#include <stdio.h>

#include <stdlib.h>

int main()

{

int n, p, q, r, \*a, i;

printf("Enter size of array:\n");

scanf("%d",&n);

a = malloc(sizeof(n));

printf("\n Enter %d element :\n", n );

for(i=0;i<n;i++)

scanf("%d",a+i);

p = 0; //starting index

r = n-1; //ending index

printf("\n Elements Before sorting:\n");

for( i = 0; i < n ; i++)

printf( " %d\t ", a[i] );

quicksort(a, p, r );

printf("\n The sorted output is:\n");

for( i = 0; i < n ; i++)

printf( " %d\t ", a[i] );

return 0;

}

void quicksort(int a[], int p, int r)

{

if(p<r)

{

int q = PARTITION(a, p, r);

//printf("q=%d",q);

quicksort(a, p, q-1);

quicksort(a, q+1, r);

}

}

int PARTITION(int a[], int p, int r)

{

int pivot = a[r];

int i = p - 1 , j ;

for(j = p ; j < r ; j++ )

{

if(a[j] < pivot)

{

i=i+1;

exchange(a,i,j);

}

}

exchange(a,i+1,r);

return (i+1);

}

//exchange a[p] with a[r]

void exchange(int a[] , int p, int r)

{

int temp = a[ p];

a [ p] = a [ r ];

a [ r ] = temp;

}