Exercise 5: UPGMA

Phylogenetic trees via UPGMA: You are to consider the following distance matrix D:

	A	B	C	D
A	**0**	**3**	**10**	**10**
B	**3**	**0**	**2**	**12**
C	**10**	**2**	**0**	**4**
D	**10**	**12**	**4**	**0**

Run the UPGMA Algorithm on distance matrix D, using centroid based (average) linkage when computing inter-cluster distances, showing intermediate steps.

a. Which pair of nodes is Merged first? initial grouping of nodes forms a cluster in node B and C

b. What is the resulting inter-cluster distance matrix?

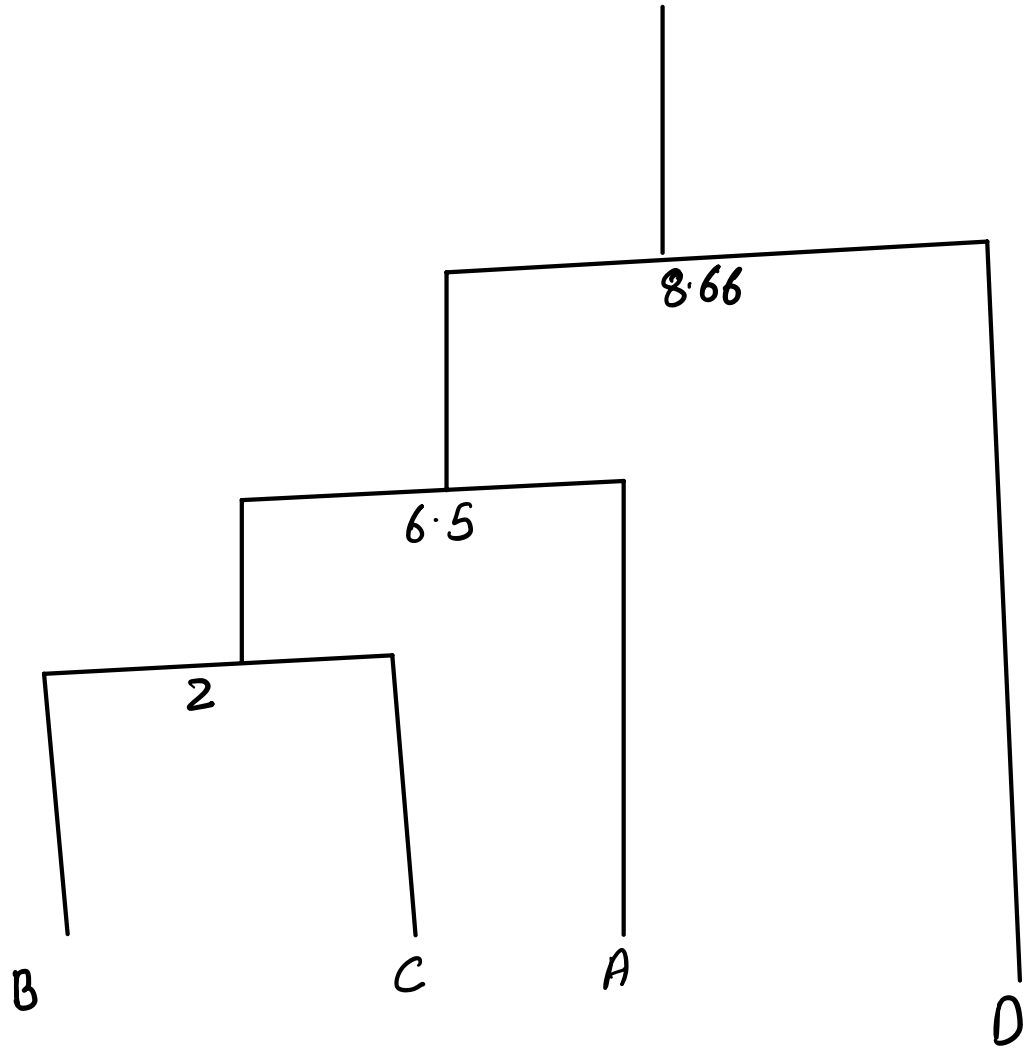
	A	BC	D
A	0	6.5	10
BC	6.5	0	8
D	10	8	0

c. Which pair of nodes or clusters is Merged next? The following merged pair of nodes are (A(B,C)).

d. What is the resulting inter-cluster distance matrix?

	A (BC)	D
A(BC)	0	8.66
D	8.66	0

e. What is the final phylogenetic tree based on the above UPGMA algorithm run?


8·66
6·5
2
B
C
A
D