IIIT Vadodara
CS263: Assignment #1

September 27, 2021

Experiment: Perform the following three tasks

Task 1: Write the algorithm of Linear Search, Binary Search, Insertion Sort, Selection Sort, and Bubble Sort. Use the Step count method and write the time function for the algorithm.
Create a table and write the complexity in "big-Oh" notations.

Table 1: Time complexity

Algorithm	Best Case	Average Case	Worst Case
Linear Search			
Binary Search			
Insertion Sort			
Selection Sort			
Bubble Sort			

Task 2: Implement the above algorithms in any language. There will be minimum 100000 elements in each array.
Initialize this three arrays: a[], b[] and c[] in following ways. Make sure input is same to all sorting algorithms.

- Elements of a[] should be in increasing order
- Elements of b[] should be decreasing order
- Elements of c[] will be in random order.

Execute your algorithm for each input array and compute the execution time in (microseconds).
Task 3: Plot the graph as execution time vs. the input size for each algorithm. Input size varies as 100, 1000, 10000, 100000, 10000000.

- Use any language.
- Don't use any in-build function which performs your operation directly.
- Save your file as CourseName_Roll_no.pdf.
- Save your source file as *AloName_roll_no*(.c, .java, .cpp, .python)
- There will be two separate links for submitting the pdf and the code.
- Submit a pdf file which will consist of Task 1, Task 2, and Task 3.
  - Screen sort of you code
  - screenshot of all your output
- Submit the *courseName_Roll_No*.zip file for the code.
- Don't copy from your friends, if we find the similarity more than 30%, we will deduct the marks.