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GSE-G1

(1)

```
#include <stdio.h>
Void desc()
{
int my arr[100], my value, loop1, loop2, temp;
Printf("Input my value: ");
Scanf("%d", &my value);
for (loop1=0; loop1<my value; loop1++)
{
  Printf("value=%d" [oop1++);
  Scanf("%d", &my array[loop1]);
}
for (loop2=0, loop2<(my value-1); loop2++)
{
  for (loop1=0; loop1<(my value-1); loop1++)
  {
    if (my.arr [loop1++]<my arr[loop1]);
    {
      temp = myarr[loop1];
      my arr[loop1] = my arr(loop++];
      my arr [loop++] = tem;
    }
  }
}
Printf("descending order": In");
for (loop1=my value; loop1>0; loop1--)
{
  Printf ("["%d", my arr [loop1--]);
  }
  return 0;
}
Void binary search()
{
int c, f [mid, n, search, arr[100];
print f ("Enter no. of Elements %n");
Scanf("%d", &n);
Printf("Enter %d Elements/n", n);
for (C=0; c<n; C++)
```

```
{
scanf("%d",&arr[i]);
}
Printf("Enter value to be find \n");
Scanf("%d",&search);
 f=0
 l=n-1
mid = (f+l)/2
}
while(f,l)
{
 if (arr[mid]<search)
  {
   f=mid+;
  }
 else if (arr[mid]==search
  {
  Printf("%d found at location:%d",
        search, mid+1);
    break;
  }
 else
{
  l=mid-1;
  mid=(f+l)/2;
}
if(f<l)
 {
  Printf("Not found ! %d isnt
      present in list \n", search);
   }
  }
}
void muladdd()
{
 int a,b,add,mul;
 Printf("Enter a location:");
 Scanf("%d",&a);
 Printf("Enter b location:");
 Scanf("%d",&b);
```

```
add = arr[a] + arr[b];
mul = arr[a] * arr[b];
Printf (" addition = %d", add);
Print f ("Multiplication = %d", mul);
}
void desc()
Void binary search()
void mul add()
main()
{
 int choice;
 while (1)
 {
 Print f ("1. descending order \n");
 Print f ("2. Searching element in array");
 Print f ("3. add & mul \n");
 Print f ("4. Quit \n");
 Printf ("Enter your choice : ");
 Scan f ("%d", & choice);
 Switch (choice)
 {
  case 1:
  desc()
  break;
  case 2:
  binary search()
  break;
  case 3:
  mul add()
  break;
  case 4;
  exit(1);
  Clefault;
  Printf ("Wrong choice \n");
 }
}
}
```

Output

① descending order
② Searching Element in arrays
③ add & mull
④ Quit

Enter your choice: 1
Input value: 5
Value-1: 3
Value-2: 6
Value-3: 9
Value-4: 10
Value-5: 5
descending order
10 9 6 5 3
Enter your choice: 2
Enter no. of elements: 5
Enter 5 integers
10
9
6
5
3
Enter value to find 6
6 found at location 3
Enter your choice: 3
Enter a location: 2
Enter b location: 3
addition = 15
multiplication = 54

④
```
#include <stdio.h>
#define MAX 100
int arr1[MAX]
int arr2[MAX]
void merge (int low, int mid, int high)
{
int i, j, k;
for (i=low, j=mid++; k=low;
    i<mid && j<=high; k++)
```

```
{
  if (arr1[i]<arr1[j]
  {
   arr2[k] = arr1[i++];
  }
else
  {
   arr2[k] = arr1[j++];
  }
}
while (i<=mid)
{
 arr2[k++] = arr1[i++]
}
while (j<=high)
{
 arr2[k++] = arr1[j++]
}
for (int i=0; [<high+1; ++( )
{
  arr a1 [i] = arr a2[l];
 }
}
void sort (int low, int high)
{
if (low < high)
{
  int mid = (low+high)/2;
  sort+[low, mid);
  sort (mid+1, high);
  merge (low, mid high)
 }
else
   return;
}
int main(void)
{
  int n;
Printf("\n Enter no. of elements: ");
Scanf("%d", &n);
Print f ("\n Enter %d Elements ", n);
for (int i=0; i<n; i++)
{
 Scanf ("%d", & arr [i]");
}
```

```
Printf("\n Array after sorting is: ");
sort(0, n-1);
for (int i=0; i<n; i++)
{
Printf("%d", arr1[i]);
}
int K, mul=1;
Printf("Enter K value \n");
Scanf("%d", &K);
for (i=0; i<K; i++)
{
mul *= mul[i];
}
Printf("Product of Kth element is %d", mul)
}
```

Output

Enter elements : 5
8
11
10
4
5

Array after sorting is 4 5 8 10 11

Enter K value
3

Product of K^{th} Elements is 160

③ Insertion sort

Let u : take

0	1	2	3	4	5
7	3	5	4	2	6

Step-1 → temp = 3

compare 7 & 3 → swap

3	7	5	4	2	6

Step 2 → temp = 5

compare 7 & 5

3	5	7	4	2	6

5 < 7 → swap

Code

```
for (i=1; i<n; i++)
{
  Key = a[i];
  j = i-1;
```

while (j>=0 && a[j]>key)

{

a[j+1] = a[j];

j = j-1;

}

a[j+1] = key;

}

step→3 temp=4

compare 7 & 4

4 is less than 7 → swap

4 is less than 5 → swap

3	5	4	7	2	6

3	4	5	7	2	6

step 4 temp = 2

compare 7 & 2

2 is less than 7

2 is less than 5

2 is less than 4

2 is less than 5

2	3	4	5	7	6

step-5 temp=6

2	3	4	5	6	7

iii) Selection sort

Code

```
int i, j, min, temp;
for (i=0; i<n-1; i++)
{
  min = i;
  for (j=i+1; j<n; j++)
  {
   if (a[j] < a[min])
   {
    min=j;
   }
  }
  temp = a[i]
  a[i]=a[min]
  a[min] = temp
}
```

let us take

0	1	2	3	4	5	6
9	3	1	4	2	7	5

index value value

compares with min elements and swaps

step-1 :

i=0

0	1	2	3	4	5	6
1	3	9	4	2	7	5

↑ → swap

step2

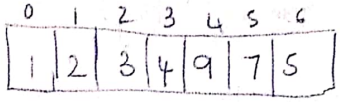
i=0

0	1	2	3	4	5	6
1	2	9	4	3	7	5

↑ → swap

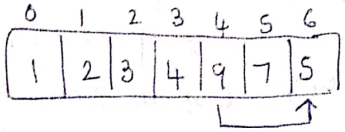
Step3

i=2



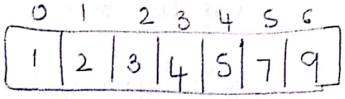
Step4 4 th if is least element swap with itself

i=3



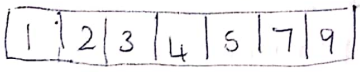
Step5

i=4



i=5 compare itself

i=6 compares itself



④

```
#include<stdio.h>
int Bubblesort(int size, int *arr)
{
  int i,j,temp;
  for(i=size-2; i>=0; i--)
  {
   for(j=0;j<=i;j++)
   {
    if(arr[j]>arr[j+1])
    {
     temp=arr[j];
     arr[j]=arr[j+1];
     arr[j+1]=temp;
    }
   }
}
return 1;
}
int main(void)
{
  int size, i, arr[20], sum=0, mu[=1,m;
Printf("Enter no. of elements: \n");
Scanf("%d", &size);
Printf("Enter the %d elements:", size);
for(i=0;i<size;i++)
  {
   Scanf("%d", &arr[i]);
  }
```

```
Bubble sort (size, arr);
Printf ("After sorting ");
for (i=0; i <size ; i++)
{
  Printf ("%d ", arr[i]);
}
Printf ("\n");
Printf ("alternate elements after sorting\n");
for (i=0; i<size ; i++)
{
  Printf ("%d", arr [i++]);
}
Printf ("\n");
Printf ("Sum of elements in odd positions
     and mul of elements in even position\n");
for (i=0; i<size ; i++)
 {
   if (i%2==0)
    {
     mul = mul * arr [i]
    }
else
   {
   sum = sum * arr[i]
   }
}
Printf ("Sum of Elements in odd position
      is %d", sum);
Printf ("mul of Elements in even position
      is %d", mul);
Printf ("Enter n value: ");
Scanf ("%d", &n);
for (i=0; i<size ; i++)
 {
   if (arr [i]%n==0
    {
     Printf ("%d" arr[i]];
    }
}
Print ("\n");
return;
}
```

output

Enter no of Elements: 5

Enter 5 elements:

5

7

9

3

11

After sorting: 3 5 7 9 11

Alternate Elements after sorting

3 7 11

Sum of elements in odd positions and mul of elements in Even positions

Sum of Elements in odd position is 21

mul of Elements in even position is: 45

Enter m value: 5

"

(5) #include<stdio.h>

int binary search (int a[], int l, int h,
int key)

{

int mid = (l+h)/2;

if (l>h)

return -1;

if (a[mid] == key)

return mid;

if (a[mid] < key)

return binary search (a, mid+1, h, key);

else

return binary search (a, l, mid-1, key);

}

int main(void)

{

int a[100];

int n, pos, i, x;

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

scanf("%d", &n);

Printf("Enter the elements: \n");

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

scanf("%d", &a[i]);

```
Printf("Enter the elemet to search: \n");
scanf("%d", &x);
POS = binary search (a, 0, n-1, x);
if (pos < 0)
Printf(" connot find %d in array \n", x);
else
Printf("Position of %d in array is %d \n",
                                x, pos++);
return 0;
}
```

output

```
Enter the length of array: 5
Enter the array elements:
6
8
5
9
3
Enter the element to search
5
Position of 5 in array is 3
```