SPPU In-semester Examination - A.Y.2020-21 Sem 1(In Sem Exam SE 2019 Fundamental of Data Structures_210242_3/04/2021_Time(2-2:40 PM))

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* Required

Attempt ALL 40 questions

Questions are begin here...

Recursive algorithms are based on * 1 point

- ( ) Top-down approach
- ( ) Heuristic approach
- ( ) Bottom-up approach
- (•) Divide and conquer approach

Which of the following concepts make extensive use of arrays * 1 point

- ( ) Binary trees
- ( ) caching
- (•) spatial locality
- ( ) scheduling of process

What is the output of below code int main() { int arr[5]={10,20,30,40,50}; printf("%d", arr[5]); return 0; } * 1 point

- [ ] 50
- [ ] 40
- [x] Garbage value
- [ ] 10

Entries in a stack are “ordered”. What is the meaning of this statement? * 1 point

- [ ] Stack entries may be compared with the ‘<‘ operation
- [ ] A collection of stacks is sortable
- [x] There is a Sequential entry that is one by one
- [ ] The entries are stored in a linked list

Which of the following is the correct way to declare a multidimensional array? * 1 point

- [x] int[][]arr;
- [ ] int arr[[]];
- [ ] int[] arr;
- [ ] int[[]] arr;

The transpose of square matrix is a * 1 point

- [ ] Digonal matrix
- [ ] Regular matrix
- [ ] Scaler matrix
- [x] Square matrix

Elements in an array are accessed _____ * 1 point

- [ ] Exponentially
- [x] Randomly
- [ ] Sequentially
- [ ] logarithmically

The upper bound on the time complexity of non-deterministic sorting algorithm is * 1 point

- [ ] O (log n)
- [x] O (n)
- [ ] O (1)
- [ ] O log(n log n)

Which of the following property does not hold for matrix multiplication? * 1 point

- ○ Distributive
- ○ Additive Inverse
- ◉ Commutative
- ○ Associative

What is the worst case run time complexity if binary search? * 1 point

- ○ O(nlog n)
- ○ O(n2)
- ◉ O(n)
- ○ O(n3)

Matrix A when multiplied with Matrix C gives the Identity matrix I, what is C? * 1 point

- ○ Identity matrix
- ◉ Inverse of A
- ○ Square of A
- ○ Transpose of A

A pictorial representation of an algorithm is called * 1 point

- ○ Structure chart
- ◉ Flow chart
- ○ Pseudo code
- ○ an Algorithm

If n has value 3, then the statements a[++n]=n++ * 1 point

- ○ Assigns 4 to a[5]
- ○ Assigns 3 to a[5]
- ○ Assigns 4 to a[4]
- ◉ Produces unpredictable results

In which of the following cases dynamic arrays are not preferred? * 1 point

- ○ If the size of the array is unknown
- ◉ If the array holds less number of elements
- ○ If the memory reallocation takes more time i.e. expensive
- ○ If the size of the array changes after few iterations

An n × n matrix is known as_____. * 1 point

- ◉ Square matrix
- ○ Sparce matrix
- ○ Rectangular matrix
- ○ Uniform matrix

What is the worst case time complexity of linear search algorithm? * 1 point

- [x] O(n)
- [ ] O(log n)
- [ ] O(n2
- [ ] O(1)

A basic algorithm that arranges data according to their values is known as * 1 point

- [ ] Recursion
- [ ] Searching
- [x] Sorting
- [ ] Inquiry

Let A be a two dimentional array declared as follows:An array [1,....,10] [1,....,15] of integers; assuming that each integer takes one memory location,the array is stored in row majored order, and that the first element of the array is stored at location 100,what is the address of the element A[i] [j]? * 1 point

- [x] 15i+j+84
- [ ] 10i+j+89
- [ ] 10j+i+89
- [ ] 15j+i+84

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

- (●) 15
- ( ) 10
- ( ) 8
- ( ) 13

The time factor when determining the efficiency of algorithm is measured by * 1 point

- ( ) Counting microseconds
- ( ) Counting the number of statements
- ( ) Counting the kilobyte of algorithms
- (●) Counting the number of key operations

To represent hierarchical relationship between elements, which data structure is suitable? * 1 point

- ( ) Struture
- ( ) Priority
- (●) Tree
- ( ) Dqueue

Which of the following is not the method to represent Sparse Matrix? * 1 point

- (●) Heap
- ( ) Array
- ( ) Linked List
- ( ) Dictionary of Keys

In the system development process, a pseudo code is a tool used in the * 1 point

- ( ) Design Phase
- (●) Analysis Phase
- ( ) Testing phase
- ( ) Implementation Phase

An algorithm that call itself directly or indirectly is called? * 1 point

- ( ) Traversal Algorithm
- (●) Recursion
- ( ) Sub algorithm
- ( ) Polish notation

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

- ○ 4
- ○ 1
- ◉ 2
- ○ 3

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

- ○ O(nlogn)
- ○ O(n^2)
- ○ O(1)
- ◉ O(n)

Which of the following is a disadvantage of dynamic arrays? * 1 point

- ○ Random access
- ◉ Memory leak
- ○ Data cache utilization
- ○ Locality of reference

Which of the following sorting algorithm is of divide and conquer type? * 1 point

- (●) Quick sort
- ( ) Bubble sort
- ( ) Insertion sort
- ( ) Selection sort

The parameter passing mechanism for an arrays is * 1 point

- (●) a. Call by value
- ( ) b. Call by value-result
- ( ) d. call by address
- ( ) c. Call by reference

Matrices obtained by changing rows and columns is called * 1 point

- ( ) rectangular matrix
- ( ) Square
- (●) transpose
- ( ) Symmetric

Which of these best describes an array? * 1 point

- ( ) Arrays are immutable once initialized
- (●) Container of objects of similar types
- ( ) Array is not a data structure
- ( ) A data structure that shows a hierarchical behavior

Which of the following is an advantage of matrices? * 1 point

- [ ] Searching through a matrix is complex
- [x] Graph Plotting
- [ ] Internal complexity
- [ ] Not space efficient

Assuming int is of 4bytes, what is the size of int arr[15]? * 1 point

- [x] 60
- [ ] 15
- [ ] 11
- [ ] 19

Which of the following is the correct way to access a specific element from a Multi-Dimensional List? * 1 point

- [x] list[row_size][column_size]
- [ ] list[(row_size)(column_size)]
- [ ] List[(colmn size)(row size)]
- [ ] list[row_size:column_size]

A sub algorithm is also known as a * 1 point

- [ ] control loop
- [x] Recursion
- [ ] Module
- [ ] sub algorithm

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

- [ ] Upper bound
- [ ] Extraction
- [ ] Range
- [x] Lower bound

If A is a lower triangular matrix then AT is a _____ * 1 point

- [ ] sparse matrix
- [x] Upper triangular matrix
- [ ] Null matrix
- [ ] Lower triangular matrix

What is sparsity of a matrix? * 1 point

- [ ] The fraction of total number of elements over the zero elements
- [ ] The fraction of total number of elements over the non-zero elements
- [ ] The fraction of non-zero elements over the total number of elements
- [x] The fraction of zero elements over the total number of elements

Which of the following Python statements will result in the output: 6? A = [[1, 2, 3], [4, 5, 6], [7, 8, 9]] * 1 point

- (●) A[1][2]
- ( ) A[3][2]
- ( ) A[2][1]
- ( ) A[2][3]

Which matrix has most of the elements (not all) as Zero? * 1 point

- ( ) Identity Matrix
- (●) Sparse Matrix
- ( ) Unit Matrix
- ( ) Zero Matrix

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