MergeSort Algorithm

```
procedure MergeSort(A)
    n ← length(A)
    if n ≤ 1:
        return A
    L ← MergeSort(A[1:n/2])
    R ← MergeSort(A[n/2 + 1:n])
    return Merge(L,R)
end procedure

procedure Merge(L,R)
    ll ← length(L)
    rl ← length(R)
    n ← ll + rl
    S ← empty array of size n
    i ← 1
    j ← 1
    k ← 1
    while i ≤ ll and j ≤ rl do
        if L[i] < R[j] do
            S[k] ← L[i]
            i ← i+1
        else:
            S[k] ← R[j]
            j ← j+1
        k ← k+1
    end while
    while i ≤ ll do
        S[k] ← L[i]
        i ← i+1
        k ← k+1
    end while
    while j ≤ rl do
        S[k] ← R[j]
        j ← j+1
        k ← k+1
    end while
    return S
end procedure
```