CSC236 Week 6 Tutorial:

Analyzing Algorithm Runtime

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Exercise

Consider the following Python code, a recursive version of selection sort:

Exercise (cont'd)

```
def recSS(A, i):
    '''
    Sorts A[i:]  by recursively finding the smallest element in the
    remaining list and putting it into its correct position.
    '''
    if i < len(A) - 1:
        # Find the minimum element in A[i:]
        small = i
        for j in range(i + 1, len(A)):
            if A[j] < A[small]:
                small = j
        # Swap A[i] and A[small]
        temp = A[i]
        A[i] = A[small]
        A[small] = temp

        # Sort the remainder of the list
        recSS(A, i + 1)
```

Exercise (cont'd)

Note that the above has an implicit base case $i = \texttt{len(A) - 1}$, for which it does nothing.

Analyse the asymptotic (worst-case) runtime of `recSS` in terms of n, the size of the input list.