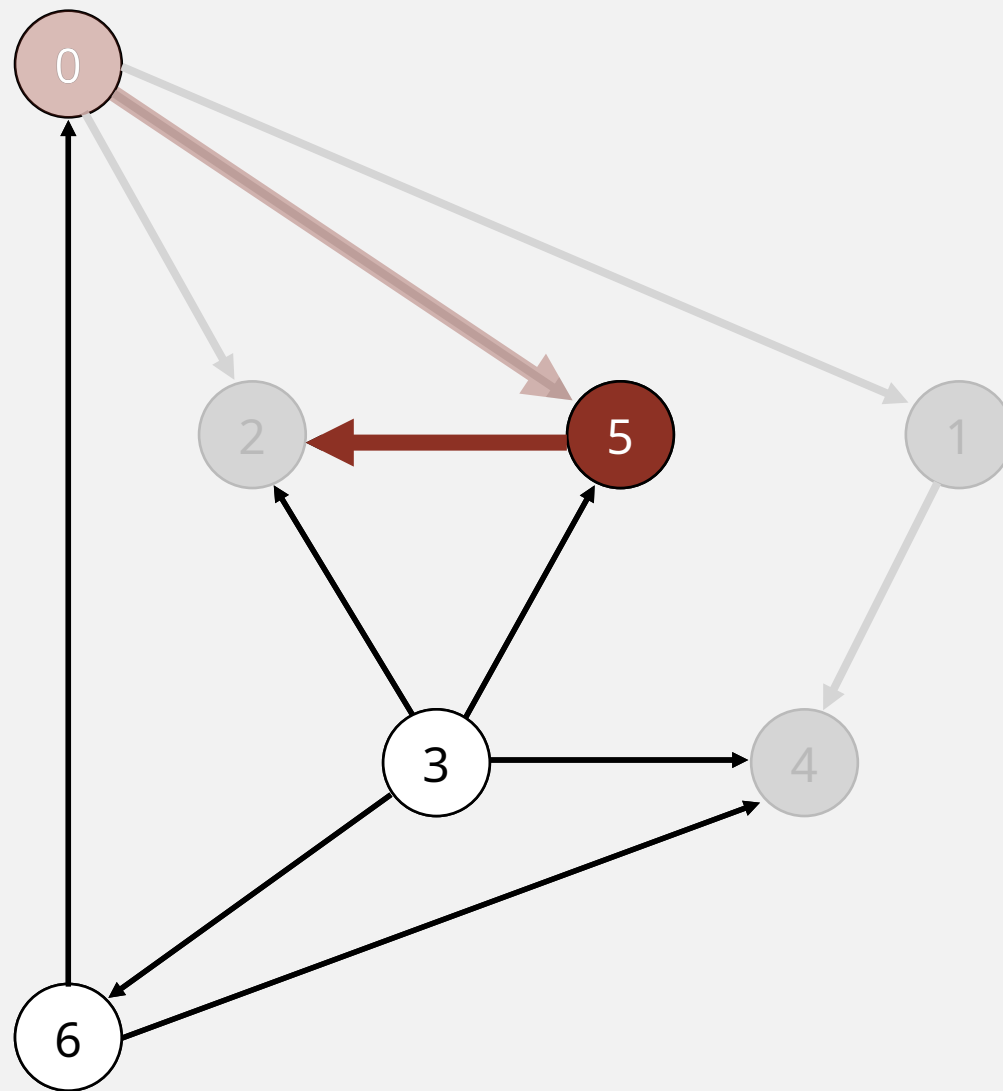
v	marked[]
0	T
1	T
2	T
3	F
4	T
5	T
6	F

visit 5: check 2

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1 2

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	T
6	F

visit 5

Topological sort demo

- Run depth-first search.
- Return vertices in reverse postorder.
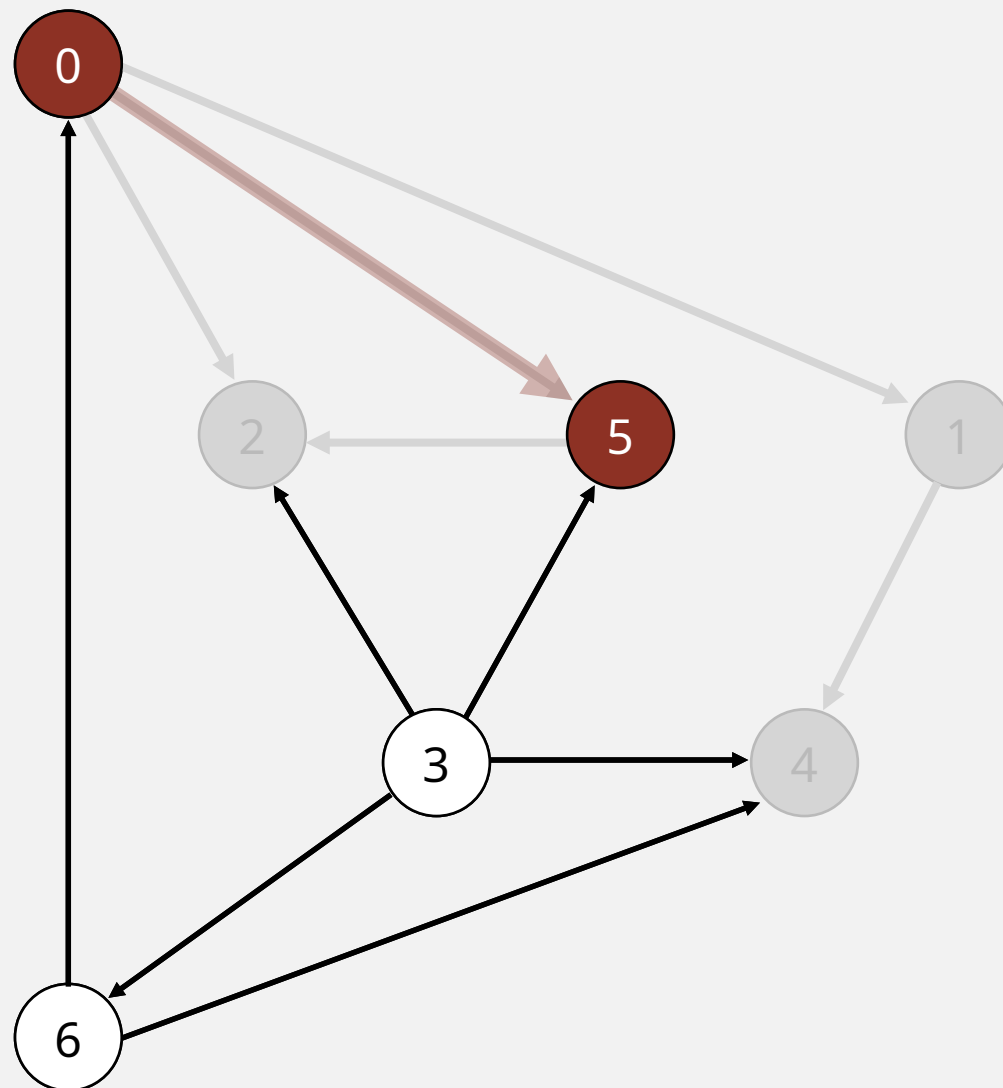
postorder

4 1 2 5

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	T
6	F

5 done

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.
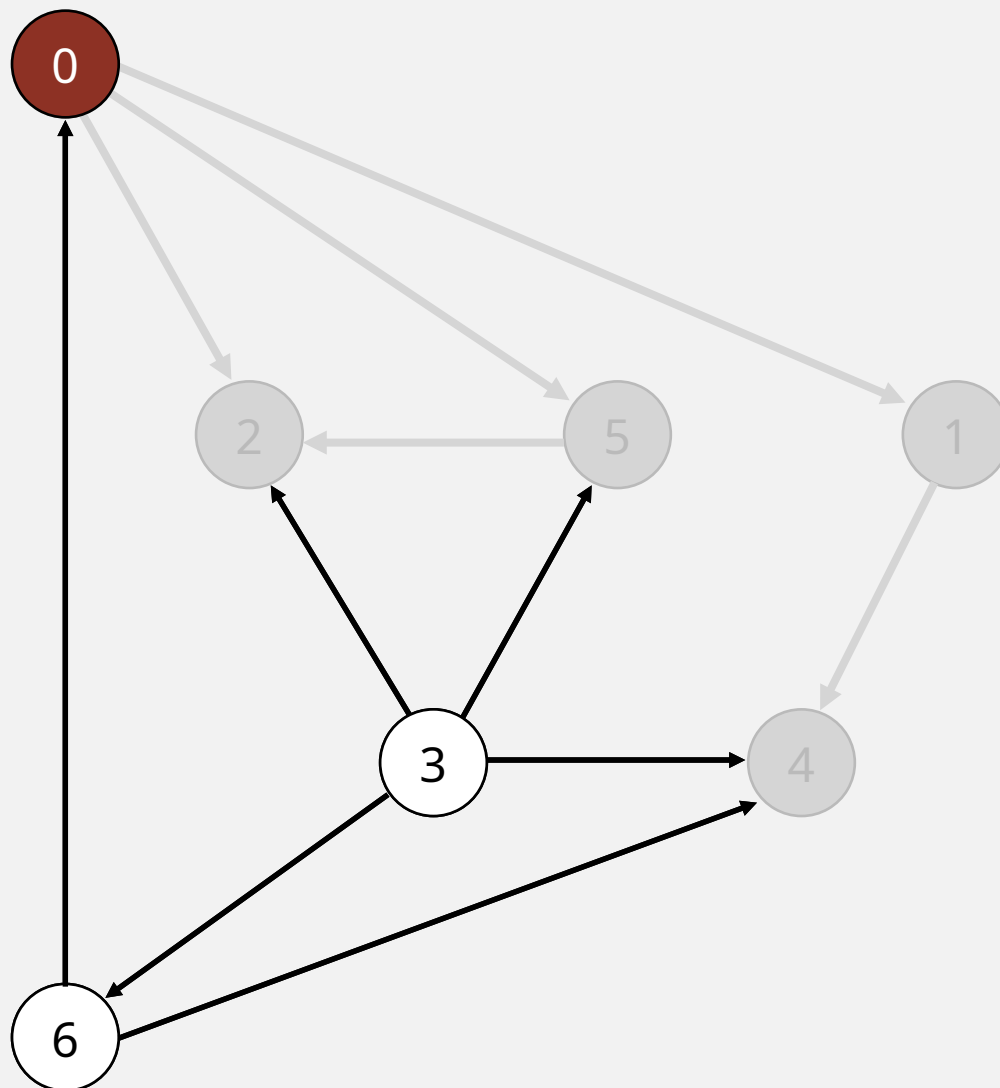
postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	T
6	F

0 done

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.
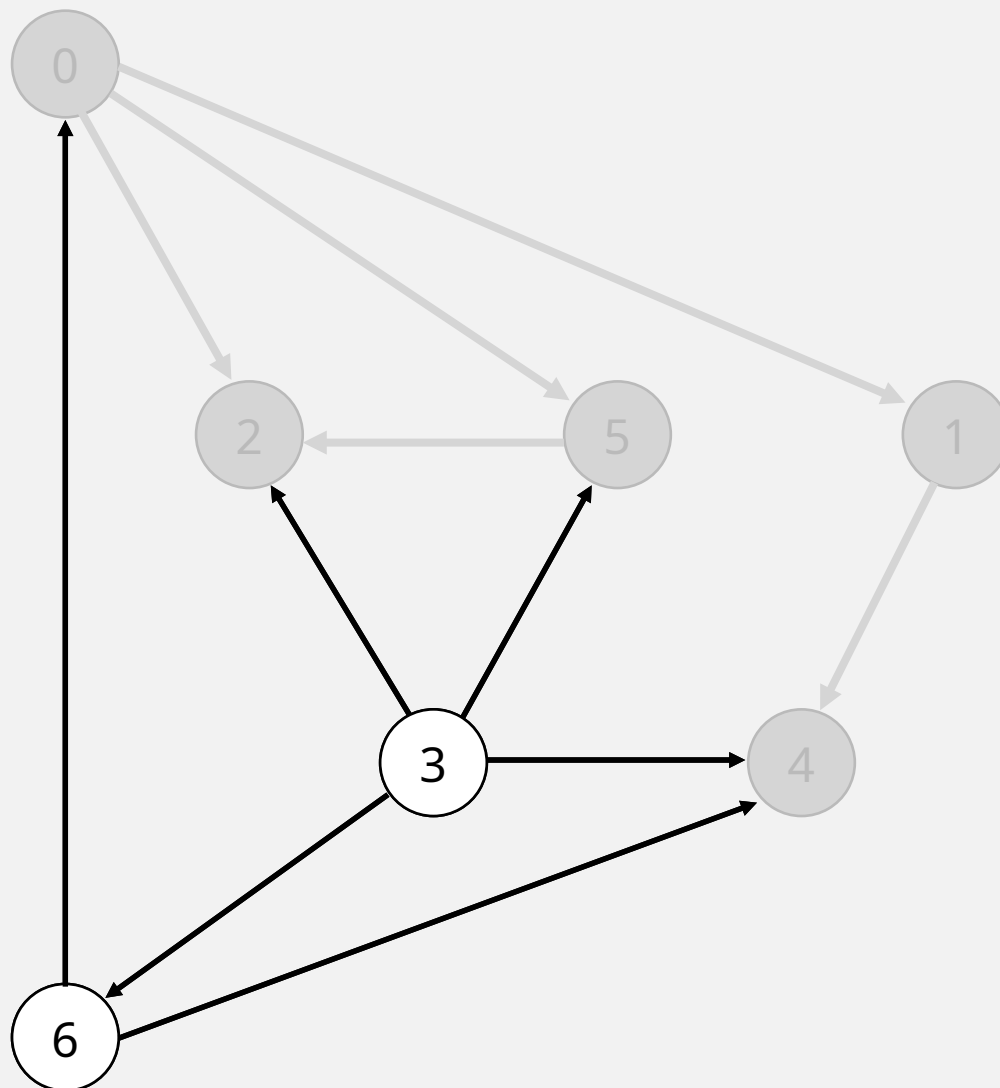
postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	T
6	F

check 1

Topological sort demo

- ☐ Run depth-first search.
- ☐ Return vertices in reverse postorder.
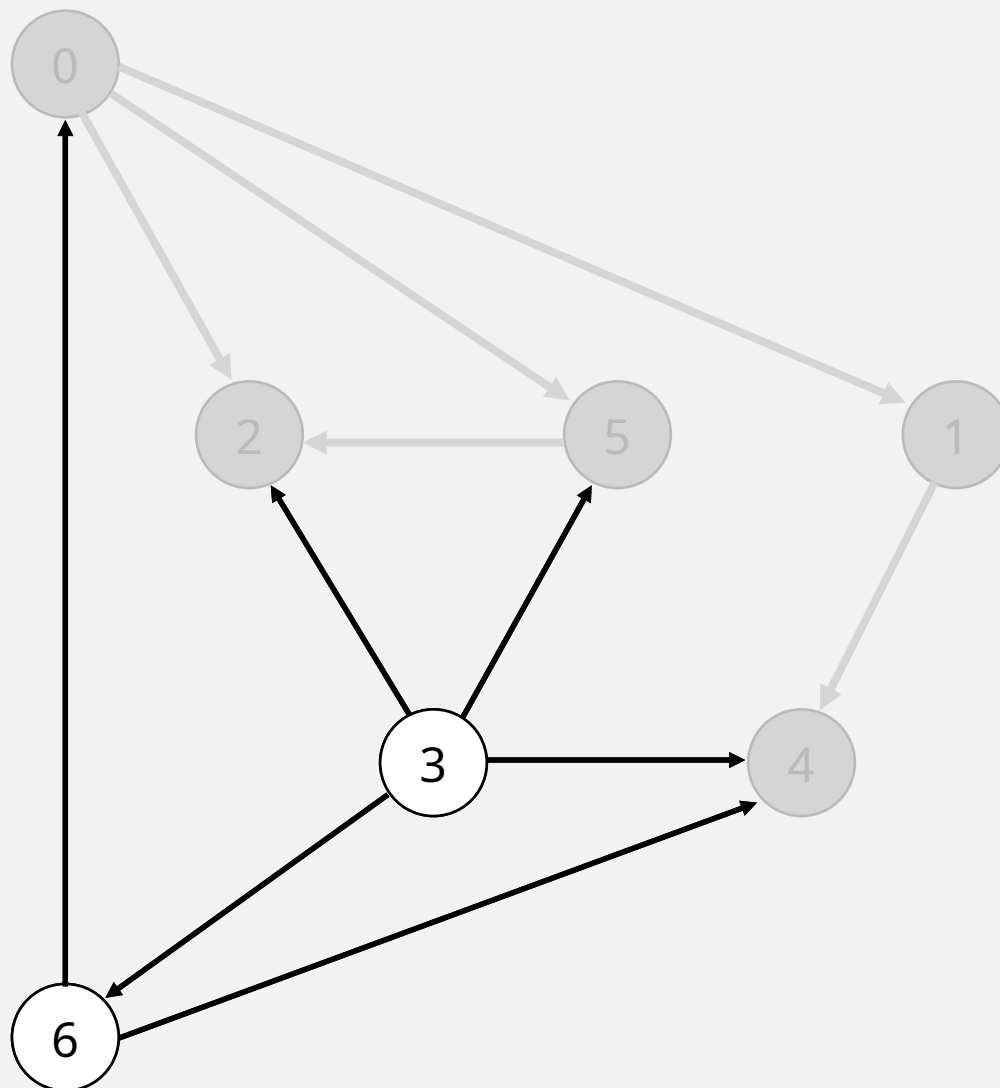
postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	F
4	T
5	T
6	F

check 2

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	F

visit 3: check 2, check 4, check 5, and check 6

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	F

visit 3: check 2, **check 4**, check 5, and check 6

Topological sort demo

☐ Run depth-first search.

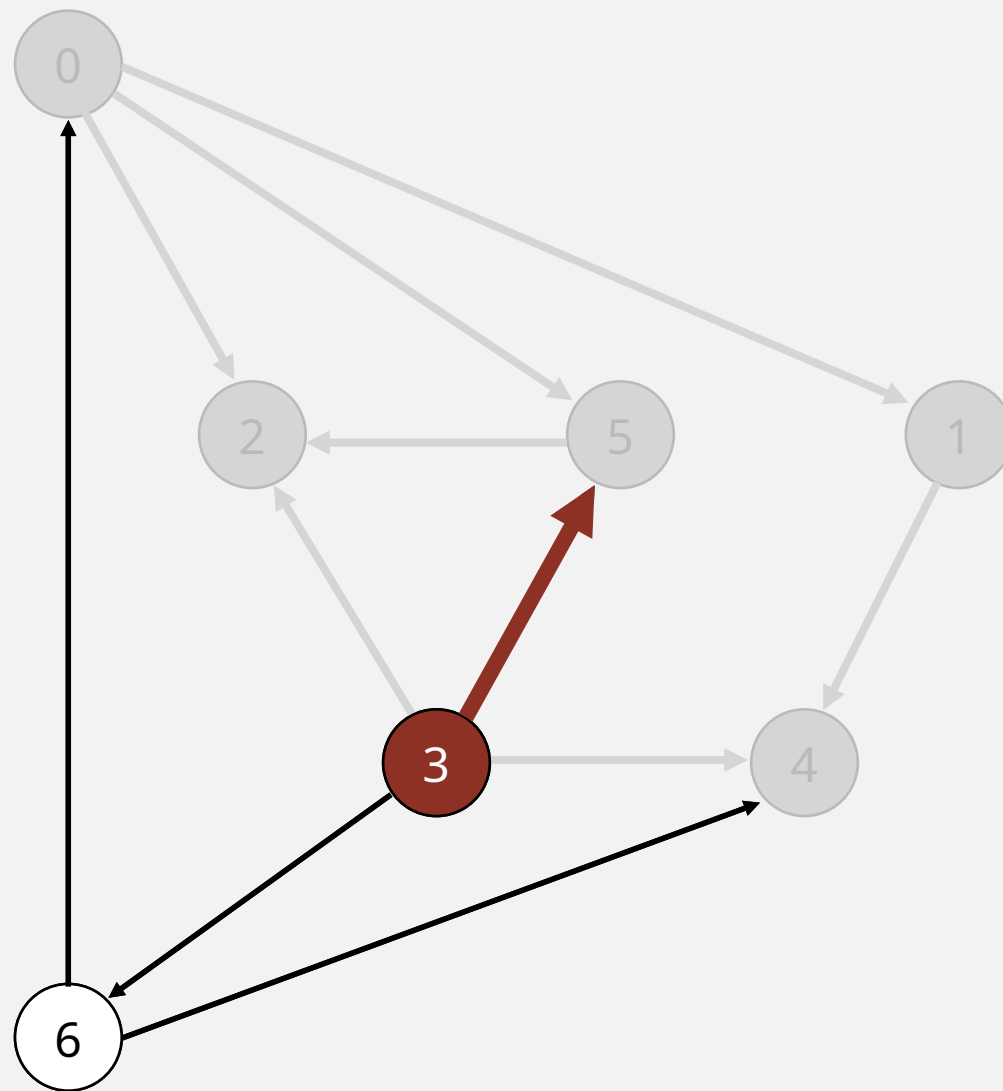☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	F

visit 3: check 2, check 4, **check 5**, and check 6

Topical sort demo

☐ Run depth-first search.
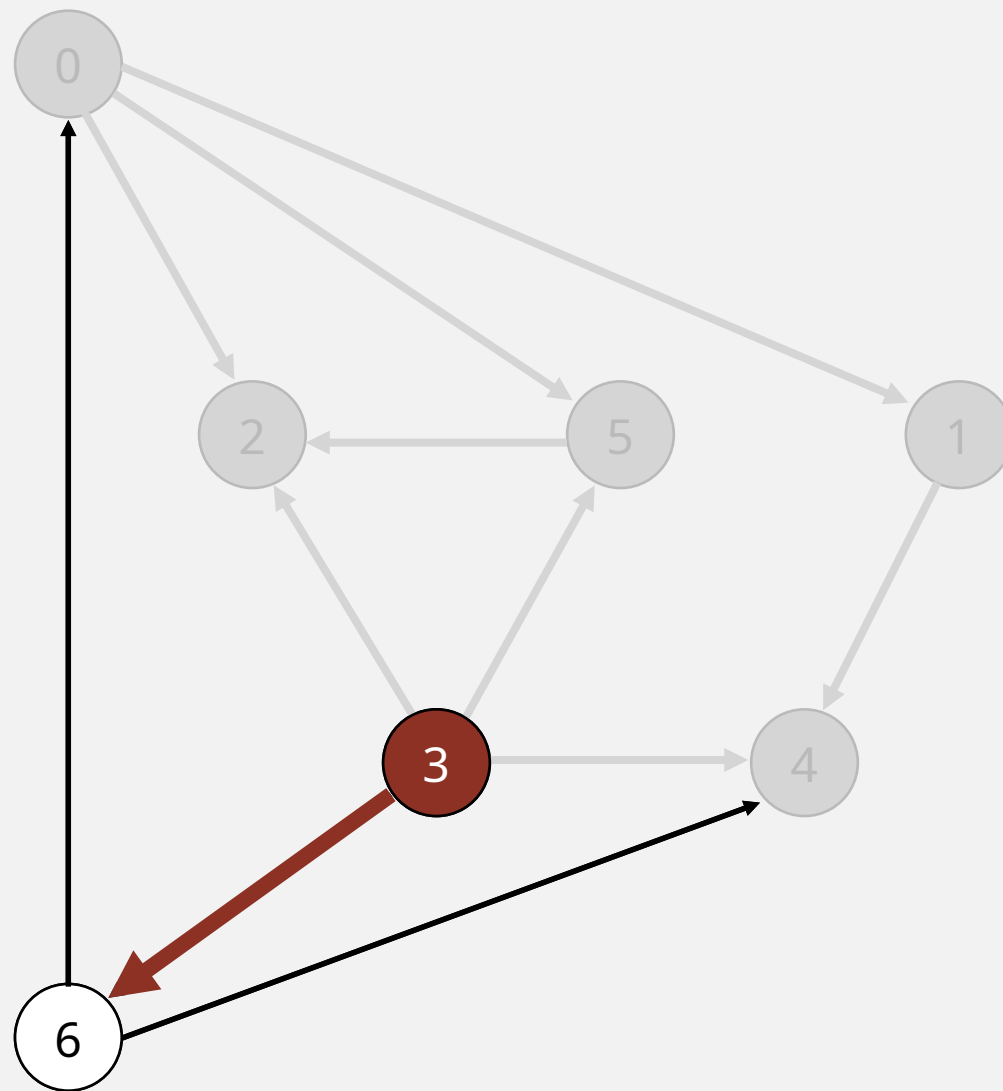
☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	F

visit 3: check 2, check 4, check 5, and **check 6**

Topological sort demo

☐ Run depth-first search.

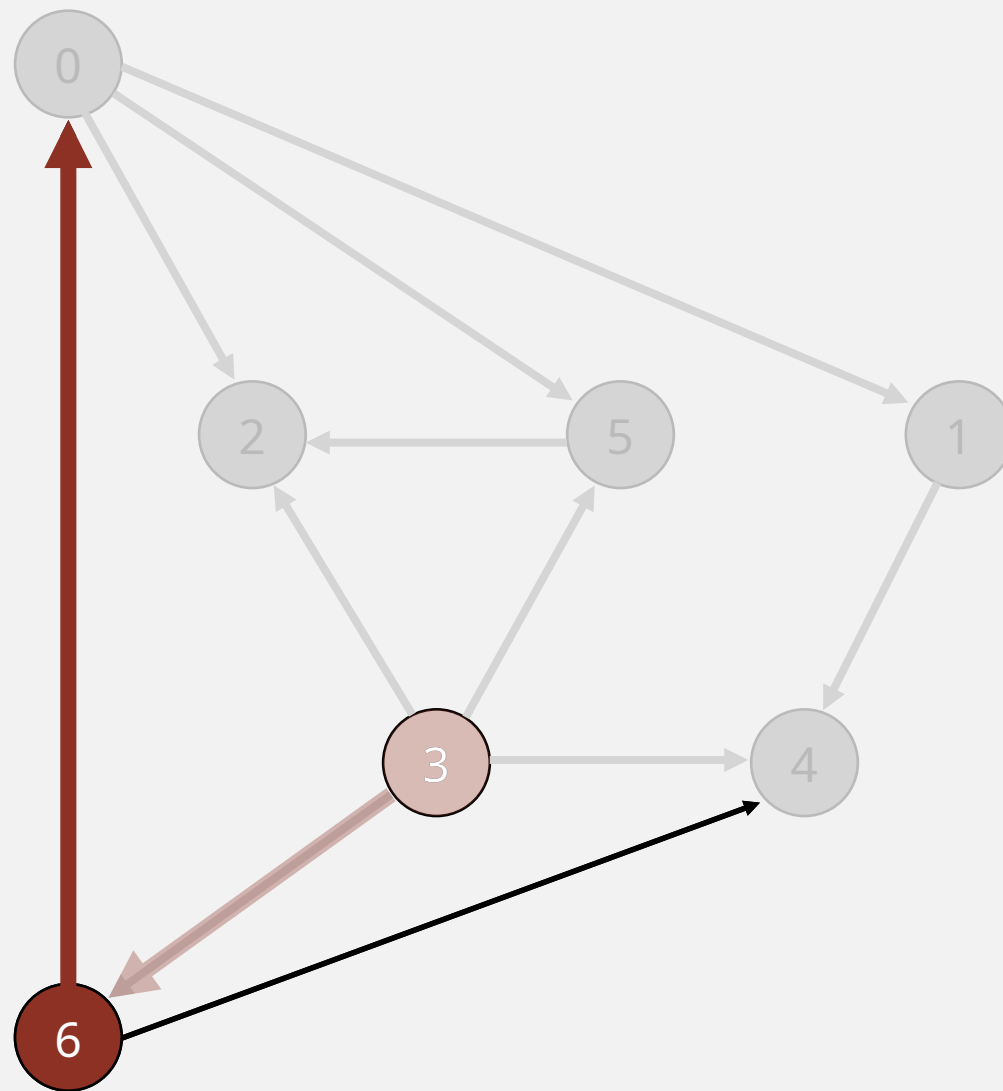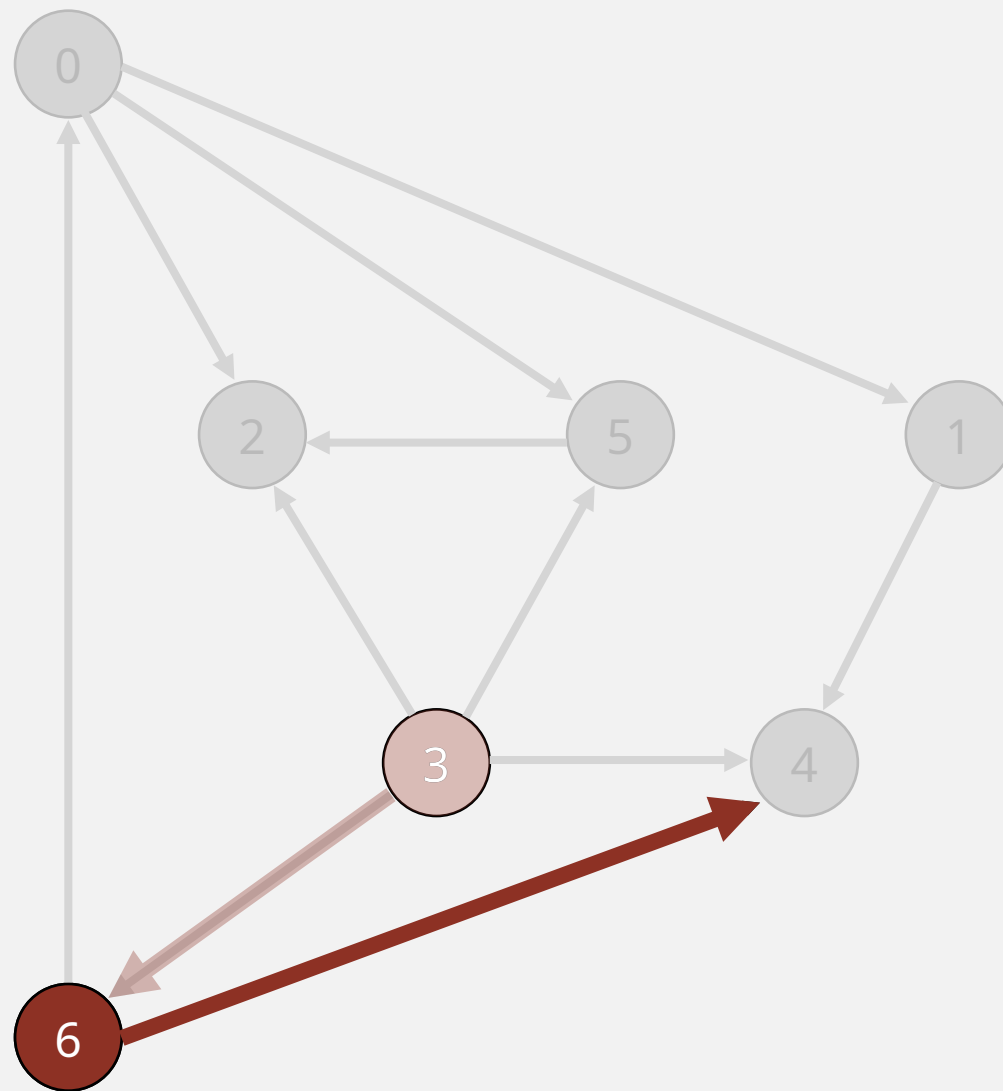☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	T

visit 6: check 0 and check 4

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	T

visit 6: check 0 and **check 4**

Topological sort demo

☐ Run depth-first search.
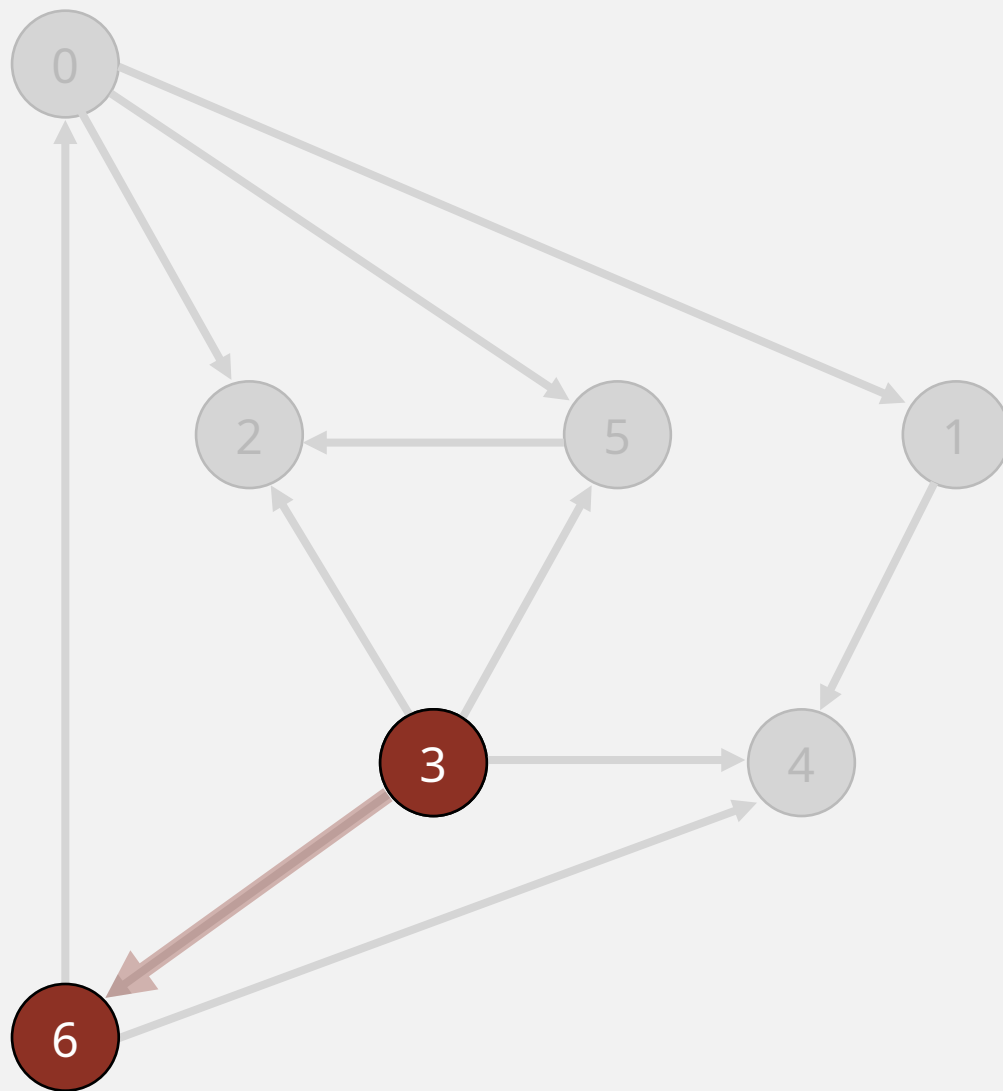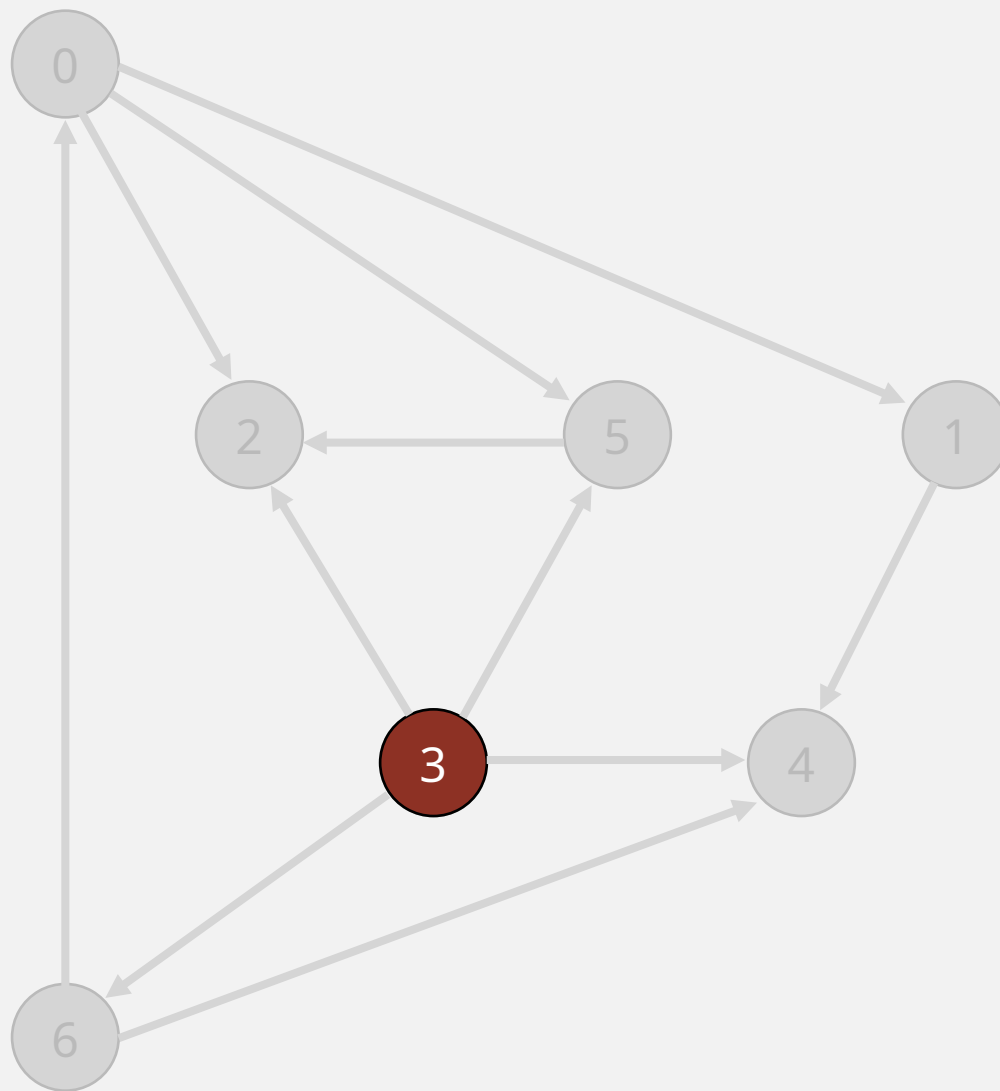
☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0 6

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	T

6 done

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.

postorder

4 1 2 5 0 6 3

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	T

3 done

Topological sort demo

☑ Run depth-first search.

☑ Return vertices in reverse postorder.
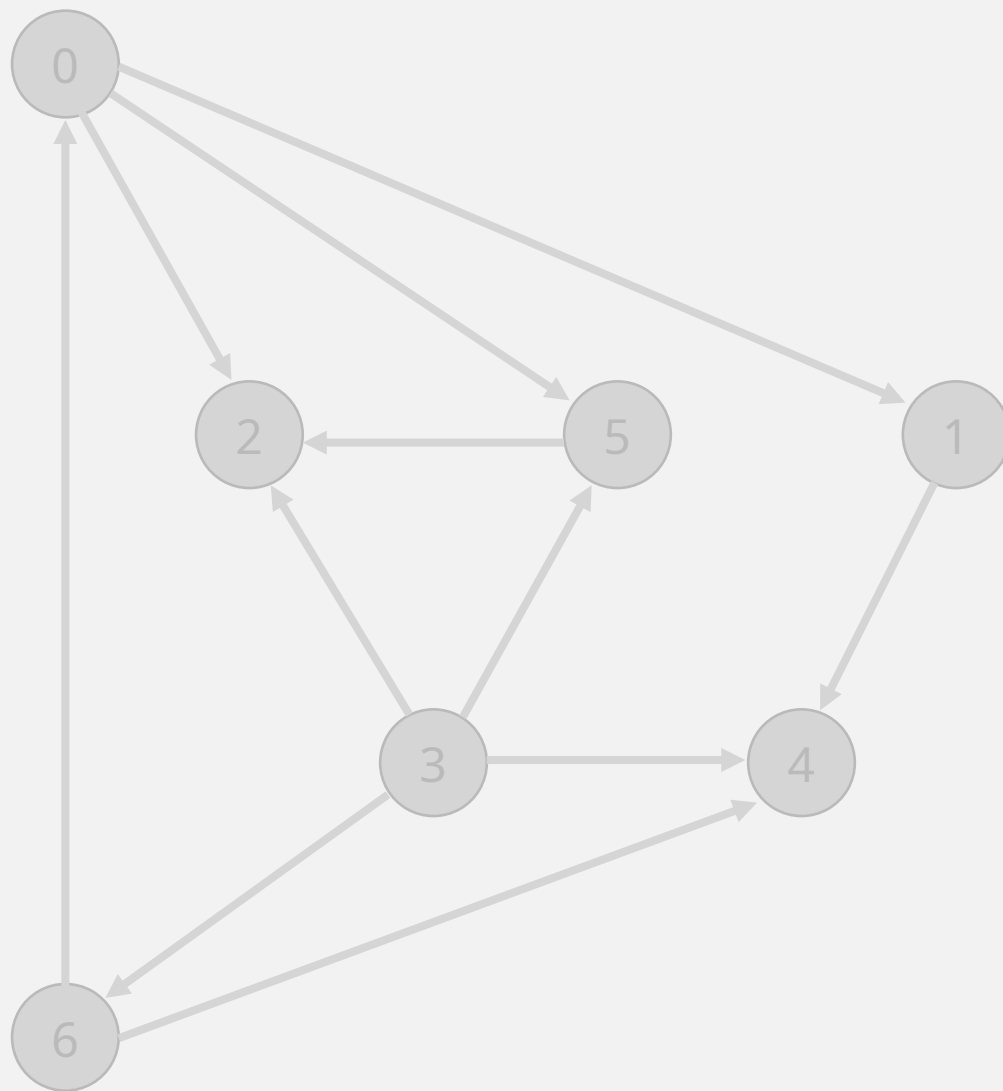
postorder

4 1 2 5 0 6 3

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	T

check 4

Topological sort demo

☐ Run depth-first search.

☐ Return vertices in reverse postorder.
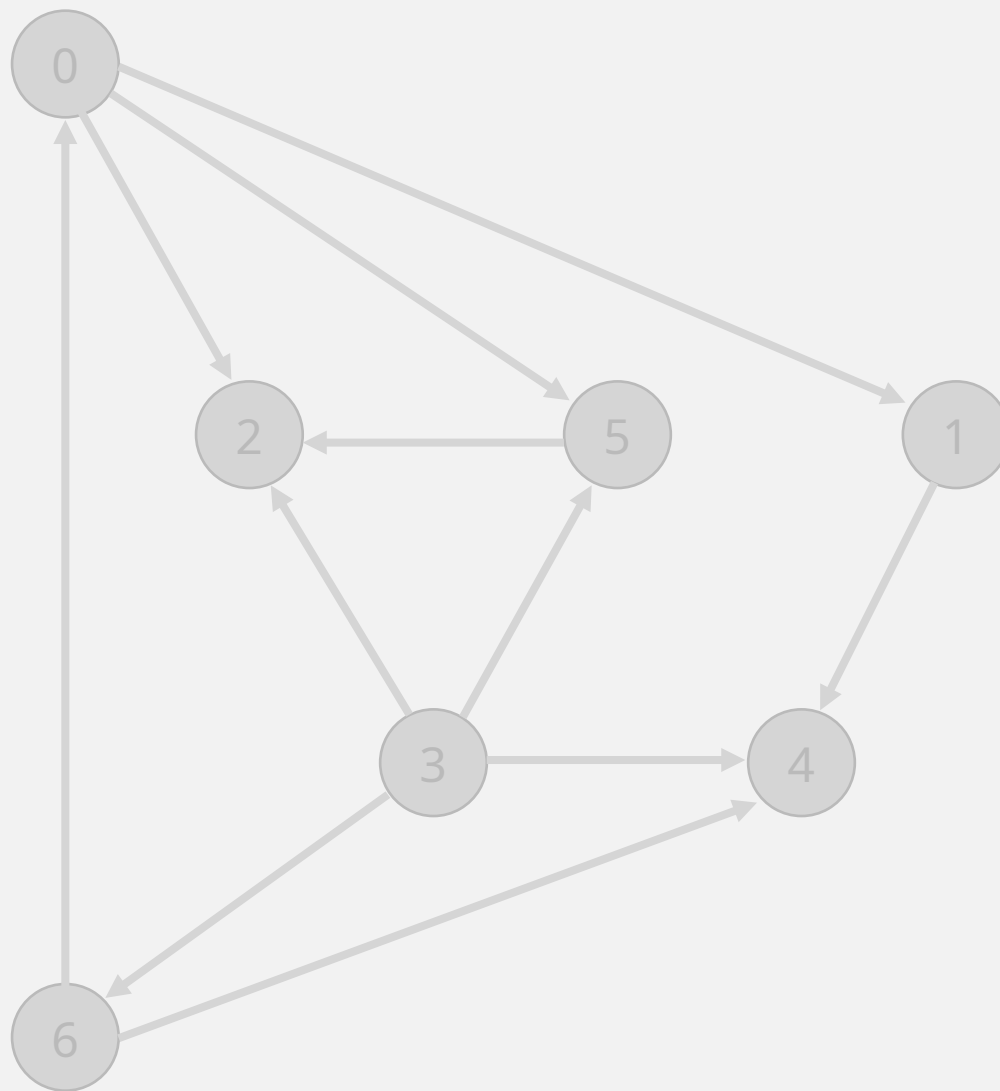
postorder

4 1 2 5 0 6 3

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	T

check 5

Topological sort demo

☑ Run depth-first search.

☑ Return vertices in reverse postorder.
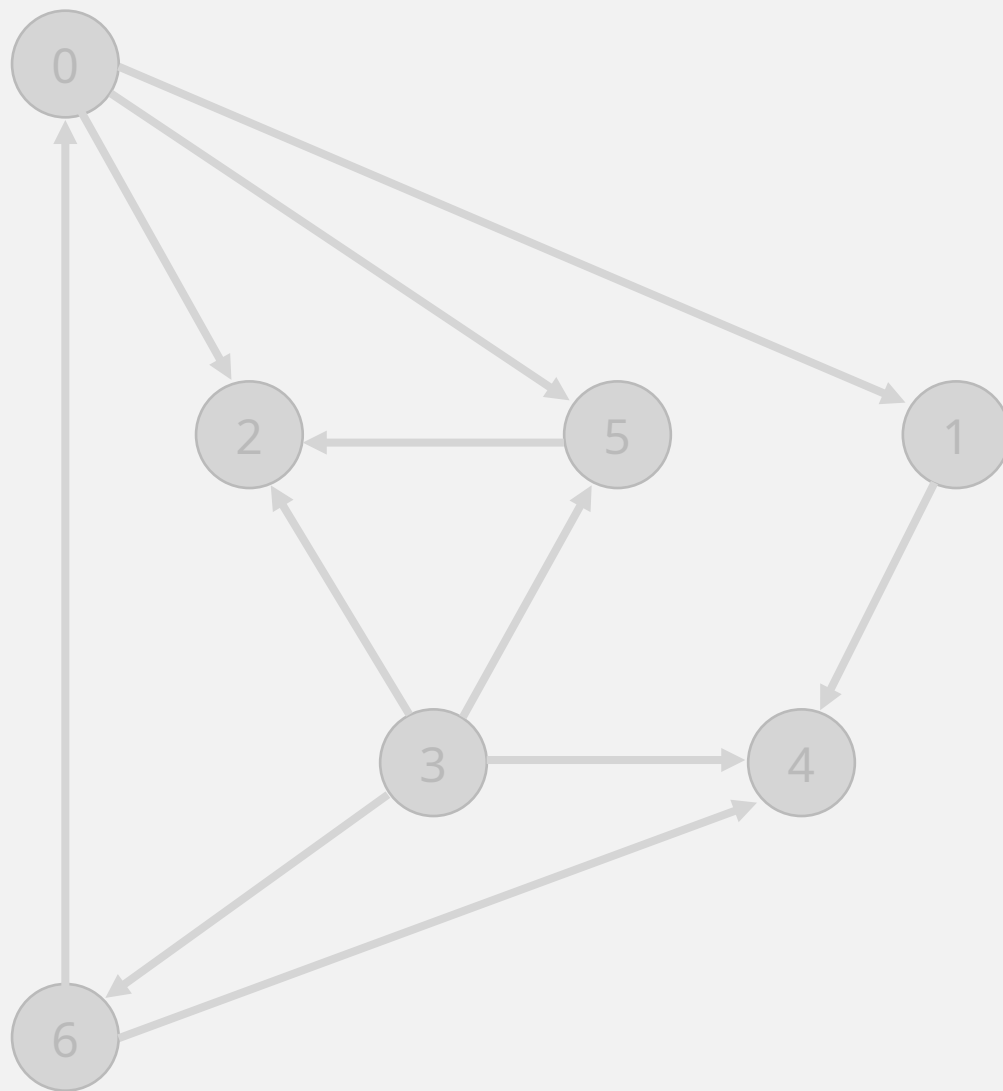
postorder

4 1 2 5 0 6 3

v	marked[]
0	T
1	T
2	T
3	T
4	T
5	T
6	T

check 6

Topological sort demo

- Run depth-first search.
- Return vertices in reverse postorder.
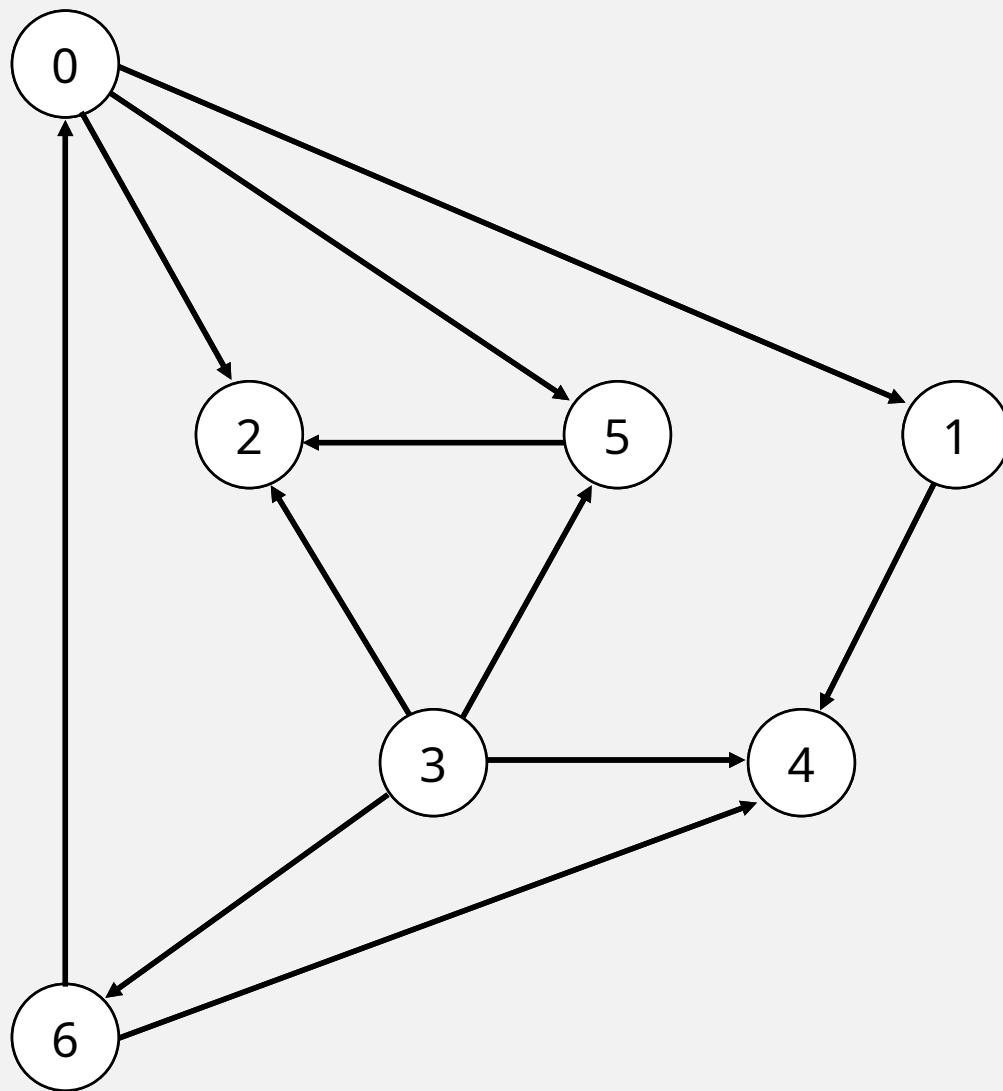
postorder

4 1 2 5 0 6 3

topological order

3 6 0 5 2 1 4

done