Introduction to Financial Engineering and Algorithms
Programming Assignment 2 (Fall 2016)

Unless you can provide your own demonstration platform, please specify the programming language you will use and tell the TA. This will be critical for demonstration purpose. The maximum score for this exercise is 100 points.

1. (a) (30 points) Write a computer program that implements the CRR binomial option pricing model to compute European-style call option and put option. A sample test data is \( S_0 = 90, X = 95 \) (strike price), \( T = 0.5 \) (6 months), \( \sigma = 0.30(30\%) \), and \( r = 2\% \). The call price is 5.9111 and the put price is 9.9659. You can also verify the price by using put-call parity.

(b) (20 points) Plot a graph where the x-axis represents the number of partitions \( n \) and y-axis represent the option price. What do you see in this plot?

2. (50 points) Write a computer program that implements the CRR binomial option pricing model to compute American-style call option and put option. A sample test data is \( S_0 = 90, X = 95 \) (strike price), \( T = 0.5 \) (6 months), \( \sigma = 0.30(30\%) \), and \( r = 2\% \). The call price is 5.9111 and the put price is 10.0729.