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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)
$\mu = 0.0002981060700200034$
$\sigma^2 = 0.000496475360718651$

(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: