

# CS0048 DATA STRUCTURES AND FILES

## Assignment 3 – Testing Run-Times of Searches

### Task

This assignment analyzes the worst case (unsuccessful search) for three searches:

- iterative sequential search
- recursive sequential search
- recursive binary search

Design and write a program, **Searches**, that will count the number of comparisons executed for an **unsuccessful** search (worst case) for a variety of integer arrays in each of the searches. Your program should ask the user to input an initial array size, count the number of comparisons and then keep doubling the size and counting comparisons. The program should print the size of the array and the number of comparisons in every case.

Write each of the searches as a separate method – the iterative search has two parameters, the recursive searches have four parameters. You can create other methods if you want.

### Note

For a recursive method use the number of times the method is called as the number of comparisons – the assumption is that there is one comparison per call.

### Turning in the Assignment

Take a screenshot of your program running when the original size is 100. Upload the screenshot, **Searches.java** and **Searches.class** by the start of the next class on February 3.