Question 1

1 / 1 pts

What is an Eulerian graph?

Correct!

- (•) An Eulerian graph is a *connected graph* in which you can make a walk, in which *all edges* occur exactly once.
- ( ) An Eulerian graph is a *connected graph* in which you can make a walk, in which *all vertices* occur exactly once.
- ( ) An Eulerian graph is a *complete graph* in which you can walk all edges twice.
- ( ) An Eulerian graph is a *complete graph* in which all vertices are connected with each other.
- ( ) An Eulerian graph is a *two component graph* in which you can make a walk, in which *all vertices* occur exactly once.
- ( ) An Eulerian graph is a *connected graph* in which all edges have a direction towards a vertice.
- ( ) An Eulerian graph is a *two component graph* in which you can make a walk, in which *all edges* occur exactly once.

Question 2

1 pts

What algorithm technique is used in the implementation of Kruskal solution for the minimum spanning tree?

- he algorithm combines more than one of the above techniques
- Greedy Technique
- Divide-and-Conquer Technique
- Dynamic Programming Technique

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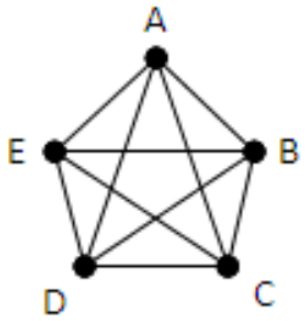
Question 3

1 pts

Find two Hamilton circuits in the graph below.



- [ ] A-B-C-E
- [ ] A-D-B-E
- [ ] A-B-C-D-E
- [ ] A-B-A-E-D-C-B
- [ ] A-D-B-E-A
- [ ] A-C-E-B-D
- [ ] A-C-E-B-D-A
- [ ] A-B-C-D-E-A
- [ ] A-B-C-E-A

2019 - P 1

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Mock exam

Started: Oct 22 at 10:07am

Quiz Instructions

Mock Exam Computational Thinking

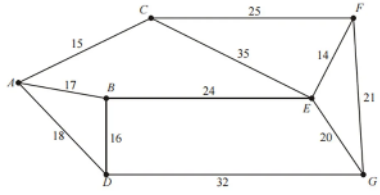
Date: 16 October 2019

Time: 2 hours

Remarks

- Read the questions carefully and check what is asked in the questions before you answer them!
- You are not allowed to use such devices as a calculator, laptop, mobile, or similar.
- Do not guess. Solve the questions on paper first. That way you will increase the chance of a good answer.

Question 4 — 1 pts



Starting from A, which of the following will be the correct minimum spanning tree when using Prim's algorithm?

- AC, AB, AD, BE, EF, EG, CF
- AC, AB, BD, BE, EG
- AC, CF, FE, EG, DB
- AC, AB, BD, FE, EG
- AC, AB, BD, BE, EF, EG
- AC, CF, FE, EG, GD, DB
- AC, AB, BE, EF, EG, CF
- AC, AB, BD, CF, FE, EG

◂ Previous Next ▸

No new data to save. Last checked at 10:13am Submit Quiz

Questions

✓ Question 1
✓ Question 2
✓ Question 3
Question 4
Question 5
Question 6
Question 7
Question 8

Time Running: Hide
Attempt due: Oct 23 at 9am
1 Hour, 53 Minutes, 39 Seconds

Question 5

1 pts

What is the big O notation for a linear search?

- O(n/2)
- O(nlogn)
- $O(nlogn^2)$
- O(n)
- $O(n^2)$
- O(1)
- $O(2^n)$

Question 6

1 pts

4	13	25	33	38	41	55	71	73	84	86	92	97

In the above sequence we are searching for the number 25 with *binary search* and *linear search*.
Which of the following statements is true?

- ○ Binary search in this case is faster than linear search.
- ○ Linear search and binary search in this case are equally fast.
- ● Linear search in this case is faster than binary search.

Question 7

1 pts

State a difference between a binary search algorithm and a linear search algorithm.

- ○ Binary search compares data set sequentially
- ○ Binary search divides data set into 3
- ○ Binary search is quick with large data sets
- ◉ Binary search requires data to be sorted

Question 8

4 pts

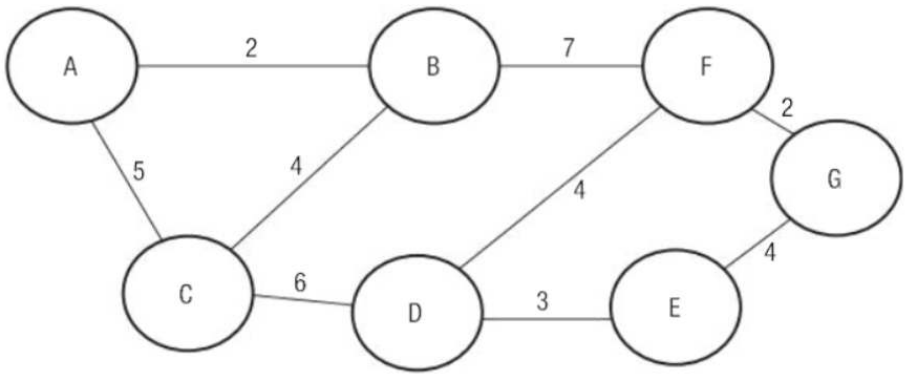
	A	B	C	D	E	F	G
A	-	8	-	9	-	-	-
B	8	-	5	-	5	7	8
C	-	5	-	6	3	3	-
D	9	-	6	-	10	-	-
E	-	5	3	10	-	6	11
F	-	7	3	-	6	-	4
G	-	8	-	-	11	4	-

Select **four** properties of the graph that is represented by the distance table.

- [ ] A mixed graph.
- [ ] A graph that is not connected.
- [ ] A complete graph.
- [ ] A graph with a Hamilton cykel.
- [ ] A graph with an Euler cykel.
- [ ] A connected graph.
- [ ] A weighted graph.
- [ ] A graph with two components.
- [ ] An undirected graph.
- [ ] A directed graph.

Question 9

1 pts



Determine, using Dijkstra's algorithm, the shortest path from A to G.

- A-B-G
- A-C-B-E-F-G
- A-C-E-F-G
- A-C-B-G
- A-D-E-G
- A-D-C-E-G
- A-C-E-B-F-G
- A-B-E-G
- A-B-F-G
- A-B-C-E-G

Question 10

1 pts

	A	B	C	D	E	F	G
A	-	12	-	14	-	-	-
B	12	-	6	-	-	10	12
C	-	6	-	8	2	-	-
D	14	-	8	-	16	-	-
E	-	-	2	16	-	8	18
F	-	10	-	-	8	-	4
G	-	12	-	-	18	4	-

Determine the weight of the minimum spanning tree for the graph which is represented by the distance table.

- 36
- 38
- 50
- 46
- 64
- 40
- 42
- 48
- 52
- 66

Question 11

1 pts

Two cows stand 100 meters from each other. A fly is sitting on the nose of one of the cows. At a certain moment, the cows start walking toward each other at a speed of 4 km per hour. At that same moment, the fly flies at a speed of 50 km per hour. He flies from the nose from one cow to another cow and then back again. He keeps doing this until the cows have reached each other.

What is the total distance in meters that the fly has traveled?

- 62.5
- 42.5
- 475
- 625
- 75
- 100
- 425
- 12.5
- 50
- 125

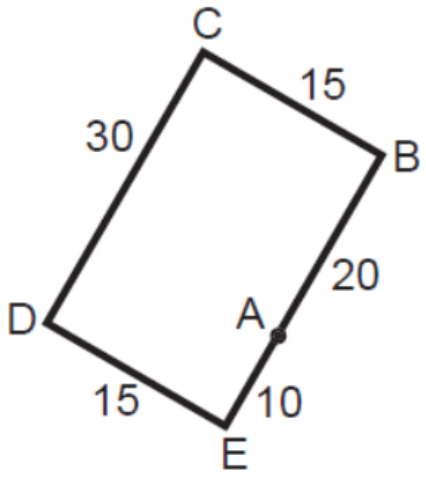
Question 12

1 pts

John lives in Gluckstadt and he gets offered a job in Jackson. Before he accepts the job he wants to know how far it is to drive from Gluckstadt to Jackson. He has the following details of his future employer.

Gluckstadt is located 20 km south-southwest of Nashville. From Nashville to Springfield you have to drive 15 km to the west-northwest direction. Springfield is located 30 km north-northeast of Little Rock. Jackson is located 15 km east-southeast of Little Rock.

To calculate the distance between Gluckstadt and Jackson, he translated the text into a map.



where

A = Gluckstadt
B = Nashville
C = Springfield
D = Little Rock
E = Jackson

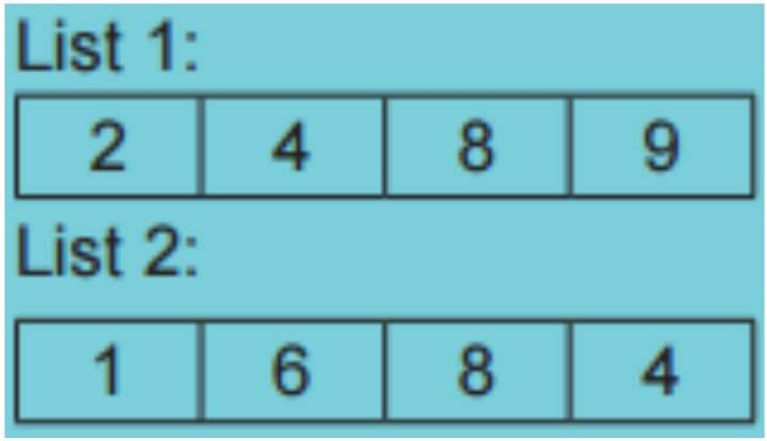
Which solution strategy is used by John to calculate the distance between Gluckstadt and Jackson?

- ○ Dijkstra's algorithm
- ○ Shortest paths
- ○ Discover a structure or pattern
- ○ Explore all possibilities
- ○ Use formulas/equations
- ○ Guess and check
- ○ Divide the problem into several subproblems or steps
- ○ Prim's algorithm
- ○ Divide and conquer
- ◉ Modeling

Question 13

1 pts

The following two lists are to be merged, which number goes first into the new merged list?



- 8
- 6
- 9
- 2
- 1
- 4

Question 14

1 pts

If you have a list of 16 numbers, how many passes does merge sort require?

- 6
- 8
- 7
- 2
- 3
- 16
- 4
- 5
- 1