MA 323 (2020) Monte Carlo Simulation Lab 07

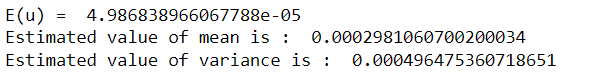
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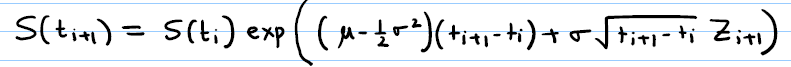
**Q1.**

Using the method provided in the assignment, an estimate of μ and σ have been obtained using the data of the stock prices. The estimated values of mean and variance are as follows:



1000 values from the Normal Distribution have been generated for each date using the Box Muller Method. The starting date has been set to 30 Sep 2020. (Initial Stock Price is the Stock Price on 30 Sep 2020). Using the simulation formula (to directly calculate the stock price on a given day, not day by day), 1000 values of simulated stock price was calculated for each case.

Simulation Formula used:



(ti+1 - ti) represents the number of working days between 30 Sep 2020, and the given date for each case.

The Average of the 1000 values (Estimated Value) is as follows:







Table is as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Simulated Value | Actual Value | (t i+1 – t i ) |
| 7-OCT | 181.89 | 190.7 | 4 |
| 14-OCT | 184.43 | 200.05 | 10 |
| 21-OCT | 200.82 | 203.75 | 15 |

**Q2.**

The percentatge error for each case has been calculated using the below formula:

Percentage Error = |(Simulated Value – Actual Value)\*(100)|/(Actual Value)

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Simulated Value | Actual Value | Percentage Error |
| 7-OCT | 181.89 | 190.7 | 4.616% |
| 14-OCT | 184.43 | 200.05 | 7.807% |
| 21-OCT | 200.82 | 203.75 | 1.435% |