

MA 323 - Monte Carlo Simulation Assignment - 8

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1 QUESTION - 1:

The mean, standard deviation, and $S(0)$ are as follows :

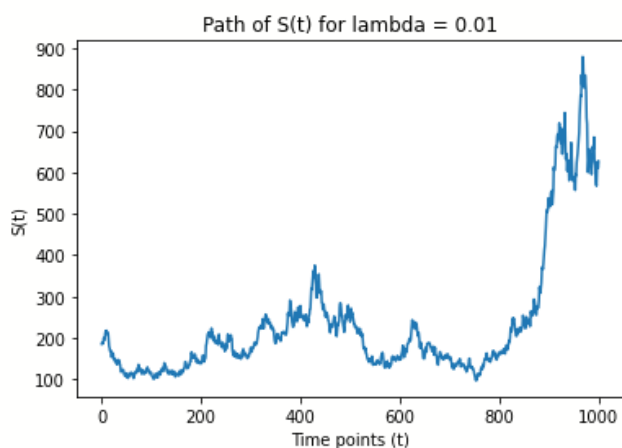
$$\mu = 0.00029810607002$$

$$\sigma = \sqrt{0.000496475360719} = 0.0222817$$

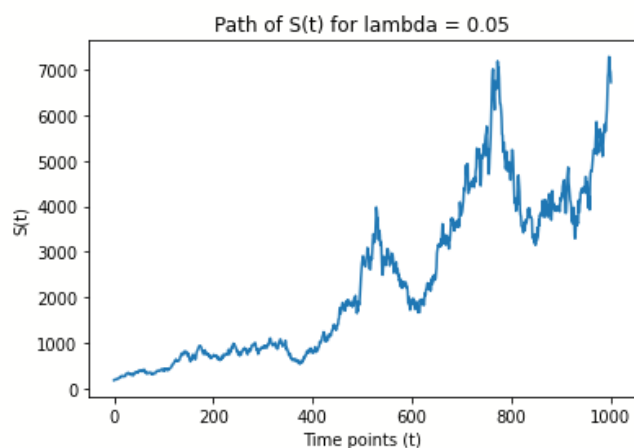
$$S(0) = 185.40 \quad (\text{Price at 30}^{\text{th}} \text{ September, 2020})$$

The plots for various values of λ are as follows:

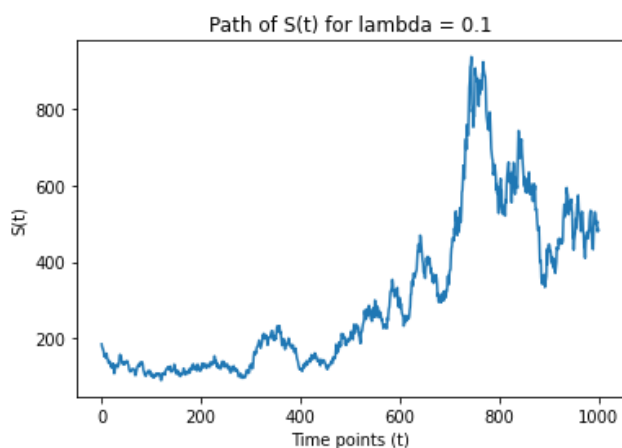
$$\lambda = 0.01$$



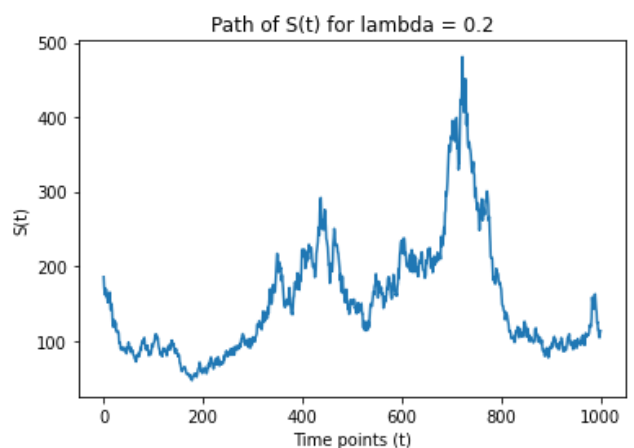
$$\lambda = 0.05$$



$$\lambda = 0.1$$



$$\lambda = 0.2$$



Observations:

1. The sample paths are generated using method – 1, i.e., simulation is done at fixed dates with value of $t_i - t_{i-1}$ taken as 4.
2. As we can observe that the sample path behaves very wildly, with lot of fluctuations, it hints at the fact that the sample path of Brownian motion is almost surely nowhere differentiable and continuous everywhere.