

LEBANESE AMERICAN UNIVERSITY  
School of Arts and Science  
Department of Computer Science and Mathematics  
CSC 310: Algorithms and Data Structures  
Lab 2

**The following input/output sample is applied to all questions.  
Your input first reads n number of test cases and m the  
number of elements in the array**

Sample Input	Sample Output
3	-732 9 12 34 156 237 700
7	-20 0 1 5
12 700 9 156 34 -732 237	-10 2 2 8 9
4	
5 -20 0 1	
5	
2 2 -10 8 9	

**Problem 1 – *Bubble Sort*:**

Given an array of integers, write a most-efficient program that sorts the array using bubble sort

**Problem 2 – *Selection Sort*:**

Given an array of integers, write a most-efficient program that sorts the array using Selection sort

**Problem 3 – *Insertion Sort***

Given an array of integers, write a most-efficient program that sorts the array using Insertion sort.

**Problem 4– Merge Sort:**

Given an array of integers, write a most-efficient program that sorts the array using Merge sort.

**Problem 5 – *Hybrid Merge-Insertion Sort*:**

Given an array of integers, write a most-efficient program that sorts the array using Merge-Insertion Sort. This algorithm starts by using the Merge Sort algorithm and switches to Insertion Sort when crossing a

certain threshold (When the size of an array becomes less than a certain number, it switches from Merge Sort to Insertion Sort).

#### Problem 6 – *Performance*:

Write a brief report that shows that race between these five algorithms. To be submitted later

You are required to run and measure the performance of each algorithm multiple times for increasing input sizes then compare the race between the five algorithms.

After that graph the result using excel.