MergeSort
Recursion in Python

Thomas Erlebach

Mergesort

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Mergesort in Python

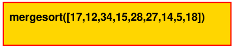
```python
def mergesort(L):
    if len(L) <= 1:
        return L
    else:
        mid = len(L) // 2
        L1 = mergesort(L[:mid])
        L2 = mergesort(L[mid:])
        return merge(L1,L2)

print(mergesort([17,12,34,15,28,27,14,5,18]))
```

Merging two sorted lists

```python
def merge(L1,L2):
    L=[]
    while L1 and L2:
        if L1[0]<= L2[0]:
            L.append(L1.pop(0))
        else:
            L.append(L2.pop(0))
    L.extend(L1)
    L.extend(L2)
    return L
```

Visualisation of the calls to mergesort: recursion tree



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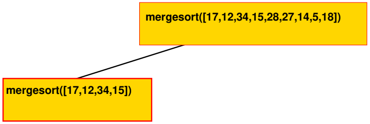

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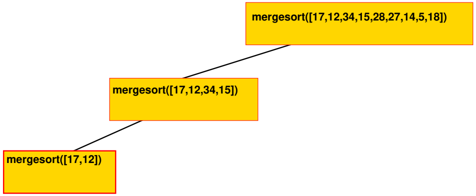

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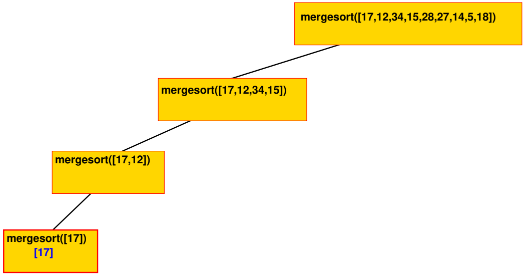

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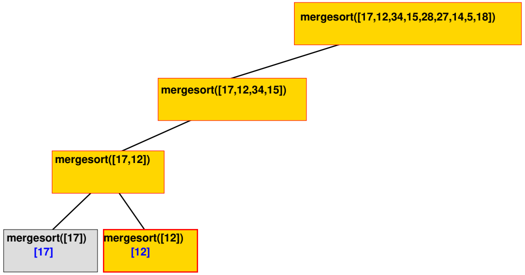

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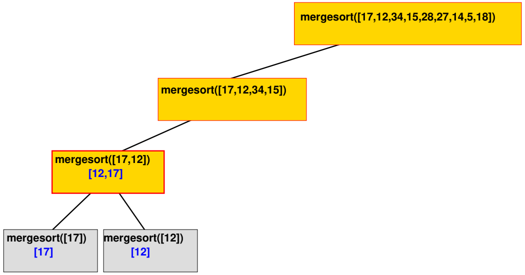

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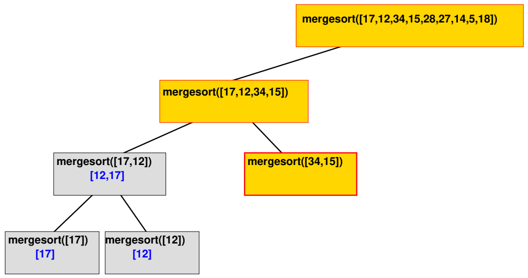

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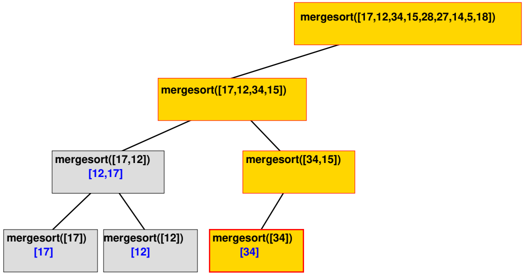

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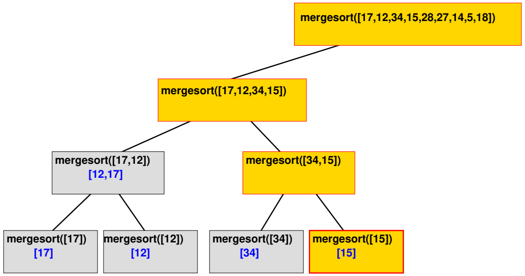

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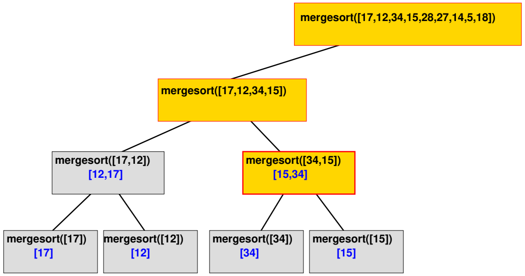

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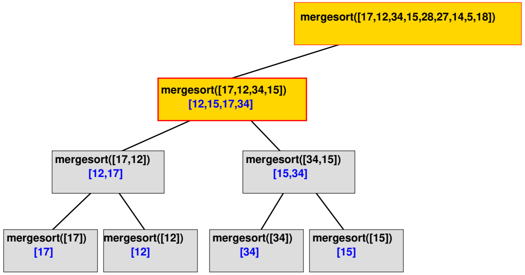

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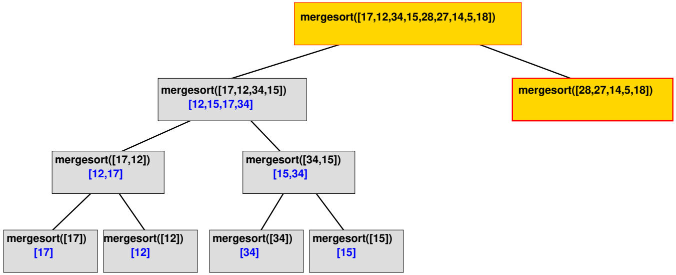

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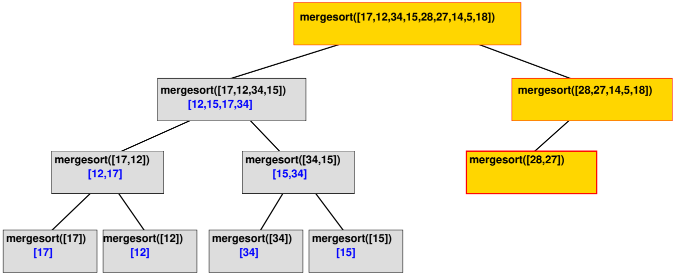

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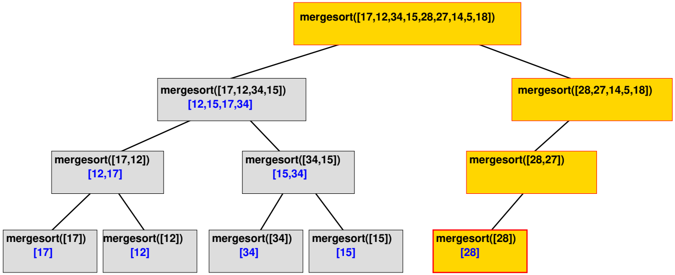

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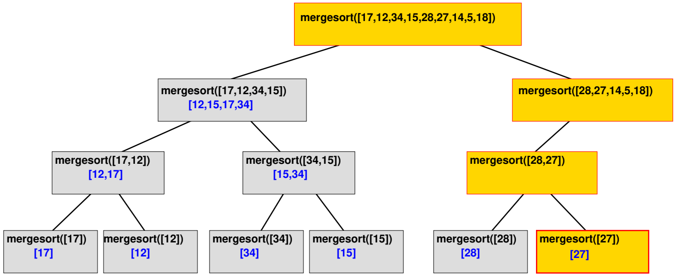

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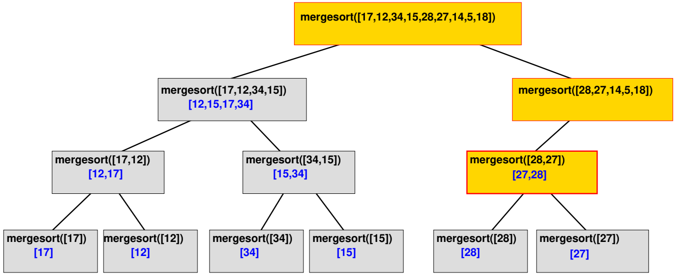

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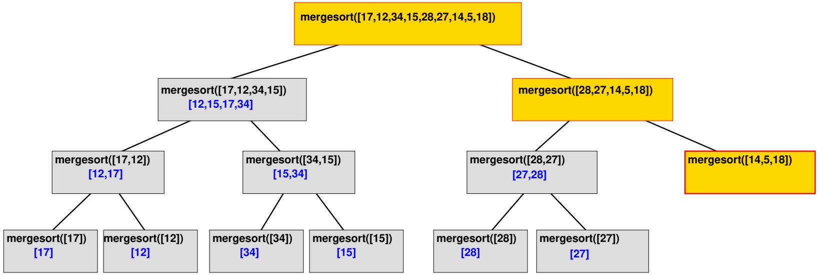

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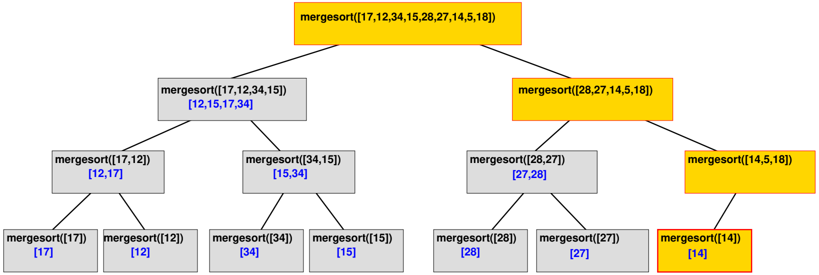

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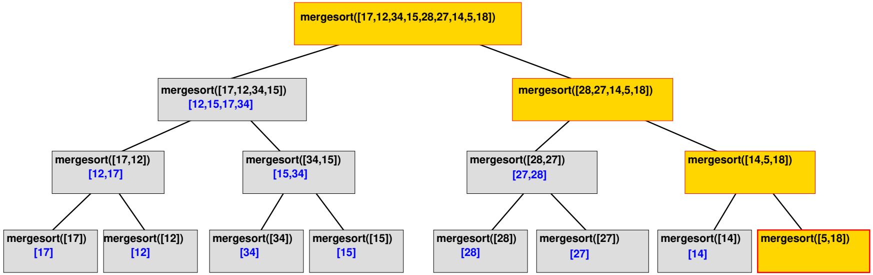

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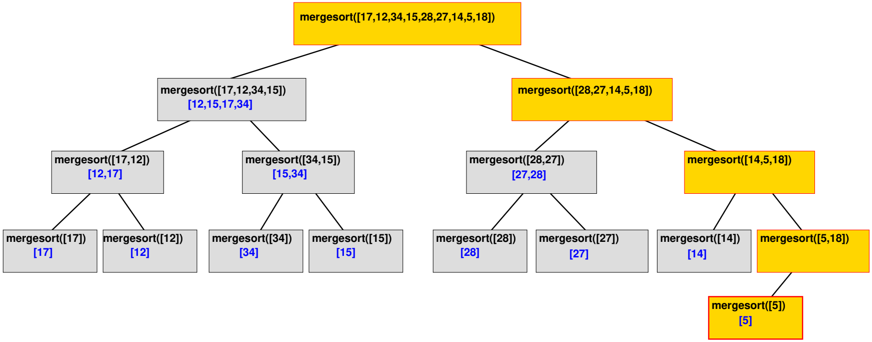

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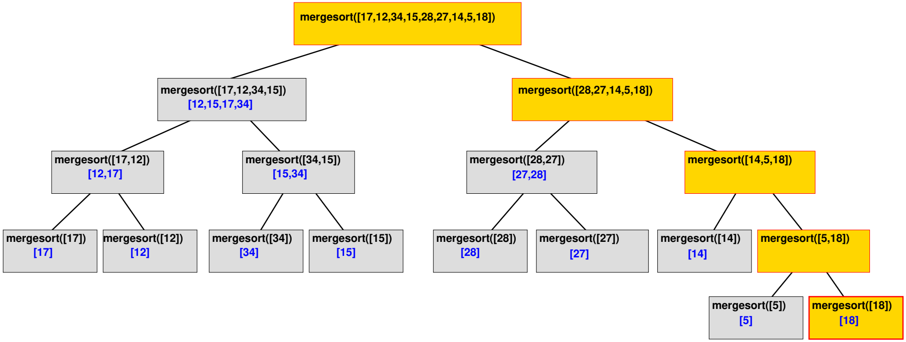

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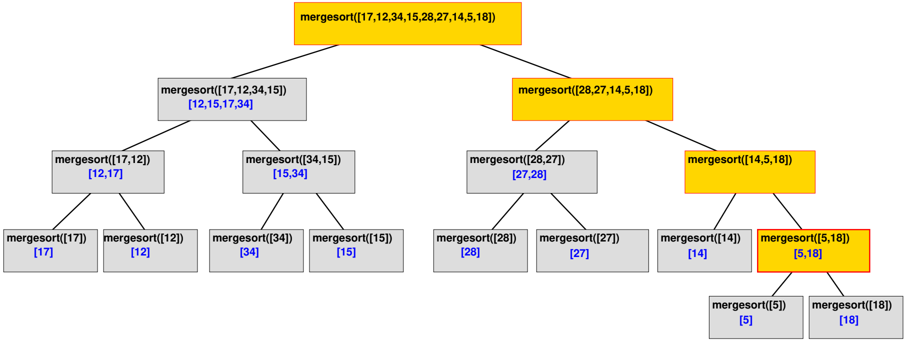

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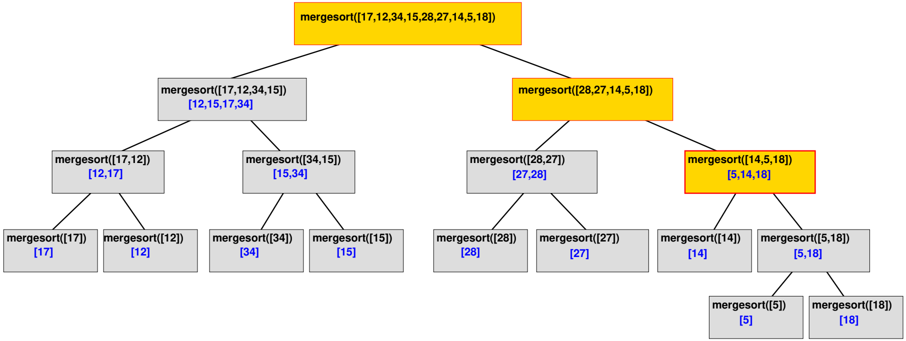

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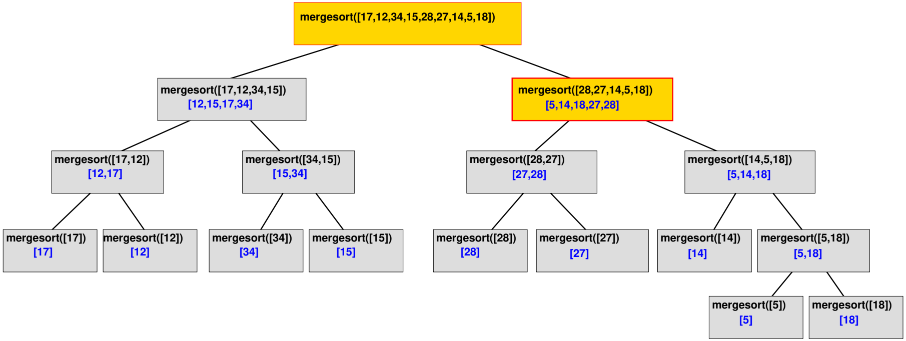

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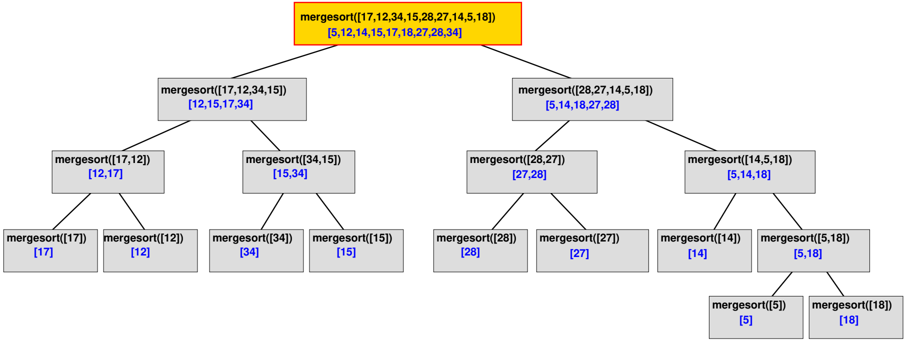
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