

## Extra Bonus 2 (5%)

Implement the implicit and explicit finite difference method to price American and European calls and puts.

(Inputs:  $S_0$ ,  $K$ ,  $r$ ,  $q$ ,  $\sigma$ ,  $T$ ,  $S_{\min}$ ,  $S_{\max}$ ,  $m$  (number of partitions for the stock price),  $n$  (number of partitions for the time to maturity). Outputs: Option values.)