Lab3

Q1

```
#include <iostream>
using namespace std;
int *ar = NULL;
 int n=0;

 void createArray();
 void displayArray();
 void insertElement();
 void deleteElement();
 void searchElement();
 void largeSmall();
 void sortArray();

void swap( int *xp , int *yp){

        int temp = *xp;
        *xp = *yp;
        *yp = temp;

 }

int main() {
    int flag;
    cout<< "To start enter 1"<<endl;
    cin>> flag;
    while(flag) {
    cout << " 1. Create an array "<<endl;
    cout << " 2. Display element at a given pos.\n";
    cout << " 3. Display the array\n";
    cout << "4. Delete elemnt from given pos.\n";
    cout<<" 5. search an element ";
    cout<< " 6. Display the largest and smallest elemt";
    cout << "7. Sort the array\n";
     cout<< "Press 0 to exit"<<endl;
     cin>> flag;
```

```
switch(flag) {
    case 0:
        break;
    case 1:
        creatArray();
        break;
    case2:
        display_Array();
        break;
    Case 3:
        insertElement();
        break;
    case 4:
        deleteElemt();
        break;
    case 5:
        searchElemt();
        break;
    case6:
        Largesmall();
        break;
    case 7:
        sortArray();
        break;
    }
return 0;
}
void createArray(){
    cout << " Enter size of array";
    cin>>n;
    arr=(int*) malloc (n*sizeof(int));
    cout<< " Enter Array Elements: ";
    for(int i=0 ; i<n ; i++){
        cin>> arr[i];
    }
}
```

```
void displayArray(){
    for (int i=0 ; i<n ;i++) {
        cout<< arr[i]<< " ";
    }
    cout<<endl;
}

void insertElement() {
    arr = (int*) realloc (arr, sizeof(int) * (n+1));
    int pos, val;
    cout<<" Enter position to enter: ";
    cin>>pos;
    cout<<"Enter value: ";
    cin>>val;
    for (int i=n-1; i>=pos-1; i--)
        arr[i+1] = arr[i];
    arr[pos-1] = val;
}

void deleteElement() {
    int pos;
    cout<<" Enter position to delete: ";
    cin>>pos;
    if(pos>=n+1)
        cout<<" Deletion not possible";
    else {
        for(int i=pos-1; i<n-1; i++)
            arr[i] = arr[i+1];
    }
}
```

```
void searchElement() {
    int flag = 0;
    int n;
    cout<< "Enter element: ";
    cin>>n;
    for(int i=0 ; i<n ; i++){
        if( arr[i] == n ){
            cout<< "found at pos: " << i <<endl;
            flag++;
            break;
        }
    }
    if( flag == 0){
        cout << "Element not found." <<endl;
    }
}
void largeSmall() {
    int max = arr[0], i;
    for(i=0 ; i<n ; i++){
        if(max < arr[i])
            max = arr[i];
    }
    int min = arr[0];
    for (i=0 ; i<n ; i++) {
        if (min > arr[i])
            min = arr[i];
    }
    cout<< "Largest Element : " << max <<endl;
    cout<< " smallest Elem : " << min <<endl;
}
void sortArray() {
    int i, j;
    for(i=0 ; i<n-1 ; i++) {
        for(j=0 ; j<n-i-1 ; j++) {
            if( arr[j] > arr[j+1])
                swap (&arr[j] , &arr[j+1]);
        }
    }
}
```

```
-MIEngine-Pid-rkqrdjs2.ckn' '--dbgExe=C:\msys64\mingw64\bin\gdb.exe' '--interpreter=mi'
To start enter 1.
1
1. Create an array
5. Search an elemment
6. Display the largest and smallest elements
7. Sort the array
Press 0 to exit
1
Enter Size of array: 5
Enter Array Elements: 2 3 4 9 1
1. Create an array
2. Display the array
3. Insert an element at a given position
4. Delete an element from a given position
5. Search an elemment
6. Display the largest and smallest elements
7. Sort the array
Press 0 to exit
6
Largest element : 9
Smallest element : 1
1. Create an array
2. Display the array
3. Insert an element at a given position
4. Delete an element from a given position
5. Search an elemment
6. Display the largest and smallest elements
7. Sort the array
Press 0 to exit
2
2 3 4 9 1
1. Create an array
2. Display the array
3. Insert an element at a given position
4. Delete an element from a given position
5. Search an elemment
6. Display the largest and smallest elements
7. Sort the array
Press 0 to exit
```

Q2.
```
#include <iostream>
using namespace std;
void greatest(int &a, int &b) {
    if( a>b) {
        a += b;
        b = a-b;
        a -= b;
    }
}
int main() {
int n;
cout << "Enter no. of elements: ";
cin>> n;
int *a = (int*) malloc (n *sizeof(int));
cout << "Enter elements: ";
for(int i=0 ; i<n; i++)
    cin>> arr[i];

int m1, m2;
cout <<"enter two elements";
 cin>>m1>>m2;
 int flag1, flag2;
 for(int i=0; i<n ; i++){
    if( a[i] == m1)
        flag1 = i;
    if(arr[i] == m2)
        flag2 = i;

}
cout greatest(flag1, flag2);
int count =0;
for(int i= flag1; i<= flag2; i++) {
    cout << a[i] << " ";
    count++;
}
cout << "\nNo of elements = " <<count;
return 0;

}
```

```
-MIEngine-Pid-5mstfgva.guf' '--dbgExe=C:\msys64
Enter No. Of elements: 5
Enter elements: 1 9 4 5 2
Enter two elements: 9 5
9 4 5
No of Elements = 3
PS T:\C++\CPP\3rd SEM\DSA LAB\LAB 3>
```

Q3

```
#include <iostream>
using namespace std;
int main() {
    int n, i, j, x;
    cout<< "Enter size of array: ";
    cin>>n;
   int *A = (int*)malloc(n*sizeof(int));
   cout<< "Enter element of array";
   for (i=0; i<n; i++)
      cin>> A[i];
for (i=0; i<n; i++) {
      for (j= i+1; j<n; j++)
      {
          if(A[i]<A[j]) {
              x = A[i];
              A[i] = A[j];
              A[j] = x;
          }
      }
}
cout<< "second Largest number: "<< A[1];
cout<< "\n second smallest number: "<< A[n-2]<<endl;
return 0;
}
```

```
-MIEngine-Pid-4e0yy2wf.0jx' '--dbgExe=C:\msys64\mingw64\
Enter size of array : 5
Enter elements of array : 1 8 3 0 4
Second largest number : 4
Second smallest number : 1
PS T:\C++\CPP\3rd SEM\DSA LAB\LAB 3>
```

04

```
#include <iostream>
using namespace std;
int main(){
    int n;
    cout<<"Enter no. of Elements: ";
    cin>>n;
    int *arr = (int*) malloc (sizeof(int) *n );
    int *even = (int*) malloc (sizeof(int) *n);
    int *odd = (int*) malloc (sizeof(int) * n);
int evncnt =0, oddcnt = 0 ,i;
cout<<" input numbers in the array:";
for(i=0 ;i<n; i++)
    cin>>arr[i];
for(i=0; i<n; i++) {
    if( arr[i] %2 ==0)
        even[evncnt++] = arr[i];
    else
        odd [oddcnt++] = arr[i];
}
int j=0;
for(j=0,i=0; i<evncnt ;j++, i++)
    arr[j] = even[i];
for( i =0 ;, i< oddcnt; j++, i++)
    arr [j] = odd [i];
for (i=0 ; i<n ; i++)
    cout<< arr[i]<< " ";
return 0;
}
```

```
-MIEngine-Pid-v1lsmmjb.e3h' '--dbgExe=C:\msys64\mingw64\b
Enter No. of Elements: 10
Input numbers in the array: 1 2 3 4 5 6 7 8 9 10
2 4 6 8 10 1 3 5 7 9
PS T:\C++\CPP\3rd SEM\DSA LAB\LAB 3>
```