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# Sorting Functions Implementation

## C++ Code

/\* sort.cpp is a file which have all sorting functions (bubble,selection and insertion) using a switch we can sort the given array.\*/  
#include <cstdio>  
#include <cstdlib>  
  
//Display  
void display() {  
 printf("1.Bubble Sort  
 2.Selection Sort  
 3.Insertion Sort  
 4.Exit  
");  
}  
  
//Bubble Sort  
void bubblesort(int arr[],int size) {  
 for(int i=0;i<size-1;i++) {  
 for(int j=0;j<size-i-1;j++) {  
 if (arr[j]>arr[j+1]){  
 int temp=arr[j];  
 arr[j]=arr[j+1];  
 arr[j+1]=temp;  
 }  
 }  
 }  
}  
  
//Selection Sort  
void selectionsort(int arr[], int size) {  
 for(int i=0;i<size-1;i++) {  
 int minIndex=i;  
 for(int j=i+1;j<size;j++) {  
 if(arr[j]<arr[minIndex]) {  
 minIndex=j;  
 }  
 }  
 int temp=arr[i];  
 arr[i]=arr[minIndex];  
 arr[minIndex]=temp;  
 }  
}  
  
//Insertion Sort  
void insertionsort(int arr[], int size) {  
 for(int i=1;i<size;i++) {  
 int key=arr[i];  
 int j=i-1;  
 while(j>=0 && arr[j]>key) {  
 arr[j+1]=arr[j];  
 j--;  
 }  
 arr[j+1]=key;  
 }  
}  
  
//Output  
void output(int arr[], int size) {  
 for(int i=0;i<size;i++) {  
 printf("%d",arr[i]);  
 }  
 printf("\n");  
}  
  
int main() {  
 int size;  
 int choice;  
  
 printf("Enter the size of array: ");  
 scanf("%d",&size);  
  
 int arr[size];  
  
 printf("Enter the elements of the array:\n ");  
 for (int i=0;i<size;i++) {  
 scanf("%d", &arr[i]);  
 }  
 printf("Choose any one of the following choices:\n ");  
 display();  
  
 printf("Enter your choice: ");  
 scanf("%d", &choice);  
  
 switch(choice) {  
 case 1:  
 bubblesort (arr,size);  
 printf("You have selected the Bubble Sort and your sorted array is:\n ");  
 output(arr,size);  
 break;  
  
 case 2:  
 selectionsort (arr,size);  
 printf("You have selected the Selection Sort and your sorted array is:\n ");  
 output(arr,size);  
 break;  
  
 case 3:   
 insertionsort (arr,size);  
 printf("You have selected the Insertion Sort and your sorted array is:\n ");  
 output(arr,size);  
 break;  
  
 case 4:  
 printf("You have selected Exit option...Exiting the Menu\n");  
 break;  
  
 default:  
 printf("Invalid choice input");  
 }  
 return 0;  
}

## Expected Output

Input:  
Enter the size of array: 5  
Enter the elements of the array:  
34 7 23 32 5  
Choose any one of the following choices:  
1.Bubble Sort  
2.Selection Sort  
3.Insertion Sort  
4.Exit  
  
Enter your choice: 1  
  
Output:  
You have selected the Bubble Sort and your sorted array is:  
5 7 23 32 34

Input:  
Enter the size of array: 5  
Enter the elements of the array:  
34 7 23 32 5  
Choose any one of the following choices:  
1.Bubble Sort  
2.Selection Sort  
3.Insertion Sort  
4.Exit  
  
Enter your choice: 2  
  
Output:  
You have selected the Selection Sort and your sorted array is:  
5 7 23 32 34

Input:  
Enter the size of array: 5  
Enter the elements of the array:  
34 7 23 32 5  
Choose any one of the following choices:  
1.Bubble Sort  
2.Selection Sort  
3.Insertion Sort  
4.Exit  
  
Enter your choice: 3  
  
Output:  
You have selected the Insertion Sort and your sorted array is:  
5 7 23 32 34