॥वसुधैव कुटुम्बकम॥

SYMBIOSIS INSTITUTE OF TECHNOLOGY, PUNE

Constituent of Symbiosis International (Deemed University), Pune

Assignment No.: 11	
Course Name	Programming in C Lab
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Branch	CSE
Class	C-1
Academic Year & Semester	2023-2024 & Semester 2
Date of Performance	12/04/2024
Assignment Title (Full):	Write a C program of selection sorting using functions.

Theory: (Note: According to the assignment title, please write the background information as an introduction, then write the steps/logic/process/algorithm of the C program in the Journal Notebook, and add its screenshot in the below theory response.)

Theory Response:

- **SelectionSort Function:**
  1. Initialize min_index to track the minimum element index.
  2. Iterate through the array from i = 0 to n-1.
  3. Find the minimum element in the unsorted portion of the array.
  4. Swap the minimum element with the element at i if necessary.

- **Main Function:**
  1. Declare and initialize an array arr.
  2. Determine the size n of the array.
  3. Call SelectionSort function with arr and n.
  4. Print the sorted array using a for loop.
  5. Return 0 to indicate successful completion.

Output: (Note: Execute the C program as per the assignment title, take an input code and output result screenshot with the date and time from your computer, and add its screenshot in the below output response.)

Output Response:

```c
#include <stdio.h>
void SelectionSort(int arr[],int n){
    int min_index=0;
    for(int i=0;i<n-1;i++){
        min_index=i;
        for(int j=i+1;j<n;j++){
            if(arr[j]<arr[min_index]) min_index=j;
        }
        if(min_index!=i) swap(&arr[min_index],&arr[i]);
    }
}

int main() {
    int arr[] = {64, 34, 25, 12, 22, 11, 90};
    int n = sizeof(arr)/sizeof(arr[0]);
   //bubbleSort(arr, n);
   SelectionSort(arr,n);
    printf("\nSorted array: \n");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }
    printf("\n");
    return 0;
}
```

```
Sorted array:
11 12 22 25 34 64 90
(base) fahee@Faheems-MacBook-Pro Programming_in_C %
```

Conclusion: (Note: Write the key findings or outcome from this assignment, enlist their potential real-world applications in Journal Notebook, and add its screenshot in the below conclusion response.)

Conclusion Response:

The code demonstrates a simple implementation of the Selection Sort algorithm. It iteratively selects the smallest element from the unsorted portion of the array and places it at the beginning. This process continues until the entire array is sorted.

Please note that assignment content can be readable.

Faculty Name:

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