**Notes:**

* You are required to upload your in–class implementations of problems 1-3 to Canvas. This is due by 2:10 PM today. You MUST demonstrate the output of your code to the TA before leaving.
* You are required to turn in a written report (Word or PDF file) for the homework part (problem 4 and 5) of the lab and upload implementations to Cnavas. These are due by 12.20 PM, January 20, 2016).
* Homework report must follow the guidelines provided in the sample report uploaded in Canvas.
* Do NOT include source code in your report; upload the Java source files separately to Canvas. You can create a zip/tar file to upload multiple source files. Please do NOT upload java class files, upload ONLY the source files.
* Binary Search needs sorted array. Check the input. If the array is not sorted then sort it before binary search. (Sorting code for Java is : Arrays.sort(array);

**Objectives:**

* Implement linear search and binary search algorithms
* Evaluate performance of linear and binary search

**Problems**

1. Implement a method that will search a given array using the linear search algorithm.
2. Implement a method that will search a given array using a recursive binary search algorithm.
3. Write a driver program to test the two search algorithms implemented in questions 1-2. Read the input file “input100” for the input numbers and store them in an array. Search for a number, print a message according to the search result.
4. Test the program for the different size input files provided in Canvas.
5. Compare the execution time for linear search and binary search. Use a table or plot to summarize the results and document your observations and explanations in the report.