Quiz 4

Deadline	Friday, 03 July 2020 at 11:59PM
Latest Submission	*no submission yet*
Maximum Mark	4

Question 1 (1 mark)

Consider the following graph
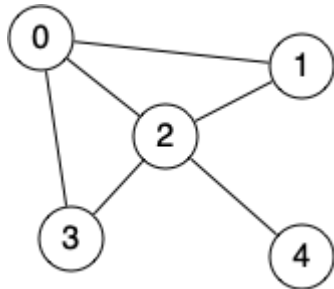
Which of the following gives a valid adjacency representation of this graph?

(a) ○

	[0]	[1]	[2]	[3]	[4]
[0]	0	1	1	1	0
[1]	1	0	1	0	0
[2]	1	1	0	1	1
[3]	1	0	1	0	0
[4]	0	0	1	0	0

(b) ○

	[0]	[1]	[2]	[3]	[4]
[0]	1	1	0	1	0
[1]	1	1	1	0	0
[2]	1	1	1	1	1
[3]	1	0	1	1	0
[4]	0	0	1	0	1

(c) ○

	[0]	[1]	[2]	[3]	[4]
[0]	0	1	1	1	0
[1]	0	0	1	0	0
[2]	1	1	0	1	1
[3]	0	1	1	0	0
[4]	0	0	1	0	0

(d) ○

	[0]	[1]	[2]	[3]	[4]
[0]	0	1	1	0	0
[1]	0	0	1	0	0
[2]	1	1	0	1	1
[3]	1	0	1	0	0
[4]	0	0	1	0	0

(e) ○   None of the above is correct

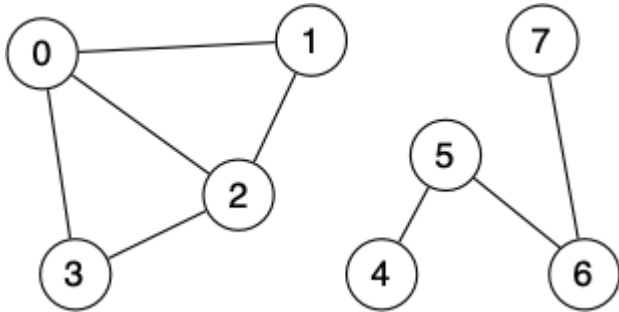## Question 2 (1 mark)

Consider the following graph
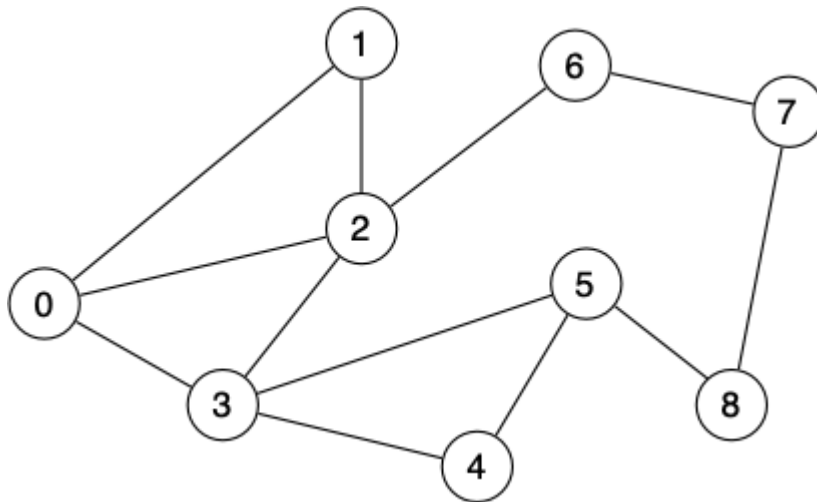
If we used a standard breadth-first search, starting from vertex 0, and giving priority to lower-numbered neighbours, which path would be discovered to reach vertex 8?

(a) ○	0-3-5-8
(b) ○	0-3-4-5-8

(c) ○	0-2-6-7-8
(d) ○	0-1-2-3-4-5-8
(e) ○	None of the above paths would be chosen

Question 3 (1 mark)

Consider the following graph with two connected components

Which of the following actions would convert this into a graph with a single connected component?

You must choose *all* relevant actions to obtain full marks for this question. There is more than one valid action.

(a) ☐	add an edge between 0 and 5
(b) ☐	add an edge between 5 and 7
(c) ☐	add an edge between 2 and 4
(d) ☐	add an edge between 1 and 3
(e) ☐	add an edge between 0 and 6
(f) ☐	add an edge between 7 and 4

Question 4 (1 mark)

How many edges are in a complete graph with N vertices?

(a) ○	N-1
(b) ○	N
(c) ○	$\log_2 N$

(d) ○	N(N-1)/2
(e) ○	N^2

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