Sorting

Bubble Sorting:

```
# include <iostream>
using name std;
void bubbleSort (int arr[], int n)
{
for (int i=0; i<n-1; i++)
{
    bool swapped =false;
for (intj =0 ; j<n-i-1; i++) {
if (arr [j] > arr [j+1]) {
  swap (arr[j], arr [j+1]);
     swapped true;
  }
}
void print Array (int arr[], int n) {
```

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

}
 int main ( ) {
int arr [] = {64, 34, 25, 12, 22, 11, 90};
int n=size of(arr) / size of (arr[0]);
cout << "unsorted array:";
print Arr (arr, n);
bubble sort (arr, n);
cout << "sorted array:";
 print Array (arr, n);
 return 0;

}
```

Insertion Sorting:

```
# include <iostream>
using namespace std;
void insertion Sort(int arr[], n) {
for (int i=1; i<n; i++) {
 int key = arr [i];
  int j = i-1;
// Move elements that are greater than
key to one position ahead
 while (j>=0 && arr[j] >key ) {
 arr [j+1] =arr [j];
   j--;
 }
 arr [j+1] = key; // insert the key to the right
position
     }
 }
  void print Array (int arr[], int n ) {
  for (int i=0 ; i<n ; i++)
    cout << arr [i] << " ";
    cout << endl;
    }
 int main ( ) {
int arr [] = { 12, 11, 13, 5, 6 };
 int n= size of (arr [0]);
 cout << "Usorted array:";
 print Array( arr, n);
 insertion Sort (arr, n);
 cout << " Sorted array:";
```

```
    Print Array (arr,n);
    return 0;

 }
```

Selection Sorting

```
 # include <iostream>
 using name space std;
void  Selection Sort (int [a] ,int n) {
 for (int  i=0 ; i<n-1 ; i++) {
int min Index = i; // Assume the first element
is the smallest
// find the smallest element in the array
for (int j = i+1 ; j<n ; j++ ) {
 int (arr [j] < arr [min Index]) {
     min Index = j; //update index of the
smallest element
  }
}
// swap the found minimum element with the first
element of the unsorted part
  swap (arr[i], arr [min Index]);
 }
}
```

```
void print Array (int arr[], int n) {
For (int i=0; i<n ; i++)
Cout << arr[i] << " ";
cout<<endl;
}
int main () {
int arr[] = {64,25,12,22,11} ;
int n = size of(arr[0]);
cout << "unsorted arr: ";
print Array (arr,n);
Selection Sort (arr, n);
cout << "Sorted array:";
print Array (arr, n);
return 0;
}
```

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