Quiz Questions

Which operator is used to invert all the digits in binary representation of a number? *

/

2

~

<<<
>>>
^

Add individual feedback

On applying Left shift operator, <<, on an integer bits are lost one they are shifted past which position bit?

/

2

1
32
33
31

Add individual feedback

Which right shift operator preserves the sign of the value?

/

2

<<
>>

<<=
>>=

Add individual feedback

int var1 = 42; int var2 = ~var1; System.out.print(var1 + " " + var2);

/

2

42 42

43 43
42 -43

42 43

Add individual feedback

int a = 3; int b = 6; int c = a | b; int d = a & b; System.out.println(c + " " + d);

/

2

7 2

7 7
7 5
5 2

Add individual feedback

int x; x = 10; x = x >> 1; System.out.println(x);

/

2

10
5

2
20

Add individual feedback

int a = 1; int b = 2; int c = 3; a |= 4; b >>= 1; c <<= 1; a ^= c; System.out.println(a + " " + b + " " + c);

/

2

3 1 6

2 2 3
2 3 4
3 3 6

Add individual feedback

Which index is the last element in an array called nums at?

/

0

nums.length
nums.length - 1

Add individual feedback

Which of the following is an incorrect array declaration?

/

2

int [] arr = new int[5].
int arr[] = new int[5].
int arr[] = int [5] new

Add individual feedback

String s1 = "Hey"; String s2 = s1.substring(0,1);String s3 = s2.toLowerCase();

/

2

Hey

he
H
h

Add individual feedback

String str1 = "Emily"; String str2 = "Alex"; System.out.println(str1.charAt(0) > str2.charAt(0));

/

2

true

false
0
1

Add individual feedback

The String method compareTo() returns _____.

/

2

1
-1
true
an integer value

Add individual feedback

The number of edges from the root to the node is called _____ of the tree.

/

2

height
depth

Add individual feedback

Suppose a binary tree is constructed with n nodes, such that each node has exactly either zero or two children. The maximum height of the tree will be?

/

2

(n+1)/2
(n-1)/2

n/2 -1
(n+1)/2 -1

Add individual feedback

The maximum number of elements in a heap of height h is

/

2

math.pow(2,h)+1 -1

math.pow(2,h)
math.pow(2,h)+1
math.pow(2,h) -1

Add individual feedback

In which of the following tree, parent node has a key value greater than or equal to the key value of both of its children?

/

2

Binary search tree
full binary tree
Complete binary tree
Max-heap

Add individual feedback

A binary search tree is generated by inserting in order the following integers:50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24 The number of the node in the left sub-tree and right sub-tree of the root, respectively, is

/

2

(4, 7)
(7, 4)

(8, 3)
(3, 8)

Add individual feedback

The data structure required to check whether an expression contains balanced parenthesis is?

/

2

Stack

Queue
Array
Tree

Add individual feedback

The result of evaluating the postfix expression 5, 4, 6, +, *, 4, 9, 3, /, +, * is?

/

2

600

350

650

Add individual feedback

Consider the linked list implementation of a stack. Which of the following node is considered as Top of the stack?

/

2

First node

Last node
Any node
Middle node

Add individual feedback

Consider the following operation performed on a stack of size 5.Push(1);Pop();Push(2);Push(3);Pop();Push(4);Pop();Pop();Push(5); After the completion of all operation, the no of element present on stack are

/

2

1

2
3
4

Add individual feedback

The data structure required for Breadth First Traversal on a graph is?

/

2

Stack
Array
Queue

Tree

Add individual feedback

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?

/

2

rear=(rear%1)+MAX_SIZE
rear=rear%(MAX_SIZE+1)
rear=(rear+1)%MAX_SIZE

rear=rear+(1%MAX_SIZE)

Add individual feedback

Quiz Questions

In delete operation of BST, we need inorder successor (or predecessor) of a node when the node to be deleted has both left and right child as non-empty. Which of the following is true about inorder successor needed in delete operation? *

/

2

Inorder Successor is always a leaf node

Inorder successor is always either a leaf node or a node with empty left child

Inorder successor may be an ancestor of the node

Inorder successor is always either a leaf node or a node with empty right child

Add individual feedback

What does the following piece of code do? public void func(Tree root){ func(root.left()); func(root.right()); System.out.println(root.data());}

/

2

Preorder traversal

Inorder traversal

Postorder traversal

Level order traversal

Add individual feedback

How will you find the minimum element in a binary search tree? *

/

2

while(root.left() != null){root = root.right();}

while(root.left() != null){root = root.left();}

while(root.right() != null){root = root.left();}

Add individual feedback

A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a ?

/

2

Queue

Stack
Tree
Linked list

Add individual feedback

Let the following circular queue can accommodate maximum six elements with the following datafront = 2 rear = 4queue = _____; L, M, N, ___, ___What will happen after ADD O operation takes place?

/

2

front = 2 rear = 5

front = 3 rear = 5
front = 3 rear = 4
front = 2 rear = 4

Add individual feedback

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?

/

2

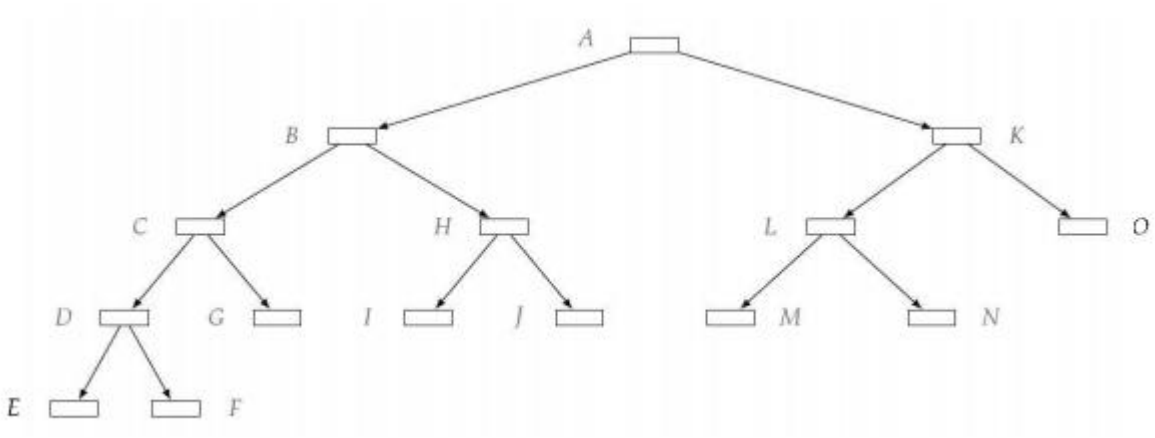
ABCD

DCBA
DCAB
Option 4

Add individual feedback

Check whether the tree is height balanced

/
2



true

false

Add individual feedback

in the above tree find the height of the tree

/
2

3
4

5
2

Add individual feedback

What is the code that find the height of a node

/
2

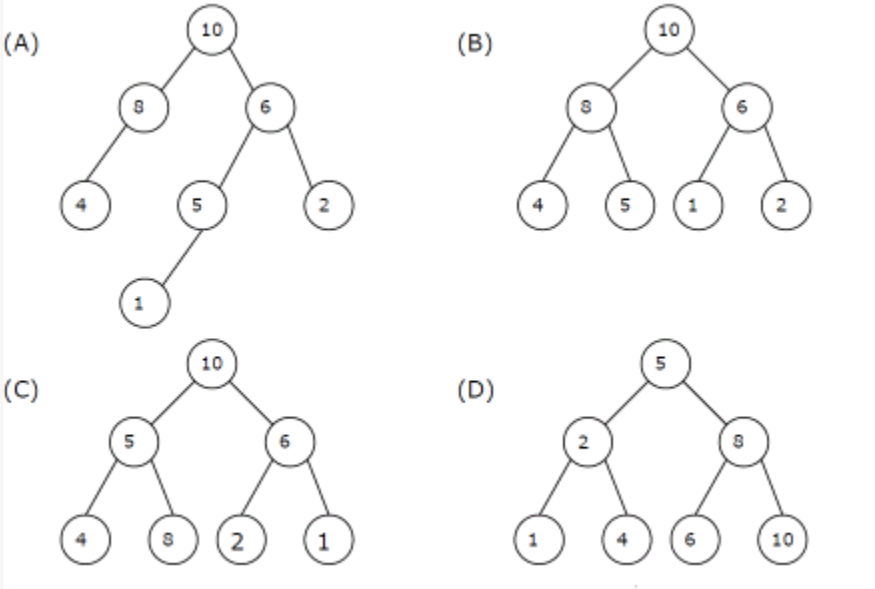
int height = Math.max(leftResult.height , rightResult.height) + 1;

int height = Math.max(leftResult.height , rightResult.height) - 1;
int height = Math.min(leftResult.height , rightResult.height) + 1;
int height = Math.min(leftResult.height , rightResult.height) - 1;

Quiz Questions

A max-heap is a heap where the value of each parent is greater than or equal to the values of its children. Which of the following is a max-heap? *

/
2



A
B

C
D

Add individual feedback

What is the complexity of adding an element to the heap?

/
2

O(log n)
O(log h)
O(h)
Both A and C

Add individual feedback

Heap can be used as _____

/
2

Priority queue

Stack
A decreasing order array
ArrayList

Add individual feedback

An array consists of n elements. We want to create a heap using the elements. The time complexity of building a heap will be in order of

/
2

O(n*n*logn)
O(n*logn)

O(n*n)
O(n *logn *logn)

Add individual feedback

Which one of the following array elements represents a binary min heap?

/
2

12 ,10 ,8 ,25 ,14, 17
8 ,10, 12 ,25, 14, 17

25 ,17, 14 ,12, 10, 8
14 ,17, 25, 10, 12, 8

Add individual feedback

Suppose k=4, String [] s={"aaa","ab","abcca","aacddeg"} minHeap.poll() will return which string?

/
2

```
public static List<String> topK(int k, Iterator<String> iter) {
  PriorityQueue<String> minHeap
      = new PriorityQueue<>(k, new Comparator<String>() {
          public int compare(String s1, String s2) {
            return Integer.compare(s1.length(), s2.length());
          }
        });
  while (iter.hasNext()) {
    minHeap.add(iter.next());
```

aaa
ab

abcca
aacddeg

Add individual feedback

Each string is processed in _____time, which is the time to add and to remove the minimum element from the heap.

/
2

O(log k)

O(nlogk)
O(n)
O(n*n)

Add individual feedback

How would you compute the k stars which are closest to Earth?

/
2

Opublic int compare(ArrayEntry ol , ArrayEntry o2) {return Integer.compare(ol.value , o2.value);}
public int compareTo(Star rhs) {return Double.compare(this.distance(), rhs.distance());}

public int compareTo(Star rhs){ return Double.compare(this.star(), rhs.star());

Add individual feedback

Construct a min heap from A[ ]={120, 140, 40, 50, 80, 70, 60, 90, 20, 100} After deleting a root element, what will be the post order traversal of the heap?

/

2

140 90 100 50 80 40 120 60 70
140 100 80 90 120 70 50 60 40
140 100 90 80 50 120 70 60 40

140 100 90 80 120 70 50 60 40

Correct answer

140 100 80 90 120 70 50 60 40

Add individual feedback

Heap is an example of ..... *

/

2

complete binary tree

spanning tree
sparse tree
binary search tree

Quiz Questions

11&~(11-1) *

/

2

2
1

10
4

Add individual feedback

The parity of (11010111) is *

/

2

```
public static short parity(long x) {
  x ^= x >>> 32;
  x ^= x >>> 16;
  x ^= x >>> 8;
  x ^= x >>> 4;
  x ^= x >>> 2;
  x ^= x >>> 1;
```

```
  return (short)(x & 0x1);
}
```

1
0

5
2

Add individual feedback

Extract the i-th and j-th bits of x, and see if they differ,what is the correct statement.

/
2

(((x >>> i) & 1) != ((x>>> j) & 1))

(((x << i) & 1) != ((x<< j) & 1))
(((x >>> i) & 1) == ((x>>> j) & 1))

Add individual feedback

reverse(-314) is

/
2

```
public static long reverse(int x) {
  long result = 0;
  long xRemaining = Math.abs(x);
  while (xRemaining != 0) {
    result = result * 10 + xRemaining % 10;
    xRemaining /= 10;
  }
  return x < 0 ? -result : result;
}
```

413
-413

312
567

Add individual feedback

what is the output :plusOne(1,9,9)

/

2

```
public static List<Integer> plusOne(List<Integer> A) {
  int n = A.size() - 1;
  A.set(n, A.get(n) + 1);
  for (int i = n; i > 0 && A.get(i) == 10; --i) {
    A.set(i, 0);
    A.set(i - 1, A.get(i - 1) + 1);
  }
  if (A.get(0) == 10) {
    // Need additional digit as the most significant digit (i.e., A.get(0))
    // has a carry-out.
    A.set(0, 0);
    A.add(0, 1);
  }
  return A;
}
```

2,0,0

1,9,9
1,0,0

Add individual feedback

, if A = (3,3,1,0,2,0,1), we iteratively compute the furthest we can advance to as we can advance to and i + A[i].What is the arraylist of the resultant furthest arraylist

/

2

0,3,4,4,4,6,6,7,

0,3,3,4,4,6,6,7,
0,3,3,3,4,6,6,7,

Add individual feedback

consider the following sequence ofstock prices: (310,315, 275, 295, 260, 270, 290, 230, 255, 250).Find the maximum profit for buy and sell once

/

2

20
30

10
25

Add individual feedback

suppose the input array is (12,11,13,9,12,8,14,13,15).the maximum profit for buy and sell twice

/

2

7
8
9
10

Add individual feedback

the permutation (2,0,1,3} applied to A = (a,b,c,d} yields the array A after operation

/

2

(b,c,a,d).

(c,b,a,d).
(b,c,d,a).

Add individual feedback

if the input is (1,0,3, 2) compute the next permutation

/

2

(1, 2,0,3)

(1, 2,3,0)
(3, 2,0,1).
(1, 0,2,3).

Add individual feedback

Quiz Questions

Find the output for String s="-123" for (int i = s.charAt(0) =='-' ? 1 : 0; i < s.length(); ++i) {final int digit = s.charAt(i) - ’0’;result = result + digit; return s.charAt(0) =='-' ? -result : result; *

/

2

-123
-6

6
123

Add individual feedback

for the string is "615", b1 =7 and b2 = 13, then the integer value, expressed in decimal, is

/

2

312
245
306

Add individual feedback

If String col="ZZ" find the result return from the function

/

2

```
public static int ssDecodeColID(final String col) {
  int result = 0;
  for (int i = 0; i < col.length(); i++) {
    char c = col.charAt(i);
    result = result * 26 + c - 'A' + 1;
  }
  return result;
}
```

670
702

777
701

Add individual feedback

The look-and-say sequence starts with 1. Find the 5th sequence is

/

2

312211

132211
312111
312212

Add individual feedback

Which of these method of String class can be used to test to strings for equality?

/

2

isequal()
isequals()
equal()
equals()

Add individual feedback

Consider a class List that implements an unordered list. Suppose it has as its representationa singly linked list with a head and tail pointer (i.e., pointers to the first and last nodes in thelist). Given that representation, which of the following operations could be implemented in O(1)time? I. Insert item at the front of the list II. Insert item at the rear of the list III. Delete front item from list IV. Delete rear item from list

/
2

I and II
I and III
I, II, and III

I, II, and IV

Add individual feedback

void fun1(Node head){ if(head == NULL) return; fun1(head.next); System.out.println(head.data);}

/
2

Prints all nodes of linked lists
Prints all nodes of linked list in reverse order

Prints alternate nodes of Linked List
Prints alternate nodes in reverse order

Add individual feedback

Assume that reference of head of following doubly linked list is passed to above function 1 <--> 2 <--> 3 <--> 4 <--> 5 <-->6. What should be the modified linked list after the function call?

/
2

```
void fun(Node head_ref){
  Node temp = NULL;   Node current = head_ref;
  while (current != NULL)  {
    temp = current.prev;
    current.prev  = current.next;
    current.next = temp;
    current = current.prev;   }
  if(temp != NULL )
    head_ref = temp.prev;
}
```

2 <--> 1 <--> 4 <--> 3 <--> 6 <-->5
5 <--> 4 <--> 3 <--> 2 <--> 1 <-->6.
6 <--> 5 <--> 4 <--> 3 <--> 2 <--> 1.

Add individual feedback

What is the output of following function for start pointing to first node of following linked list? 1->2->3->4->5->6

/
2

```
void fun(struct node* start){
 if(start == NULL)   return;
 System.out.println( start.data);
 if(start.next != NULL )
  fun(start.next.next);
 System.out.println( start.data);
}
```

1 4 6 6 4 1
1 3 5 1 3 5
1 2 3 5
1 3 5 5 3 1

Add individual feedback

Find the output of the following prefix expression. *+2-2 1/-4 2+-5 3 1

/

2

2

12
10
4

Add individual feedback

Suppose a circular queue of capacity (n – 1) elements is implemented with an array of n elements. Assume that the insertion and deletion operation are carried out using REAR and FRONT as array index variables, respectively. Initially, REAR = FRONT= 0. The conditions to detect queue full and queue empty are

/

2

Full: (REAR+1) mod n == FRONT, empty: REAR == FRONT

Full: (REAR+1) mod n == FRONT, empty: (FRONT+1) mod n == REAR
Full: REAR == FRONT, empty: (REAR+1) mod n == FRONT
Full: (FRONT+1) mod n == REAR, empty: REAR == FRONT

Add individual feedback

Consider the usual algorithm for determining whether a sequence of parentheses isbalanced. What is the maximum number of parentheses that will appear on the stack AT ANY ONE TIME when the algorithm analyzes: (()(()))(()))

/

2

4
3

2
6

Add individual feedback

If the characters 'D', 'C', 'B', 'A' are placed in a queue (in that order), and then removed one at a time, in what order will they be removed?

/

2

ABCD
ABDC
DCAB
DCBA

Add individual feedback

What data structure is used to perform recursion?

/

2

Stack

Queue
Linked List
Arrays

Add individual feedback

Which is/are the application(s) of stack?

/

2

Function calls
Parentheses check
Evaluation of arithmetic expressions
All of the above

Add individual feedback

Quiz Questions

What is the maximum number of children that a binary tree node can have? *

/

2

0
1
2

3

Add individual feedback

Consider a node in a binary tree is stored at data[i] then its right child is at

/

2

data[i+1]
data[2i+1]

data[2i+2]
data[i+2]

Correct answer

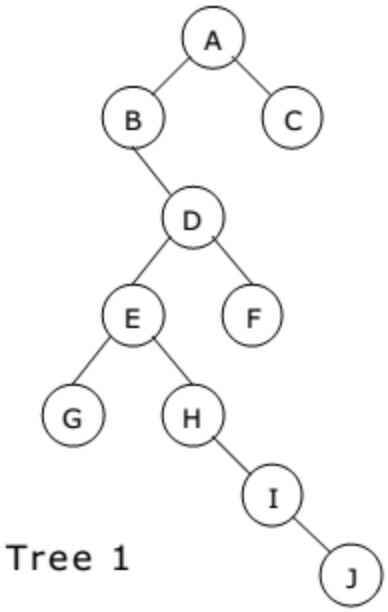
data[2i+2]

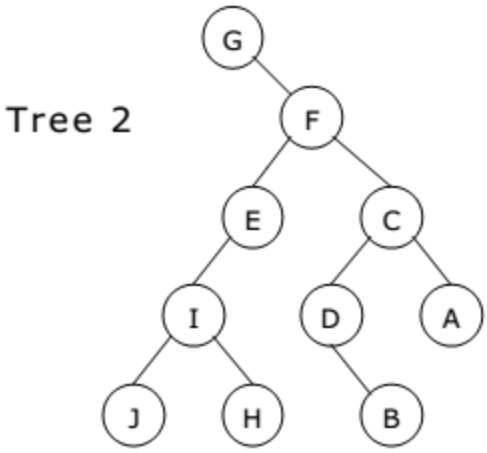
Add individual feedback

which traversal will have same sequence for tree1 and tree2?

/

2





postorder postorder
postorder inorder

inorder postorder
inorder inorder

Add individual feedback

The height of a BST is given as h. Consider the height of the tree as the no. of edges in the longest path from root to the leaf. The maximum no. of nodes possible in the tree is?

/

2

math.pow(2,h-1)-1
math.pow(2,h+1)-1

math.pow(2,h)-1
math.pow(2,h+1)+1

Add individual feedback

Suppose a binary tree is constructed with n nodes, such that each node has exactly either zero or two children. The maximum height of the tree will be?

/

2

(n+1)/2
(n-1)/2

n/2 -1
(n+1)/2 -1

Add individual feedback

Level of a node is distance from root to that node. For example, level of root is 1 and levels of left and right children of root is 2. The maximum number of nodes on level i of a binary tree is In the following answers, the operator '^' indicates power

/
2

2^i-1

2^i
2^i+1
2^(i+1/2)

Add individual feedback

if level is 3 then there will be maximum how many nodes in the binary tree

/
2

3
5
7

4

Add individual feedback

A full binary tree is a tree in which every node in the tree has either 0 or 2 children. Suppose root is at height 0 then minimum no of node in full binary tree of height 3 will be

/
2

7

5
4
8

Add individual feedback

In a full binary tree, every internal node has exactly two children. A full binary tree with 2n+1 nodes contains

/
2

n leaf node
n internal nodes

n-1 leaf nodes
n-1 internal nodes

Add individual feedback

Which traversal reach root at last?

/
2

inorder
postorder

preorder
none ofthese

Add individual feedback

The balance factor of a node in a binary tree is defined as _____

/
2

addition of heights of left and right subtrees
height of right subtree minus height of left subtree
height of left subtree minus height of right subtree

height of right subtree minus one

Add individual feedback

A binary tree stored using linked representation can be converted to its mirror image by traversing it in_____.

/

2

In order.
Preorder

Post order.
Any order.

Add individual feedback

A full binary tree with ‘n’ non-leaf nodes contains _____ nodes.

/

2

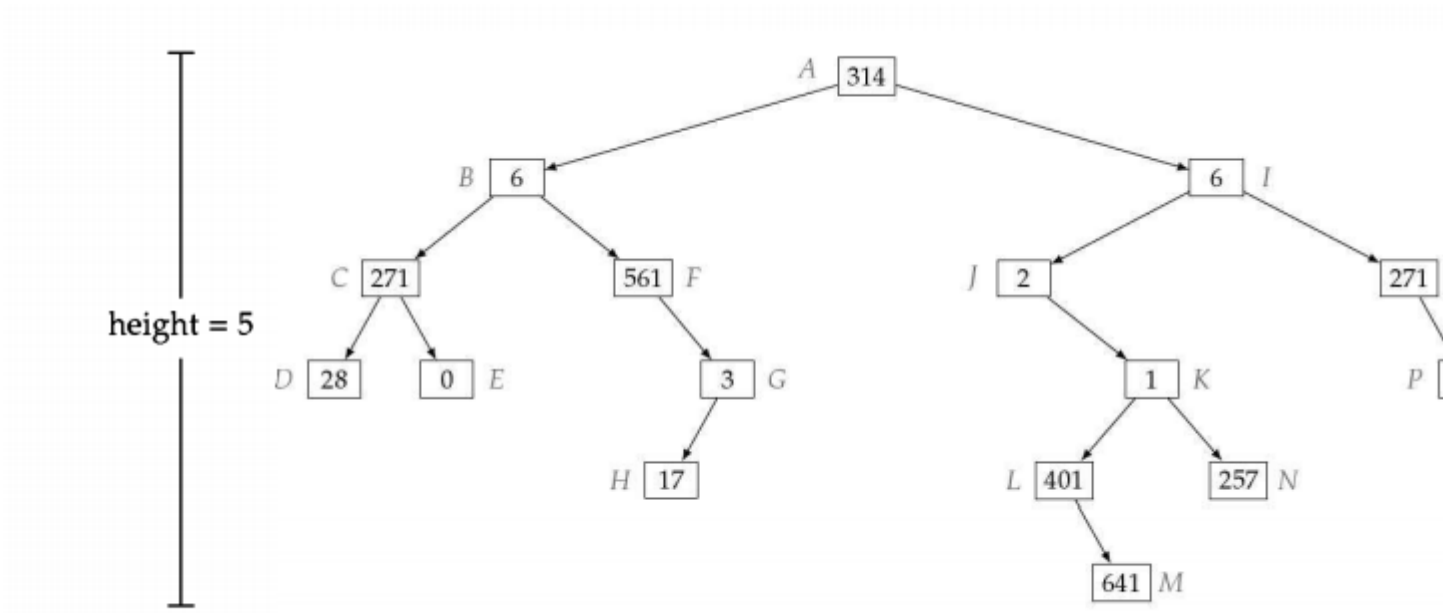
log2 n
n+1 .
2n
2n+l

Add individual feedback

Which of the following option is preorder traversal of the below tree?

/

2



(D,C,E,B, E,H, G,A,J,L, M,K,N,I,O,P).
(A,B,C,D,E, F, G,H, I,J, K,L,M,N,O,P).

(D, E,C,H,G,F,B,M,L,N,K,J, P,O,I,A)
(A B I C F J O D E G K P H L N M)

Add individual feedback

A binary tree is said to be height-balanced if for each node in the tree, the difference in the height of its left and right subtrees is

/

2

atmost zero
atmost one

atleast zero
one

Add individual feedback

Quiz Questions

The number of edges from the root to the node is called _____ of the tree. *

/

2

a)Height
b) Depth

c) Length
d) Width

Add individual feedback

The number of edges from the node to the deepest leaf is called _____ of the tree. *

/
2

a) Height

b) Depth
c) Length
d) Width

Add individual feedback

What is a full binary tree?

/
2

a) Each node has exactly zero or two children

b) Each node has exactly two children
c) All the leaves are at the same level
d) Each node has exactly one or two children

Add individual feedback

In a full binary tree if number of internal nodes is I, then number of leaves L are?

/
2

a) L = 2*I
b) L = I + 1

c) L = I – 1

d) L = 2*I – 1

Add individual feedback

In a full binary tree if there are L leaves, then total number of nodes N are?

/

2

a) N = 2*L
b) N = L + 1
c) N = L – 1
d) N = 2*L – 1

Add individual feedback

Quiz Questions

What is value of i start within for loop?What is the val of result? *

/

2

```
String s="-456";int result = 0;

for (int i = s.charAt(0) =='-' ? 1 : 0; i < s.length(); ++i)

{

final int digit = s.charAt(i) - '0';

result = result * 10 + digit; }

return s.charAt(0) == ? -result : result;
```

0 456
1 -456

0 -456
1 456

Add individual feedback

For example, if the string is "615", base b1 is 7 and convert string to base b2 is 14, then the result should be

/

2

17C

132
1A7
306

Add individual feedback

The bigger issue is the time-complexity—it takes 6 times of each 26 steps to get to "ZZZZZZ". In general, the time complexity is *

/

2

O(n)
O(26)

$O(26^n)$

Option 3

O(k)

Add individual feedback

What is the col id value for String s="AAC"? *

/

2

702
703

705

704

Add individual feedback

String s=""A man, a plan, a canal, Panama." Find the boolean value that is returned here based on the above input to s.

/

2

```
int i = 0, j = s.length() - 1;
while (i < j) {
  // i and j both skip non-alphanumeric characters.
  while (!Character.isLetterOrDigit(s.charAt(i)) && i < j) {
    ++i;
  }
  while (!Character.isLetterOrDigit(s.charAt(j)) && i < j) {
    --j;
  }
  if (Character.toLowerCase(s.charAt(i++))
      != Character.toLowerCase(s.charAt(j--))) {
    return false;
  }
}
return true;
```

true

false

Add individual feedback

What is the time complexity to reverse a set of words in a sentence?

/

2

O(n)

O(n *n)

Add individual feedback

What is the next String for look and say pattern where S="111221"?

/

3

```
private static String nextNumber(String s) {
  StringBuilder result = new StringBuilder();
  for (int i = 0; i < s.length(); ++i) {
    int count = 1;
    while (i + 1 < s.length() && s.charAt(i) == s.charAt(i + 1)) {
      ++i;
      ++count;
    }
    result.append(count);
    result.append(s.charAt(i));
  }
  return result.toString();
}
```

2112211

312211

121112

132211

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Practice Quiz (CSW 2)

What is the time complexity of a program that takes two arrays Arr1[n] and Arr2[m] representing integers, and returns an integer representing their product?

A. O(1)
B. O(n)
C. O(m)
D. O(n*m)

What is the space complexity of a program that takes two arrays Arr1[n] and Arr2[m] representing integers, and returns an integer representing their product?

A. O(n)
B. O(m)
C. O(n+m)
D. O(n*m)

What is the output of a program which takes an array of n integers, where A[i] denotes the maximum you can advance from index i, and returns whether it is possible to advance to the last index starting from the beginning of the array? Let A = {3, 3, 1, 0, 2, 0, 1}

A. It is not possible to reach the last index.
B. It is possible to reach the last index.

What is the time complexity of the Dutch National Flag algorithm, where we make a single pass and move all the elements less than the pivot to the beginning and in the second pass we move the larger elements to the end.

A. O(1)
B. O(N)
C. O(N+N)
D. O(N*M)

What is the output of a program which takes an array of n integers, where A[i] denotes the maximum you can advance from index i, and returns whether it is possible to advance to the last index starting from the beginning of the array? Let A = {3, 2, 0, 0, 2, 0, 1}

A. It is not possible to reach the last index.
B. It is possible to reach the last index.

What is the output of a program which takes an array of n integers, where A[i] denotes the maximum you can advance from index i, and returns whether it is possible to advance to the last index starting from the beginning of the array? Let A = {2, 4, 1, 1, 0, 2, 3}

A. It is not possible to reach the last index.
B. It is possible to reach the last index.

What is the minimum number of jumps required to reach the end of an Array={2, 1, 3, 2, 3, 4, 5, 1, 2, 8}, where A[i] denotes the maximum move you can advance from index i.

A. 2
B. 3
C. 4
D. 5

An array Price[ ]={310, 315, 275, 295, 260, 270, 290, 230, 255, 250} denoting the daily stock price. What is the corresponding to buying and selling one share of that stock once so that maximum profit is earned?

A. Buy at price = 315 & Sell at price = 230
B. Buy at price = 275 & Sell at price = 290
C. Buy at price = 260 & Sell at price = 290
D. Buy at price = 230 & Sell at price = 255

An array Price[ ]={10, 22, 5, 75, 65, 80} denoting the daily stock price. What is the maximum profit by buying and selling a share of that stock at most twice?

A. Max profit=75
B. Max profit=80
C. Max profit=87
D. Not possible to earn

An array Price[ ]={2, 30, 15, 10, 8, 25, 80} denoting the daily stock price. What is the maximum profit by buying and selling a share of that stock at most twice?

A. Max profit=80
B. Max profit=100
C. Max profit=106
D. Not possible to earn

An array Price[ ]={100, 30, 15, 10, 8, 25, 80} denoting the daily stock price. What is the maximum profit by buying and selling a share of that stock at most twice?

A. Max profit=72
B. Max profit=92
C. Max profit=70
D. Not possible to earn

An array Price[ ]={90, 80, 70, 60, 50} denoting the daily stock price. What is the maximum profit by buying and selling a share of that stock at most twice?

A. Max profit=40
B. Max profit=30
C. Max profit=10
D. Not possible to earn

An array Price[ ]={12, 11, 13, 9, 12, 8, 14, 13, 15} denoting the daily stock price. What is the maximum profit by buying and selling a share of that stock at most twice?

A. Max profit=7
B. Max profit=12
C. Max profit=10
D. Max profit=3

What is the time complexity of a program that takes an integer argument and returns all the primes between 1 and that integer using trial-division method.

A. O(n * n)
B. O(n^(1/2))
C. O(n^(3/2))
D. O(n log n)

What is the time complexity of a program that takes an integer argument and returns all the primes between 1 and that integer using the sieve method.

A. O(n^(3/2))
B. O(n log n)
C. O(log n)
D. O(n log log n)

What is the space complexity of a program that takes an integer argument and returns all the primes between 1 and that integer using the sieve method.

A. O(n)
B. O(n^(1/2))
C. O(n log n)
D. O(n log log n)

A program that takes an integer argument and returns all the primes between 1 and that integer using the improve sieve method. What is the size of a boolean array to encode the candidates, i.e., if the ith entry in the array is true, then i is potentially a prime?

A. size = n
B. size = n+1
C. size = Math.floor(0.5 * (n - 3)) + 1
D. size = Math.floor(0.5 * n) + 1

Suppose A[ ] = <0, 1, 2, 0, 2, 1, 1> and the pivot index is 1, then apply the Dutch National Flag algorithm to reorder the array. What is the final output after applying the algorithm?

A. [0, 1, 2, 0, 2, 1, 1]
B. [0, 0, 1, 1, 1, 2, 2]
C. [0, 0, 1, 1, 2, 2, 1]
D. [1, 0, 0, 1, 1, 2, 2]

Suppose ArrayList = [WHITE, BLUE, WHITE, BLUE, RED, RED] and the pivot index is 1, then apply the Dutch National Flag algorithm to reorder the ArrayList. What is the final output after applying the algorithm?

A. [WHITE, BLUE, WHITE, BLUE, RED, RED]
B. [RED, RED, BLUE, WHITE, BLUE, WHITE]
C. [WHITE, WHITE, RED, RED, BLUE, BLUE]
D. [RED, RED, WHITE, WHITE, BLUE, BLUE]

What is the time complexity of accessing an element in ArrayList?

A. O(n)
B. O(1)
C. O(nlogn)
D. O(2)

What is the time complexity of the Dutch National Flag algorithm, where we make a single pass and move all the elements less than the pivot to the beginning and in the second pass we move the larger elements to the end.

A. O(1)
B. O(N)
C. O(N*N)
D. O(N*M)

Apply Quick sort ascending order on a given sequence 5, 3, 6, 7, 9, 2, 8, 4. What is the sequence after the first phase, if pivot is the last element?

A. 5, 3, 6, 7, 9, 2, 8, 4
B. 2, 3, 4, 5, 6, 7, 8, 9
C. 7, 9, 5, 8, 6, 4, 2, 3
D. 3, 2, 4, 7, 9, 5, 8, 6

What is the order of variables in Enum?

A. Ascending order
B. Descending order
C. Random order
D. Depends on the order() method

What will be the output of the following Java code?

```
enum Season

{

   WINTER, SPRING, SUMMER, FALL

};

System.out.println(Season.WINTER.ordinal());
```

A. 0
B. 1
C. 2
D. 3

What will be the output of the following code?

```
public class test {
	public static void dutchFlagPartition(int PivotIndex,
List<Integer> A) {
		int pivot=A.get(PivotIndex);
		for(int i=0; i<A.size(); ++i) {
			for(int j=i+1; j<A.size(); ++j) {
				if(A.get(j) < pivot) {
					Collections.swap(A, i, j);
					break;
				}
			}
		}
		for(int i=A.size()-1; i>0 && A.get(i) >= pivot; --i) {
			for(int j=i-1; j>=0 && A.get(j) >= pivot; --j) {
				if(A.get(j) >= pivot) {
					Collections.swap(A, i, j);
					break;
				}
			}
		}
	}
	public static void main(String[] args) {
		ArrayList<Integer> al=new ArrayList<>();
		al.add(0);
		al.add(1);
		al.add(2);
		al.add(0);
		al.add(2);
		al.add(1);
		al.add(1);
		System.out.println(al);
		int pivotindex = al.indexOf(1);
		dutchFlagPartition(pivotindex, al);
		System.out.println(al);
	}	}
```

A. [0, 1, 2, 0, 2, 1, 1]
B. [0, 0, 1, 1, 1, 2, 2]
C. [0, 0, 1, 2, 1, 2, 1]
D. [1, 0, 0, 1, 1, 2, 2]]

What is the space complexity of the Dutch National Flag algorithm, where we make a single pass and move all the elements less than the pivot to the beginning and in the second pass we move the larger elements to the end.

A. O(1)
B. O(N)
C. O(N*N)
D. O(N*M)

What will be the output of the following code? *

```
public class test {
	public static enum Color {WHITE, RED, BLUE; }
	public static void dutchFlagPartition(int PivotIndex, List<Color> A) {
		Color pivot=A.get(PivotIndex);
		int smaller=0, equal=0, larger=A.size();
		while (equal < larger) {
			if (A.get(equal).ordinal() < pivot.ordinal()) {
				Collections.swap(A, smaller++, equal++);
			}
			else if (A.get(equal).ordinal() == pivot.ordinal()) {
				++equal ;
			}
			else { // A . get (equal) > pivot.
				Collections.swap(A, equal, --larger);
			}
		}
	}
	public static void main(String[] args) {
		ArrayList<Color> al=new ArrayList<>();
		al.add(Color.RED);
		al.add(Color.RED);
		al.add(Color.WHITE);
		al.add(Color.BLUE);
		al.add(Color.WHITE);
		al.add(Color.BLUE);
		al.add(Color.RED);
		al.add(Color.RED);
		System.out.println(al);
		int pivotindex=al.indexOf(Color.RED);
		dutchFlagPartition(pivotindex, al );
		System.out.println(al);
	}	}
```

A. [RED, RED, WHITE, BLUE, WHITE, BLUE, RED, RED]
B. [WHITE, WHITE, BLUE, RED, BLUE, RED, RED, RED]
C. [WHITE, WHITE, RED, RED, RED, RED, BLUE, BLUE]
D. [RED, RED, RED, RED, WHITE, WHITE, BLUE, BLUE]

Given the array[ ] = {1,2,3,4} and a permutation array p[ ] = {3,2,1,0}. What is the output after permuting the given array[ ] based on the permutation p[ ]?

A. {4, 3, 2, 1}
B. {4, 3, 1, 2}
C. {1, 2, 3, 4}
D. {1, 2, 4, 3}

Given the array[ ] = {11, 32, 3, 42} and a permutation array p[ ] = {2, 3, 0, 1}. What is the output after permuting the given array[ ] based on the permutation p[ ]?

A. {11, 32, 3, 42}
B. {3, 42, 11, 32}
C. {3, 11, 32, 42}
D. {3, 11, 42, 32}

Given the array[ ] = {a, b, c, d} and a permutation array p[ ] = {2, 0, 1, 3}. What is the output after permuting the given array[ ] based on the permutation p[ ]?

A. {a, b, c, d}
B. {b, c, d, a}
C. {b, c, a, d}
D. {b, d, c, a}

Given the array[ ] = {a, b, c, d} and a permutation array p[ ] = {3, 1, 2, 0}. What is the output after permuting the given array[ ] based on the permutation p[ ]?

A. {a, b, c, d}
B. {b, c, a, d}
C. {b, c, d, a}
D. {d, b, c, a}

Compute the next permutation of an input {6, 2, 1, 5, 4, 3, 0} under dictionary ordering.

A. {6, 2, 3, 0, 1, 4, 5}
B. {6, 2, 1, 0, 3, 4, 5}
C. {6, 2, 1, 5, 4, 3, 0}
D. {6, 2, 3, 5, 4, 1, 0}

Compute the next permutation of an input {0, 1, 2, 5, 3, 3, 0} under dictionary ordering.

A. { Empty }
B. {0, 1, 2, 5, 3, 3, 0}
C. {0, 1, 3, 5, 3, 2, 0}
D. {0, 1, 3, 0, 2, 3, 5}

Compute the next permutation of an input {6, 5, 4, 3, 2, 3, 2, 1, 0} under dictionary ordering.

A. { Empty }
B. {6, 5, 4, 3, 3, 0, 1, 2, 2}
C. {6, 5, 4, 3, 3, 2, 2, 1, 0}
D. {6, 5, 4, 3, 3, 2, 2, 0, 1}

Compute the next permutation of an input {9, 5, 4, 3, 1} under dictionary ordering.

A. { Empty }
B. {9, 5, 4, 3, 1}
C. {9, 5, 4, 1, 3}
D. {9, 5, 3, 4, 1}
E. {9, 5, 3, 1, 4}

A program that takes an integer argument and returns all the primes between 1 and that integer using the general sieve method. What is the size of a boolean array to encode the candidates, i.e., if the ith entry in the array is true, then i is potentially a prime?

A. size = n
B. size = n+1
C. size = Math.floor(0.5 * (n - 3)) + 1
D. size = Math.floor(0.5 * n) + 1

A program that takes an integer argument and returns all the primes between 1 and that integer using the improve sieve method. What is the size of a boolean array to encode the candidates, i.e., if the ith entry in the array is true, then i is potentially a prime?

A. size = n
B. size = n+1
C. size = Math.floor(0.5 * (n - 3)) + 1
D. size = Math.floor(0.5 * n) + 1

What is the time complexity to delete an element at index i from an ArrayList?

A. O(n-i)
B. O(1)
C. O(nlogn)
D. O(2)

Given an array of non-negative integers A, you are initially positioned at the array's first index. Each element in the array represents your maximum advance length at that position. Determine if you can reach the last index. Determine the output for the Input: A= [2, 3, 1, 1, 4].

A. True
B. False

Given an array of non-negative integers A, you are initially positioned at the array's first index. Each element in the array represents your maximum advance length at that position. Determine if you can reach the last index. Determine the output for the Input: A= [3, 2, 1, 0, 4].

A. True
B. False

You are given an array of prices where prices[i] is the price of a given stock on the ith day. Find the maximum profit you can achieve by buying and selling a stock once and twice, respectively.If you cannot achieve any profit, return 0. Input : prices = [12, 11, 13, 9, 12, 8, 14, 13, 15]

A. 6, 9
B. 7, 10
C. 8, 9
D. 8, 10

Compute the next permutation of an input {0, 1, 2, 5, 3, 3, 0} under dictionary ordering.

A. {0, 1, 2, 0, 3, 3, 5}
B. {0, 1, 2, 5, 3, 3, 0}
C. {0, 1, 3, 5, 3, 2, 0}
D. {0, 1, 3, 0, 2, 3, 5}

Given an array A[ ]={3, 7, 5, 11, 13}. How many equally likely subsets of size 3 are obtained from the array A[ ]?

A. 5
B. 6
C. 10
D. 120

Compute the next permutation of an input {8, 6, 5, 2, 0} under dictionary ordering.

A. { Empty }
B. {8, 6, 5, 2, 0}
C. {8, 5, 6, 0, 2}
D. {8, 6, 2, 5, 0}
E. {8, 6, 2, 0, 5}

What is the time complexity in offline random sampling of the input array with size "n" and returns a subset of size "k" of the array elements?

A. O(n)
B. O(n+k)
C. O(n*k)
D. O(k)

Compute random permutations of A[ ]={0, 1, ..., n-1} with equal probability, where n=3. Random number generator returns integers 1, 2, 3, and 3 respectively.

A. {1, 0, 2, 3}
B. {1, 2, 0, 3}
C. {1, 2, 3, 0}
D. {0, 1, 2, 3}

What is the output of the following code?

```
import java.util.*;
public class Output {

	public static void main(String[] args) {
		HashMap<Integer, Integer> map=new HashMap<>();
		map.put(10, 1);
		map.put(20, 2);
		map.put(20, 2);
		map.put(40, 4);
		map.put(20, 6);
		map.put(50, 5);
		System.out.println(map);
	}
}
```

A. {50=5, 20=6, 40=4, 10=1}
B. {50=5, 20=2, 40=4, 10=1}
C. {50=5, 20=2, 20=6, 40=4, 10=1}
D. {50=5, 20=2, 20=6, 40=4, 20=2, 10=1}

Compute: 20 & (20 - 1) *

A. 15
B. 16
C. 17
D. 18

Compute: 20 & ~(20 - 1) *

A. 4
B. 5
C. 6
D. 7

Compute: 11 & (11 - 1) *

A. 8
B. 9
C. 10
D. 11

Compute: 11 & ~(11 - 1) *

A. 1
B. 2
C. 3
D. 4

Compute: 16 & (16 - 1) *

A. 10
B. 1
C. 16
D. 0

Compute: 16 & ~(16 - 1) *

A. 15
B. 16
C. 10
D. 0

Compute: 0010 << 2 *

A. 1000
B. 0100
C. 0010
D. 0000

Compute: 1011 >>>3 *

A. 0101
B. 0001
C. 1011
D. 1111

Compute: 1011 >> 1 *

A. 1111
B. 0000
C. 1101
D. 0101

Compute: 0011 >> 2 *

A. 0000
B. 0001
C. 1001
D. 0011

Compute the parity of 10001000:

A. 0
B. 1
C. 2
D. 3

What is the time complexity to computing the parity using a lookup table?

A. O(n)
B. O(k)
C. O(log n)
D. O(n/L)

For the parity computation, if n=16 (word size), L=4 (sub word size), then preferable BitMask=_____.

A. 00000000 00000001
B. 00000000 00000011
C. 00000000 00001111
D. 00000000 11111111

Which operation replaces the lowest bit that is "1" with "0" ?

A. X = (X & 1)
B. X = (X ^ 1)
C. X = X & ~(X-1)
D. X = X & (X-1)

Which bitwise operator is used for flipping bits?

A. Bitwise OR (|)
B. Bitwise AND (&)
C. Bitwise XOR (^)
D. All of the above

What is the output of the following code?

```
package mypackage;
public class test {
	static int CountBit(long n) {
		int count=0;
		while(n>0) {
			n &=(n-1);
			count++;
		}
		return count;
	}
	public static void main(String[] args) {
		long i=45;
		System.out.println(CountBit(i));
	}

}
```

A. 5
B. 4
C. 3
D. 0

What is the output of the following code?

```
package mypackage;
public class test {

	public static void main(String[] args) {
		int a=5;
		int b=7;
		System.out.println("a^b = " + (a ^ b));
	}
}
```

A. a^b = 2
B. a^b = 5
C. a^b = 7
D. a^b = 0

Compute: -10 >> 2

A. -3
B. -2
C. -5
D. 5

Compute: 5 << 2

A. 11
B. 10
C. 20
D. 30

What is the output of the following code?

```
package mypackage;
public class test {

	public static void main(String[] args) {
		int x=0b11010111;
		x = x ^ (x >>> 4);
		System.out.println("x=" + Integer.toBinaryString(x));
	}
}
```

A. x=00001010
B. x=11111010
C. x=10101010
D. x=11011010

Which among the following is not a primitive data type in Java?

A. char
B. String
C. byte
D. short

What is the default boolean literal assigned to a boolean variable in Java?

A. true
B. false
C. undefined
D. None of the above

What will be the output of the following code? (Input to the array represents the integer 123.)

```
class Solution {
public int[] do(int[] digits) {

    int[] tempArray = null;
    if(digits[digits.length-1] == 9) {
        int positions = 1;
        for(int i = digits.length-1; i >=0; i--) {
            if(digits[i] == 9) {
                digits[i] = 0;
                positions++;
            } else {
                digits[i] +=1;
                break;
            }
        }
        if(positions > digits.length) {
            tempArray = new int[digits.length+1];
            tempArray[0] = 1;
            for(int i = 0; i < digits.length; i++) {
                tempArray[i+1] = digits[i];
            }
        }
    } else {
        digits[digits.length-1] +=1;
    }
    return (tempArray == null ? digits : tempArray);
}
}
```

A. [1,2,2]
B. [1,2,3]
C. [1,2,4]
D. [1,1,1]

What is the time complexity of the Dutch National Flag algorithm, where we make a single pass and move all the elements less than the pivot to the beginning and in the second pass we move the larger elements to the end.

A. O(1)
B. O(N)
C. O(N*N)
D. O(N*M)

What will be the output of the following code? (Input to the array represents the integer 999.)

```
public static List<Integer> Do (List<Integer> A) {

            int n = A.size() - 1;
            A.set(n, A.get(n) + 1);
            for(int i = n; i > 0 && A.get(i) == 10; --i) {
                  A .set (i, 0) ;
                  A.set(i - 1, A.get(i - 1) + 1);
            }
            if (A .get (0) == 10) {
                  A.set(0, 0) ;
                  A.add(0, 1);
            }
          return A ;
      }
```

A. [9, 9, 0]
B. [9, 9, 9]
C. [0, 0, 0]
D. [1, 0, 0, 0]

Modify the above runtime in such a way that the number of invocations or (multiplication) will be less than 36 for evaluation of pow (2,37). How many invocations is required to compute the pow(2,37)?

A. 10
B. 11
C. 6
D. 7

Modify the above runtime in such a way that the number of invocations or (multiplication) will be less than 29 for evaluation of pow (2,30). How many invocations is required to compute the pow(2,30)?

A. 6
B. 7
C. 10
D. 11

What is the output of the following code?

```
public class test {
	public static long Do (long x, long y) {
		long c;
		while(y != 0) {
			c = x & y;
			x = x ^ y;
			y = c << 1;
		}
		return x;
	}
	public static void main(String[] args) {
			long x=0b1101, y=0b1001;
			long result= Do(x,y);
			System.out.println(result);
		}

	}
```

A. 9
B. 13
C. 22
D. 25

What is the output of the following code?

```
public class test {
	public static long Do (long x, long y) {
		while (y != 0)
	    {
	        long b = (~x) & y;
	        x = x ^ y;
	        y = b << 1;
	    }
	    return x;
	}
	public static void main(String[] args) {
			long x=0b1101, y=0b1001;
			long result= Do(x,y);
			System.out.println(result);
		}

	}
```

A. 22
B. 20
C. 9
D. 4

What is the output of the following code?

```
public class test {
	public static long Do (long x, long y) {
		if (y == 0)
			return 1;
		else if (y % 2 == 0)
			return Do(x, y / 2) * Do(x, y / 2);
		else
			return x * Do(x, y / 2) * Do(x, y / 2);
	}
	public static void main(String[] args) {
		int x = 2;
		int y = 3;
	 System.out.printf("%d", Do(x, y));
	}

}
```

A. 1
B. 5
C. 8
D. 0

Which of these methods of the ArrayList class is used to obtain the present size of an object?

A. size()
B. length()
C. index()
D. capacity()

How to sort elements of ArrayList?

A. Collection.sort(listObj);
B. Collections.sort(listObj);
C. listObj.sort(listObj);
D. Arrays.sort(listObj);

What is the computational complexity of inserting an element in the middle of an array ? (where N is the number of elements in the array)

A. O(1)
B. O(N*N)
C. O(N)
D. O(C)

What will be the output of the following Java program?

```
import java.util.*;
class Arraylist
{
    public static void main(String args[])
    {
        ArrayList obj = new ArrayList();
        obj.add("A");
        obj.add("B");
        obj.add("C");
        obj.add(1, "D");
        System.out.println(obj);
   }
}
```

A. [A, B, C, D]
B. [A, D, B, C]
C. [A, D, C]
D. [A, B, C]

What will be the output of the following Java program?

```
import java.util.*;
class Output
{
    public static void main(String args[])
    {
        ArrayList obj = new ArrayList();
        obj.add("A");
        obj.add(0, "B");
        System.out.println(obj.size());
    }
}
```

A. 0
B. 1
C. 2
D. Any Garbage Value

A pivot element to partition unsorted list is used in:

A - Merge Sort
B - Quick Sort
C - Insertion Sort
D - Selection Sort

A. A
B. B
C. A & B
D. B & C

Apply Quick sort on a given sequence 7 11 14 6 9 4 3 12. What is the sequence after the first phase, pivot is the first element?

A. 6 4 3 7 11 9 14 12
B. 6 3 4 7 9 14 11 12
C. 7 6 14 11 9 4 3 12
D. 7 6 4 3 9 14 11 12

What is the co-ordinate(x,y), width, and height of the intersect rectangle?

Apply the RectangleIntersect algorithm:
R1: (1,2), width=3, height=4
R2: (4,3), width=2, height=4

A. R3: (x,y)=(0,0), width=-1, height=-1
B. R3: (x,y)=(4,3), width=0, height=3
C. R3: (x,y)=(2,3), width=2, height=3
D. R3: (x,y)=(5,3), width=0, height=3

Time complexity of binary search having n elements:

A. O(n)
B. O(n*n)
C. O(log n)
D. O(n log n)

What is the co-ordinate(x,y), width, and height of the intersect rectangle?

Apply the RectangleIntersect algorithm:
R1: (1,2), width=3, height=4
R2: (5,3), width=2, height=4

A. R3: (x,y)=(0,0), width=-1, height=-1
B. R3: (x,y)=(4,3), width=0, height=3
C. R3: (x,y)=(2,3), width=2, height=3
D. R3: (x,y)=(5,3), width=0, height=3

Compute the Space complexity of the following set of algorithm:

```
Algorithm ( A[ ], n)
{
        int i;
        Create B[n];
       For i=1 to n do
            B[i]=A[i];
        Print B[i];
}
```

A. O(n)
B. O(log n)
C. O(1)
D. O(n^2)

Given numbers are 3, 5, 7, 11 and the probabilities are 0.5, 0.333, 0.111, 0.0555 respectively. The random number generated uniformly in [0.0, 1.0] is 0.757. What value would generate one of the 4 numbers according to the specified probabilities using a non uniform random number generator?

A. 3
B. 5
C. 7
D. 11

What is the output of the following code?

```
import java.util.*;
public class output {
	public static void main(String[] args) {
		List<Integer> al = new ArrayList<Integer>();
		al.add(1);
		al.add(3);
		al.add(5);
		al.add(7);
		al.add(9);
		al.add(11);
		int index=Collections.binarySearch(al, 8);
		System.out.println("index="+index);
	}
}
```

A. index= -1
B. index= -4
C. index= -3
D. index= -5

What is the output of the following code?

```
import java.util.*;
public class output {
	public static void main(String[] args) {
		ArrayList <ArrayList<Integer>> x = new ArrayList<ArrayList<Integer>>();
		x.add(new ArrayList<Integer>(Arrays.asList(3, 4, 6)));
		x.get(0).add(0, 3);
		x.add(new ArrayList<>(Arrays.asList(3, 8)));
		x.get(1).add(0, 6);
		x.add(new ArrayList<Integer>(Arrays.asList(8, 6, 7)));
		System.out.println(x);
	}
}
```

A. [[3, 4, 6], [6, 3, 8], [8, 6, 7]]
B. [[3, 3, 4, 6], [6, 3, 8], [8, 6, 7]]
C. [[3, 4, 6], [3, 8], [8, 6, 7]]
D. [[3, 4, 6, 3], [3, 8, 6], [8, 6, 7]]

Given numbers are 3, 5, 7, 11 and the probabilities are 0.5, 0.333, 0.111, 0.0555 respectively. The random number generated uniformly in [0.0, 1.0] is 0.833. What value would generate one of the 4 numbers according to the specified probabilities using a non uniform random number generator?

A. 3
B. 5
C. 7
D. 11

Check whether the given 2D array representing a fully completed Sudoku is valid or not valid.

```
ArrayList<ArrayList<Integer> > x = new ArrayList<ArrayList<Integer> >();
x.add(new ArrayList<Integer>(Arrays.asList(7, 9, 2, 1, 5, 4, 3, 8, 6)));
x.add(new ArrayList<Integer>(Arrays.asList(6, 4, 3, 8, 2, 7, 1, 5, 9)));
x.add(new ArrayList<Integer>(Arrays.asList(8, 5, 1, 3, 9, 6, 7, 2, 9)));
x.add(new ArrayList<Integer>(Arrays.asList(2, 6, 5, 9, 7, 3, 8, 4, 1)));
x.add(new ArrayList<Integer>(Arrays.asList(4, 8, 9, 5, 6, 1, 2, 7, 3)));
x.add(new ArrayList<Integer>(Arrays.asList(3, 1, 7, 4, 8, 2, 9, 6, 5)));
x.add(new ArrayList<Integer>(Arrays.asList(1, 3, 6, 7, 4, 8, 5, 9, 2)));
x.add(new ArrayList<Integer>(Arrays.asList(9, 7, 4, 2, 1, 5, 6, 3, 8)));
x.add(new ArrayList<Integer>(Arrays.asList(5, 2, 8, 6, 3, 9, 4, 1, 7)));
```

A. Valid
B. Not Valid

Compute the 5 rows of the Pascal Triangle. (The row index starts from 0)

A. [1, 4, 6, 4, 1]
B. [1, 5, 10, 10, 5, 1]
C. [1, 5, 10, 5, 1]
D. [1, 4, 6, 6, 4, 1]

Compute the spiral ordering of the given 2D Array:

```
1   2   3   4   5   6

7   8   9   10  11  12

13  14  15  16  17  18
```

A. [1 2 3 4 8 12 16 15 14 13 9 5 6 7 11 10]
B. [1 2 3 4 5 6 12 18 17 16 15 14 13 7 8 9 10 11]
C. [1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18]
D. [1 2 3 4 5 6 12 11 10 9 8 7 13 14 15 16 17 18]

The given matrix is rotated by 90 degrees in a clockwise direction. What is the output?

```
1    2   3   4
5    6   7   8
9    10  11  12
13   14  15  16
```

A.
```
1  2  3  4
5  6  7  8
9  10 11 12
13 14 15 16
```

B.
```
4  8  12 16
3  7  11 15
2  6  10 14
1  5  9  13
```

C.
```
4  2  3  16
5  6  7  8
9  10 11 12
1  14 15 13
```

D.
```
13 9  5  1
14 10 6  2
15 11 7  3
16 12 8  4
```

What is the binary representation of x=-12? * 1 point

- [ ] 12
- [x] -4
- [ ] 11
- [ ] -12

what is the value of 12|13 and -12|13? * 1 point

- [ ] 13 -2
- [x] 13 -3
- [ ] 12 4
- [ ] 13 4

short c=0;n=6 while(n!=0){ c=c----(n--- 1); n>>>----;} Fill in the blanks if System.out.println(c=2); 2 points

- [ ] & & 2 2
- [ ] ^ & 2 2
- [x] + & 1 2
- [ ] + ^ 1 2

short res=0; x=7 while(x!=0){ res=res^_ ; x=x & (x-_); } Fill in the blanks System.out.println(res=1); 2 points

- 1 1 0
- 2 1 0
- 1 2 0
- 1 1 1 (selected)

Fill in the blanks To swap to bits at position i and j bitmask=(1___i)____(1____j) 2 points

- <<< & <<<
- << | << (selected)
- >>> | >>>
- << & <<

Fill in the blanks to perform addition operation Bitwise carry= x ___y Bitwise sum x___y 2 points

- ^ &
- ^ ^
- & ^ (selected)
- & &

Fill in the blanks public static short parity(long x) { short result =0 ; while (x != 0) { result ___= (x & 1); x___= 1; return result; The time complexity is O(n) * 2 points

- [x] ^ >>>
- [ ] & <<
- [ ] ^ >>
- [ ] & ^

Fill in the blanks public static short parity(long x) { short result = ___; while (x != 0) { result ^= ___; x &= (x - ___); // Drops the lowest set bit of x. return result; Time Complexity is O(k) * 2 points

- [x] 0 1 1
- [ ] 0 0 1
- [ ] 1 0 1
- [ ] 0 0 1

The parity of (11010111) is the same as the parity of (_____) XORed with (_____), which will result to (1010) with time complexity achieved to _____ 2 points

- [ ] 1110 1011 O(n)
- [x] 1101 0111 O(logn)
- [ ] 1010 0111 O(n)
- [ ] 0111 1010 O(logn)

_____ operation clears the lowest setbit in x. 2 points

- (x & 1) ^ x
- x & (x-1)
- x & ~(x-1)
- (x-1) & x

Fill in the blanks public static double power(double x, int y) { double result =____; long power = y; while (power != 0) { if ((power ____ 1) != 0) { result *= _____; }x *= x ; power >>>= 1 ;} return result ; 2 points

- 0 & x
- 0 | x
- 1.0 & x
- 1.0 | x

Quiz 3

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M

Quiz Questions

The quicksort algorithm for sorting arrays proceeds recursively * 2 points

- [ ] such that it reorders the element greater than pivot.
- [x] such that reoders element based on (<= Pivot or > Pivot)
- [ ] such that reorders element == Pivot

int smaller = 0, equal = 0, larger = A.size(); // Keep iterating as long as there is an unclassified element. while (equal < larger) { if (A . get (equal).() < pivot)) {Collect ions . swap (A , ___,_____);} else if (A . get (equal) == pivot){ ++equal ;} else {A . get (equal) > pivot. Collect ions . swap (A , _____,_____);}} 2 points

- [x] Collect ions . swap (A , smaller++, equal++); Collect ions . swap (A , equal, --larger);
- [ ] Collect ions . swap (A , equal++,smaller++); Collect ions . swap (A , equal, --larger);
- [ ] Collect ions . swap (A , smaller++, equal++); Collect ions . swap (A , --larger,equal);

For example, if the array is (1, 2, 9), we would derive the integer 129,add one to get 130, then extract its digits to form (1,3,0). int n = A.size() - 1; 2 points

- [ ] A.set(3, A.get(3) + 1);
- [ ] A.set(2, A.get(2) + 1);
- [x] A.set(2, 0);
- [ ] Other: _____

List<Integer > result= new ArrayList <>(Collections . nCopies (numl . size () + num2.size(), 9));for (int i = numl.size() - 1 ; i >= ®; --i) {for (int j = num2.size() - 1; j >= ® ; --j) { _____} Write the three statements to multiply num1 and num2 . 2 points

result.set((i+j+1), result.get(i+j+1)+num1.get(i)*num2.get(j));
result.set((i+j),result.get(i+j)+result.get(i+j+1)/10);
result.set((i+j+1),result.get(i+j+1)%10);

There are m partial products, each with at most n + 1 digits. We perform 0(1)operations on each digit in each partial product, so the time complexity is _____. 2 points

- ○ 0(n*n)
- ○ 0(n+m)
- ◉ 0(n*m)

Quiz4

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4. Section *

Quiz Questions

5. Here is a brute-force algorithm that uses0(1) additional space—iterate through A of length n,testing if A[i] equals A[i + 1], and, if so,shift all elements at and after i+ 2 to the leftby one. When all entries are equal, the number of shifts is * 2 points

Mark only one oval.

- n times
- n * n times
- Square root of n
- n /2 times

6. For the given example, (2,3,5,5,7,11,11,11,13), when processing the A[3], since we already have a 5 (which we know by comparing A[3] with A[2]), we advance to A[4], Since this is a new value, we move it to the first vacant entry, namely A[3]. Now the array is (2,3,5,7,7,11,11,11,13), and the first vacant entry is A[4]. We continue from A[5], What is the time complexity and space complexity is ? 2 points

7. We can improve runtime by sieving p's multiples from p2 instead of p where the size of Array of length is 2 points

Mark only one oval.

- ◯ n-1
- ◯ n*n/2
- ◯ (int)Math.floor(0.5 * (n - 3)) + 1;

8. For example, to apply (3,1,2,0), we begin with the first entry, 3. We move A[0]to A[3], first saving the original A[3], We update the permutation to (-1,1, 2, 0). We move A[3] to A[0], Since P[0]is negative we know we are done with the cycle starting at 0. We also update the permutation to (-1,1, 2,-4).Write the code for the above example. 5 points

9. Based on the text above question.what is the time complexity and space complexity * 1 point

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For example, if A = (3,3,1,0,2,0,1), we iteratively compute the furthest we canadvance to as 0,3,4,4,4,6,6,7, which reaches the last index, 6. The furthest we can advance from index i is * 2 points

- (●) furthestReachSoFar = Math.max(furthestReachSoFar , i + A.get(i));
- ( ) furthestReachSoFar = Math.max(furthestReachSoFar , i + A.get(i++));
- ( ) furthestReachSoFar = Math.max(furthestReachSoFar++ , i + A.get(i));

: Let A be the array and n its length. —iterate through A,testing if A[i] equals A[i + 1], and, if so,shift all elements at and after i+ 2 to the left by one. Time Complexity is ____. If 2 points

- ( ) O(n)
- (●) O(n*n)
- ( ) O(1)

For example, suppose the input array is (12,11,13,9,12,8,14,13,15). Then the most profit that can be made with a single buy and sell by Day i (inclusive) is F = (0,0, 2, 2,3,3,6,6,7).Write the code to generate the F ArrayList of profits. * 3 points

Math.max (max profit, a.get(i),minimum so far);

As an example, if n = 10, the candidate array is initialized to(F,F, T, T, T, T, T, T, T, T), where T is true and F is false. (Entries 0 and 1 are false, since 0 and 1 are not primes.) We begin with index 2. Since the corresponding entry is one, we add 2 to the list of primes, and sieve out its multiples.The array is now (F,F,T,T,F, F, F,T,F,T,F) 3 points

if(isPrime.get(2); Prime.add(2); for (j=2;j<=10;j+=2){ isPrime.set(j,false);}

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public static short parity(34) { short result = 0; while (x != 0) { result ^= (x & 1); x >>>= 1; return result; } * 2 points

- [ ] 1
- [x] 0
- [ ] 10
- [ ] 7

public static void swapBits(long x, int i, int j) { if (((x >>> i) & 1) != ((x>>> j) & 1)) { long bitMask = (1L << i)|(1L << j); System.out.println(bitMask); } What is the value of bitMask when x=78 ,i=2,j=4 * 2 points

- [x] 20
- [ ] 30
- [ ] 40
- [ ] 36

To compute the parity of (11001010) we would compute the parities of (11), (00), (10), (10). By table lookup we see these are 0,0,1,1, respectively, so the final result is 2 points

- [x] the parity of 0,0,1,1 is 0
- [ ] the parity of 0,0,1,1 is 1
- [ ] the parity of 1,0,1,1 is 1
- [ ] the parity of 1,1,0,0 is 0

Write the bit representation of -12 2 points

11111111111111111111111111110100

what is the value of ~ -12? 2 points

- 12
- 13
- -13
- 11

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Assignment_Quiz2

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Section

Fgg

Quiz Questions

if the condition to group elements larger than pivot is true swapping of elements takes place between * 2 points

```
public static enum Color { RED, WHITE, BLUE }

public static void dutchFlagPartition(int pivotIndex, List<Color> A) {
  Color pivot = A.get(pivotIndex);
  // First pass: group elements smaller than pivot.
  int smaller = 0;
  for (int i = 0; i < A.size(); ++i) {
    if (A.get(i).ordinal() < pivot.ordinal()) {
      Collections.swap(A, smaller++, i);
    }
  }
  // Second pass: group elements larger than pivot.
  int larger = A.size() - 1;
  for (int i = A.size() - 1; i >= 0 && A.get(i).ordinal() >= pivot.ordinal();
       --i) {
    if (A.get(i).ordinal() > pivot.ordinal()) {
```

- ○ Collections.swap (A, i ,larger++)
- ◉ Collections.swap(A , larger--, i);
- ○ Collections.swap(A , smaller++, larger--);
- ○ Collections.swap(A , larger--, smaller++);

What is time complexity and space complexity of above code to partition the array A? * 2 points

O(n) O(1)

What is the code if (A.get(equal).ordinal() < pivot.ordinal()){ _____} where equal is same as mid and smaller is same as low and larger is same as high positions in the Array A. * 2 points

```
public static enum Color { RED, WHITE, BLUE }

public static void dutchFlagPartition(int pivotIndex, List<Color> A) {
  Color pivot = A.get(pivotIndex);

  /**
   * Keep the following invariants during partitioning:
   * bottom group: A.subList(0, smaller).
   * middle group: A.subList(smaller, equal).
   * unclassified group: A.subList(equal, larger).
   * top group: A.subList(larger, A.size()).
   */
  int smaller = 0, equal = 0, larger = A.size();
  // Keep iterating as long as there is an unclassified element.
  while (equal < larger) {
    // A.get(equal) is the incoming unclassified element.
```

- (●) Collections.swap(A , smaller++, equal++);
- ( ) ++equal ;
- ( ) Collections.swap(A , equal, --larger);
- ( ) ++smaller;

What is the code if (A.get(equal).ordinal() ==pivot.ordinal()){ _____} where equal is same as mid and smaller is same as low and larger is same as high positions in the Array A. 2 points

- ( ) Collections.swap(A , smaller++, equal++);
- (●) ++equal ;
- ( ) Collections.swap(A , equal, --larger);
- ( ) ++smaller;

What is the code if (A.get(equal).ordinal() > pivot.ordinal()){ _____} where equal is same as mid and smaller is same as low and larger is same as high positions in the Array A. 2 points

- [x] Collections.swap(A , equal, --larger);
- [ ] ++smaller;
- [ ] ++equal ;
- [ ] Collections.swap(A , smaller++, equal++);

If the result has an additional digit, e.g., 99 + 1 = 100, all digits have to be moved to the right by one. Then the code that is executed to store 100 in array A when input A =[9 9] ie, if (A . get (0) == l0) {// Need additional digit as the most significant digit (i.e A. get (9))// has a carry-out . 2 points

- [ ] A .set (0 ,10) ;A . add (0 , 1);
- [x] A .set (0 ,0) ;A . add (0 , 1);
- [ ] A .set (1 ,9) ;A . add (0 , 1);
- [ ] A .set (0 ,0) ;A . add (0 , 10);

what is the result array updated when code is run once for i=num1.size()-1 and for(j=num2.size()-1;j>=0;j--) when num1=123 and num2 986? 2 points

```
List<Integer> result
    = new ArrayList<>(Collections.nCopies(num1.size() + num2.size(), 0));
for (int i = num1.size() - 1; i >= 0; --i) {
  for (int j = num2.size() - 1; j >= 0; --j) {
    result.set(i + j + 1,
               result.get(i + j + 1) + num1.get(i) * num2.get(j));
    result.set(i + j, result.get(i + j) + result.get(i + j + 1) / 10);
    result.set(i + j + 1, result.get(i + j + 1) % 10);
  }
}
```

- [0 0 0 0 0 18]
- [0 0 0 0 1 8]
- [0 0 0 0 13 8]
- [0 0 0 1 3 8]
- [0 0 0 7 3 8]

What is the time complexity for the above code for multiplying two nos num1 and num2? 2 points

O(nm)

If A = (3, 2,0,0, 2,0,1},we iteratively update the furthest we can advance to calling the below function canReachEnd(A) what is the value of furthestReachSoFar? 2 points

```
public static boolean canReachEnd(List<Integer> maxAdvanceSteps) {
  int furthestReachSoFar = 0, lastIndex = maxAdvanceSteps.size() - 1;
  for (int i = 0; i <= furthestReachSoFar && furthestReachSoFar < lastIndex;
       ++i) {
    furthestReachSoFar
        = Math.max(furthestReachSoFar, i + maxAdvanceSteps.get(i));
  }
  return furthestReachSoFar >= lastIndex;
}
```

- (●) 3
- ( ) 4
- ( ) 5
- ( ) 6

Find the value of maxProfit if array of stock prices: (310,315, 275, 295, 260, 270, 290, 230, 255, 250) 2 points

```
public static double computeMaxProfit(List<Double> prices) {
  double minPrice = Double.MAX_VALUE, maxProfit = 0.0;
  for (Double price : prices) {
    maxProfit = Math.max(maxProfit, price - minPrice);
    minPrice = Math.min(minPrice, price);
  }
  return maxProfit;
}
```

- ( ) 20
- ( ) 25
- (●) 30
- ( ) 35

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What is the answer for x=x|y where x=-5 and y=2? * 2 points

- [ ] 5
- [ ] 2
- [x] -5
- [ ] -2

what is output of 5>>3? 2 points

- [x] 0
- [ ] 1
- [ ] 2
- [ ] 5

what is the output of 64>>>4 2 points

- [ ] 8
- [ ] 12
- [ ] 16
- [x] 4

Write the code to perform swapping of bits can be possible if values at i and j positions for a no(01001001) i=6 and j to be checked . 2 points

- [x] ((no>>>i)&1)!=((no>>>j)&1)
- [ ] ((no<<i)&1)!=((no<<j)&1)
- [ ] ((no<<i)|1)!=((no<<j)|1)
- [ ] ((no>>i)&1)!=((no<<j)&1)

What is the value of x in each iteration when x=7? 2 points

```
public static short parity(long x) {
  short result = 0;
  while (x != 0) {
    result ^= 1;
    x &= (x - 1); // Drops the lowest set bit of x.
  }
  return result;
}
```

- [x] 6 4 1
- [ ] 7 5 3
- [ ] 7 6 5
- [ ] 6 3 1

What is the time complexity for the above code for x=7? 1 point

- [ ] O(n)
- [x] O(k)
- [ ] O(1)
- [ ] None of these

We illustrate the approach with an 8-bit word. The parity of (11010111) is the same as the parity of (1101) XORed with (0111), i.e., of (1010).Note that the first XOR yields (11011010), and only the last 4 bits are relevant going forward. The second XOR yields (11101100), and only the last 2 bits are relevant. The third XOR yields (10011010). The last bit is the result x, and to extract we have to perform a _____ operation to find the parity? 2 points

```
public static short parity(long x) {
  x ^= x >>> 32;
  x ^= x >>> 16;
  x ^= x >>> 8;
  x ^= x >>> 4;
  x ^= x >>> 2;
  x ^= x >>> 1;
```

- ○ OR
- ◉ AND
- ○ NOT
- ○ XOR

What is the time complexity of the above program ? 1 point

O(logn)

Define the weight of a nonnegative integer x to be the number of bits that are set to1 in its binary representation. For example, since 92 in base-2 equals (1011100)2, the weight of 92 is 2 points

- [ ] 3
- [x] 4
- [ ] 0
- [ ] 1

FIND A CLOSEST INTEGER WITH THE SAME WEIGHT for x=6(0000 0110) NUM_UNSIGN_BITS=63 2 points

```
public static long closestIntSameBitCount(long x) {
  // x is assumed to be non-negative so we know the leading bit is 0. We
  // restrict to our attention to 63 LSBs.
  for (int i = 0; i < NUM_UNSIGN_BITS - 1; ++i) {
    if ((((x >>> i) & 1) != ((x >>> (i + 1)) & 1))) {
      x ^= (1L << i) | (1L << (i + 1)); // Swaps bit-i and bit-(i + 1).
      return x;
    }
  }

  // Throw error if all bits of x are 0 or 1.
  throw new IllegalArgumentException("All bits are 0 or 1");
}
```

- [ ] 7
- [x] 5
- [ ] 6
- [ ] 4

Find the value of sum where x=5 and y=3? 2 points

```
public static long foo(long x, long y)    {
long sum = 0;
while (x != 0) {
// Examines each bit of x.
if ((x & 1) != 0) {
sum =sum+y
}
x >>>= 1 ;
y <<= 1 ;
}return sum;
```

- 5
- 10
- 15
- 20

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Find the maximum profit if Array A =[12,11,13,9,12,8,14,13,15] after tracing the function given in the figure. 3 points

```
public static double buyAndSellStockTwice(List<Double> prices) {
  double maxTotalProfit = 0.0;
  List<Double> firstBuySellProfits = new ArrayList<>();
  double minPriceSoFar = Double.MAX_VALUE;

  // Forward phase. For each day, we record maximum profit if we
  // sell on that day.
  for (int i = 0; i < prices.size(); ++i) {
    minPriceSoFar = Math.min(minPriceSoFar, prices.get(i));
    maxTotalProfit = Math.max(maxTotalProfit, prices.get(i) - minPriceSoFar);
    firstBuySellProfits.add(maxTotalProfit);
  }

  // Backward phase. For each day, find the maximum profit if we make
  // the second buy on that day.
  double maxPriceSoFar = Double.MIN_VALUE;
```

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```
  for (int i = prices.size() - 1; i > 0; --i) {
    maxPriceSoFar = Math.max(maxPriceSoFar, prices.get(i));
    maxTotalProfit
        = Math.max(maxTotalProfit, maxPriceSoFar - prices.get(i)
                                   + firstBuySellProfits.get(i - 1));
  }
  return maxTotalProfit;
}
```

- 7
- 10
- 9
- 6

In the above question ,Print the values of maxTotalProfit at each iteration i in an array P. 2 points

- (●) P = [7, 7,7,9,9,10,5,8,6]
- ( ) P = [7, 7,7,9,9,9,5,8,7]
- ( ) P = [7, 7,7,9,7,5,5,8,7]
- ( ) P = [6, 6,6,6,6,5,5,6,6]

Print the array isPrime for n=20. * 2 points

```
// Given n, return all primes up to and including n.
public static List<Integer> generatePrimes(int n) {
  List<Integer> primes = new ArrayList<>();
  // isPrime.get(p) represents if p is prime or not. Initially, set each
  // to true, excepting 0 and 1. Then use sieving to eliminate nonprimes.
  List<Boolean> isPrime = new ArrayList<>(Collections.nCopies(n + 1, true));
  isPrime.set(0, false);
  isPrime.set(1, false);
  for (int p = 2; p <= n; ++p) {
    if (isPrime.get(p)) {
      primes.add(p);
      // Sieve p's multiples.
      for (int j = p; j <= n; j += p) {
        isPrime.set(j, false);
      }
    }
  }
  return primes;
}
```

- ( ) isPrime=[F F T T T T F T F F F T F T F F F T F T F]
- (●) isPrime=[F F T T F T F T F F F T F T F F F T F T F]
- ( ) isPrime=[F F T T F T F T F T F T F T F F F T F T F]
- ( ) isPrime=[F F F F F T F T F F F T F T F F F T F T F]

To reduce the size of the array of isPrime array in above question what is the new value of n is

1 point

- size = (int)Math.floor(1/2* (n - 3)) + 1;
- n = (int)Math.floor((n - 3)) + 1;
- [x] n = (int)Math.floor(0.5 * (n - 3)) + 1;

To print the values of prime nos what is the value of next prime no if(isPrime.get(i)==true) in the above program as now size is reduced and assume prime.add(2) initially.

2 points

(2*i+3)

To sieve out the multiples of p what is the value of j in the for loop?

2 points

- [x] j = ((i *i)*2)+6*i + 3 + p
- j=p+2
- j=j+p

To apply it to an array A = {a,b,c,d),we move the element at index 0 (a) to index 3 and the element already at index 3 (6) to index 0. Continuing, we move the element at index1(b) to index 2 and the element already at index 2 (c)to index 1. Now all elements have been moved according to the permutation, and the result is(d, c, b, a).Then the permutation array P applied to it is _____

2 points

- [x] P={3, 2,1,0}.
- P={2,3,1,0}.
- P={3, 2,0,1}.

Apply the above array A and P=[3,1,2,0] to this program and print the resultant P array before restoring again . 2 points

```
public static void applyPermutation(List<Integer> perm, List<Integer> A) {
  for (int i = 0; i < A.size(); ++i) {
    // Check if the element at index i has not been moved by checking if
    // perm.get(i) is nonnegative.
    int next = i;
    while (perm.get(next) >= 0) {
      Collections.swap(A, i, perm.get(next));
      int temp = perm.get(next);
      // Subtracts perm.size() from an entry in perm to make it negative,
      // which indicates the corresponding move has been performed.
      perm.set(next, perm.get(next) - perm.size());
      next = temp;
    }
  }

  // Restore perm.
  for (int i = 0; i < perm.size(); i++) {
    perm.set(i, perm.get(i) + perm.size());
  }
}
```

- ○ [3,-2,1,-4]
- ○ [-1,1,2,0]
- ○ [-1,1,-2,-4]
- ◉ [-1,-3,-2,-4]

What is the next permutation found after tracing the program nextPermutation(p) where p=[6,2,1,5,4,3,0] 2 points

```
public static List<Integer> nextPermutation(List<Integer> perm) {
  int k = perm.size() - 2;
  while (k >= 0 && perm.get(k) >= perm.get(k + 1)) {
    --k;
  }
  if (k == -1) {
    return Collections.emptyList(); // perm is the last permutation.
  }

  // Swap the smallest entry after index k that is greater than perm[k]. We
  // exploit the fact that perm.subList(k + 1, perm.size()) is decreasing so
  // if we search in reverse order, the first entry that is greater than
  // perm[k] is the smallest such entry.
  for (int i = perm.size() - 1; i > k; --i) {
    if (perm.get(i) > perm.get(k)) {
      Collections.swap(perm, k, i);
      break;
    }
```

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```
  }

  // Since perm.subList(k + 1, perm.size()) is in decreasing order, we can
  // build the smallest dictionary ordering of this subarray by reversing it.
  Collections.reverse(perm.subList(k + 1, perm.size()));
  return perm;
}
```

- p=[6,2,1,5,4,3,0]
- p=[6,2,3,5,4,1,0]
- p=[6,2,3,0,1,4,5]

let the input be A = (3, 7,5,11} and the size be 3. In the first iteration, we use the random number generator to pick a random integer in the interval [0,3], Let the returned random number be 2. We swap A[0] with A[2]— now the array is (5,7,3,11). Now we pick a random integer in the interval [1,3].Let the returned random number be 3. We swap A[I] with A[3]—now the resulting array is (5,11,3,7). Now we pick a random integer in the interval [2,3]. Let the returned random number be 2. When we swap A[2] with itself the resulting array is unchanged. The random subset consists of the first three entries, i.e., (5,11,3}.Write equation to generate the random no as per the iteration.

2 points

i + gen . nextInt (A.size () - i));

The four intervals are [0.0, 0.5),[0.5,0.833),[0.833,0.944),[0.944, 1.0], Now, for example,if the random number generated uniformly in [0.0, 1.0] is 0.873,Then random no can be generated using double n =_____.

2 points

r . nextDouble () ;

For example, suppose n = 100 and k = 4. In the first iteration, suppose we get the random number 28. We update H to (0, 28),(28,0). This means that A[0] is 28 and A[28] is 0—for all other i, A[i] = i. In the second iteration ,suppose we get the random number 42. We update H to (0, 28),(28,0),(1, 42),(42,1). In the third iteration, suppose we get the random number 42 again and then random no next is 64.Then what is next update in H=[(keys,values)]

3 points

(0,28),(1,42),(2,1),(3,64),(28,0),(42,2),(64,3)