Walmart Codehers Previous Year Questions Prepared By Krishan Kumar

1. Choose the option which is not an example of a control statement.
    a. The Loop
    b. The process
    c. The Sequential
    d. The decision

2. Find the time complexity of the following iterative code:

```
int i=0, j=N; // N is any positive integer
while(j>0)
{
    i=i*j;
    // Follow Krishan Kumar on Linkedin
    j=j/2;
}
```

    a. O(1)
    b. O(N)
    c. O(log n)
    d. O(sqrt(n))

3. Catalan numbers can be implemented in several ways, which of these is the best way in terms of time complexity?
    a. Dynamic Programming
    b. Recursion
    c. Binomial coefficients
    d. Equal complexity in every case

4. Which of the following are the two main characteristics used to define the efficiency of an algorithm?
    a. Time and space
    b. Data and time
    c. Processor and memory
    d. Complexity and capacity

5. An array can be defined as:
    a. A data structure which stores heterogeneous data elements
    b. A data structure which stores homogeneous data elements
    c. A data structure which shows hierarchical behavior
    d. All of the above

6. While inserting in a circular queue, which of the following is the correct way to increment the rear value?
   a. rear rear+1
   b. (rear+1) % max
   c. (rear % max)+1
   d. None of the above

7. Find the output of the given code :

```cpp
int main() {
    int arr[8]={1,2,3,4,5,6};
    cout<<arr[2]<<" "<<arr[6]<<" "<<arr[8];
    // Follow Krishan Kumar on Linkedin
    return 0;
}
```

   a. 2, 6,0
   b. 2, 6, garbage value
   c. 3, 6, 1
   d. 3, 0, garbage value

8. Which of the following is the application of stack?
   a. Data Transfer between two asynchronous process
   b. Simulation of limited resource allocation
   c. Compiler Syntax Analyzer
   d. Load balancing

9. Choose the incorrect property of a binary tree:
   a. For every level 'i' (i>=0), there are no more than 2i nodes on that level.
   b. In Binary tree where every node has 0 or 2 children, the number of leaf nodes is always one more than nodes with two children.
   c. If the tree has L levels, then the maximum nodes present can be 2L-1.
   d. If binary tree has N nodes, the number of levels of that tree is at least floor(log(N+1))

10. Which data structure is considered best to find maximum value from a huge collection of data?
    a. Sorted array
    b. Max heap
    c. Min heap
    d. Binary search tree

11. A complete n-ary tree contains 14 internal nodes and 29 leaf nodes. What is the value of n?
    a. 2
    b. 3
    c. 4

     d. 5

12. Find the time complexity of sorting n integers using Radix sort. Each integer has d digits and the digit is in the set of {1,2...,5}.
   a. O(s (n + d))
   b. O(d (n + s))
   c. O((n + s) lg d)
   d. O((n + d) lg s)

13. Calculate the result of the following prefix expression: +, -, *, 8, 4, /, 6, 2, 5
   a. 32
   b. 34
   c. 5
   d. 42

14. Suppose a word is reversed using stack algorithm. What will be the number of stacks required to perform such task?
   a. 1
   b. 2
   c. 3
   d. None of the above

15. f you have n distinct keys, how many distinct binary search trees can be created?
   a. 2n!
   b. (2n)!/(n)!
   c. (n)!/(n-1)!
   d. (2n)!/(n! * (n-1)!)

16. Which of the following methods will start this thread?

```java
public class MyThread implements Runnable
{
    public void run()
    {
    // some code here
    }
}
```

   a. new Runnable(MyThread).run();
   b. new Thread(MyThread).start();
   c. new Thread(new MyThread()).start();
   d. new MyThread().run();

17. A single try block must be followed by which of these?
   a. Finally
   b. Catch
   c. Both finally and catch
   d. None of the above

18. What will be the output of the following Java program?

```
class X
{
    int a;
    double b;
}
class Y extends X
{
    int c;
}
class Output
{
    public static void main(String args[])
    { // Follow Krishan Kumar on Linkedin
        X a = new X();
        Y b = new Y();
        Class obj:
        obj = b.getClass();
        System.out.print(obj.isLocalClass());
    }
}
```

a. 0
b. 1
c. TRUE
d. FALSE

19. What will be the output of the following Java program?

```java
import java.io.*;
public class filesinputoutput
{
    public static void main(String[] args)
    {
        String obj="abc";
        byte b[] = obj.getBytes();
        ByteArrayInputStream obj1 = new ByteArrayInputStream(b);
        for (int i = 0; i < 2; ++i)
        {
            int c;
            while ((c = obj1.read()) != -1)
            {
                if (i == 0)
                {
                    System.out.print(Character.toUpperCase((char)c));
                    // Follow Krishan Kumar on Linkedin
                    obj2.write(1);
                    System.out.print(obj2);
                }
            }
        }
    }
}
```

a. AaBaCa
b. ABCaaa
c. AaaBaaCaa
d. AaBaaCaaa

20. Which of the following methods is used to avoid serialization of new class whose super class already implements Serialization?
    a. writeObject()
    b. readWriteObject()
    c. writeReadObject()
    d. unSerializaedObject()

21. What will be the output of the following Java program?

```java
class recursion
{
    int fact(int n)
    {
        int result;
        if (n == 1)
        return 1;
        result fact(n - 1) * n;
        return result;
    }
}
class Output
{
    public static void main(String args[])
    {
        recursion obj = new recursion();
        // Follow Krishan Kumar on Linkedin
        System.out.print(obj.fact(6));
    }
}
```

a. 1
b. 30
c. 120
d. 720

22. A table has fields F1, F2, F3, F4, and F5, with the following functional dependencies:
F1->F3 F2->F4 (F1, F2)->F5 In terms of normalization, this table is in?
    a. 1NF
    b. 2NF
    c. 3NF
    d. None of the above

23. Which is a bottom-up approach to database design that design by examining the relationship between attributes?
    a. Functional dependency
    b. Database modelling
    c. Normalization
    d. Decomposition

24. What are composite indexes?
    a. Are those which are composed by database for its internal use
    b. A composite index is a combination of index on 2 or more columns
    c. Composite index can never be created
    d. None of the above

25. If a transaction is performed in a database and committed, the changes are taken to the previous state of transaction by
    a. Flashback
    b. Rollback
    c. Both Flashback and Rollback
    d. Cannot be done

26. A indicates an absent value that may exist but be unknown or that may not exist at all.
    a. Empty tuple
    b. New value
    c. Null value
    d. Old value

27. Class (course id, title, dept name, credits, sec id, semester, YEAR, building, room NUMBER, capacity, TIME slot id)
    The SET OF functional dependencies that we require TO hold ON class are:
    course id->title, dept name, credits
    building, room number->capacity
    course id, sec id, semester, year->building, room NUMBER, TIME slot id
    A candidate KEY FOR this schema IS {course id, sec id, semester, YEAR}

    Considering the above conditions, which of the following relation holds?
    a. Course id-> title, dept name, credits
    b. Title-> dept name, credits
    c. Dept name-> credits
    d. Cannot be determined

28. Here which of the following displays the unique values of the column?

    SELECT ____ dept_name FROM instructor;

    a. All
    b. From
    c. Distinct
    d. Name

29. Which of the following is a basic form of grant statement?
    a. GRANT 'privilege list' ON 'relation name or view name' TO 'user/role list';
    b. GRANT 'privilege list' ON 'user/role list' TO 'relation name or view name';
    c. GRANT 'privilege list' TO 'user/role list'
    d. GRANT 'privilege list' ON 'relation name or view name' ON 'user/role list';

30. Let R(A,B,C,D,E,P,G) be a relational schema in which the following FDs are known to hold:
    AB->CD
    DE->P
    C->E
    P->C
    B->G

The relation schema R is?
   a. In BCNF
   b. In 3NF, but not in BCNF
   c. In 2NF, but not in 3NF
   d. Not in 2NF

Coding Questions:

1. You are given a string S of length 2N consisting of only characters 'A' and 'B'. Since you like strings that contain only 'A', you want to possibly convert the given string using some defined process.

   You are allowed to perform the following process exactly N times.

   - Choose any two indices i and j(i<j) in the string and then change all the characters between them. Here, to change the character means to make it 'B' if it is 'A', and vice versa.

   Each index can be chosen exactly once.

   Two ways are considered different if and only if there exists i (1 ≤ is N) such that the pair of the indices chosen in the i-th operation is different.

   Find the number of ways to make the string you like at the end of the process. Since the answer can be large, output it modulo 10^9 +7.

   Input Format:
   The first line of input contains N.
   The next line contains the string of length 2N.

   • 1 <=N<= 100000

   • [S] = 2*N

   • Each character of S is A or B.

   Sample Testcase #0
   2
   BAAB

   Testcase Output
   4

   Explanation
   There are four ways to make all the indices white, as follows:

   • Choose indices 1,3 in the first operation, and choose indices 2,4 in the second operation.

   • Choose indices 2,4 in the first operation, and choose indices 1,3 in the second operation.

• Choose indices 1,4 in the first operation, and choose indices 2,3 in the second operation.
• Choose indices 2,3 in the first operation, and choose indices 1,4 in the second operation

Sample Testcase #1

3

BABBAB

Testcase Output
36

2. Tomorrow is Kerry's birthday. Jim is planning to gift her a rooted tree with n nodes. Nodes are numbered from 1 to n, rooted at node 1. Every node has a cost associated with it and a color either black or white. It's been years and Jim know exactly what combination of colors Kerry will love. So, he knows which target color (Black/White) every node should have at the end.

To do so, he can perform the following operation any number of times:
• Select any node p except a leaf node, and swap colors of any two nodes in the subtree of node p. This operation costs equal to the cost associated with the node p.

He wants that after performing such operations every node finally has the color corresponding to its target.

Help him find out the minimum total cost for such operations after which every node has the corresponding target color, or find out if that is impossible.

Input Format
First line contains a single integer n, the numbers of nodes in the tree (1 ≤ n ≤ 105).
ith line of the next n lines contain 3 space-separated integers Ci, Ui, Ti, denoting the cost of ith node, the initial color of ith node, and target color of ith node respectively. 0 represent white color and 1 represent black color. (1 ≤ Ci ≤ 109, 0 ≤ Ui S 1,0≤ Ti ≤ 1).

Next n-1 lines contain 2 space-separated integers x, y (1 ≤ x ≤ n, 1 ≤ y ≤n, x!=y), meaning that there is an edge between x and y.

It is guaranteed that given edges will constitute a tree.

Output Format

Print a single integer denoted minimum total cost as described, or -1 if it is not possible.

Sample Testcase #0

Testcase Input

4

10 0 0

20 10

30 0 1

40 1 1

4 1

2 3

1 3

Testcase Output

10

Explanation

If we swap node 2 and node 3, every node color will be same as corresponding target color.

Node 2 and node 3 both are in Subtree of node 3 and Subtree of node 1. If we choose subtree of node 3 then cost will be 30, while if we choose subtree of node 1 then cost will be 10 only.

Hence output is 10.

3. Given two strings S and T of length N. You can perform the following operations on string S any number of times:
    1) Rotate it left by 1 character. This operation costs A rupees. Rotating left means the first character of the string becomes last, the second character becomes the first, the third character becomes the second and so on.
    2) Change a character of string s to any other character. This operation costs B rupees.
    Find the minimum cost to make string S equal to string T.

    Input Format
    First line contains the number of test cases T.
    • 1≤ T≤ 100
    First line of each test case contains three integers N, A and B- the size of the strings, the cost of operation 1 and 2 respectively.
    1 <= N <= 1000
    0 <=A, B≤ 10^9

    The next two lines contain the strings S and T.
    Output format
    For each test case, print the minimum cost to make S equal to T.

4. Ella loves to play the number game. In that game, she is given a number num for which she has to repeatedly find the sum of digits and replace the number with its sum of digits: she has to keep doing this until the number only has a single digit.

    You must print the product of the digit obtained and her original number.

Constraints
0<=num<=2^31-1

Input Format
Each test case contains a number num.

Output Format
Print the number after following the above process.
Sample Testcase #0

Testcase Input
38

Testcase Output

76

Explanation
The process is
38→3+8 → 11
11 → 1+1→ 2
Since 2 has only one digit, ans=38*2

Sample Testcase #1

Testcase Input
0

Testcase Output
0
Explanation
Since 0 has only 1 digit, it's the answer.

5. Alice is playing a game where she stands at a point (0,0) on a 2D plane. There are N other people on the plane, and she wants to distribute K number of books to the persons standing near her (one to each). She needs your help to find people standing near her.

Constraints:

0<=k<=N<=10^5

-10^4<=x,y<=10^4

Input Format

The first line contains N (the number of persons).

The next N lines contain a pair of integers denoting the x and y coordinate, respectively.

The last line contains K.

Output Format

You have to print the coordinates of the person in the answer vector.

Sample Testcase #0

Testcase Input

3

1 1

2 2

3 3

1

Testcase Output

1 1

Explanation
The distance between (1, 1) and the origin is sqrt (2).
The distance between (2, 2) and the origin is sqrt (8).
The distance between (3, 3) and the origin is sqrt (18)
Since sqrt (2) is closer to the origin.
We only want the closest k = 1 points from the origin, so the answer is just [[1,1]].

Sample Testcase #1
Testcase Input
2
1 3
-1 1
1

Testcase Output

The closest point is -1,1

6. There is a superhero statue exhibition in a city with n statue. A director came to visit the exhibition. The i'th superhero statue has ai marbles. The director becomes happy every time he passes from a statue with fewer marbles to a more marble one. The organizer is allowed to arrange the statue in any order. What is the maximum number of times the director may become happy while passing from all marble from first to last? In other words maximum possible number of indices i(1<=i<n) such that a[i+1]>a[i].

Constraints:

1<=n<=100

1<=a(i)<=1000

Input Format

The first line contains an integer n, denoting the class size. The second line contains n integers total marble of ai statue.

Output Format

The output should print one integer, the maximum possible number of neighboring pairs, such that a[i+1]>a[i], after the optimal rearrangement.

Sample Testcase #0

Testcase Input

4

200 300 300 200

Testcase Output

2

Explanation

The Optimal Order is 200,300,200,300

Sample Testcase #1

Testcase Input

4

1 1 1 1

Testcase Output

0

Explanation

All elements are the same so there will be 0 elements that satisfy the condition

7. You are given an array nums of size n. Your task is to convert all the even numbers in the array to the odd numbers first by decreasing them by 1 and then find the maximum subarray sum of size k having all the elements distinct in that subarray. If no subarray satisfies the condition, return 0 in that case.

Constraints:

1 <= n<= 100000

1 <= arr[i] <= 2000

1 <= k <= n

Input Format

The first line contains two integers, n and k.

The second line contains the 'n' elements of the Array

Output Format

Print a single number 'x' - the maximum subarray sum satisfying the condition.

Sample Testcase #0

Testcase Input

4 2

1 3 3 1

Testcase Output

4

Testcase Input
3 2
1 1 1

Testcase Output
0
Explanation
No two subarray of size 2 has distinct elements in it. Hence the answer is 0.

That's it my Friend. It took me more than a week to compile all of them honestly. I hope you will like this PDF and prepare with full dedication and get into Walmart.

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