Monte Carlo Simulations (MA323) Lab 9

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Question 1

The stock prices are estimated for N = 300 points spanning over T = 30 days using the GBM model. This simulation is repeated M = 1000 times. The payoff is calculated for each simulation using -

$$payoff \ = \ max(0, K - \tfrac{1}{N+1} \sum_{i=1}^{n+1} S(t_i))$$

The sampling mean $\hat{\mu}$ and standard deviation $\hat{\sigma}$ are calculated for these payoffs.

Question 2 (Using Control Variance)

The value of b is calculated and it comes out to be b = 0.001473.

Then the control variance is calculated.

The values observed are -

Part	Mean	Standard Deviation	Variance	95% Confidence Interval
Part 1	18.428669	12.016893	144.405733	[17.683854, 19.173484]
Part 2	18.428669	12.016864	144.405037	[17.683856, 19.173482]