**Assignment 5**

Q1 :-Write a function for insertion sort?

Answer :- [Insertion Sort](https://www.edureka.co/blog/insertion-sort-in-java/) creates the final sorted array one element at a time. It is usually implemented when the user has a small data set. Insertion Sort is a sorting algorithm where the array is sorted by taking one element at a time. The principle behind insertion sort is to take one element, iterate through the sorted array & find its correct position in the sorted array.

**Algorithm for Insertion Sort**

* **Step 1** − If the element is the first one, it is already sorted.
* **Step 2** – Move to next element
* **Step 3** − Compare the current element with all elements in the sorted array
* **Step 4** – If the element in the sorted array is smaller than the current element, iterate to the next element. Otherwise, shift all the greater element in the array by one position towards the right
* **Step 5** − Insert the value at the correct position
* **Step 6** − Repeat until the complete list is sorted

**Insertion Sort Function**

* void insertionSort(int array[], int n)
* {
* int i, element, j;
* for (i = 1; i < n; i++) { element = array[i]; j = i - 1; /\* Move elements of arr[0..i-1], that are greater than key by one position \*/ while (j >= 0 && array[j] > element) {
* array[j + 1] = array[j];
* j = j - 1;
* }
* array[j + 1] = element;
* }
* }