**Week 11 Seminar Questions**

The following operation can be implemented in the Python Jupyter Notebook or Spyder. Please sign up for a Github account and submit your codes to your own Github repo.

1. Define the implied volatility function for put options of non-dividend-paying stock by using the Newton Raphson method.

2. Calculate the implied vol for a one-month AAPL put option with spot $169.65, strike $180. Risk free rate is 3.53% and the option price is $10.00.

3. Use mibian to get these implied vol and plot the volatility smile/skew.

4. Get the Implied Vol data for these puts from the yahoo finance. Plot the volatility smile/skew.

5. Compare the results in 3 and 4.

6. Plot vol surface for the strike from $170 to $190 ($10 each difference) by using the call option data of AAPL in yahoo finance.