Selection sort and Insertion sort

Aim:

To write a program to perform selection sort and insertion sort using python programming.

Equipment's required:

- 1. Hardware PCs
- 2. Anaconda Python 3.7 Installation / Moodle-Code Runner

Algorithm:

Selection Sort Algorithm:

- 1. Set the first unsorted element as the minimum
- 2. For each of the unsorted elements, check if the element < current minimum.
- 3. If yes, set the element as the new minimum.
- 4. Swap minimum with first unsorted position.
- 5. Repeat the steps 2 and 3 for all the elements in the array.

Insertion Sort Algorithm:

- 1. Set the first element as sorted element j.
- 2. For each unsorted element X, check if current sorted element j >X.
- 3. If yes, move sorted element to the right by 1.
- 4. Break the loop and insert X.
- 5. Repeat the steps 2 to 4 for sorting all the elements in the array.

Program:

i) #Selection Sort

1.1.1

Program to sort the elements in the list using the Selection Sort algori Developed by: Tamizhselvan .R

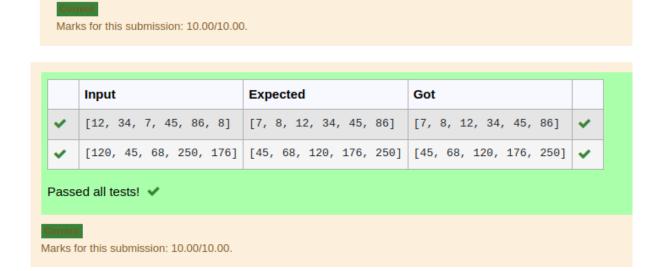
1 of 3 22/01/23, 21:29

```
RegisterNumber: 22002952
  def selectionSort(array, size):
      for ind in range(size):
          min_index = ind
          for j in range(ind + 1, size):
              if array[j] < array[min_index]:</pre>
                   min_index = j
          (array[ind], array[min_index]) = (array[min_index], array[ind])
  arr = eval(input())
  size = len(arr)
  selectionSort(arr, size)
  print(arr)
ii) #Insertion Sort
  1 \cdot 1 \cdot 1
  Program to sort the elements in the list using the Insertion Sorting Alg
  Developed by: Tamizh selvan.R
  RegisterNumber: 22002952
  1.1.1
  def insertion_sort(nums):
      for i in range(1,len(nums)):
          item_to_insert=nums[i]
          j=i-1
          while j >=0 and nums[j]>item_to_insert:
              nums[j+1]=nums[j]
              j-=1
          nums[j+1]=item_to_insert
  list_of_nums = eval(input())
  insertion_sort(list_of_nums)
  print(list_of_nums)
```

Output:

Input	Expected	Got	
[12, 34, 7, 45, 86, 8]	[7, 8, 12, 34, 45, 86]	[7, 8, 12, 34, 45, 86]	~
[120, 45, 68, 250, 176]	[45, 68, 120, 176, 250]	[45, 68, 120, 176, 250]	~
	[12, 34, 7, 45, 86, 8]	[12, 34, 7, 45, 86, 8] [7, 8, 12, 34, 45, 86]	[12, 34, 7, 45, 86, 8] [7, 8, 12, 34, 45, 86] [7, 8, 12, 34, 45, 86] [120, 45, 68, 250, 176] [45, 68, 120, 176, 250] [45, 68, 120, 176, 250]

2 of 3 22/01/23, 21:29



Result:

Thus the program is written to perform selection sort and insertion sort using python programming.

3 of 3 22/01/23, 21:29