Homework 6

The book by Carmona refers to "Statistical Analysis of Financial Data in R"
by René A. Carmona, **2nd edition**.

I. Download the dataset "hibor_20_21.csv" from the course website, which contains the overnight HIBOR rate from 2020 to 2021. Conduct the following analysis parallel to what we did in class for LIBOR.

1. Draw the time series plot and acf plot. Comment;
2. Set the index 1 - 252 entries as the training data, and the 253–257 entries as the testing data. Based on the training data, determine the order of AR using both pacf and aic;
3. Fit an AR(1) to the training data. Report the estimated parameters for the Vasicek model;
4. Conduct model diagnostics and comment;
5. Construct predictions and prediction intervals (based on the assumption that the noise is normal), and compare with the testing data. Comment.

II. Problem 6.14 on page 418 of the book by Carmona. (To set the random seed in R, refer to Lecture 14.)