CS2102 Database
Project Report

Carolend

DONG SHAOCONG, HE XINYI, LIU YULIN, WANG ZEXIN

BIU BIU BIU

Department of Mathematics

National University of Singapore

AY2017/18 Semester 1

Abstract

Acknowledge

We would like to thank Associate Professor Bressan Stephane for his helpful supervision throughout the course of this project.

Contents

1 Introduction

1.1 Developing Specifications

2 Database Design

2.1 Entity-Relationship Diagram

2.2 Entities

2.3 Relational Schema

2.4 Schema Functions

3 SQL Queries

3.1 Simple Queries

3.2 Aggregate Queries

3.3 Nested Queries

3.4 Queries using INNER JOIN

3.5 Queries using EXISTS

3.6 Queries using set operations

3.7 Insertions, Deletions and Updates

3.8 Stored Procedures and Triggers

4 Web Interface Design

4.1 Login Page

5 Sample table and diagram insertion

StrikePrice	Closed-form formula	Ordinary Monte Carlo	Control Variate
105	10.0022021172	10.005252032814727	10.005252032814751
110	8.02638469385	8.0166707887876427	8.016670788787664
115	6.37924904693	6.3659464432937911	6.3659464432937733
120	5.02541348179	5.0148870431746415	5.0148870431746184
125	3.92690420603	3.9241698581683577	3.9241698581683728
130	3.04592058431	3.044679765401427	3.0446797654014213
135	2.34679877596	2.3310307686205207	2.3310307686205225
140	1.79723400902	1.8055531375480696	1.8055531375480751
145	1.36889248498	1.3630119824610754	1.3630119824610734
150	1.03756650489	1.0254470920297398	1.0254470920297361
155	0.783018613011	0.77819086371547286	0.77819086371547308
160	0.588637155719	0.5924848566970754	0.59248485669707973
165	0.440997057228	0.44342591182216823	0.4434259118221664
170	0.329392108384	0.32449718396190719	0.32449718396190735
175	0.245381782063	0.2462392632801686	0.24623926328016907
180	0.182377553986	0.17995020687354496	0.1799502068735449
185	0.13528073067	0.13478417666883458	0.13478417666883413
190	0.100175092579	0.099449778570450814	0.099449778570450523
195	0.0740722950356	0.074452813719303179	0.074452813719303304
200	0.0547050187389	0.051631534936688268	0.051631534936688074

Figure 1: Effect of control variate in pricing European call options

6 Conclusion

correct way of citing something:[1]

References

[1] Yves Hilpisch, *Python for Finance*. O'Reilly Media, 2015.

[2] Paul Glasserman, *Monte Carlo methods in financial engineering*. Springer, 2010.

[3] Daniel Duffy, *Finite difference methods in financial engineering: A partial differential equation approach*. John Wiley&Sons, 2006.

[4] Mark Broadie, Paul Glasserman, Steven Kou, *A Continuity Correction for Discrete Barrier Options*. Mathematical Finance, 1997.