

Exercise – Analysis of Algorithms

Count the number of operations and give the Big-O characterizations for the following Java code segment:

```
int[] data;    // data members declared, instantiated
int size;      // outside of the method but within scope of it

public boolean binarySearch(int key)
{
    int low = 0;
    int high = size - 1;

    while(high >= low)
    {
        int middle = (low + high) / 2;
        if(data[middle] == key)
        {
            return true;
        }
        if(data[middle] < key)
        {
            low = middle + 1;
        }
        if(data[middle] > key)
        {
            high = middle - 1;
        }
    }
    return false;
}
```