SSN College of Engineering

Department of CSE

Exercise 2

1. [Collatz Conjecture] Consider the following algorithm to generate a sequence of numbers. Start with an integer n. If n is even, divide by 2. If n is odd, multiply by 3 and add 1. Repeat this process with the new value of n, terminating when n = 1. For example, the following sequence of numbers will be generated for n = 22: 22 11 34 17 52 26 13 40 20 10 5 16 8 4 2 1. Count the sequence length.
2. Implement Fibonacci Series using Iterative, Recursive and Golden ratio.
3. Count ways to reach the nth stair using step 1, 2 or 3
4. Karatsuba algorithm for fast multiplication using Divide and Conquer algorithm