```c
//extract max
#include<stdio.h>

int n=0;

void create_max_heap(int arr[]);
int extract_max(int arr[]);
void max_heapify(int arr[],int i);

int main(){
        int arr[20],i;
        printf("enter the size of array(heap): ");
        scanf("%d",&n);
        printf("\nenter the array eles\n");
        for(i=0;i<n;i++){
                scanf("%d",&arr[i]);
        }
        printf("the array(heap) is: ");
        for(i=0;i<n;i++){
                printf("%d ",arr[i]);
        }
        create_max_heap(arr);
        printf("\nafter max heapify the array(heap) is: ");
        for(i=0;i<n;i++){
                printf("%d ",arr[i]);
        }
        printf("\n");
        while(n>0){
                int max_ele=extract_max(arr);
                printf("extracted max element:%d\n",max_ele);
        }
```
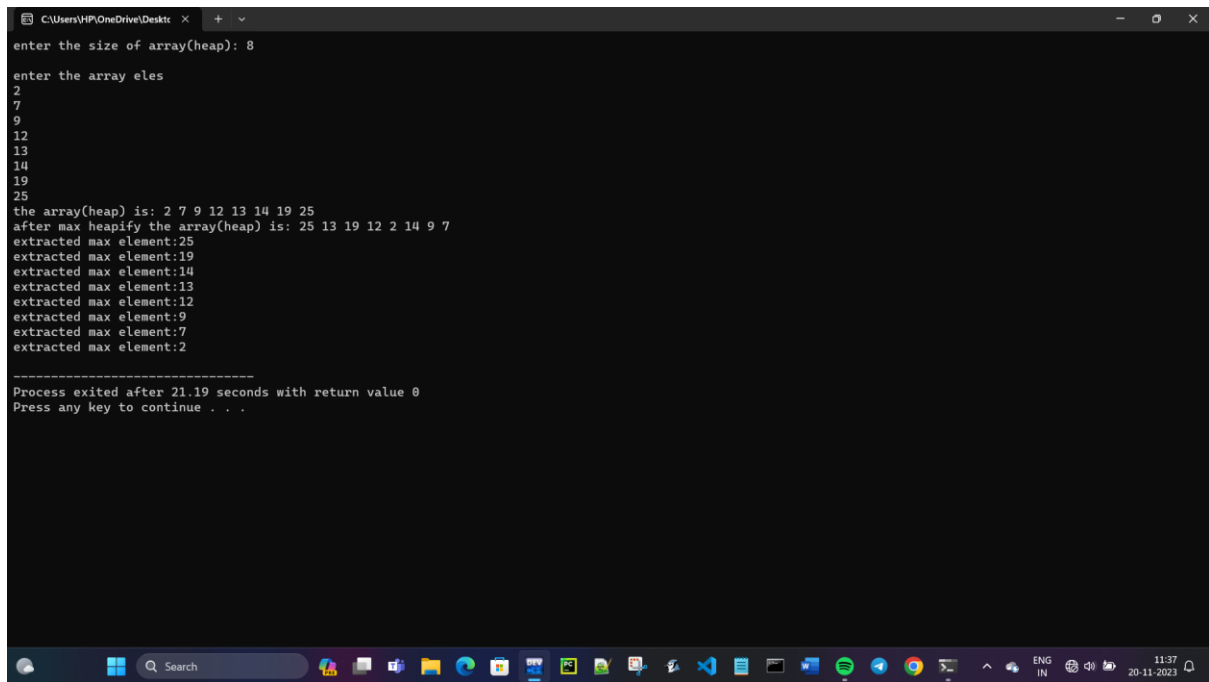
```c
        }

void create_max_heap(int arr[]){
        int largest_non_leaf=(n-1)/2;
        for(int i=largest_non_leaf;i>=0;i--){
                max_heapify(arr,i);
        }
}

int extract_max(int arr[]){
        int max_ele=arr[0];
        arr[0]=arr[n-1];
        n--;
        max_heapify(arr,0);
        return max_ele;
}

void max_heapify(int arr[],int i){
        int rc,lc,largest;
        lc=2*i+1;
        rc=2*i+2;
        if(lc<n && arr[i]<arr[lc]){
                largest=lc;
        }
        else{
                largest=i;
        }
        if(rc<n && arr[largest]<arr[rc]){
                largest=rc;
        }
        if(largest!=i){
```

```
                int temp=arr[i];

                arr[i]=arr[largest];

                arr[largest]=temp;

                max_heapify(arr,largest);

        }

}
```

```
enter the size of array(heap): 8

enter the array eles
2
7
9
12
13
14
19
25
the array(heap) is: 2 7 9 12 13 14 19 25
after max heapify the array(heap) is: 25 13 19 12 2 14 9 7
extracted max element:25
extracted max element:19
extracted max element:14
extracted max element:13
extracted max element:12
extracted max element:9
extracted max element:7
extracted max element:2

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Process exited after 21.19 seconds with return value 0
Press any key to continue . . .
```