

NEAREST SMALLER ELEMENT

Problem states that for an array of integers, we are supposed to return an array where the corresponding indices contain the previous small element.

Exact opposite of next greater element.

Brute force solution is to use 2 nested loops and time complexity is $O(N^2)$.

Optimal Solution involves usage of Stack just like Next Greater Element.

Pseudocode :

```
previousSmallerElement(arr, N) {  
    int ans[N];  
    stack <int> st;  
    for (int i = 0; i < N; i++) {  
        if (st.empty()) {  
            st.push(arr[i]);  
            ans[i] = -1;  
        } else {  
            if (st.top() < arr[i]) {  
                ans[i] = st.top();  
                st.push(arr[i]);  
            } else {  
                st.push(arr[i]);  
            }  
        }  
    }  
}
```

while (!st.empty() && arr[i] <= st.top())

{ st.pop();

ans[i] = st.top();

st.push(arr[i]);

}

}

}

{ return ans;

}