#include <iostream>

using namespace std;

#include <conio.h>

void merge(int \*,int, int , int ); //declaration

void mergesort(int \*a, int s, int e) //called function receied array stat=low end=high

{

int mid;

cout<<"\nbefore if condition start ";

if (s < e)

{ cout<<"\ninside if condition start ";

cout<<"\ns="<<s;

cout<<"\ne="<<e;

cout<<"\nbefore mid=";

mid=(s+e)/2; //finding mid point

cout<<"\nafter mid="<<mid;

cout<<"\nmerge left (a,s,mid)";

cout<<"\nPassing in left "<<"\n="<<a<<"\ns="<<s<<"\nmid="<<mid;

mergesort(a,s,mid); // left hand side again calling to mergesort

cout<<"\nmerge right (a,mid+1,e)";

cout<<"\nPassing in right "<<"\ns (only show but not pass)="<<s<<"\na="<<a<<"\nmid+1=start="<<mid+1<<"\ne=high="<<e;

mergesort(a,mid+1,e); //right hand side

cout<<"\nmerge(a,s,e,mid)";

merge(a,s,e,mid); //

}

cout<<"\nreturn";

return;

}

//cout<<"";

void merge(int \*a, int s, int e, int mid)

{

cout<<"\npasing in merge function"<<"\na="<<a<<"\ns="<<s<<"\ne=high="<<e<<"\nmid="<<mid;

cout<<"\n\n";

cout<<"\nvoid merge(int \*a, int s, int e, int mid)";

int i, j, k, c[5];

cout<<"\n\nBefore assigning values are";

cout<<"\na="<<a<<"\ns="<<s<<"\ne=high="<<e<<"\nmid="<<mid;

cout<<"\n\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\n";

i = s;

k = s;

j = mid + 1;

cout<<"\n\nAfter assigning values are";

cout<<"\ns to i="<<i<<"\ns to k="<<k<<"\nmid+1 to j="<<j;

cout<<"\n(i <= mid && j <= e)";

cout<<" \n 1 before while loop";

cout<<"\nmid="<<mid;

while (i <= mid && j <= e)

{

cout<<"\n1 inside while loop";

cout<<"\ni="<<i;

cout<<"\nj="<<j;

cout<<"\nbefore if condition";

if (a[i] < a[j])

{

cout<<"\n\*\*b";

cout<<"\ninside if condition";

c[k] = a[i];

cout<<"\nk="<<k;

k++;

cout<<"\ni="<<i;

i++;

}

else

{

cout<<"\ninside else of 1 while loop";

c[k] = a[j];

cout<<"\nk="<<k;

k++;

cout<<"\nj="<<j;

j++;

}

}

while (i <= mid)

{

cout<<"\n2 inside while loop";

cout<<"\ni="<<i;

cout<<"\nmid="<<mid;

c[k] = a[i];

cout<<"\nk="<<k;

k++;

cout<<"\ni="<<i;

i++;

}

while (j <= e)

{

cout<<" \n3 inside while loop ";

c[k] = a[j];

cout<<"\nk="<<k;

k++;

cout<<"\nj="<<j;

j++;

}

for (i = s; i < k; i++)

{

cout<<"\nindise for loop last collection";

a[i] = c[i];

}

}

////////////////////////////////////////////////////////////

int main()

{

cout<<"main";

int a[5]; //taking array

int i,flag,x;

cout<<"\nEnter the elements\n";

for (i = 0; i < 5; i++)

{

cout<<"i="<<i;

cin>>a[i];

}

cout<<" mergesort(a, 0, 4);";

mergesort(a, 0, 4); //calling function passing array, staring and ending index no.

cout<<"\nSorted array\n";

for (i = 0; i < 5; i++)

{

cout<<a[i]<<endl;

cout<<"i="<<i;

}

start:

cout<<"\nEnter value to search :";

cin>>x;

for(i=0;i<5;i++)

{

if(a[i]==x)

{

flag=1;

break;

}

else

{

flag=0;

}

}

if(flag==1)

{

cout<<"\nValue found !";

}

else

if(flag==0)

{

cout<<"\nValue not Found !";

}

else

{

cout<<"\nValue not Found !";

}

goto start;

getchar();

getchar();

}