// WAP to perform binary search in an array (recursively)

```
#include<stdio.h>
int binarySearch(int arr[], int l, int r, int item){
    if(l>r){
        return -1; }
    else{
        int mid=(int)(l+r)/2;
        if(arr[mid]==item){
            return mid; }
        else if(arr[mid]>item)
            return binarySearch(arr,l,mid-1,item);
        else
            return binarySearch(arr,mid+1,r,item);
    }
}
int main(){
    int item;
    int arr[]={2,3,4,10,40};
    printf("Enter item to be searched: ");
    scanf("%d",&item);
    int n=sizeof(arr)/sizeof(arr[0]);
    int result=binarySearch(arr,0,n-1,item);
    if(result==-1)
        printf("Item not found");
    else
        printf("Item found at %d index", result);
}
```

```
Enter item to be searched: 10
Item found at 3 index
```

// WAP to perform selection sort in an array

```
#include <stdio.h>
int main()
{
    int arr[100], n, i, j,temp;
    printf("Enter number of elements you want to give to array: ");
    scanf("%d", &n);
    printf("Enter elements: \n");
    for (i = 0; i < n; i++){
        scanf("%d", &arr[i]); }

    for(i=0;i<n-1;i++){
        for(j=i+1;j<n;j++){
            if(arr[i]>arr[j]){
                temp=arr[i];
                arr[i]=arr[j];
                arr[j]=temp;
            }
        }
    }
    printf("\nSorted array is: ");
    for(i=0;i<n;i++){
        printf("%d, ",arr[i]);
    }
}
```

```
Enter number of elements you want to give to array: 3
Enter elements:
52
48
92
Sorted array is: 48, 52, 92,
```

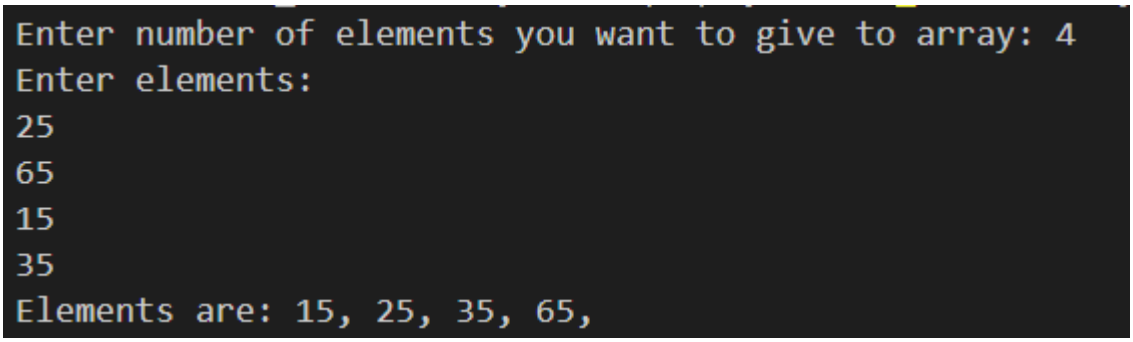
// WAP to perform bubble sort in an array

```
#include <stdio.h>
int main()
{
    int i, n, j, noswap, temp;
    int arr[100];
    printf("Enter no.of elements you want to give to array: ");
    scanf("%d", &n);
    printf("Enter elements: \n");
    for (i = 0; i < n; i++) {
        scanf("%d", &arr[i]); }
    for (i = 0; i < n-1; i++) {
        for (j = 0; j < n - i - 1; j++) {
            if (arr[j] > arr[j + 1]) {
                temp = arr[j];
                arr[j] = arr[j+1];
                arr[j+1] = temp;
            }
        }
    }
    printf("Sorted array is: ");
    for (i = 0; i < n; i++) {
        printf("%d, ", arr[i]);
    }
}
```

```
Enter no.of elements you want to give to array: 3
Enter elements:
21
11
36
Sorted array is: 11, 21, 36,
```

// WAP to perform insertion sort in an array

```
#include <stdio.h>
int main()
{
    int arr[100], n, i, j, key;
    printf("Enter number of elements you want to give to array: ");
    scanf("%d", &n);
    printf("Enter elements: \n");
    for (i = 0; i < n; i++)    {
        scanf("%d", &arr[i]);
    }
    for (i = 1; i < n; i++) {
        key = arr[i];
        j=i-1;
        while (key < arr[j] && j >= 0) {
            arr[j + 1] = arr[j];
            j--;
        }
        arr[j + 1] = key;
    }
    printf("Elements are: ");
    for (i = 0; i < n; i++) {
        printf("%d, ", arr[i]);  }
}
```



// WAP to perform merge sort in an array

```
#include <stdio.h>
void merge(int arr[], int l, int mid, int r)
{
    int n1 = mid - l + 1;
    int n2 = r - mid;      // r-mid+1-1
    int a[n1];
    int b[n2];
    for (int i = 0; i < n1; i++)  {
        a[i] = arr[l + i];
    }
    for (int i = 0; i < n2; i++)  {
        b[i] = arr[mid + 1 + i];
    }
    int i = 0, j = 0;
    int k = l;
    while (i < n1 && j < n2)  {
        if (a[i] < b[j])  {
            arr[k] = a[i];
            k++;
            i++;
        }
        else  {
            arr[k] = b[j];
            k++;
            j++;
        }
    }
    while (i < n1) {
```