Assignment3 Report

Group12 Li Daina (), Hu Hao (), Wang Youan (3035237236)

# Contribution

* Wang Youan: Merge Code, Implement of Arithmetic Mean basket call/put options calculator and Black-Scholes Formulas for European call/put options.
* Hu Hao: Implement of closed-form formulas for geometric Asian call/put options and geometric basket call/put options, and Binomial Tree method for American call/put options.
* Li Daina: Implement of implied volatility calculations and arithmetic Asian call/put options

# UI Introduction

Our program is a web-based option calculator. Usage as follows,

1. Running the index.exe program
2. Typing localhost:8080 in your web browser, then you will find our index page there (Figure 1).
3. There are 7 different types of calculators, you can choose any calculator you need (Figure 2).
4. Type in all the required parameters
5. press calculate button
6. Show the result

Figure index page

Figure 2 Example of one Calculator

# Code Detail and Test Case

## European call/put option (Black-Scholes Formulas)

### Code Detail

### Test Case and Analysis

## Arithmetic basket option (Monte Carlo method with control variate technique)

### Code Detail

### Test Case and Analysis

## Implied volatility calculator

### Code Detail

### Test Case and Analysis

## Arithmetic Asian option (Monte Carlo method with control variate technique)

### Code Detail

### Test Case and Analysis

## Geometric Asian option and Geometric basket option (Closed-form

### Code Detail

### Test Case and Analysis

## American call/put option (Binomial Tree method)

### Code Detail

### Test Case and Analysis

# Extensions