1) I programmed a solution that performed a simple linear search, which would have worst case O(N). This is because the loop will simply iterate through the every element of the data structure until it finds the query.

**public** **static** **int** ProblemThree(Data data, **int** value){

**int** i = 0;

**while(data.getValue(i) <= value){**

**if**(data.getValue(i) == value) **break**;

i++;

}

System.***out***.println("Number of compares: " + i);

**return** i;

}

2) In order to achieve O(logN) time, a search for the length would need to be completed using a binary search (values greater then what we want are -1). Once this length is found we can use a binary search on the data structure to find the result.