Program 12

Ques 12) WAP to Sort a List of Numbers Using Selection Sort?

Sol:

Algorithm:

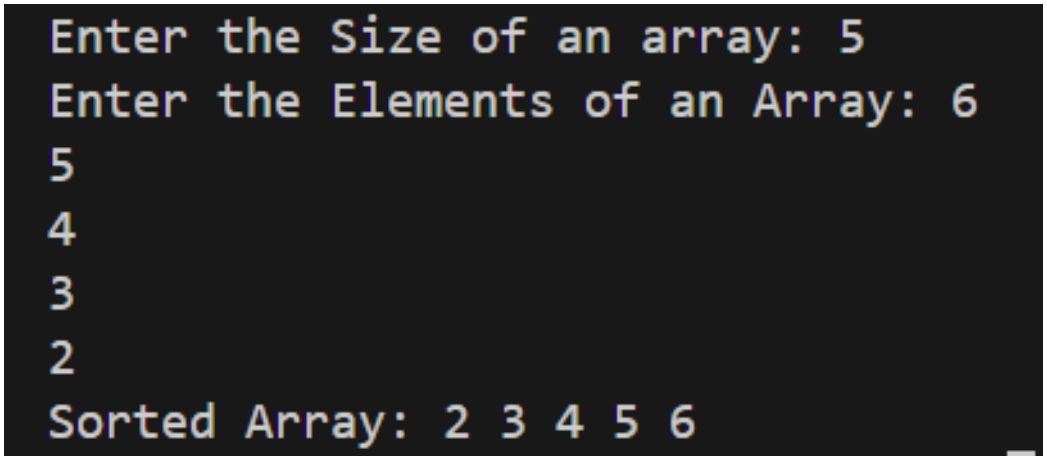
1) Start.
2) Initialize:
   a) Declare an integer array arr[5] (or arr[n] for variable size).
   b) Declare an integer variable n to store the size of the array.
3) Input the size of the array:
   a) Print "Enter the size of the array:".
   b) Take the user input and store it in n.
4) Input the elements of the array:
   a) Print "Enter the elements of the array:".
   b) Loop from i = 0 to n-1:
   i) Take the user input for each element and store it in arr[i].
5) Sort the array using Selection Sort:
   a) Loop from i = 0 to n-2:
   i) Set minIndex = i (assume the current element at arr[i] is the minimum).
   ii) Loop from j = i + 1 to n-1:
   (1) If arr[j] < arr[minIndex], then:
   (a) Set minIndex = j (update the position of the minimum element).
   iii) If minIndex != i (meaning a smaller element was found):
   (1) Swap arr[i] and arr[minIndex].
6) Print the sorted array:
   a) Loop from i = 0 to n-1:
   i) Print arr[i] followed by a space.
7) End

Code:

```
#include<stdio.h>

int main() {
   int arr[5];
   int n;
```

```
    // Input the size of the array
    printf("Enter the Size of an array: ");
    scanf("%d", &n);

    // Input the elements of the array
    printf("Enter the Elements of an Array: ");
    for(int i = 0; i < n; i++) {
        scanf("%d", &arr[i]);
    }

    // Selection Sort algorithm
    for (int i = 0; i < n - 1; i++) {
        int minIndex = i;  // Assume the current index is the minimum
        for (int j = i + 1; j < n; j++) {
            if (arr[j] < arr[minIndex]) {
                minIndex = j;  // Update minIndex if a smaller element is found
            }
        }

        // Swap the found minimum element with the element at index i
        if (minIndex != i) {
            int temp = arr[i];
            arr[i] = arr[minIndex];
            arr[minIndex] = temp;
        }
    }

    // Print the sorted array
    printf("Sorted Array: ");
    for (int i = 0; i < n; i++) {
        printf("%d ", arr[i]);
    }

    return 0;
}
```

Output:


Enter the Size of an array: 5
Enter the Elements of an Array: 6
5
4
3
2
Sorted Array: 2 3 4 5 6