#### <u>Dashboard</u> / My courses / <u>Computer Programming</u> / Topic 2 / <u>Midsem-Theory-Section-B</u>

```
Started on Thursday, 21 September 2023, 5:06 PM
              State Finished
     Completed on Thursday, 21 September 2023, 5:21 PM
        Time taken 15 mins
             Grade 6.00 out of 10.00 (60%)
Question 1
Incorrect
Mark 0.00 out of 1.00
 What does the following function print for n = 25?
 void test(int n) {
    if (n == 0)
       return;
    printf("%d", n%2);
    test(n/2);
   O a. 11111
```

b. 11001

oc. 00000

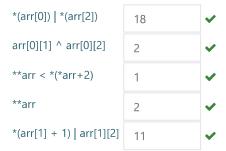
O d. 10011

The correct answer is: 10011

# Question **2**Correct Mark 1.00 out of 1.00

Match the following with respect to the following program segment:

```
int arr[3][3] = \{\{2,4,6\}, \{9,1,10\}, \{16, 64, 5\}\};
```



```
The correct answer is: *(arr[0]) \mid *(arr[2]) \rightarrow 18, arr[0][1] \land arr[0][2] \rightarrow 2, **arr < *(*arr+2) \rightarrow 1, **arr \rightarrow 2, *(arr[1] + 1) \mid arr[1][2] \rightarrow 11
```

```
Question 3
Correct
```

Mark 1.00 out of 1.00

```
int main() {
  char *p = "Programming";
  printf("%c", *& * & * p);
  return 0;
}
```

b. Runtime Error

a. P

- o c. Programming
- O d. Garbage value

The correct answer is:

```
Question 4
Correct
Mark 1.00 out of 1.00
 What will be the output produced by the following C code:
 int main() {
   int arr[5][5];
   printf("%d", ((arr == *arr) && (*arr == arr[0]) ));
   return 0;
   a. 1
   O b. 0
   O c. -1
   O d. 2
 The correct answer is:
Question 5
Correct
Mark 1.00 out of 1.00
  Consider the following recursive function fun(x, y). What is the value of fun(4, 3)?
 int fun(int x, int y) {
   if (x == 0)
   return y;
   return fun(x - 1, x + y);
   a. 13
   O b. 12
   O c. 10
   O d. 9
 The correct answer is:
  13
```

Question **6** Correct Mark 1.00 out of 1.00 Which of the following is the correct way for declaring a float pointer? a. float ptr b. float \*ptr oc. None of the above Od. \*float ptr The correct answer is: float \*ptr Question **7** Incorrect Mark 0.00 out of 1.00 What is the output of the following program? #include <stdio.h> void func(int \*a, int \*b) a = b; \*a = 2;int i = 0, j = 1;int main() func(&i, &j); printf("%d %d", i, j); return 0; a. 2 1 O b. 0 2 O c. 0 1 d. 2 2 The correct answer is:

02

```
Question 8
Incorrect
Mark 0.00 out of 1.00
 What is the problem with following code?
  #include < stdio.h >
 int main() {
    int *ptr = (int *)malloc(sizeof(int));
    ptr = NULL;
    free(ptr);

    a. Compiler Error: free can't be applied on NULL pointer

                                                                                                                                        ×
   b. Dangling Pointer
   oc. Memory Leak
 The correct answer is:
 Memory Leak
Question 9
Correct
Mark 1.00 out of 1.00
 What is the return type of the function with prototype: "int func(char x, float v, double t);"
   a. float
   O b. char
   o c. int
   Od. double
  The correct answer is:
 int
```

ncorrect	
Mark 0.00 out of 1.00	
What happens when one assigns a value to an element of array whose subscript exceeds the size of the array?	
a. Nothing, it is done all the time	×
O b. The element is set to zero	
oc. Other data may be overwritten	
Od. Compiler error	
The correct answer is:	
Other data may be overwritten	
■ Midsem-Theory-Section-A	
Jump to	
Ends	em Theory ►









#### **Problem Description**

The Elections for the new academic year are in full swing!

There are N students in the college and two candidates for the current elections (where N is guaranteed to be an odd number). The students cast their votes in the form of 0s or 1s, where the  $i^{th}$  vote ( $1 \le i \le N$  1 < i < N) being 1 represents a vote to candidate A and it being 0 represents a vote for candidate B.

A candidate wins the elections if they have the strict majority. That is, if the number of votes cast for them is strictly greater than the number of votes cast for the other candidate.

Output (Yes) if candidate A wins the elections and (No) otherwise.

#### **Input Format**

The first line of input contains N, the number of students. Then, N line follows.

The  $i^{th}$  line contains a single integer  $V_i = \{0,1\}$  where 1 represents a vote for candidate A and 0 represents a vote for candidate B.

#### **Input constraints**

- 1 < N < 99
- N is an odd number
- $V_i = \{0, 1\}$

#### **Output Format**

Output (Yes) if candidate A wins the elections and (No) otherwise.

## Sample Input 1

3		Сору
1		
0		
1		

## **Sample Output 1**

Submit solution

My submissions All submissions Best submissions

**✓ Points:** 100 (partial)

**② Time limit:** 1.0s

**Memory limit:** 256M

✓ Allowed languages

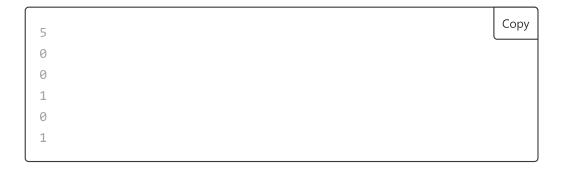




## **Explanation**

There are 2 votes for candidate A and 1 vote for candidate B. Therefore, candidate A has the majority and wins the elections.

## Sample Input 2



## **Sample Output 2**



## **Explanation**

There are 2 votes for candidate A and 3 votes for candidate B. Therefore, candidate B has the majority and wins the elections.



No clarifications have been made at this time.

proudly powered by **DMOJ** | English (en)









#### **Problem Description**

There are N trees in the forest, numbered Tree 1, Tree 2,..., Tree N.

Tree 1, is a special tree which is home to the entire forest. Each tree i ( $2 \le i \le N$ ), has a parent tree  $T_i$  from which it grew. It is guaranteed that  $T_i < i$ .

You are currently on tree N and want to reach tree 1. However, from a given tree, you can only jump to its parent tree (unless you are already on tree 1, in which case you have already reached the destination).

For example, consider the input [1124] which means,

 $T_2=1, T_3=1, T_4=2, T_5=4$  (note that tree 1 has no parent tree). Starting from tree 5, the only option is to jump to tree 4, its parent. Similarly, from tree 4, you jump to tree 2. Finally, from tree 2 you jump to tree 1, taking a total of 3 jumps to go from tree 5 to tree 1.

Find the number of jumps that you need to make in order to reach tree 1 starting from tree N. It can be shown that you can reach it in a finite number of jumps.

#### **Input Format**

The first line of input contains a single integer N, the number of trees.

The following line contains N-1 space separated integers,  $T_2, T_3, \ldots, T_N$  where  $T_i$  denotes the parent of the  $i^{th}$  tree.

#### **Input constraints**

- $2 \le N \le 50$
- $1 < T_i < i \ (2 < i < N)$

#### **Output Format**

Output a single integer denoting the number of jumps required to go from tree  ${\cal N}$  to tree  ${\bf 1}.$ 

#### Sample Input 1

Copy 1 2

Submit solution

My submissions
All submissions
Best submissions

**✓ Points:** 100 (partial)

**② Time limit:** 1.0s

Memory limit: 256M

**✓** Allowed languages



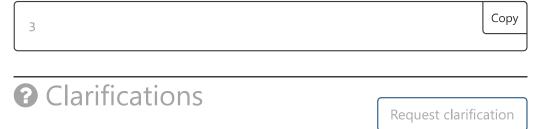


Сору

## Sample Input 2



# **Sample Output 2**



No clarifications have been made at this time.

proudly powered by **DMOJ** | English (en)





#### Max AND



#### **Problem Description**

Given an array of integers A of length N,  $A_1, A_2, \ldots, A_N$ . Define a "set operation" as the following:

• Select any index i where  $1 \le i \le N$  and set the  $j^{th}$  bit of  $A_i$  where j is any integer between 0 and 30 inclusive. In other words, replace  $A_i$  with  $A_i$   $\bigvee$   $2^j$ .

You are also given a non-negative integer K. You can perform **at most** K operations on the given array. After doing so, output the maximum possible value of  $A_1 \cap A_2 \cap \ldots \cap A_N$ .

#### Submit solution

My submissions All submissions Best submissions

**✓ Points:** 100 (partial)

② Time limit: 3.0s

Memory limit: 256M

**✓** Allowed languages

#### **Input Format**

The first line of input contains two space separated integers N and K, denoting the length of the array and the maximum number of operations that can be performed respectively.

The second line contains N space separated integers  $A_1, A_2, \ldots, A_N$  that denote the initial array.

#### **Input constraints**

- $1 \le N \le 2 \times 10^5$
- $0 < K < 10^9$
- $0 \le A_i < 2^{31}$

## **Output Format**

Output the maximum possible value of the bitwise AND of the entire array after performing at most  ${\cal K}$  operations.

## Sample Input 1

3 2 2 1 1





Сору

#### **Explanation**

We set the j=1 bit (that is, the bit corresponding to  $2^1$ ) for  $A_2$  and  $A_3$ . This requires  $2 \le K$  operations. After doing so, the array now looks like [2,3,3], giving us a bitwise AND value of 2 which can be shown is the maximum possible value for the given input.

#### Sample Input 2



#### **Sample Output 2**



## **Explanation**

Here, K=0. So, we cannot perform any operations. Hence, the bitwise AND of the initial array, 4 is our final answer.



No clarifications have been made at this time.

proudly powered by **DMOJ** | English (en)