# Lab 17 Notes

Name:

SID:

Please complete this worksheet during your lab, and turn it in to your TA by the end
of your section. You are encouraged to work with your neighbors collaboratively.

Section Number: (01) (02) (03) (04) (05) (06) (07) (08) (09) (10) (11) (12)

1   Shortest Path

1.1 Suppose that the weight of an edge represents the distance along a road between
the corresponding vertices. The weight of a path would then be the sum of the
weights on its edges. Use the graph below to answer the following questions.
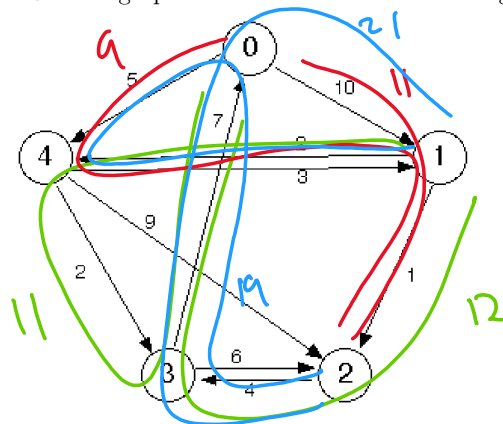
What is the shortest path that connects vertex 0 with vertex 2? Write your answer
as a space separated list of numbers.

0 4 1 2

What is the shortest path that connects vertex 2 with vertex 1? Write your answer
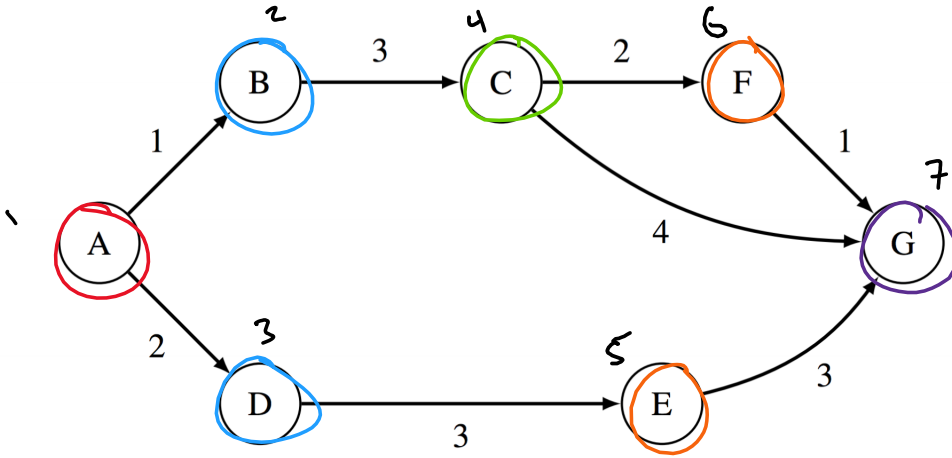as a space-separated list of numbers.

2 3 0 4 1

What is the shortest path that connects vertex 1 with vertex 0? Write your answer
as a space-separated list of numbers.

1 4 3 0

2 Dijkstra's Algorithm

For the graph below, let g(u, v) be the weight of the edge between any nodes u and v. Let h(u, v) be the value returned by the heuristic for any nodes u and v.

2.1 Run Dijkstra's algorithm to find the shortest paths from A to every other vertex. You may find it helpful to keep track of the priority queue and make a table of current distances.

Vertex	Shortest path from A	Weight of path
B	A	1
C	B	4
D	A	2
E	D	5
F	C	6
G	C F	8 7

Final
A
B
A
D
C
F

⇒

Path
AB
ABC
AD
ADE
A BCF
A BCF G