NUMGAME

Alice and Bob play the following game. They choose a number N to play with. The rules are as follows :

1) Alice plays first, and the two players alternate.

2) In his/her turn, a player can subtract from N any proper divisor (not equal to N) of N. The number thus obtained is the new N.

3) The person who cannot make a move in his/her turn loses the game.

Assuming both play optimally, who wins the game ?

Input :

The first line contains the number of test cases T. Each of the next T lines contains an integer N.

Output :

Output T lines, one for each test case, containing "ALICE" if Alice wins the game, or "BOB" otherwise.

```
Sample Input :
2
1
2


Sample Output :
BOB
ALICE


Constraints :
1 <= T <= 10000
1 <= N <= 1000000000
```

Note : For the first test case, Alice cannot make any move and hence Bob wins the game. For the second test case, Alice subtracts 1 from N. Now, Bob cannot make a move and loses the game.

NUMGAME 2

Alice and Bob play the following game.They choose a number N to play with.The runs are as follows :

1.Bob plays first and the two players alternate.

2.In his/her turn ,a player can subtract from N any prime number(including 1) less than N.The number thus obtained is the new N.

3.The person who cannot make a move in his/her turn loses the game.

Assuming both play optimally,who wins the game ?

Input format:

The first line contains the number of test cases T.Each of the next lines contains an integer N.

Output format:

Output T lines one for each test case,containing "ALICE" if Alice wins the game ,or "BOB" if Bob wins the game.

Example

```
Sample Input:
2
1
2


Sample Output:
ALICE
BOB


Constraints:
1 <= T <= 1000000
1 <= N <= 1000000000
```

Note : For the first test case, Bob cannot make any move and hence Alice wins the game. For the second test case, Bob subtracts 1 from N. Now, Alice cannot make a move and loses the game.

Given ‘n’, print the nth Factorial (using Recursion)

Input: 9

Output: 362880

Given two numbers, find their HCF/GCD and LCM (space-separated) (using Recursion)

Input: 30 18

Output: 6 90

Properties of Modulus

(a+b)%c = a%c + b%c

(a-b)%c = (a%c - b%c + c)%c

(a*b)%c = a%c * b%c

(a/b)%c **not equal to** a%c / b%c

a%c = ((a%c)+c)%c if(a<0)

Given a number ‘a’, a number ‘n’ and a number ‘m’, find (a^n)%m.

Constraints:

0<=a<=10^9

0<=n<=10^9

1<=m<=10^9+9

Example 1:

Input: 2 3 5

Output: 3

Example 2:

Input: 2 40 10^9+9

Output: 511617885

Given a sorted array search if a no. exists in the array. If it exists print the index of the no. in the array else print -1.

Example 1:

Input: 2 5 6 7 8 9 10

10

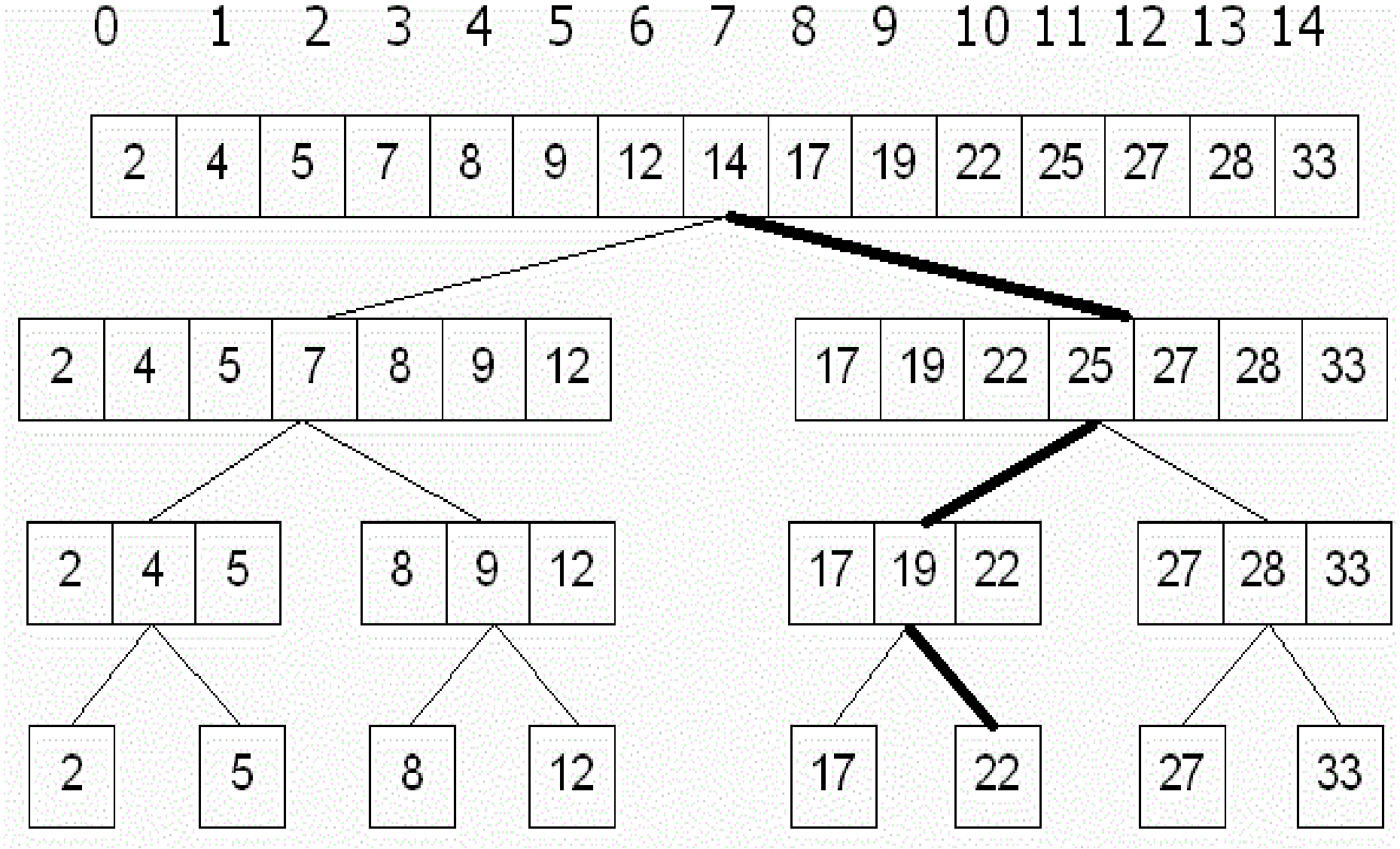
Output: 6

Example 2:

Input: 2 5 6 7 8 9 10

4

Output: -1


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
2 4 5 7 8 9 12 14 17 19 22 25 27 28 33
2 4 5 7 8 9 12
17 19 22 25 27 28 33
2 4 5
8 9 12
17 19 22
27 28 33
2
5
8
12
17
22
27
33

Given ‘n’ and ‘m’ and two sorted arrays of size ‘n’ and size ‘m’ respectively, merge them and print the final sorted array.

Example 1:

Input:

5 8

2 4 7 9 11

1 3 5 6 10 13 16 18

Output: 1 2 3 4 5 6 7 9 10 11 13 16 18

Given the list of numbers, you are to sort them in non decreasing order.

Input

t – the number of numbers in list, then t lines follow [t <= 10^6].

Each line contains one integer: N [0 <= N <= 10^6]

Output

Output given numbers in non decreasing order.

Example

Input:

```
5
5
3
6
7
1
```

Output:

```
1
3
5
6
7
```

MERGESORT

Given a number, print “YES” if it is a palindrome and “NO” if it is not.

Example 1:

Input: 72487427

Output: NO

Example 2:

Input: 7247427

Output: YES