

Next Greater Element

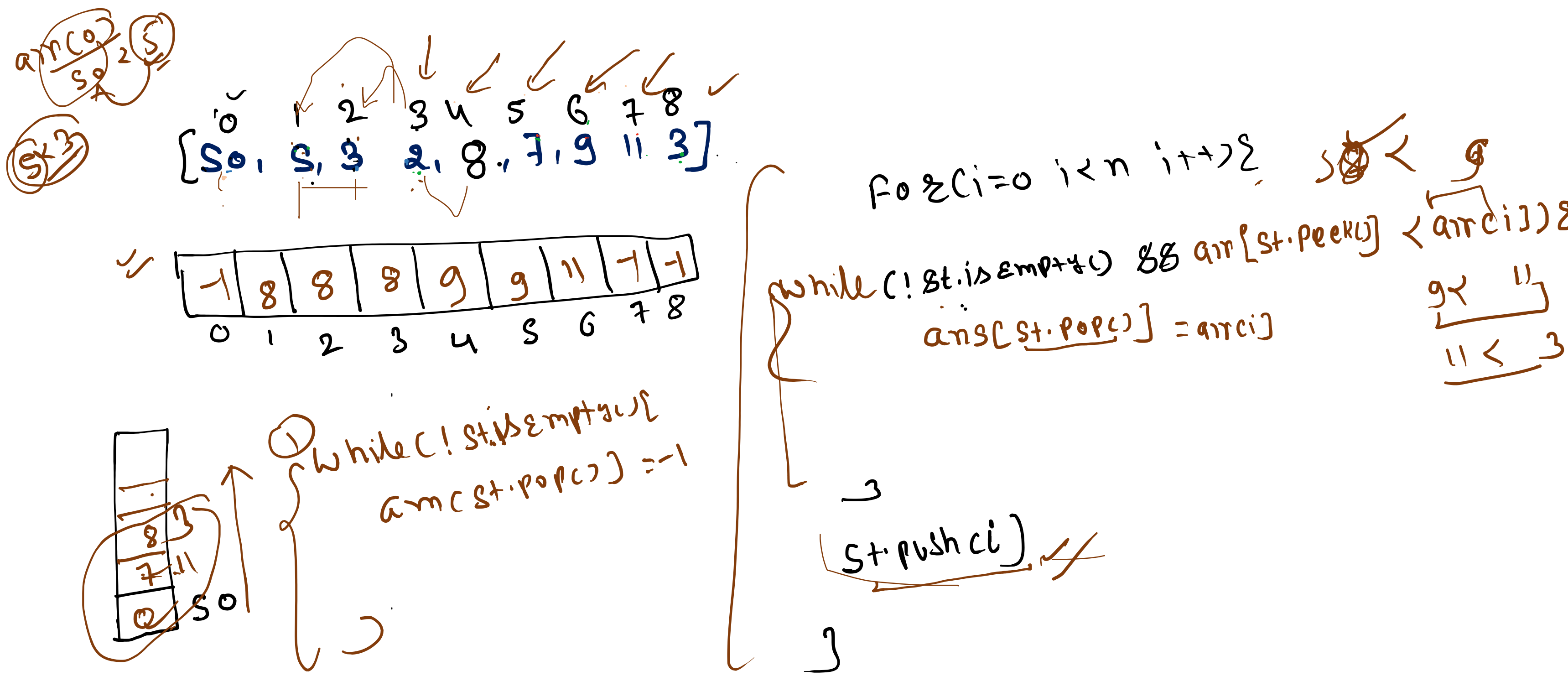
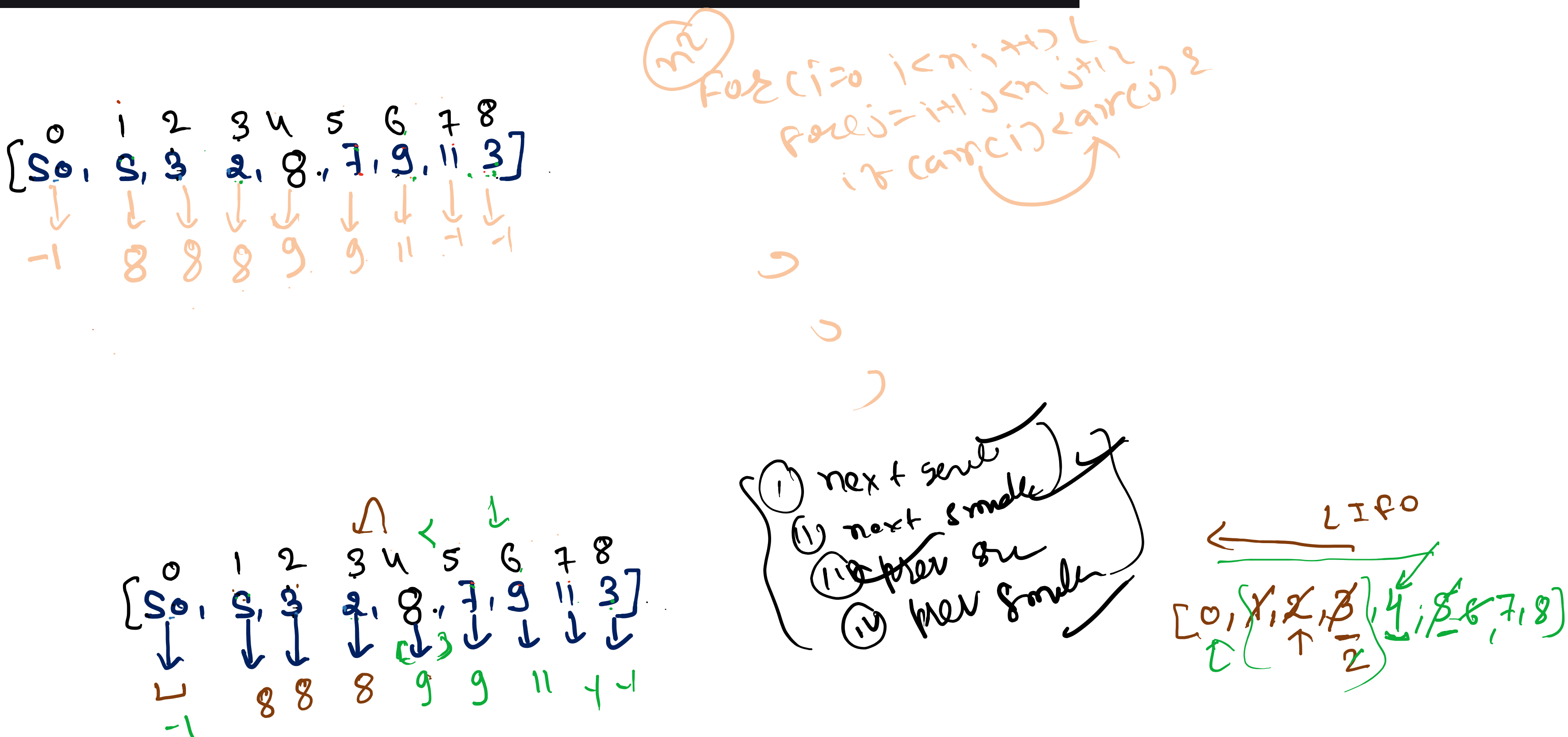
Given an array of integers, for each element in the array, find the **next greater element** (NGE) in the array. The next greater element for an element x is the first element y to the right of x in the array such that $y > x$. If no such element exists, the NGE for that element is **-1**.

Input format

The first line contains an integer n , the size of the array.
The second line contains n space-separated integers $A[0], A[1], \dots, A[n-1]$.

Output format

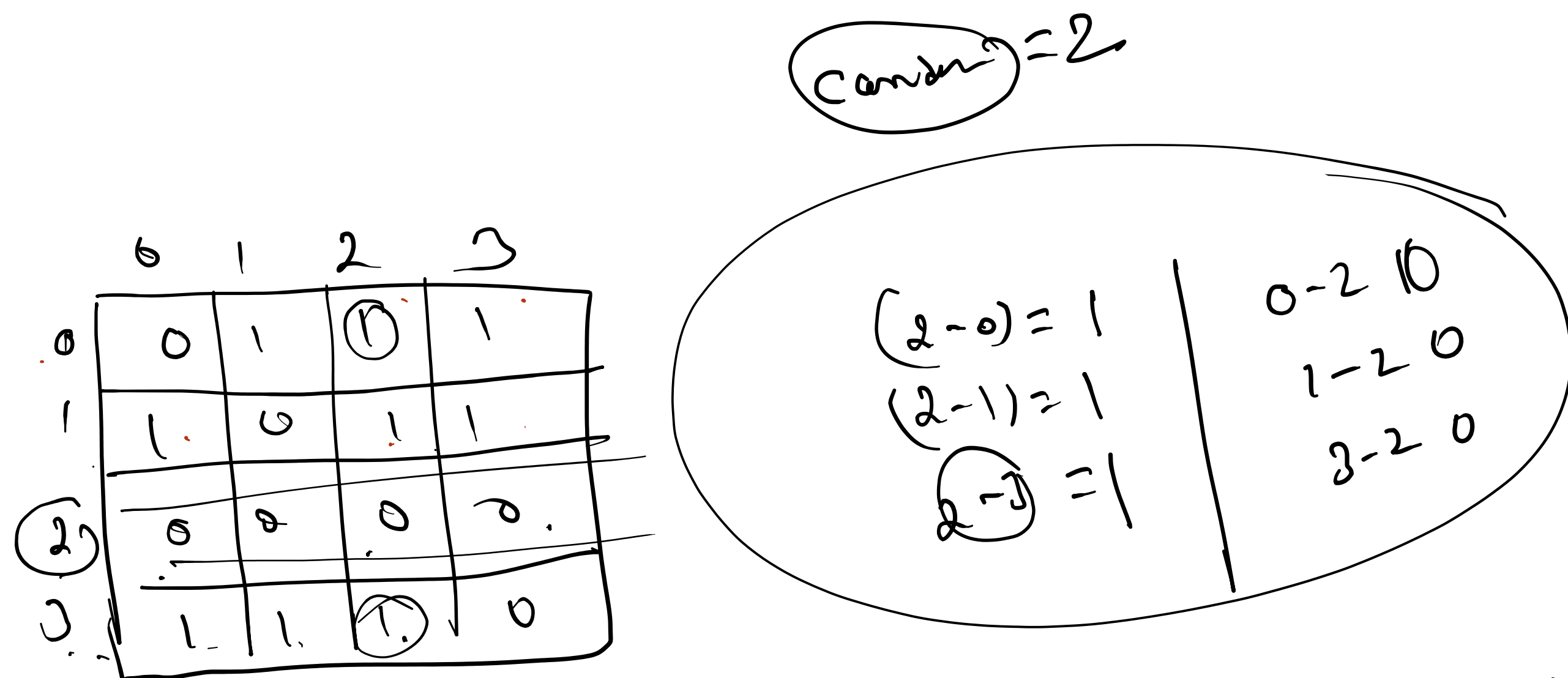
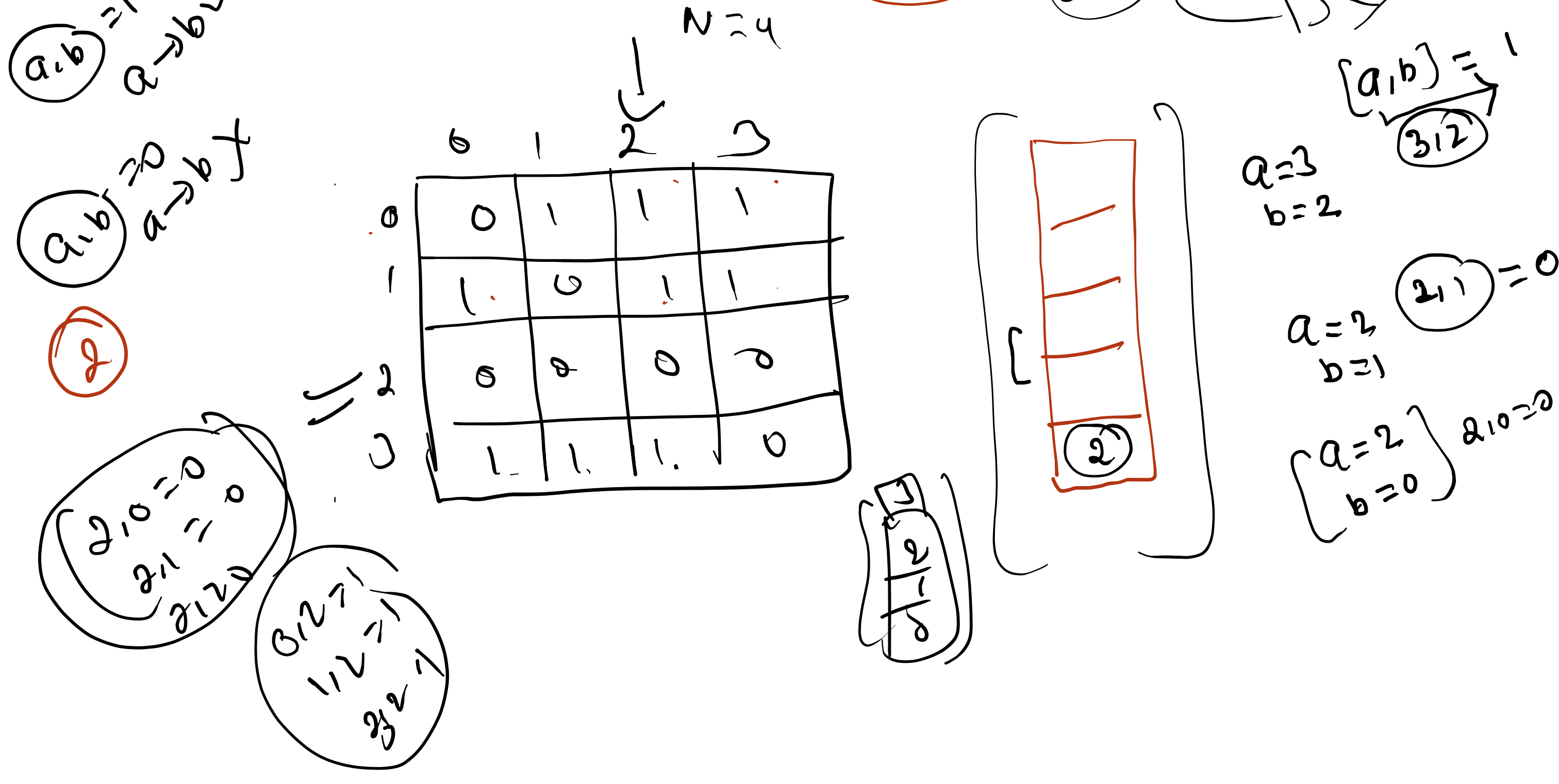
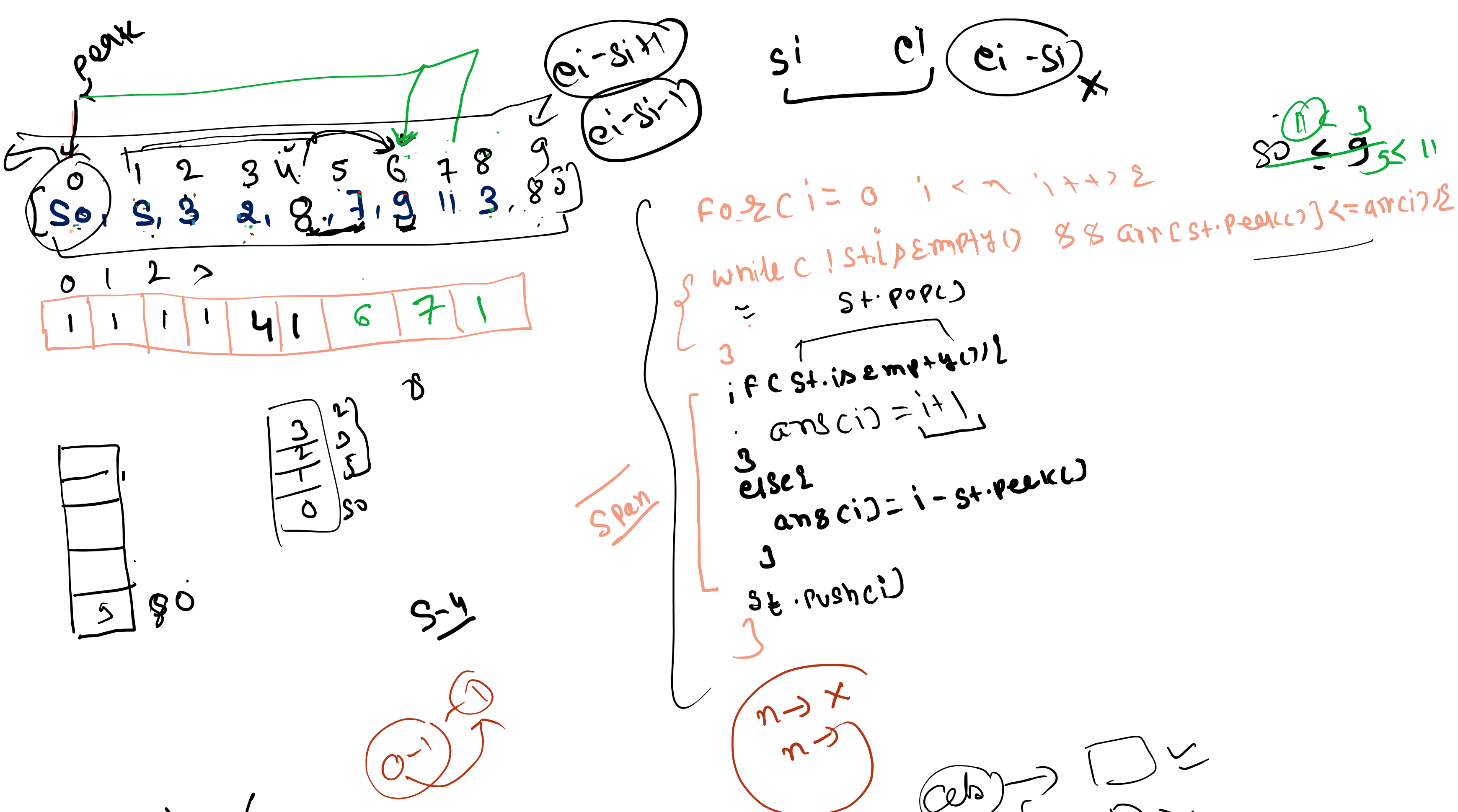
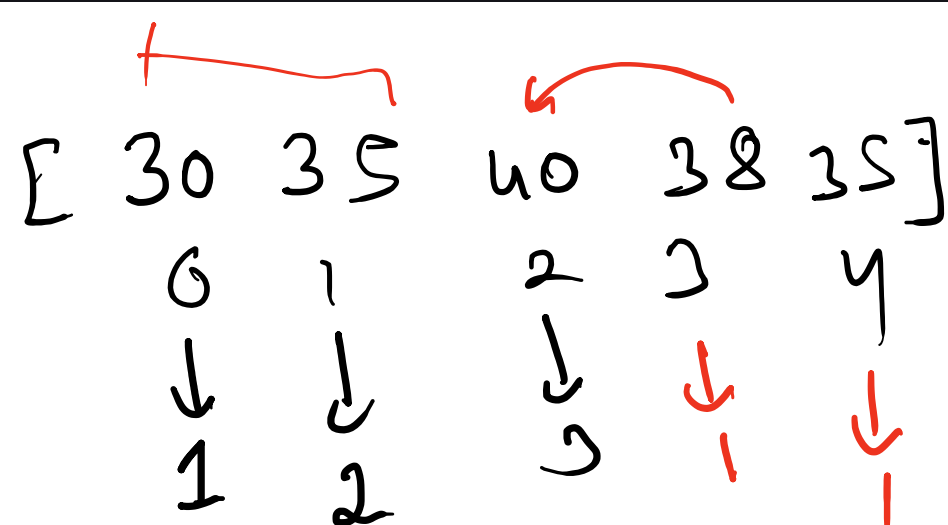
Output a single line containing n space-separated integers, where each integer is the next greater element for the corresponding element in the input array. If no greater element exists, output **-1**.



```
public static void NGE(int[] arr) {
    Stack<Integer> st = new Stack<>();
    int[] ans = new int[arr.length];
    for (int i = 0; i < arr.length; i++) {
        while (!st.isEmpty() && arr[st.peek()] < arr[i]) {
            ans[st.pop()] = arr[i];
        }
        st.push(i);
    }
    while (!st.isEmpty()) {
        ans[st.pop()] = -1;
    }
    for (int i = 0; i < ans.length; i++) {
        System.out.println(arr[i] + " " + ans[i]);
    }
}
```

The stock span problem is a financial problem where we have a series of N daily price quotes for a stock and we need to calculate span of stock's price for all N days. You are given an array of length N, where i^{th} element of array denotes the price of a stock on i^{th} . Find the span of stock's price on i^{th} day, for every $1 \leq i \leq N$.

A span of a stock's price on a given day, i , is the maximum number of consecutive days before the $(i+1)^{\text{th}}$ day, for which stock's price on these days is less than or equal to that on the i^{th} day.



```
int candidate = st.pop();
for (int i = 0; i < arr.length; i++) {
    if(i==candidate) {
        continue;
    }
    if(arr[candidate][i]==1 || arr[i][candidate]==0) {
        return -1;
    }
}
```

$\text{for } i = 0 \quad i < n \quad i++ \{$
 $\quad \text{if } \text{arr}[i][i] == 1 \quad \text{arr}[i][i] = 0 \}$
 $\}$

