Application of the trinomial pricing model: profitability of an investment in the market

You are asked to trade American options on the S&P 100 index (OEX) by considering the following steps:

1) Download the file "bb_options_20190815.csv" at HTTPS://HISTORICALOPTIONDATA.COM/SAMPLE-FILES/, in which the following data should be found: OEX index price on Aug. 15, 2019 and the set of bid and ask prices for American Call options with various strikes and the expiration date on Sep. 13, 2019. The selected strikes should contain in-the-money (ITM) and out-of-the-money (OTM) options, e.g., $[1145, 1150, 1200, 1250, 1300, 1350]$. You may need more information at HTTPS://HISTORICALOPTIONDATA.COM/DATA-STRUCTURE/ to understand the downloaded data.

2) Find the volatility of the S&P 100 index at HTTPS://WWW.INVESTING.COM/INDICES/CBOE-OEX-IMPLIED-VOLATILITY-HISTORICAL-DATA

3) Find the risk-free interest rate at HTTPS://FRED.STLOUISFED.ORG/SERIES/FEDFUNDS

4) With all the data you have collected to initialize your trinomial pricing model (from PS 2) to calculate the prices of the American options for each strike given above. Compare your prices to the bid and ask prices by plotting them.

5) Find the price of the S&P 100 index on Sep. 13, 2019 at HTTPS://FINANCE.YAHOO.COM. Suppose that you paid the ask price for each Call option (each strike) on Aug. 15, 2019, how much will you gain by exercising all the options on Sep. 13, 2019.

6) Would you like to purchase the Call options on Aug. 15, 2019 with the prices given by your model?

You must comment your code.