Homework1 for EECS 340

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1 Give a recursive algorithm to find the average (mean) value of an array of 2^k decimal numbers, where $k \in \mathbb{N}$.

Answer: The proposed algorithm is like follow:

Algorithm A1: Average(L, $position_{start}$, $position_{end}$)
Data: A list of 2^k decimal numbers L, and the start and end position of calculation, $position_{start}$ and $position_{end}$.
Result: The average of all the numbers in L.
if $position_{start} = position_{end}$ **then**
    return $L(position_{start})$
else
    return $0.5\times$ (Average(L,$position_{start}$,$\frac{position_{start}+position_{end}-1}{2}$)+Average($L$,$\frac{position_{start}+position_{end}+1}{2}$,$position_{end}$))
end if

2 R-12.6