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Batch: M3 (TE3)

**Title : Greedy Search Algorithm for Selection Sort Algorithm**

**Problem Statement:** Implement Greedy Search Algorithm for any of the following Application : 1) Selection Sort

**Code :**

**#include<bits/stdc++.h>**

**using namespace std;**

**void displayArray(vector<int> &arr){**

**int n = arr.size();**

**for(int i=0;i<n;i++){**

**cout << arr[i] << " ";**

**}**

**cout << endl;**

**}**

**void swap(vector<int> &arr, int i, int j){**

**int temp = arr[i];**

**arr[i] = arr[j];**

**arr[j] = temp;**

**}**

**void selectionSort(vector<int> &arr){**

**int n = arr.size();**

**for(int i=0;i<n;i++){**

**int minElement = arr[i];**

**int min\_idx = i;**

**for(int j=i+1;j<n;j++){**

**if(arr[j] < minElement){**

**minElement = arr[j];**

**min\_idx = j;**

**}**

**}**

**if(min\_idx != i){**

**swap(arr, i, min\_idx);**

**}**

**cout << i+1 << "th Iteration: ";**

**displayArray(arr);**

**}**

**}**

**int main () {**

**cout << "Enter the no. of elements in the array: ";**

**int n;**

**cin >> n;**

**vector<int> arr(n);**

**for(int i=0;i<n;i++){**

**cout << i << " : ";**

**cin >> arr[i];**

**}**

**cout << "Input Array : ";**

**displayArray(arr);**

**selectionSort(arr);**

**cout << "Sorted Array : ";**

**displayArray(arr);**

**return 0;**

**}**

**Output:**

**pict@pict-OptiPlex-9020:~/Desktop/31353\_Rohit\_LP2\_Mock\_Practical$ cd "/home/pict/Desktop/31353\_Rohit\_LP2\_Mock\_Practical/" && g++ selectionSort.cpp -o selectionSort && "/home/pict/Desktop/31353\_Rohit\_LP2\_Mock\_Practical/"selectionSort**

**Enter the no. of elements in the array: 10**

**0 : 9**

**1 : 5**

**2 : 6**

**3 : 3**

**4 : 2**

**5 : 8**

**6 : 7**

**7 : 1**

**8 : 4**

**9 : 10**

**Input Array : 9 5 6 3 2 8 7 1 4 10**

**1th Iteration: 1 5 6 3 2 8 7 9 4 10**

**2th Iteration: 1 2 6 3 5 8 7 9 4 10**

**3th Iteration: 1 2 3 6 5 8 7 9 4 10**

**4th Iteration: 1 2 3 4 5 8 7 9 6 10**

**5th Iteration: 1 2 3 4 5 8 7 9 6 10**

**6th Iteration: 1 2 3 4 5 6 7 9 8 10**

**7th Iteration: 1 2 3 4 5 6 7 9 8 10**

**8th Iteration: 1 2 3 4 5 6 7 8 9 10**

**9th Iteration: 1 2 3 4 5 6 7 8 9 10**

**10th Iteration: 1 2 3 4 5 6 7 8 9 10**

**Sorted Array : 1 2 3 4 5 6 7 8 9 10**