DSA 5203: Time Series Analysis – Spring2019
Homework -1: Due on 01/24/2019

1) (*10 pts*) Using the standard library in MATLAB or R, generate $\varepsilon_t \sim N(0,1)$, independent, identically distributed(iid) samples: $1 \leq t \leq 500$
   a) Plot $\varepsilon_t(vs)t$, $\varepsilon_t(vs)\varepsilon_{t\text{-}1}$, $\varepsilon_t(vs)\ \varepsilon_{t\text{-}2}$ and comment
   b) Compute the mean, variance, covariance γ_k and correlation ρ_k for $0 \leq k \leq 500$. Plot $\gamma_k(vs)\ k\ \ and\ \ \rho_k\ (vs)\ k$
   c) Compute the min, max and plot the histogram of ε_t: $1 \leq t \leq 500$
2) (*10 pts*) Repeat (2) on x_t when x_t is given by:
   a) $x_t = 2.0 + \varepsilon_t, x_0 = 0$
   b) $x_t = x_{t-1} + \ \varepsilon_t\ ,\ x_0 = 0$
3) (*10 pts*) Define covariance function $f(i,j)$. Verify that covariance is non-negative definite (Refer Module 1.3)

NOTE:

1) Read through the Modules 1.1,1.2 and 1.3 and master all the basic concepts introduced
2) Please scan your home work and upload it to canvas with your name and homework number on it
3) Please let us know of you have any questions related to accessing canvas