# ALGORITHM AND PROBLEM SOLVING Lab

Jan - June 2022

# Assignment 1

1. Fill an array of size *n* = 10 with 16 bit integers randomly. Use this array as an input and calculate the running time of (1) Insertion sort, (2) Bubble sort, (3) Selection sort. Repeat this for *n* = 102*, n* = 103*, n* = 104*, n* = 105*, n* = 106 and plot the output as a graph;
2. Repeat the above experiment with an array whose entries are *sorted*;
3. Repeat the above experiment with an array whose entries are *reversely sorted*.
4. Implement Karatsuba’s integer multiplication. Your program should in- voke the C language’s multiplication operator only on pairs of single-digit numbers. For a concrete challenge, what is the product of the following two 64-digit numbers? 3141592653589793238462643383279502884197169399375105820974944592 2718281828459045235360287471352662497757247093699959574966967627

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