C++ in Quantitative Finance part #2
Graded Homework #2 (10 pts.)
deadline: 2024-06-10 23:59:59

GRADED HOMEWORK RULES

1. This is the individual graded homework. You should prepare it individually.
2. Any attempt of copying work of other students will result in sending an appropriate information to the Dean and a formal request for disciplinary consequences to the University Disciplinary Commission.

Problem 1

1. Build an R package (in the **source** version) which would provide a function performing Monte Carlo valuation of the non-path dependent option, as in `cpp07`. The function should take two additional arguments which would decide: 1) whether to price a call or a put option, and 2) whether to include antithetic variates in the Monte Carlo, or not. Give your package a meaningful name.
2. Create a separate RStudio project with one R script which would:
   (a) install the package from point 1,
   (b) load the installed package to the memory,
   (c) call the function 1000 times (with different seed values) to get 1000 different option price approximations without antithetic variates,
   (d) compute the mean and standard deviation of the 1000 option price approximations from the point above,
   (e) call the function 1000 times (with different seed values) to get 1000 different option price approximations with antithetic variates,
   (f) compute the mean and standard deviation of the 1000 option price approximations from the point above,
   (g) create a visualization of the distribution densities of option price approximations in these two experiments,
   (h) compare results from these two experiments and draw conclusions.
3. Zip the RStudio project (the whole folder with it) from point 2. Give it a name according to the following pattern: `XXXXX-project.zip`, where `XXXXX` is your last name.
4. Share two files (`*.tar.gz` file from point 1, and the `*.zip` file from point 2) with a direct link to: `p.sakowski@uw.edu.pl`. Include a following statement in your email or sharing message: *In accordance with the Honor Code, I certify that my answers here are my own work, and I did not make my solutions available to anyone else.*