**Question 2**

We have two arrays,

Take a nut, from and check for a match amongst .

While we do this, we simultaneously sort into two arrays:

the bolts that are too large for the nut and

the bolts that are too small for the nut .

*Time Complexity:*

From the bolt we have found, call it , we compare it against every nut in , again sorting it into two arrays.

the nuts that are too large for and

the nuts that are too small for

Put this pair of and into our found array, call it.

Recursively call the function with inputs (, ) and (, )

*Time Complexity:*

Thus, a total time complexity of*:*