MA323(Lab-04)

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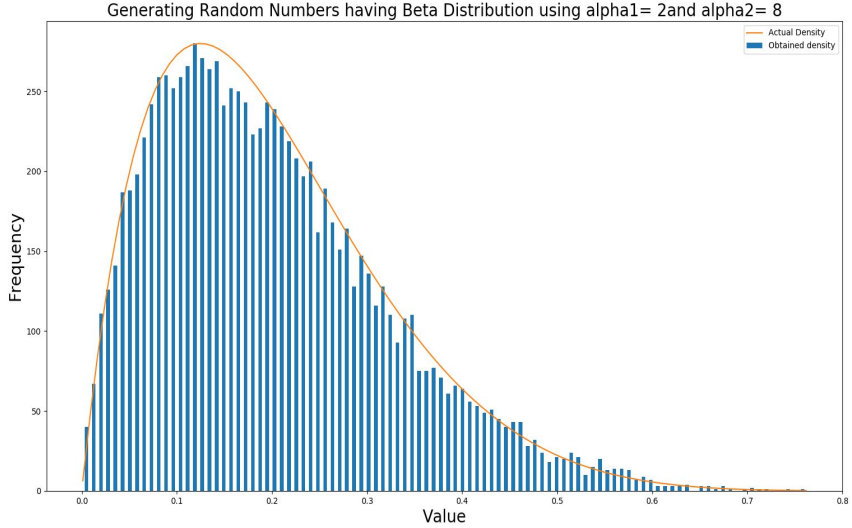
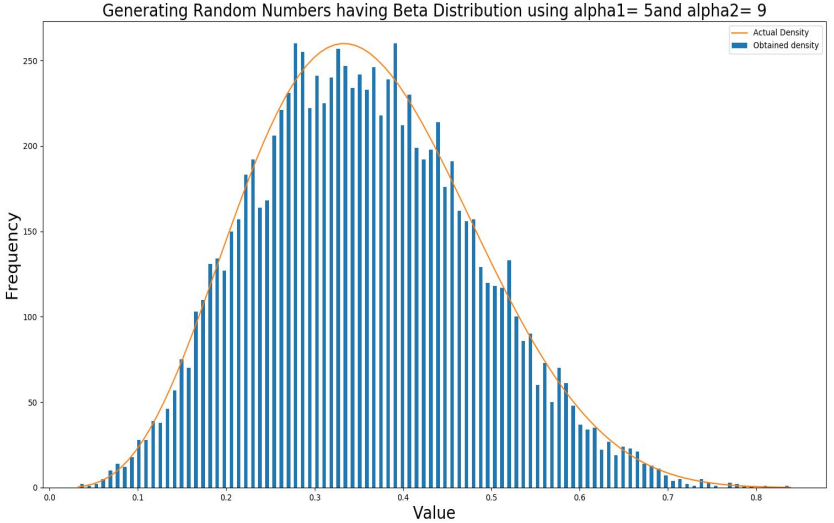
Five different set of values(alpha1, alpha2) chosen are:
alpha1= [2, 5, 10, 15, 20]
alpha2= [8, 9, 10, 11, 12]

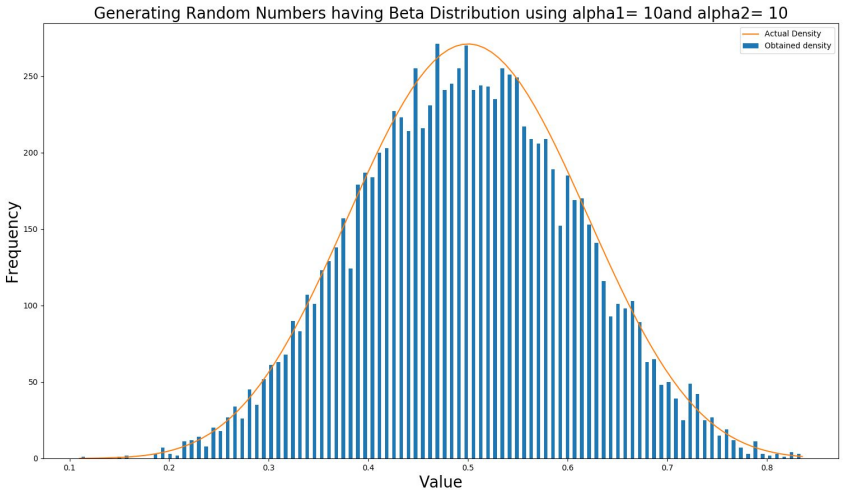
Corresponding to each values of(alpha1 and alpha2), value of x*(point at which f(x) attains its maximum value) and c(or f(x*)) are:

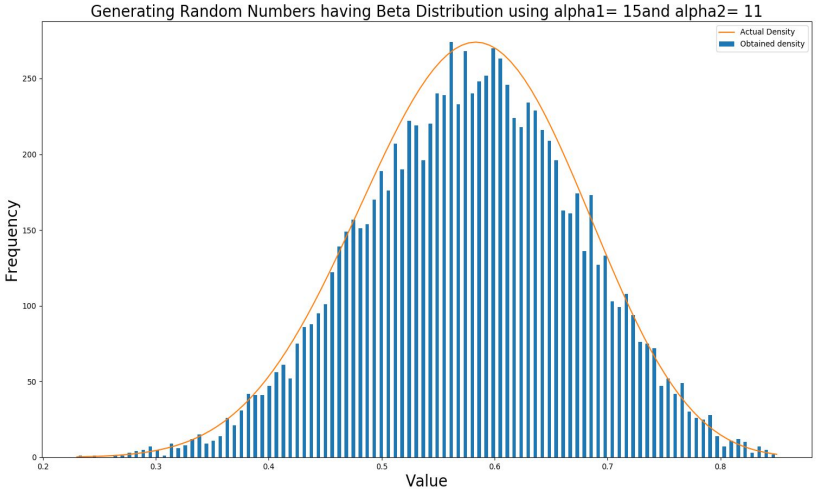
alpha1	2	5	10	15	20
alpha2	8	9	10	11	12
x*	0.125	0.333	0.500	0.583	0.633
c(or f(x*))	3.534	3.099	3.523	4.085	4.642

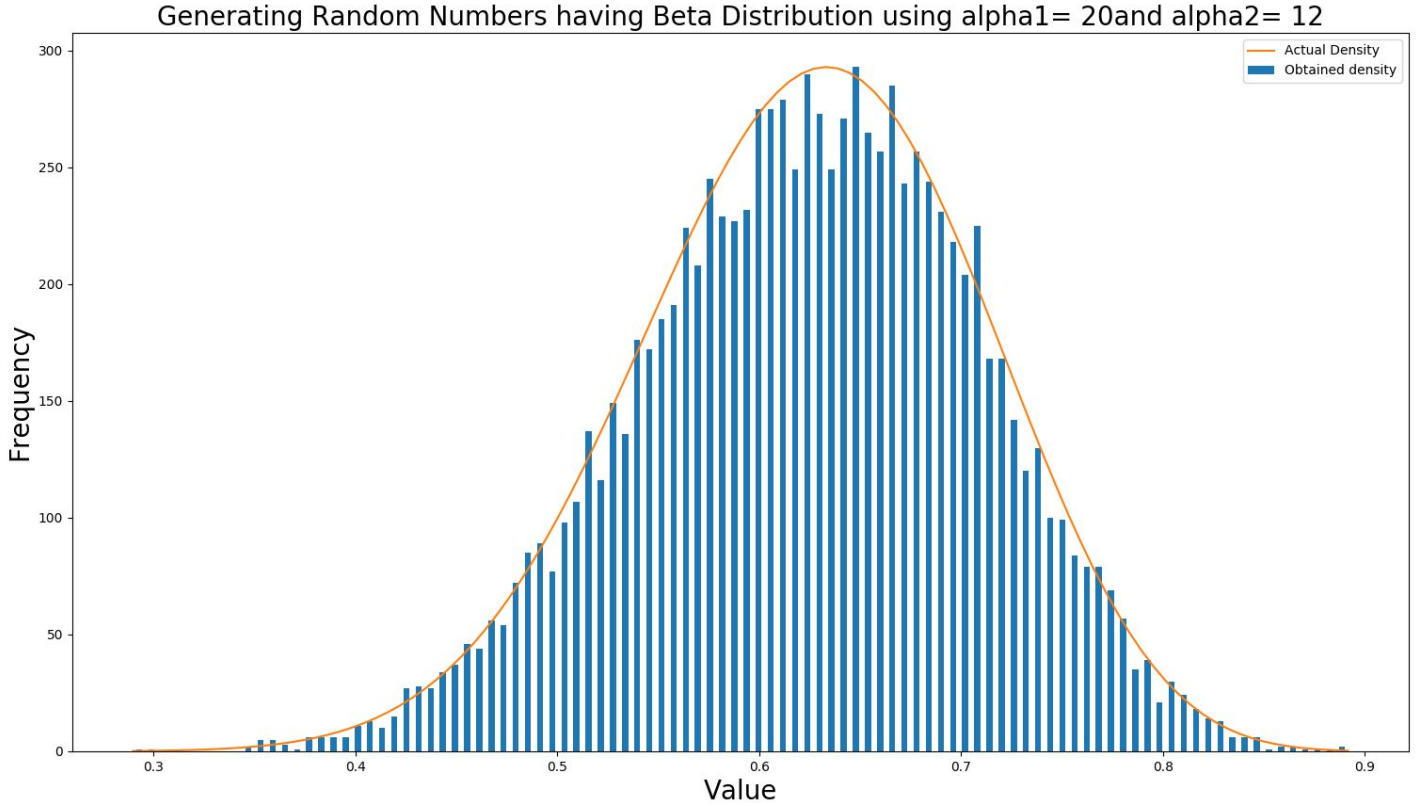
Now for each values of alpha1 and alpha2(mentioned above), random numbers(10,000 for each case) were generated using Acceptance-Rejection method which corresponds to given probability distribution function(Beta function).
In all the 5 histogram shown below, orange curve is the actual density scaled to match the frequencies denoted by blue bars in the histogram.
As it is clear from the graph, density of the generated sequence converges to actual density.


Generating Random Numbers having Beta Distribution using alpha1= 2and alpha2= 8
Actual Density
Obtained density
Frequency
Value


Generating Random Numbers having Beta Distribution using alpha1= 5and alpha2= 9
Actual Density
Obtained density
Frequency
Value


Generating Random Numbers having Beta Distribution using alpha1= 10and alpha2= 10
Actual Density
Obtained density
Frequency
Value


Generating Random Numbers having Beta Distribution using alpha1= 15and alpha2= 11
Actual Density
Obtained density
Frequency
Value



In all histograms above, maximum frequency is at x* calculated(or written) on first page of pdf and also Obtained density converges to actual density.