CPS 600 Python for Finance, Fall 2018

Team Term Project

Due: Friday, December 7, EOD

Work in groups of 2 or 3 to produce a Jupyter notebook as described below.

(1) Study Chapter 10, *Stochastics* in Hilpisch's *Python for Finance*. This chapter introduces the following topics from a Python perspective:

- **Simulation** (pp 271 – 290) - In finance, two simulation tasks are of particular importance: simulation of random variables and of stochastic processes.
- **Valuation** (pp 290 – 298) - The two main disciplines are the valuation of derivatives with European exercise (at a specific date) and American exercise (over a specific time interval); there are also instruments with Bermudan exercise, or exercise at a finite set of specific dates.
- **Risk measures** (pp 298 – 304) - Simulation lends itself pretty well to the calculation of risk measures like value-at risk, credit value-at-risk, and credit value adjustments.

(2) Implement all 3 topics in Jupyter notebook format. Include cells with the code, cells with section titles, comments and notes, and for extra credit, cells with equations and formulas in Latex. Copy the code from the textbook. Fix problems (if any). Make sure that the final code is running without errors and produces images the same (or similar) to these presented in the textbook.

You will submit a zipped folder containing a notebook file and any relevant data files.