Team Number: 23

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COA Lab Assignment 4

Question 1:

We use recursion to calculate the sum. Base case is when n is 1 and we return 1 in that case. Else, we call recursion on (n-1), add the value of n^n to the value of rec(n-1) and return. Value of n^n is calculated in a loop of size n.

For value of n greater than 9, the sum of the series is overflowing 32 bits, therefore we prompt the user to enter a value from 1 to 9 whenever any other value is entered.

Time complexity: $O(n^2)$

Question 2:

We use recursion to calculate the number of steps. Base case is when n is 1 and we return 0 in that case. Else, we call recursion on (n/2) if n is even or (3n+1) if n is odd. Then we add 1 to the return value of the recursion and return.