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State	Finished
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Time taken	9 mins 24 secs
Grade	**11.00** out of 11.00 (**100**%)

Question 1

Correct

Mark 1.00 out of 1.00

A Hash Function is typically made up of what components?

- a. None of the options provided represent what a has function is comprised of.
- b. Security key
- c. Hash code ✓
- d. Hash letter
- e. Normal distribution function
- f. Hash number
- g. Compression Function ✓

Your answer is correct.

The correct answers are: Hash code, Compression Function

Question 2

Correct

Mark 1.00 out of 1.00

A larger load factor α = n/m will result in faster insertion, deletion and searching.

- a. False ✓
- b. True

Your answer is correct.

The correct answer is: False

Question 3

Correct

Mark 1.00 out of 1.00

Assuming that the hash values are like random numbers, it can be shown that the expected number of probes for an insertion with open addressing is 1/(1-α).

a. True ✓

b. False

Your answer is correct.

The correct answer is: True

Question 4

Correct

Mark 1.00 out of 1.00

The complexity of insertion, deletion and searching using open addressing is (1+α).

a. True

b. False ✓

Your answer is correct.

The correct answer is: False

Question 5

Correct

Mark 1.00 out of 1.00

The complexity of insertion, deletion and searching using chaining method is (1+α).

a. True ✓

b. False

Your answer is correct.

The correct answer is: True

Question 6

Correct

Mark 1.00 out of 1.00

Given a Hash function h(k) = k mod m where m = 7, which of the following values will collide with the value 5281

- a. 9679
- b. 1462
- c. None of the options provided collide.
- d. 6162
- e. 1989
- f. 1333 ✓
- g. 4322 ✓

Your answer is correct.

The correct answers are: 1333, 4322

Question 7

Correct

Mark 1.00 out of 1.00

A hash table of length 10 uses open addressing with hash function *h(k)=k mod 10*, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below

0	
1	
2	42
3	23
4	34
5	52
6	46
7	33
8	
9	

Identify which of the following possible sequence of keys could have lead to this Hash table.

- a. 14, 39, 18, 13, 11, 27
- b. 27, 18, 11, 14, 39, 13
- c. None of the options provided would result in the provided hash table.
- d. 27, 18, 39, 14, 11, 13 ✓
- e. 39, 18, 27, 13, 14, 11

Your answer is correct.

The correct answer is: 27, 18, 39, 14, 11, 13

Question 8

Correct

Mark 1.00 out of 1.00

The keys 12, 18, 13, 2, 3, 23, 5 and 15 are inserted into an initially empty hash table of length 10 using closed addressing with hash function *h(k) = k mod 10* and chaining. What is the resultant hash table?

a. ✓

0	
1	
2	12, 2
3	13, 3, 23
4	
5	5, 15
6	
7	
8	18
9	

b. None of the options provided represent the hash table that would result.

c.

0	
1	
2	12
3	13
4	
5	5
6	
7	
8	18
9	

d.

0	
1	
2	12
3	13
4	2
5	3
6	23
7	5
8	18
9	15

e.

0	
1	
2	2
3	23
4	
5	15
6	
7	
8	18
9	

Your answer is correct.

The correct answer is:

0	
1	
2	12, 2
3	13, 3, 23
4	
5	5, 15
6	
7	
8	18
9	

Question 9

Correct

Mark 1.00 out of 1.00

A hash table of length 10 using open addressing with hash function *h(k)=k mod 10*, and linear probing has beencreated.

0	
1	
2	32
3	73
4	12
5	15
6	82
7	37
8	65
9	9

Now the item 12 needs to be deleted using "Lazy Deletion". What is the resultant hash table?

a.

0	
1	
2	32
3	73
4	82
5	15
6	65
7	37
8	
9	9

b.

0	
1	
2	32
3	73
4	15
5	82
6	37
7	65
8	9
9	

c. None of the options provided represent the hash table that would result.

d.

0	
1	
2	32
3	73
4	82
5	15
6	
7	37
8	65
9	9

e. ✓

0	
1	
2	32
3	73
4	DEL
5	15
6	82
7	37
8	65
9	9

Your answer is correct.

The correct answer is:

0	
1	
2	32
3	73
4	DEL
5	15
6	82
7	37
8	65
9	9

Question 10

Correct

Mark 1.00 out of 1.00

Which of the following problems are known as being in the class P types of problems?

- [ ] a. Hamiltonian Cycle Problem
- [ ] b. Shortest path problem
- [ ] c. Traveling Salesman Problem
- [ ] d. 0-1 Knapsack Problem
- [x] e. Depth-First and Breadth-First graph traversing ✓
- [ ] f. None of the options provided represent an P type problem
- [x] g. Test whether a graph is acyclic ✓
- [x] h. Integer Addition and Multiplication problem ✓
- [ ] i. Graph Coloring Problem
- [x] j. Searching and sorting ✓
- [ ] k. The Subset-Sum Problem

Your answer is correct.

The correct answers are: Searching and sorting, Depth-First and Breadth-First graph traversing, Test whether a graph is acyclic, Integer Addition and Multiplication problem

Question 11

Correct

Mark 1.00 out of 1.00

Which of the following statements are true?

- a. Class P is not a subset of NP
- b. Class P is the complexity class of decision problems that can be verified in polynomial time, yet they can be solved in polynomial time on a non-deterministic sequential Turing Machine.
- c. None of the options provided (apart from this one) are true.
- d. Class NP is the complexity class of decision problems that can be verified in polynomial time, yet they can be solved in polynomial time on a non-deterministic sequential Turing Machine.
- e. Class NP is the complexity class of decision problems that can be solved in f(x), where f(x) is polynomial, on a deterministic sequential Turing Machine
- f. Class P is the complexity class of decision problems that can be solved in f(x), where f(x) is polynomial, on a deterministic sequential Turing Machine ✓
- g. It is well known that P=NP
- h. It is unknown whether P=NP ✓
- i. Class P is a subset of NP ✓

Your answer is correct.

The correct answers are: Class P is the complexity class of decision problems that can be solved in f(x), where f(x) is polynomial, on a deterministic sequential Turing Machine, Class P is a subset of NP, It is unknown whether P=NP