VIRTUAL UNIVERSITY OF PAKISTAN

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(Final Term Past Paper)

MADE AND SOLVED BY TEAM HADI

WARNING: Team HADI is not responsible for any mistake or wrong answer. All students reading and using this document may check and confirm the answers at their own.

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Best of luck!

مہربانی کرکے میری امی جان کے لیے دعا کر دینا اُن کی ۲۰۲۱ میں وافات ہوگی تھی، شکریہ (ہادی)

FINAL TERM PAST PAPER SOLVED BY TEAM HADI VU

CODE:CS301

Question 1: The selection problem can be solved in_____, time if we use array data structure.

- $N^2\log_2 N$
- $N^3\log_2 N$
- $\log_2 N$
- $N\log_2 N$ ⇦

Question 1: Which of the following will be the correct hash function if we want to store a key (quotient) into an array of size 's"?

- $
- Key*s
- Key/s
- Key%$ ⇦

Question 1: _____is not an $N\log_2(N)$ algorithm(s).

- Heap sort
- Quick sort
- Merge sort
- Bubble sort ⇦

Question 1: Which of the following is not the application(s) of Hashing?

- Compilers use hash tables in order to implement symbol tables.
- Hashing can be used to find the spelling mistakes.
- Game playing programs use hash tables to store seen positions, thereby saving computation time if the position is encountered again.
- Hashing can be used to sort the data. ⇦

Question 1: Which of the following traversal method(s), traverse a binary tree using traversal calls?

- Preorder traversal only
- Inorder traversal only
- Postorder traversal only
- Preorder, inorder and postorder traversal ⇦

Question 1: The overhead of _____operations during recursive calls can be costly.

- **Stack**
- Queue
- linked list
- priority queue

Question 1:_____ introduced Huffman code algorithm.

- Jon Huffman
- **David Huffman**
- Alex Huffman
- Moxley Huffman

Question 1: Case 1a of deletion in AVL tree is that the parent of the deleted node had a balance of _____and the node was deleted in the parent's left subtree.

- **0**
- 2
- 4
- 8

Question 1: find() operation in the implementation of table ADT using sorted sequential array takes time equal to _____

- log n ⇦
- n^2
- n ⇦
- n/2

Question 1: Deletion in AVL is complex in the sense that we may have to do more than one_____ to rebalance the tree after deleting a node.

- Insertions
- **Rotations**
- Deletions
- corrections

Question 1: If we have m union and n find, the time required by find is proportional to_____

- m/n
- **m+n**
- m-n
- m*n

Question 1: The find operation takes_____ time as unions are increased.

- **More**
- Less
- Constant
- Exponential

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Question 1: The time complexity of selection sort algorithm is_____ where N is the number of data elements.

- (N)
- logN
- NlogN
- **(N^2)**

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Question 1: When two or more keys (data items) produce the same index then it is called_____

- Hashing
- **Collision**
- Wrap-around
- Heap

Question 1: A Quad node stores ____data item(s) and____ next pointer(s).

- 1,3
- 2,4
- 1,4
- 4,1

Question 1: For any binary relation in disjoint sets, if the relation is stored as a two-dimensional array of booleans, this can be done in_____ time.

- **Constant**
- Log(N)
- 2N
- 3N

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Question 1: In heap, increaseKey(p, delta) method increases the value of the key at ____

- position 'p' by the amount "delta" ⇦
- position 'delta' by the amount 'p'
- all smaller positions of 'p' by the amount "delta"
- all greater positions of 'p' by the amount 'delta'

Question 1: A new element in the heap implemented with array, will be inserted at the_____ position of the array.

- First
- last
- middle
- any

Question 1: For any binary relation in disjoint sets, if the relation is stored as a two-dimensional array of booleans, this can be done in_____ time.

- **Constant**
- Log(N)
- 2N
- 3N

Question 1: sing max heap, we can get data sorted in_____ order.

- **Descending**
- Ascending
- Random
- Any

Question 1: For any binary relation in disjoint sets, if the relation is stored as a two-dimensional array of booleans, this can be done in_____ time.

- **Constant**
- Log(N)
- 2N
- 3N

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