Summary

- A continuous random variable x is said to follow uniform distribution in the interval (a, b) if its probability density function is given by, f(x)=1/(b-a), 0<x<1, and we write x~U(a,b)
  Here a and b are the parameters of the distribution

- In particular if a=0 and b=θ then we can write, x ~ U(0, θ)
  - If a=-θ and b=θ, then X~U(-θ, θ)
  - Hence we can define uniform distribution for any two constants a and b
  - Mean of the distribution is given by (b+a)/2
  - Variance of the distribution is given by, $(b-a)^2/12$
  - Moment generating function (mgf) is given by $(e^{tb}-e^{ta}) / t(b-a)$
  - Median of the distribution is, (b+a) / 2
  - Mean deviation is given by, (b-a) / 4

- For a rectangular distribution with pdf. f(x) = 1 / 2a, -a < x <a, mgf about origin is (sin h at)/at. Also we have shown that moments o even order are given by, $\mu_{2n} = a^{2n}/(2n+1)$

- On the x-axis, (n+1) points are take independently between the origin and x=1, all positions being equally likely the probability that the $(k+1)^{th}$ of these point, counted from origin lies in the interval x-½dx to x+½dx is $\binom{n}{k}(n+1)x^k(1-x)^{n-k}dx$