Shaheed Zulfikar Ali Bhutto Institute of Science & Technology

COMPUTER SCIENCE DEPARTMENT

Total Marks: 7.5

Obtained Marks: _____

DATA STRUCTURE AND ALGORITHM

Lab Report # 08

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Question no 1:

a. **Write a program which sort 10 number using bubble sort technique.**
b. **Write a program which sort 10 numbers using selection sort technique.**

Code:

Part(a)

```
#include<iostream>
using namespace std;

// A function to implement bubble sort
void bubbleSort(int arr[], int n)
{
   int i, j;
   for (i = 0; i < n - 1; i++)

       // Last i elements are already
       // in place
       for (j = 0; j < n - i - 1; j++)
          if (arr[j] > arr[j + 1])
             swap(arr[j], arr[j + 1]);
}
```

```
// Function to print an array
void printArray(int arr[], int size)
{
    int i;
    for (i = 0; i < size; i++)
        cout << arr[i] << " ";
    cout << endl;
}

// Driver code
int main()
{
    int arr[] = { 1, 9, 2, 8, 3, 7, 4, 6, 5, 0};
    int N = sizeof(arr) / sizeof(arr[0]);
    bubbleSort(arr, N);
    cout << "Sorted array: \n";
    printArray(arr, N);
    return 0;
}
```

Part(b)

```
#include<iostream>
using namespace std;
```

```
//Swap function
void swap(int *xp, int *yp)
{
   int temp = *xp;
   *xp = *yp;
   *yp = temp;
}

void selectionSort(int arr[], int n)
{
   int i, j, min_idx;

   // One by one move boundary of
   // unsorted subarray
   for (i = 0; i < n-1; i++)
   {

      // Find the minimum element in
      // unsorted array
      min_idx = i;
      for (j = i+1; j < n; j++)
      if (arr[j] < arr[min_idx])
         min_idx = j;

      // Swap the found minimum element
      // with the first element
      if(min_idx!=i)
         swap(&arr[min_idx], &arr[i]);
   }
```

```
}

//Function to print an array
void printArray(int arr[], int size)
{
   int i;
   for (i=0; i < size; i++)
      cout << arr[i] << " ";
   cout << endl;
}

// Driver program to test above functions
int main()
{
   int arr[] = {10, 100, 90, 80, 70, 60, 50, 40, 30, 20};
   int n = sizeof(arr)/sizeof(arr[0]);
   selectionSort(arr, n);
   cout << "Sorted array: \n";
   printArray(arr, n);
   return 0;
}
```

CONSOLE SCREEN:

Part(a)

```
Sorted array:
0 1 2 3 4 5 6 7 8 9

--------------------------------
Process exited after 6.69 seconds with return value 0
Press any key to continue . . .
```

Part(b)

```
Sorted array:
10 20 30 40 50 60 70 80 90 100

--------------------------------
Process exited after 8.163 seconds with return value 0
Press any key to continue . . .
```