Level 9 Homework
Group F: Finite Difference Methods (Introduction)

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a. Compile and run the Project

The project was appropriately set up and compiled to run with no errors.

b. Test the FD scheme

The project was run with Option Parameters for Batches 1, 2, 3 & 4. The outputs were saved to their respective Excel files.

- Batch 1 FDM Output.xlsx
- Batch 2 FDM Output.xlsx
- Batch 3 FDM Output.xlsx
- Batch 4 FDM Output.xlsx

Batch	FDM Put Price	True Price	Absolute Error
1	5.84207	5.84628	0.00421172
2	7.96321	7.96557	0.00235915
3	4.07128	4.07326	0.00197546
4	1.19586	1.24750	0.0516413

Table 1: Updated FDM Put Option Pricing Results and Error Analysis

Observations

- Comparing with data from previous exercises, the finite-difference method outperformed Monte Carlo on Batches 1, 2 & 3 by an order of magnitude.
- Output from batch 4 produced an inaccurate number 65535. This is due to the Explicit Euler method suffered from a severe approximation error.
- Using a very high value of $N = 1,000,000$ produced expected results. This is stored in Batch 4 High N FDM Output.xlsx
- However, the absolute error is still higher than that of Batches 1, 2 & 3. Hence I would recommend the usage of a more stable method such as Crank-Nicholson or Implicit Euler.