Project 3

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In general, we will use the following as paramters for this project : $r = 0.05, T = 0.25, N = 50, S_0 = 23$ and $\sigma = 0.15$.

1. *Consider the following option : if the stock at T is greater than or equal to \$25, you recieve \$1, otherwise you recieve nothing. Price this option.*

   The price of this option is 0.192.

2. *Use the same binomial tree to price a call on a call option. With this compound option, at time $T_1 = 0.25$, the holder has the right to pay $K_1 = 3$ to receive a call option with a strike $K_2 = 25$ that expires at $T_2 = 0.5$.*

   The price of this option is 0.0066. The calculation is not very complicated, just calculate the call prices out to $T_2 = 0.5$ and at $T_1 = 0.25$ swap the prices for their intrinsic value against the new strike $K_1 = 3$.

3. *Consider this put option with $K = 21$ that expires at $T = 0.25$. You are allowed to exercise at $t = (0, 0.05, 0.1, 0.15, 0.2, 0.25)$. Extend your previous American option pricer to price this put option and compare the price with those of the European put and standard American put.*

   The prices for the three options are as follows:

European	Burmuda	American
0.0629	0.0637	0.0646

   Then we get the prices that we expect, namely that the Burmuda option price falls between the European and American prices.