**Work in teams of 2 people. Use the Workhop3.xlsx file.**

1. Using the function RAND() in Excel, generate 1,000 random numbers between 0 and 1
   1. What is the mean
   2. What is the standard deviation
   3. Do a histogram of the random numbers. What is the distribution of the random numbers? (normal=1, uniform=2, chi-square=3, t-student=4)
2. The random numbers from question 1 are to be used as probabilities inputs in this question. Using these probabilities, generate 1,000 normally distributed numbers with mean 0 and standard deviation of 1. Report
   1. Mean
   2. Standard deviation
   3. Skewness
   4. Kurtosis
3. The random numbers from question 1 are to be used as probabilities inputs in this question. Using these probabilities, generate 1,000 t-student numbers with 10 degrees of freedom. Report:
   1. Mean
   2. Standard deviation
   3. Skewness
   4. Kurtosis
4. The random numbers from question 1 are to be used as probabilities inputs in this question. Using these probabilities, generate 1,000 Chi-squared numbers with 10 degrees of freedom. Report:
   1. Mean
   2. Standard deviation
   3. Skewness
   4. Kurtosis
5. Using the data from question 3.5 from the book to calibrate an ARMA(1,1) model. Report
   1. Phi0
   2. Phi1
   3. Theta1
   4. Loglikelihood
6. Using the data from question 3.5 from the book to calibrate an ARMA(2,2) model. Report
   1. Phi0
   2. Phi1
   3. Phi2
   4. Theta1
   5. Theta2
   6. Loglikelihood
7. Question 3.4 from the book. Test the hypothesis that phi1=1 for all 100 series using the t-statistic at the 95% level.
   1. What is the critical level for the t-statistic at the 95% level with 2 tails?
   2. What is the t-statistic for the coefficient phi1 for series 1
   3. For how many series do you reject the hypothesis that phi1=1?
8. Compute the Ljung-box statistic for 10 lags for all 100 series.
   1. What is the critical level for the chi-square statistic at the 5% level with 10 degrees of freedom?
   2. What is the Ljung-box statistic for 10 lags for series 1?
   3. For how many series you could not reject the hypothesis that the first 10 autocorrelations are jointly zero at the 5% significance level?