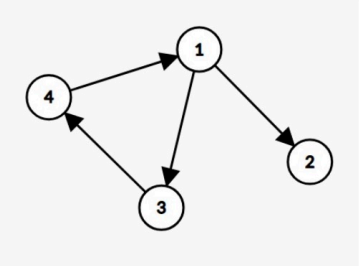
Quiz 10

What is used?

1)



Which *adjacency matrix* belongs to the directed graph above?

Select one:

a.

0	1	1	0
0	0	0	0
0	0	0	1
1	0	0	0

b.

0	1	1	1
1	0	0	0
1	0	0	1
1	0	1	0

c.

1	1	1	0
0	1	0	0
0	0	1	1
1	0	0	1

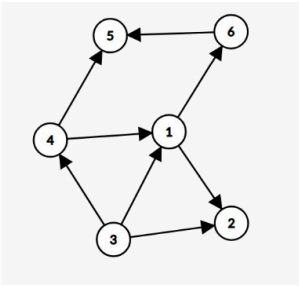
2)

True or false: a longest (directed) path in a directed graph without directed cycles must end in a sink *(Senke)*.

Select one:

- True
- False

3)

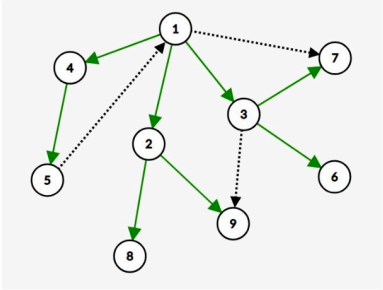


Which vertex comes first in a *topological sorting* of the graph above?

Select one:

a. 1
b. 2
c. 3
d. 4
e. 5
f. 6

4)



In the graph above, the green, solid edges indicate a *depth-first search tree*. Classify the remaining edges. (*Hint: each option should be used **exactly once***).

$(1, 7)$
$(5, 1)$
$(3, 9)$

5)

We run *depth-first search (DFS)* on a directed graph $G = (V, E)$ and determine all *pre/post numbers*.

For some edge $(u, v) \in E$, we find that

$$\text{pre}(v) < \text{pre}(u) < \text{post}(u) < \text{post}(v).$$

What can we conclude about G?

(Recall that the pre/post number of a vertex indicates the time at which it is first/last visited by the DFS algorithm)

Select one:

a. G has a directed cycle.
b. G does not have a directed cycle.
c. None of the above.