Second Quiz for CSI35

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Directions: Write your answers in the provided space

1. Recall the merge sort algorithm. the input is a list of integers L:

```
def ms(L):
    n = len(L)
    if n > 1:
        m = floor(n/2)
        L1 = ms(L[0:m])
        L2 = ms(L[m:n])
        L = merge( ms(L1), ms(L2))
    return L
```

Where the function *merge*, merges two sorted lists L_1, L_2 into one sorted list and is defined in python pseudocode as follows:

```
def merge(L1, L2):
    L = []
    while L1 != [] and L2 != []:
        if L1[0] < L2[0]:
            a = L1[0]
            remove(L1, 0)
            L.append(a)
            if L1 == []:
                for x in L2:
                    L.append(x)
        else:
            a = L2[0]
            remove(L2, 0)
            L.append(a)
            if L2 == []:
                for x in L1:
                    L.append(x)
    return L
```

Use the recursive Merge Sort algorithm to sort the following list of integers:

$$2, 7, 3, 5, 6, 10, 8,$$

2. Give a recursive algorithm that returns all the bitstring palindromes of length n, where $n \in \mathbb{N}$.