SNS COLLEGE OF ENGINEERING

Kurumbapalayam(Po), Coimbatore – 641 107
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Department of Artificial Intelligence and Data Science

Course Name: 23ITB201 Data structures and Algorithms

II Year / III semester

Unit III – Sorting, searching and hashing

Topic: Selection Sort

Selection Sort Algorithm

- This type of sorting is called Selection Sort as it works by repeatedly sorting elements.

- That is: we first find the smallest value in the array and exchange it with the element in the first position, then find the second smallest element and exchange it with the element in the second position, and we continue the process in this way until the entire array is sorted.

Selection sort function:

Selection sort function:

```
void selectionSort(int array[], int size){
    int i, j, imin;
    for(i = 0; i<size-1; i++) {
        imin = i; //get index of minimum data
        for(j = i+1; j<size; j++)
            if(array[j] < array[imin])
                imin = j;
        //placing in correct position
        int temp;
        temp = array[i];
        array[i] = array[imin];
        array[imin] = temp;
    }
}
```

Selection sort function:

Consider the following depicted array as an example.

For the first position in the sorted list, the whole list is scanned sequentially. The first position where 14 is stored presently, we search the whole list and find that 10 is the lowest value.
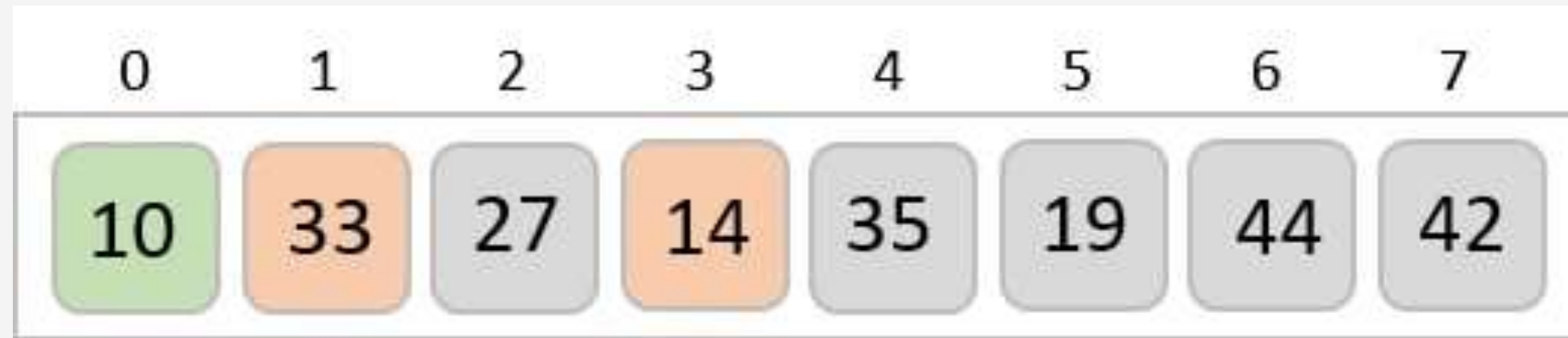

So we replace 14 with 10. After one iteration 10, which happens to be the minimum value in the list, appears in the first position of the sorted list.
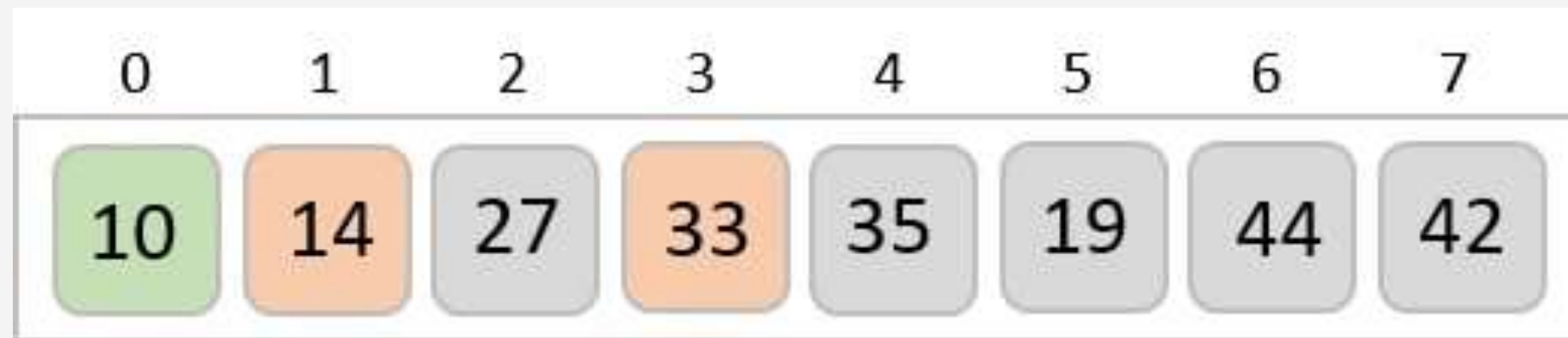

For the second position, where 33 is residing, we start scanning the rest of the list in a linear manner.

Selection sort function:

We find that 14 is the second lowest value in the list and it should appear at the second place. We swap these values.

After two iterations, two least values are positioned at the beginning in a sorted manner.

The same process is applied to the rest of the items in the array

Selection sort function:

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Selection sort function: