

Subject: Data Structures CS301
Test: Midterm past Paper questions
Total Questions: 91

Question No.	Question Details			
Total Marks	1			ddd
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1	2	Deleting a leaf node in binary search tree involves setting _____ pointer/s of that node's parent as null.
		1
		2
		3
		4

1	3	A node cannot be deleted, when the node to be deleted has both left and right subtrees.
		True
		False

1	4	An array is a group of consecutive related memory locations.
		True
		False

Consider the following infix expression : $3 + 5 * 6 - 7 * (8 + 5)$ Which of the following is a correct equivalent expression(s) for the above?

		3 6
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		* 7
		5 8
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		*
		3 6
		5 7
		5 8
		+ *
		+ -
		*
		3 5
		6 +
		* 7
		8 5
		+ -
		*
		3 5
		6 *
		+ 7
		8 5
		+ *
		-

The difference between a binary tree and a binary search tree is that, a binary search tree has

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1	7	<div>We can add ele me nts in QU EU E Fro m _____ _____ _____</div> <div>Fro nt</div> <div>Re ar</div> <div>Fro m Bot h Rar e and Fro nt</div> <div>No ne of the se</div>

Which of the following abstract data types are NOT used by Integer Abstract Data type group?

short

int

float

long

Which one of the following statements is correct?

Array size is fixed once it is created

LinkedList size is fixed once it is created

		Binary Search Tree size is fixed once it is created
		AVL Tree size is fixed once it is created

Linked lists are collections of data items "lined up in a row", insertions and deletions can be made only at the front and the back of a linked list.

		True
		False
1	11	<p>In a program a reference variable, say x, can be declared as</p> <p>int &x ;</p> <p>int *x ;</p> <p>int x ;</p> <p>None of the given options</p>

Which one of the following statement is NOT correct .

In linked list the elements are necessarily to be contiguous

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In linked list each element also has the address of the element next to it

In an array the elements are contiguous

Is a data structure that can grow easily dynamically at runtime without having to copy existing elements?

Array

List

Both of these

		No ne of the se
1	14	Que ue follo ws Las t in Firs t out Firs t in Las t out Firs t in Firs t out No ne of the se

1	15	Parameters in function call are passed using,
		Stack
		Queue
		Binary Search Tree
		AVL Tree

Which statement of the following statements is incorrect?

Lists can be implemented by using arrays or linked lists

A list is a sequence of one or more data items

Stack is a special kind of list in which all insertions and deletions take place at one end

		Stacks are easier to implement than lists
1	17	<div>The operation for removing an entry from a stack is traditionally called:</div> <div>delete</div> <div>peek</div> <div>pop</div> <div>remove</div>

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		That pointer points to First byte in main function
		That pointer contains a NULL value
		That pointer points to any memory address

		No ne of the se
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A Compound Data Structure is the data structure which can have multiple data items of same type or of different types. Which of the

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following can be considered compound data structure?

Arrays

LinkedLists

Binary Search Trees

All of the given options

The tree data structure is a

Linear data structure

Non-linear data structure

Graphical data structure

Data structure like queue

Which one of the following is a valid postfix expression?

$ab+ c*d -$

$abc *+d -$

$abc +*d -$

$(ab c*) +d-$

When an operator is used between two operands this is which type of notation

Prefix

Postfix

Infix

None of the Above

1	23	What will be the valid postfix notation of A+ B*C -D
		AB C+* D-
		AB C*+ D-
		AB CD +-*
		AB +D* C

1	24	Tree data structure is a
		Linear
		Non Linear
		Circular
		None of Above

1	25	Non recursive calls are faster than the Recursive calls.
		True
		False

Following are the linear data structures:-

Stacks

Queues

Both Stacks and Queues

None of the above

1	27	Highest Operators Precedence is of the following operator:-
		Plus
		Minus
		Multiply
		Exponentiation

1	28	Each node in a BST has Pointers:-
		1
		2
		3
		4

After
creation
of
an
array:-

Size
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be
increased
but
cannot
be
decreased
.

Size
can
be
decreased
but
cannot
be
increased.

		Size can neither be increased nor be decreased.
		Size can be increased and can also be decreased

1	30	BS T is a Stru ctur e:-
		Lin ear
		No n Lin ear
		Cir cul ar
		No ne of Ab ove

To check the depth of an AVL tree following time will be taken:-

1.6
6
Log
 $2n$

1.4
4
Log
 $2n$

Log
 $2^{(n+1)-1}$

1.6
6
Log
 $2n^{(n+1)}$

In an AVL tree to delete a parent with two children in a straight line following rotations will be required

Single

Double

Triple

		No ne. of the giv en opti ons
1	33	<p>Whi ch of the follo win g is a non line ar dat a stru ctur e?</p> <p>Lin ked List</p> <p>Sta ck</p> <p>Qu eue</p> <p>Tre e</p>

Consider the following infix expression: $.5 + 6/2$. If one converts the above expression into postfix, what would be the resultant expression?

		<div>56/</div> <div>+ 2</div> <div>5 6</div> <div>2 /</div> <div>+</div> <div>/62</div> <div>+ 5</div> <div>5 6</div> <div>/ 2</div> <div>+</div>
1	35	<div>The re is/a re cas e/s for rota tion in an AV L tree ,</div> <div>1</div> <div>2</div> <div>3</div> <div>4</div>

Searching an element in an AVL tree take maximum in AVL tree ,

$\log_2(n+1)$ time (where n is no. of nodes

$\log_2(n+1) - 1$

		1.4
		4
		Log
		2n
		1.6
		6
		Log
		2n

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Which of the following is "TRUE" about arrays,

We can increase the size of arrays after their creation.

We can decrease the size of arrays after their creation.

We can increase but can't decrease the size of arrays after their creation.

We can neither increase nor decrease the array size after their creation.

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Four statements about trees are below. Three of them are correct. Which one is INCORRECT?

Trees are recursively defined multidimensional data structures

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A search tree is a special type of tree where all values (i.e. keys) are ordered

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If Tree1's size is greater than Tree2's size, then the height of Tree1 must also be greater than Tree2's height.

Which one of the following operators has higher priority than all of others?

Multiplication operator

Minus operator

Plus operator

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A queue is a ---
--- data structure, whereas a stack is a ---
--- data structure.

FIFO, LIFO

LIFO, FIFO

both given options

None of the se

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Which of the following tests in the client code correctly compares two class objects alpha and beta?

if (alpha < beta)

		if (alp ha. Les sTh an(bet a))
		if (Le ssT han (alp ha, bet a))
		if (Le ssT han (alp ha). bet a)

Which one of the following statements is NOT correct?

Array size can be changed after its creation.

		Link List size can be changed after its creation
		Binary Search Tree size can be changed after its creation

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Which one of the following calling methods does not change the original value of the argument in the calling function?

None of the given options

		Call by passing the value of the argument
		Call by passing reference of the argument
		Call by passing the address of the argument

In an array list the current element is

The first element

The middle element

The last element

The element where the current pointer points to

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1	45	In an array we can store data elements of different types.
		True
		False

1	46	An array is a group of consecutive related memory locations.
		True
		False

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The following are statements related to queues . (i) The last item to be added to a queue is the first item to be removed (ii) A queue is a stru

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(iii)
and
(ii)
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		(i), (ii) and (iv) only
		(ii) and (iv) only
		No ne of the giv en opti ons

1	48	Which of the following can be used to reverse a string value,
		Stack
		Queue
		Both of the se
		None of the se

is the maximum number of nodes that you can have on a stack-linked list?

Zero

		$2n$ (where n is the number of nodes in linked list)
		Any Number
		None of these

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Consider the following sequence of push operations in a stack: stack.push('7'); stack.push('8'); stack.push('9'); stack.push('10'); stack.push

		('11 stac k.p ush ('12
		7 8 9 10 11 12
		9 8 11 10 7 12
		9 10 8 11 12 7
		9 10 8 12 7 11

The operation for removing an entry from a stack is traditionally called:

delete

peek

pop

remove

The operation for adding an entry to a stack is traditionally called :

add

append

insert

push

In C what is the operation that you can not do with primitive types?

Assign a value to primitive type using a literal

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Which of the following tests in the client code correctly compares two class objects alpha and beta?

if (alpha < beta)

		if (alp ha. Les sTh an(bet a))
		if (Le ssT han (alp ha, bet a))
		if (Le ssT han (alp ha). bet a)

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		(nextNode == null)
		(currentNode == 0.0)

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		All the nodes fulfill the AVL condition
		None of the given options

In which of the traversal methods, the recursive calls can be used to traverse a binary tree?

In pre order traversal only

		In inor der trav ers al onl y
		In pos tord er trav ers al onl y
		All of the giv en opti ons

1	58	Doubly Linked List always has one NULL pointer.	True	False
---	----	---	------	-------

1	59	A subscript of an array may be an integer or an integer expression.	True	False
---	----	---	------	-------

1	60	<div>“+” is a _____ _____ _____ ope rato r.</div> <div>Not an</div> <div>Un ary</div> <div>Bin ary</div> <div>Ter nar y</div>
1	61	<div>“+” is a _____ _____ _____ ope rato r.</div> <div>Not an</div> <div>Un ary</div> <div>Bin ary</div> <div>Ter nar y</div>

A binary search tree should have a minimum of one _____ node/s at each level,

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		No ne of the giv en opti ons
1	64	<div>The nod es with no suc ces sor are call ed</div> <div> <div></div> <div></div> <div></div> </div> <div>Ro ot No des</div> <div>Lea f No des</div> <div>Bot h of the se</div> <div>No ne of the se</div>

Consider the following tree.



1

How many of the nodes have at least one sibling?

8

7

5

6

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I have implemented the queue with a linked list, keeping track of a front pointer and a rear pointer. Which of these pointers will change

		during an insertion into an EMPTY queue?
		Neither changes
		Only front pointer changes.
		Only rear pointer changes.
		Both change.

1	67	Each node in doubly link list has ,
		1 pointer
		2 pointer
		3 pointer
		4 pointer

1	68	Which one is a self-referential data type?
		Stack
		Queue
		Link list
		All of the se

A queue where the dequeue operation depends not on FIFO, is called a priority queue

False

True

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		current Node = current Node >nextNode ;
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		All the nodes fulfill the AVL condition (
		No one of the given options

Which one of the following calling methods does not change the original value of the argument in the calling function?

None of the given options

		Call by passing the value of the argument
		Call by passing reference of the argument
		Call by passing the address of the argument

Each operator in a postfix expression refers to the previous _____ operator(s).

One

Two

Three

Four

Which one of the following statement is NOT correct .

In linked list the elements are necessarily to be contiguous

In linked list the elements may locate at far positions in the memory

In linked list each element also has the next to it

		In an array the elements are contiguous
--	--	---

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Consider the following binary search tree (BST):



If node A in the BST is deleted, which two nodes are the candidates to take

		e its plac e?
		J and I
		H and E
		D and E
		L and M

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		every node's right subtree contains only values that are greater than or equal?
		Strictly Binary Tree
		Binary Search tree
		AVL tree
		All of the se

1	79	The expression $AB + C^*$ is called?
<div>www.freemcqs.com</div>		Prefix expression
		Postfix expression
		Infix expression
		None of the se

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Y is 42, i.e., the array has been declared to be of size 42. Where does the push member function place the new entry in the array?

data[1]

		dat a[2]
		dat a[1 1]
		dat a[1 2]

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In the linked list implementation of the stack class, where does the push member function place the new entry on the linked list?

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After all other entries that are greater than the new entry.

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Suppose n is the number of nodes in a complete Binary Tree then the maximum steps required for a search operation are,

$$\log_2 (n+1) - 1$$

		Log 2 (n+ 1)
		Log 2 (n) − 1
		Log 2 (n)

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What is the maximum depth of recursive calls a function may make?

1

2

n (where n is the argument)

There is no fixed maximum

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Here is the start of a C++ class declaration: class foo { public: void x(foo f); void y(const foo f); void z(foo f) const; ... Which of the three members

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Only x can alter the private member variables of the object that activates the function.

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Only y y can alter the private member variables of the object that activates the function.

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Only y z can alter the private member variables of the object that activates the function.

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Two of the functions can alter the private member variables of the object that activates the function.

When should you use a constant reference parameter?

Whenever the parameter has huge size.

Whenever the parameter has huge size, the function changes the parameter within its body, and you do NOT want the changes to alter

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Whenever the parameter has huge size, the function changes the parameter within its body, and you DO want the changes to alter the act

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The tree data structure is a

Linear data structure

Non-linear data structure

Graphical data structure

Data structure like queue

In the call by value methodology, a copy of the object is passed to the called function.

True

False

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Consider the function X as under
 $\text{int } X(\text{int } \&\text{Value})$
{
 return Value;
}
Now a and b are integers in a calling function. Which one of the follo

wing is a valid call to the above function X.

a = X(b);

a = X(&b);

a = X(*b);

None of the given options

The data of the problem is of 2GB and the hard disk is of 1GB capacity, to solve this problem we should

Use better data structures

		Incr eas e the har d dis k spa ce
		Us e the bett er alg orit hm
		Us e as mu ch dat a as we can stor e on the har d dis k

1	90	<div>A queue where the dequeue operation depends not on FIFO, is called a priority queue</div> <div>True</div> <div>False</div>
1	91	<div>No Question Found</div> <div>No option found !</div> <div>No option found !</div>

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