# Q3

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Question - Why is it a bad idea to use recursion method to find the fibonacci of a number Answer - Recursion for fibonacci sequences carry extra overhead as the stack grows exponentially due to repeated calls in the absence of memoization. While the performance draw-down may not manifest for small input, the recursion tree shows explosive growth for $n \geq 8$. Consider the fibonacci for $n = 10$ , $F[10]$ The recursion calls proceed as follows

$F[10] = F[9] + F[8]$

$F[10] = [F[8] + F[7]] + [F[7] + F[6]]$

$F[10] = [[F[7] + F[6]] + [F[6] + F[5]]] + [[F[6] + F[5]] + [F[5] + F[4]]]$

$\vdots$

The repeated calls grow exponentially and overloads the stack