

Northern Michigan University (Marquette Co, MI)

CS422-01-25W: Algorithms (Andrew A. Poe)
Quiz 6

Name: _____
Friday 21 March 2025 9:00 A.M. EDT

Time: 15 minutes

In class, we went over a method for Binary Search. We learned an iterative method because the code is nice and short with a loop. However, it is EVEN SHORTER using recursion.

Write code in Java for

```
boolean BinarySearch (String[] A, String word) { ... }
```

This method searches *A* for *word*, returning true if *word* is found in the array and false if it is not. You may assume that *A* is sorted.

However, you cannot use loops; you must use recursion. You are allowed to use helper methods, but you must write them if you do. You *must* write a version of binary search; it must check as few elements as possible to determine whether the string is present. You do not have to worry about a “range search,” the same element appearing multiple times. Just true if it's present, false if it is not.

```
boolean BinarySearch (String[] A, String word) {  
    return BSearch (A,0,A.length-1,word);  
}  
  
boolean BSearch (String[] A, int f, int l, String word) {  
  
    boolean found = false;  
    if (f <= l) {  
        int t = (f+l)/2;  
        int c = A[t].compareTo (word);  
        if (c > 0) found = BSearch (A,f,t-1,word);  
        else if (c < 0) found = BSearch (A,t+1,l,word);  
        else found = true;  
    }  
    return found;  
}
```