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COP 4530  
Assignment 2

Analysis

(i) The asymptotic time complexity for evaluation of the recursive function as a function of all arguments to the executablerecurse which influence the running time of that program. For the analysis alone, assume that S1 = S2 = 0, M2 = M4 = 1, and D1 = D2 > 1. Briefly justify the results of your analysis.

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| --- | --- |
| A1 + M1\*f(N/D1) Op M3\*f(N/D2)=>  **Step 1**  **Step 2** | **Step 3**  **Step 4**  ) \*)  **Answer**  ) |

(ii) Amortized time complexity for N push operations on the stack. Briefly justify your analysis.

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| --- | --- |
| template<class T>  void Stack< T >::push(T& p)  {Stacks.push\_front(p);} | My Stack class used the push\_front function from my vector class; this will put the added element at the top of the stack. The push\_front function moves through the array in the loop n times at while pushing all the elements to the front n+1 times. This makes the amortized time complexity O(n). The resize function is negligible because it happens before the push\_front does its job, and you don’t have to do it every time. The resize has a time complexity of O(1). |