**Hedging an Options Portfolio**

After explaining what "Delta Hedging" means, you will take an example of a portfolio of 1000 call options on a stock and the following data:

**Call option characteristics:**

Maturity: 3 months (or 12 weeks)   
Strike: 100€  
Implied Volatility = 25%

t = 0, S = 100€  
t = 1 weeks, S = 105€  
t = 2 weeks, S = 100€  
t = 3 weeks, S = 90€  
t = 4 weeks, S = 100€

**Discuss your P&L** (At the end of 4 weeks).

You can assume r (Interest rate) = 0% and d (Dividend yield) = 0%.

**Do not refer to Solution below until you have tried it yourself!**

**Solution + Refer to Excel.**

Delta Hedging is a hedging strategy that relies on the concept of keeping the overall delta of the portfolio neutral (i.e. 0). We can do this through initial delta hedging or more commonly, continuous delta hedging. This is when an investor attempts to keep the delta of the portfolio neutral by shorting or longing more of the underlying (Or futures of the underlying) at a chosen time interval (Daily or in this case, Weekly).

In the question given, since we have a portfolio of 1000 Call options, we can short a relevant amount of the underlying (i.e. stocks) adjusted by the delta of the Call (i.e. N(d1)).

If we look at the excel file, we can see that not hedging and initial hedging gives us the same **cumulative PnL of -877€**. However, when we take the example of continuous delta hedging, we can see it has a great **cumulative PnL of +22178€**. Therefore, continuous delta hedging is used by institutional traders and investment banks. However, one must be careful of the transactional costs involved in trading. We have also not considered the interest rate and dividend yield as given in this question.