

Unit Test-3

Total points 49/50

✓ Which of the following is not a stable sorting algorithm? * 1/1

- ☐ Insertion sort
- ☒ Selection sort
- ☐ Bubble sort
- ☐ Merge sort



✓ Time complexity of bubble sort in best case is * 1/1

- ☒ $\theta(n)$
- ☐ $\theta(n \log n)$
- ☐ $\theta(n^2)$
- ☐ $\theta(n(\log n)^2)$



✓ Which of the following algorithms has lowest worst case time complexity? * 1/1

- ☐ Insertion sort
- ☐ Selection sort
- ☐ Quick sort
- ☒ Heap sort



✓ Which of the following is non-linear data structure? * 1/1

- ☐ Stacks
- ☐ List
- ☐ Strings
- ☒ Trees



✓ The lower bound on the number of comparisons performed by comparison-based sorting algorithm is * 1/1

- ☐ $\Omega(1)$
- ☐ $\Omega(n)$
- ☒ $\Omega(n \log n)$ ✓
- ☐ $\Omega(n^2)$

✓ How many number of swaps needed to sort the numbers 27, 61, 82, 64, 27, 62 in non-decreasing order, using Bubble Sort? * 1/1

- ☐ 8
- ☐ 7
- ☒ 6 ✓
- ☐ 5

✓ Where is linear searching used? * 1/1

- ☐ When the list has only a few elements
- ☐ When performing a single search in an unordered list
- ☐ Used all the time
- ☒ When the list has only a few elements and When performing a single search in an unordered list ✓

✓ What is the best case for linear search? * 1/1

- ☐ $O(n \log n)$
- ☐ $O(\log n)$
- ☐ $O(n)$
- ☒ $O(1)$ ✓

✓ In computer science, algorithm refers to a pictorial representation of a flowchart. * 1/1

- ☐ True
- ☒ False ✓



✓ The process of drawing a flowchart for an algorithm is called _____. * 1/1

- ☐ Performance
- ☐ Evaluation
- ☒ Flowcharting ✓
- ☐ Algorithmic Representation

✓ What is sparsity of a matrix? * 1/1

- ☒ The fraction of zero elements over the total number of elements ✓
- ☐ The fraction of non-zero elements over the total number of elements
- ☐ The fraction of total number of elements over the zero elements
- ☐ The fraction of total number of elements over the non-zero elements

✓ An $n \times n$ matrix is known as _____. * 1/1

- ☐ Rectangular matrix
- ☐ Uniform matrix
- ☒ Square matrix ✓
- ☐ None of the above

✓ A matrix having a larger number of elements with zero value than the number of nonzero elements is said to be a _____. * 1/1

- ☐ Diagonal matrix
- ☒ Sparse matrix ✓
- ☐ Triangular matrix
- ☐ None of the above

✓ A double sub-scripted array declared as `int a[3][5]`; has how many elements? * 1/1

- ☒ 15 ✓
- ☐ 13
- ☐ 10
- ☐ 8



✓ The smallest element of an array's index is called * 1/1

- ☒ Lower bound ✓
- ☐ Upper bound
- ☐ range
- ☐ Extraction

✓ Fibonacci sequence is the sequence of integers * 1/1

- ☐ 1,3,5,7,9,11,13
- ☒ 0, 1, 1,2,3,5,8, 13,21,54 ✓
- ☐ 0,1,3,7,15
- ☐ None of above

✓ What is the time complexity for inserting/deleting at the beginning of the array? * 1/1

- ☐ $O(n \log n)$
- ☐ $O(1)$
- ☒ $O(n)$ ✓
- ☐ none of above

✓ Given an array arr = {5,6,77,88,99} and key = 88; How many iterations are done until the element is found? * 1/1

- ☐ 1
- ☐ 3
- ☐ 4
- ☒ 2 ✓

✓ What data structure can be used to check if a syntax has balanced paranthesis ? * 1/1

- ☐ Queue
- ☐ Tree
- ☒ stack ✓
- ☐ Nine of above



✓ Minimum number of queues required for priority queue implementation? 1/1

*

☐ 5

☐ 4

☐ 3

☒ 2



✓ Prefix notation is also known as * 1/1

☒ Polish Notation



☐ Polish Reverse Notation

☐ Reverse Notation

☐ None of above

✓ In conversion from prefix to postfix using stack data-structure, if operators and operands are pushed and popped exactly once, then the run-time complexity is * 1/1

☐ $O(1)$

☒ $O(n)$



☐ $O(\log n)$

☐ $O(n^2)$

✓ If the MAX_SIZE is the size of the array used in the implementation of circular queue. How is rear manipulated while inserting an element in the queue? * 1/1

☐ $\text{rear} = (\text{rear} \% 1) + \text{MAX_SIZE}$

☐ $\text{rear} = \text{rear} \% (\text{MAX_SIZE} + 1)$

☒ $\text{rear} = (\text{rear} + 1) \% \text{MAX_SIZE}$



☐ $\text{rear} = \text{rear} + (1 \% \text{MAX_SIZE})$



✓ Which data structure allows deleting data elements from and inserting at 1/1 rear? *

- ☒ Queues ✓
- ☐ Stacks
- ☐ Dequeues
- ☐ Binary search tree

✓ In linked representation of stack holds the elements of the stack * 1/1

- ☒ INFO fields ✓
- ☐ TOP fields
- ☐ LINK fields
- ☐ NULL fields

✓ form of access is used to add remove nodes from a stack * 1/1

- ☒ LIFO ✓
- ☐ FIFO
- ☐ Both A and B
- ☐ None of these

✓ In the linked representation of the stack behaves as the top pointer 1/1 variable of stack. *

- ☐ Stop pointer
- ☐ Begin pointer
- ☒ Start pointer ✓
- ☐ Avail pointer

✓ New nodes are added to the of the queue. * 1/1

- ☒ Front ✓
- ☐ Back
- ☐ Middle
- ☐ Both A and B



✓ Which of the following name does not relate to stacks? * 1/1

- ☒ FIFO lists ✓
- ☐ LIFO lists
- ☐ Piles
- ☐ Push down lists

✓ Which of the following is an application of stack? * 1/1

- ☐ finding factorial
- ☐ tower of Hanoi
- ☐ infix to postfix
- ☒ all of the above ✓

✓ The Infix equivalent of the prefix * + ab – cd is _____. * 1/1

- ☒ (a+b) * (c-d) ✓
- ☐ (a+b) – (c*d)
- ☐ (a*b)–(c+d)
- ☐ (a-b)*(c+d)
- ☐ Other: _____

✓ The postfix equivalent of the infix expression a+b+c+d is _____. * 1/1

- ☐ abcd+++
- ☒ ab+c+d+ ✓
- ☐ ab+cd++
- ☐ (a-b)*(c+d)



✗ One difference between a queue and a stack is _____. *

0/1

- ☐ Queue can be implemented using linked lists, but stack cannot
- ☐ Stack can be implemented using linked lists, but queues cannot
- ☒ Queues use two ends of the structure; stacks use only one ✗
- ☐ Stacks use two ends of the structure, queues use only one

Correct answer

- ☒ Stacks use two ends of the structure, queues use only one

✓ Which of the following is not the type of queue? *

1/1

☒ Ordinary queue ✓

- ☐ Single ended queue
- ☐ Circular queue
- ☐ Priority queue

✓ The meaning of FIFO is ____ and it stands for _____. *

1/1

- ☐ First In Fast Out, Stack
- ☐ First In First Out, Stack
- ☒ First In First Out, Queue ✓
- ☐ First In Fast Out, Queue

✓ What happens when the stack is full and there is no space for a new element, and an attempt is made to push a new element? *

1/1

☒ Overflow ✓

- ☐ Top
- ☐ Underflow
- ☐ None of the above



✓ What will be the front and rear of an initially empty queue after following the following operations on it? enqueue(2), enqueue(11), enqueue(3), dequeue(), enqueue(8), dequeue(), enqueue(5), enqueue(5), dequeue() * 1/1

☐ 11,8

☐ 3,11

☒ 8,5 ✓

☐ 5,8

✓ What is the minimum number of stacks needed to implement a queue? * 1/1

☐ 1

☒ 2 ✓

☐ 3

☐ not possible

✓ If the elements “A”, “B”, “C” and “D” are placed in a queue and are deleted one at a time, in what order will they be removed? * 1/1

☒ ABCD ✓

☐ DCBA

☐ DCAB

☐ None of above

✓ A circular queue is implemented using an array of size 10. The array index starts with 0, front is 6, and rear is 9. The insertion of next element takes place at the array index. * 1/1

☒ 0 ✓

☐ 7

☐ 9

☐ 10



✓ Generally collection of Nodes is called as _____.*

1/1

- ☐ Heap
- ☒ linked list ✓
- ☐ array
- ☐ pointers

✓ Linked list is generally considered as an example of _____ type of memory allocation.*

1/1

- ☐ Static
- ☒ Dynamic ✓
- ☐ compile time
- ☐ none of above

✓ Linked list data structure usage offers considerable saving in *.

1/1

- ☐ Computational time
- ☒ Space utilization & computational time ✓
- ☐ Space utilization

✓ An array is passed into a function ____.*

1/1

- ☐ by value
- ☒ by reference ✓
- ☐ element by element
- ☐ Any of the above

✓ Each node in a linked list has two pairs of and*

1/1

- ☒ Link field and information field ✓
- ☐ Link field and avail field
- ☐ Avail field and information field
- ☐ Address field and link field



✓ A linear list in which each node has pointers to point to the predecessor and successors nodes is called as *

1/1

- ☐ Singly Linked List
- ☐ Circular Linked List
- ☒ Doubly Linked List
- ☐ Linear Linked List



✓ In circular linked list, insertion of node requires modification of? *

1/1

- ☐ One pointer
- ☒ Two pointer
- ☐ Three pointer
- ☐ Requires no modification



✓ Consider a linked list of n elements. What is the time taken to insert an element after an element pointed by some pointer? *

1/1

- ☒ $O(1)$
- ☐ $O(\log n)$
- ☐ $O(n)$
- ☐ $O(n \log n)$



✓ A linear collection of data elements where the linear node is given by means of pointer is called *

1/1

- ☐ node list
- ☒ linked list
- ☐ primitive list
- ☐ None of these



- ✓

In Linked list implementation, a node carries information regarding _____.*

1/1
- ☐

Data

☐

Link

☒

Data and Link

✓

☐

none of above

- ✓

What is the time complexity of inserting a node in a doubly linked list? *

1/1
- ☐

$O(n \log n)$

☐

$O(1)$

☒

$O(n)$

✓

☐

$O(\log n)$

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