Day 78/180 Recursion in Arrays

1: Find the Maximum element in a given array of size N.

- Similar to the problem discussed in today's lecture for minimum elements in the array through recursion.
- Here instead of checking the minimum, we're checking for the maximum elements for the given array.

```
#include <bits/stdc++.h>

using namespace std;

int max_ele(int arr[], int size, int index )
{
    if(index == size-1)
    {
        return arr[index];
    }

    return max(arr[index],max_ele(arr,size,index+1));
}

int main() {
    int arr[] = { 1, 4, 5, 8, 3 };
    int size = 5;
    cout<<max_ele(arr, size, 0);
    return 0;
}
```

2: Find the Product of all elements in a given array of size N.

- Inside the recursive function, sending the remaining array to the recursion function to bring the value of the product for the remaining elements.

- we’re multiplying the value to answer with the value of the remaining elements result that came via recursive calls.

```
#include <bits/stdc++.h>

using namespace std;

int product_of_array(int arr[], int size, int index )
{
    if(index == size-1)
    {
        return arr[index];
    }

    return (arr[index]*product_of_array(arr,size,index+1));
}

int main() {
    int arr[] = { 1, 4, 5, 8, 3 };
    int size = 5;
    cout<<product_of_array(arr, size, 0);
    return 0;
}
```

3: Find the Number of even elements in a given array of size N.

- Inside the recursive function, we're checking whether the current element is even and sending the remaining array to the recursion function again.

- If it is even we're adding 1 to answer with value of the remaining elements result that came via recursive calls.

```
#include <bits/stdc++.h>

using namespace std;

int count_of_even_element(int arr[], int size, int index )
{
    if(index == size-1)
    {
        return arr[index]%2 == 0 ? 1 : 0;
    }

    int ans = arr[index]%2 == 0 ? 1 : 0;
    return ( ans + count_of_even_element(arr,size,index+1));
}

int main() {
    int arr[] = { 1, 4, 5, 8, 3 };
    int size = 5;
    cout<<count_of_even_element(arr, size, 0);
    return 0;
}
```