MA 323 (2020) Monte Carlo Simulation Lab 08

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**Dept.:** Mathematics and Computing

**Q1.**

**Method Used:**  Simulating at Fixed Times

Time points vary from **0** to **2000** (with a **time** **interval** of **2 days**).

Using values from the previous assignment,

S[0] = 185.40 (Stock Price as of 30th Spetember 2020)

µ = 0.0002981060700200034

σ2 = 0.000496475360718651

(These Values have been hard coded into the python program )

For each case of λ, the following steps were followed:

First, **1000** values from the **Standard** **Normal** **Distribution** were generated using the **Box** **Muller** **Method**.

To generate stock price at each Time Point,

An **integer** **N** was generated from the **Possion** **Distribution** with **Expectation** = λ\*Time\_Interval = λ\*2

Then, N values from the **lognormal** **distribution** were generated. (stored in array **Y**)

Then, **M** was calculated, (which is equal to the **sum** of the **natural** **logarithm** of the values in array Y).

Using the **Recursive** **Simulating** formula for Jump Diffusion Model, the next value of the Stock Price was calculated using the Previous Stock Price.

Stock Price was plotted out using the matplotlib library of the python module.

The plots are as follows:

