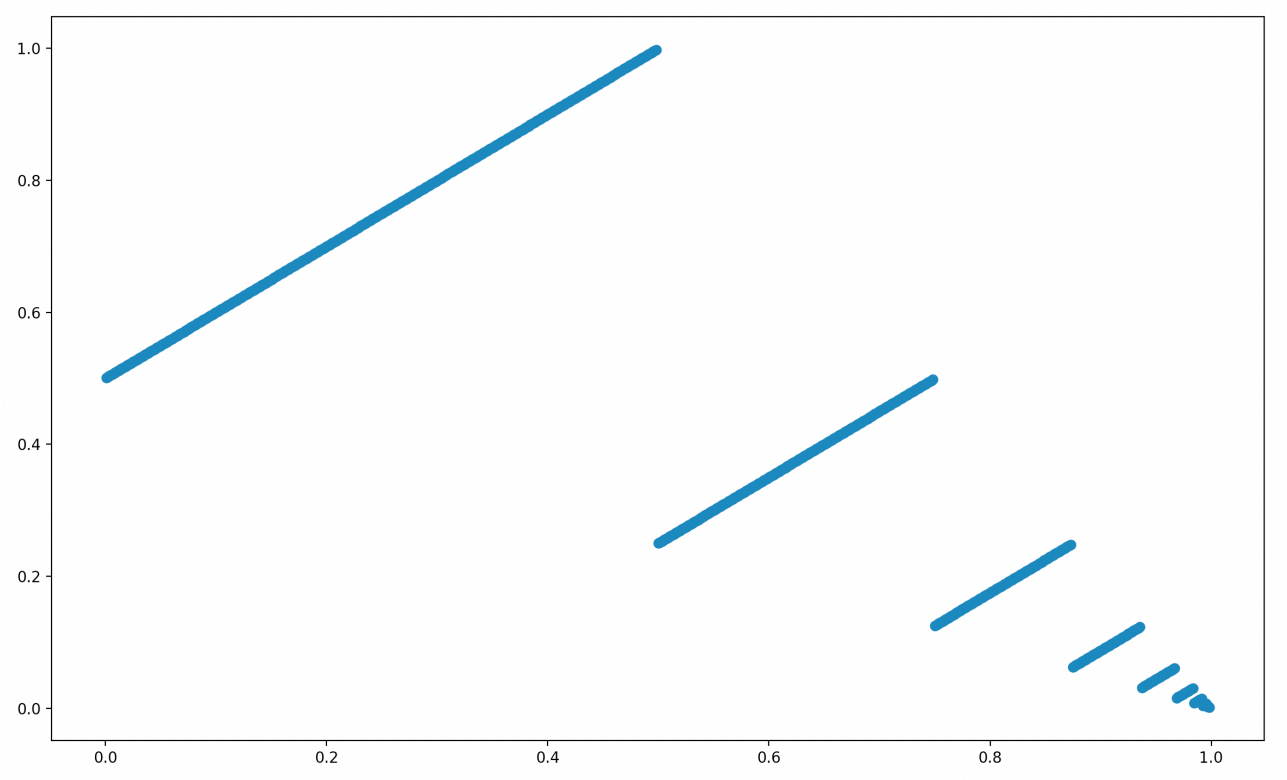
REPORT FOR LAB 11

Solution 1: The first 25 values obtained are as follows:

[0.5, 0.25, 0.75, 0.125, 0.625, 0.375, 0.875, 0.0625, 0.5625, 0.3125, 0.8125, 0.1875, 0.6875, 0.4375, 0.9375, 0.03125, 0.53125, 0.28125, 0.78125, 0.15625, 0.65625, 0.40625, 0.90625, 0.09375, 0.59375]

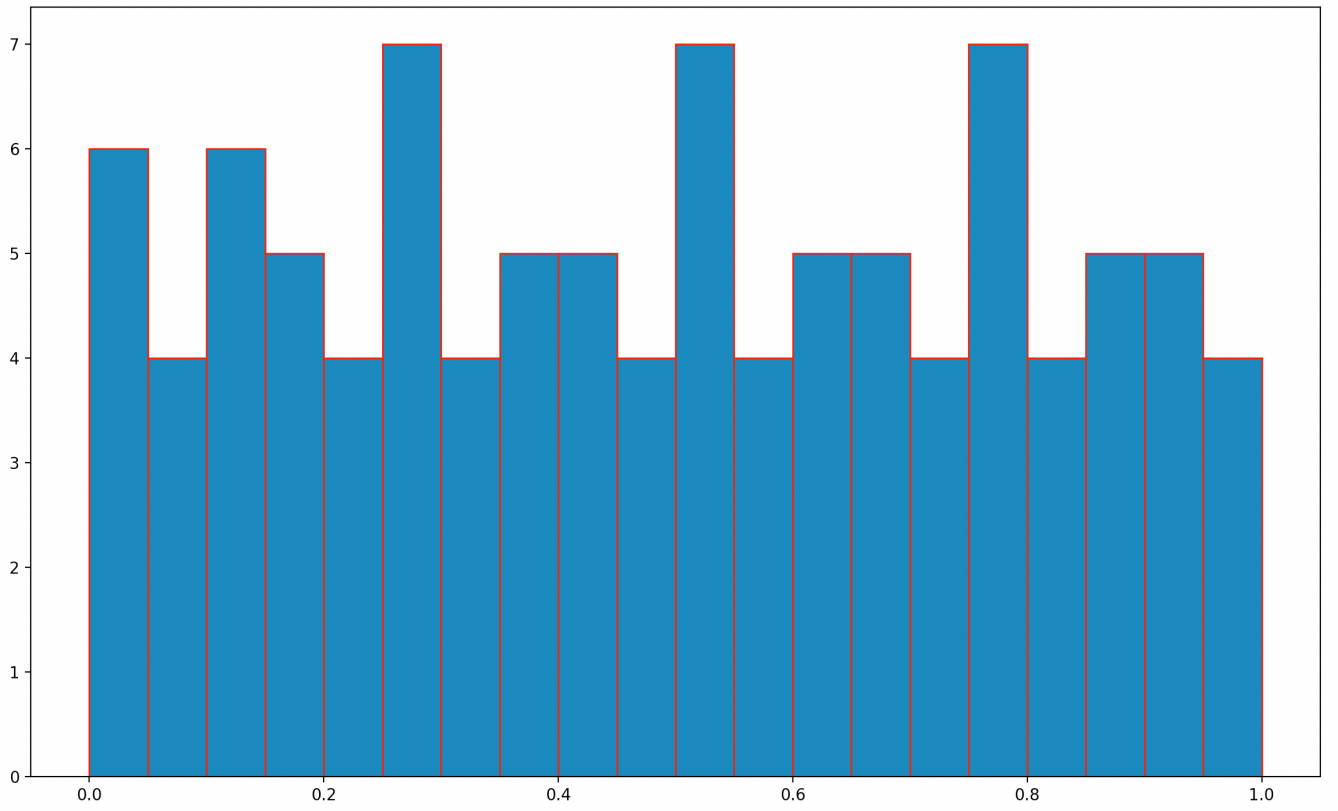
Overlapping graph for **(xi,xi+1)** for first 1000 terms of sequence:



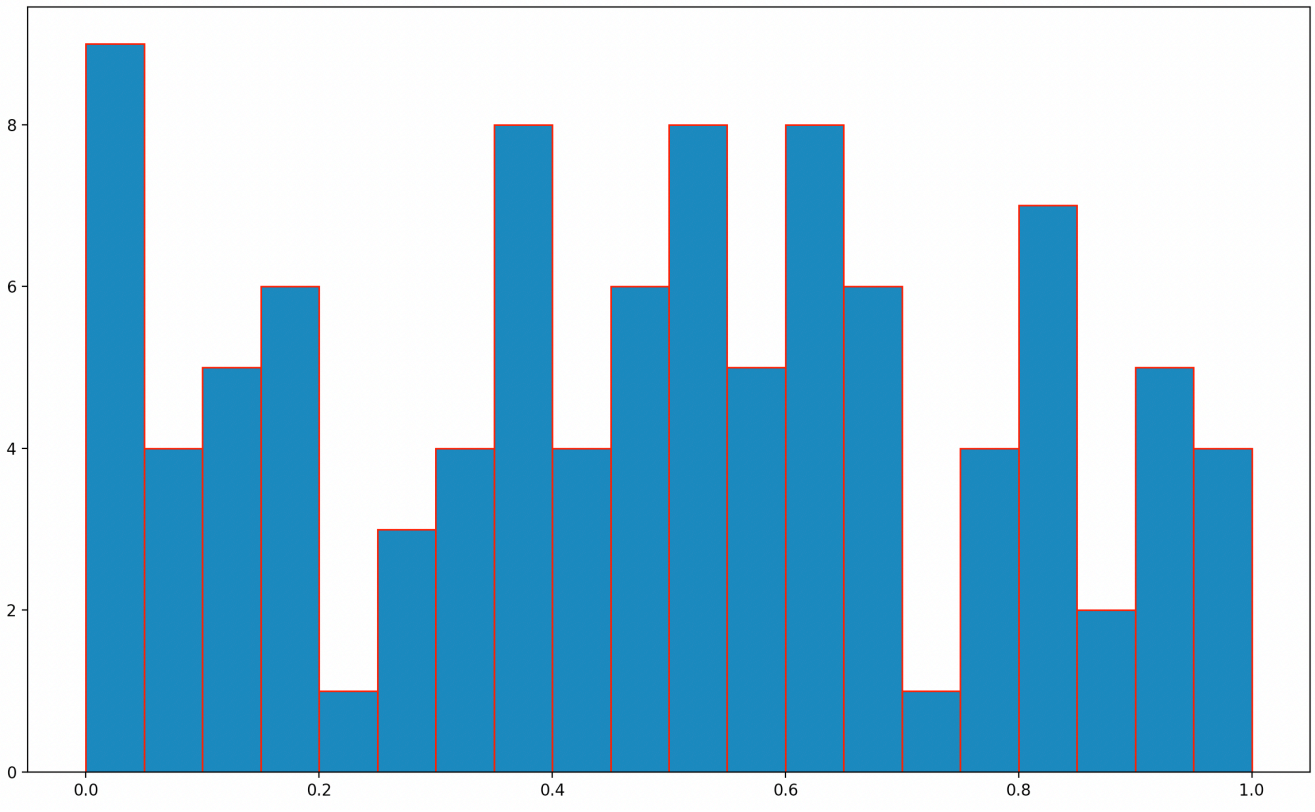
The LCG uses the following attributes:

xo=23
a=16807
c=0
m=(2^31)-1

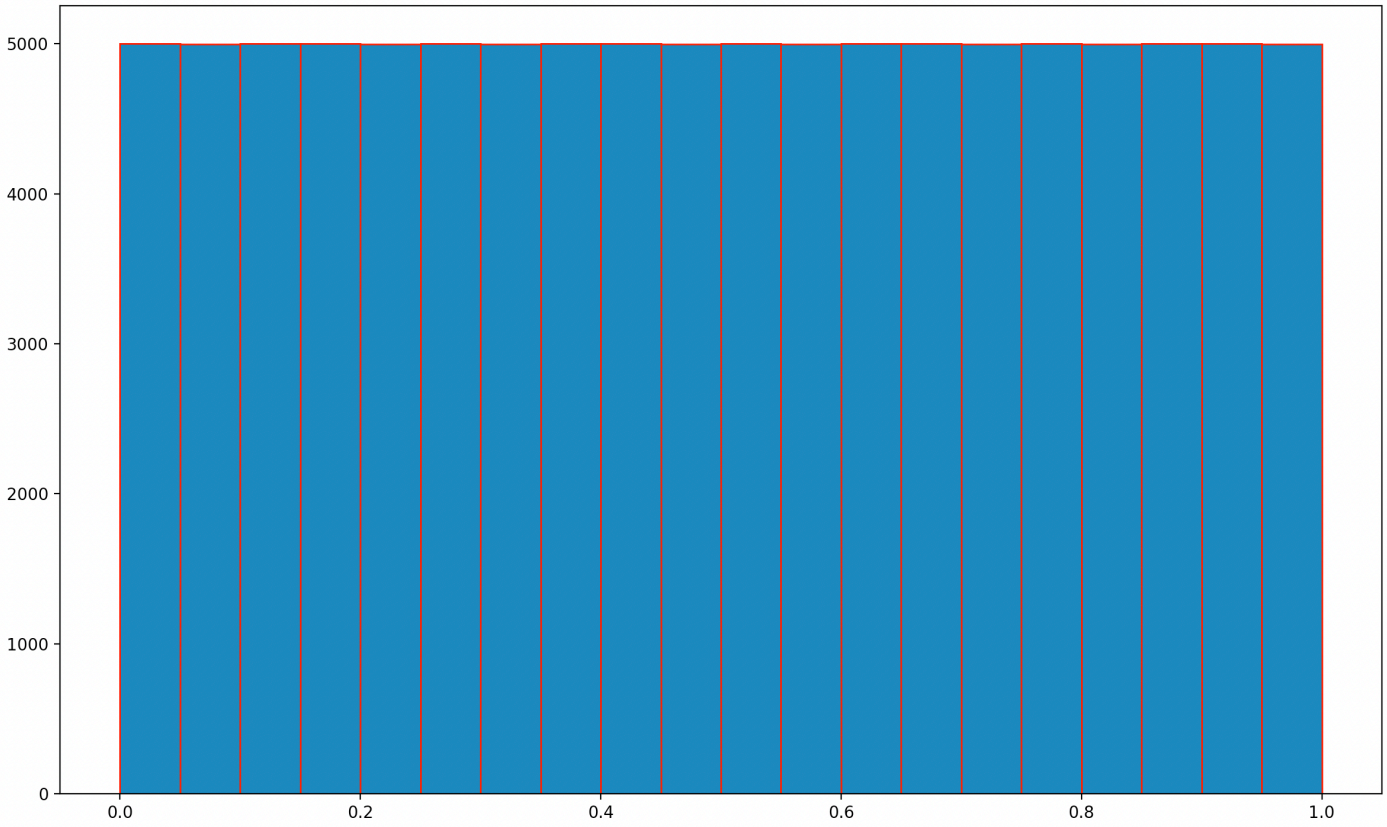
SAMPLE DISTRIBUTION FOR VAN DER CORPUT FOR N=100



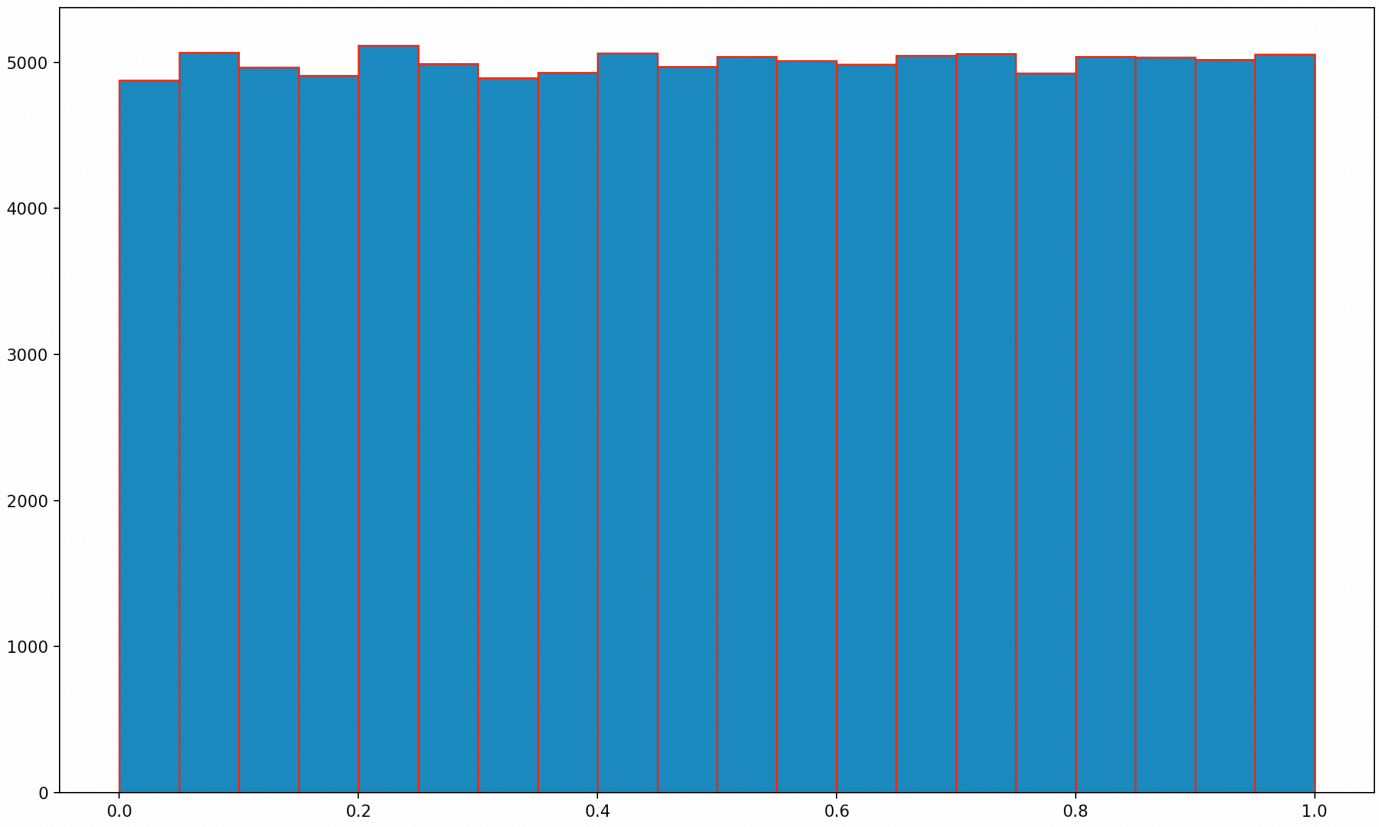
SAMPLE DISTRIBUTION FOR LCG FOR N=100



SAMPLE DISTRIBUTION FOR VAN DER CORPUT FOR N=100000



SAMPLE DISTRIBUTION FOR LCG FOR N=100000



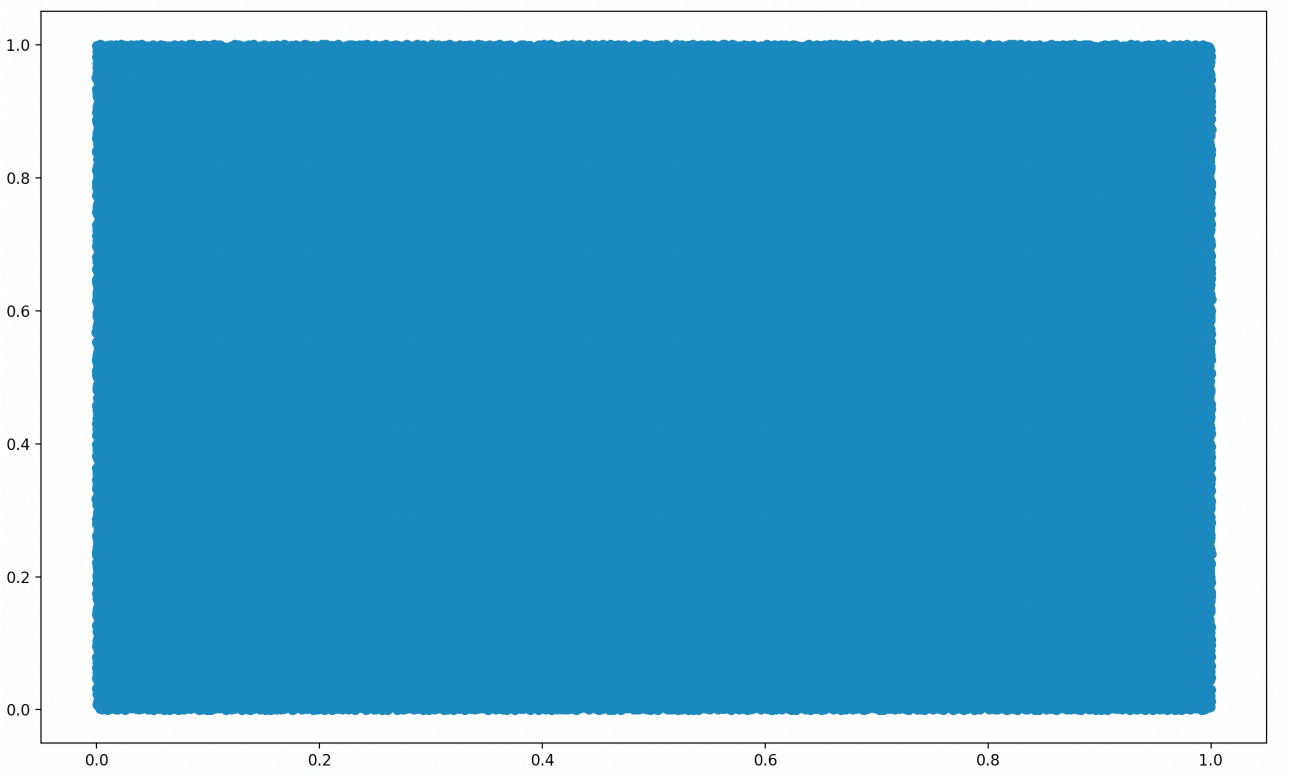
The graph for **(xi,xi+1)** consists of parallel lines representing the ratio **xi+1/xi** almost remains constant.

From the sample distribution graphs we can see that as n increases graph for van Der corput sequence and lcg becomes almost same.

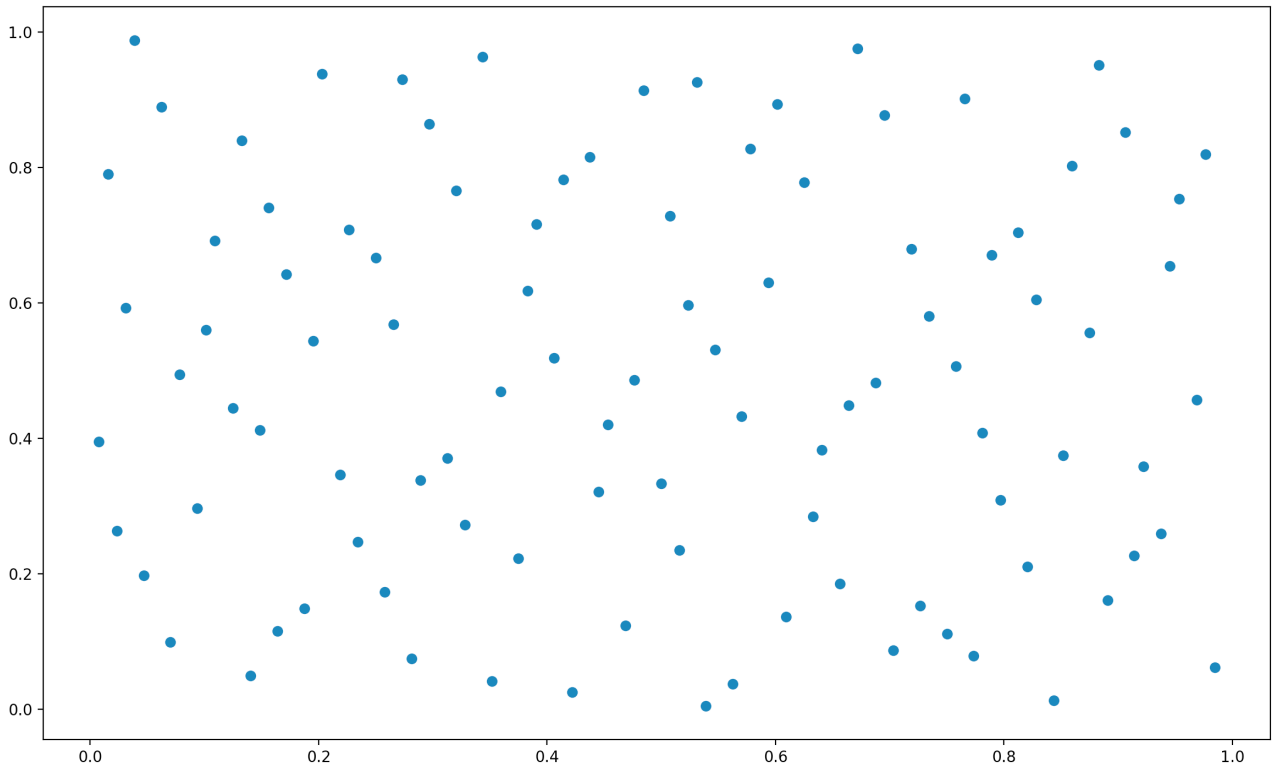
Solution 2:

The obtained graphs is attached below:

PLOT OF HALTON SEQUENCE FOR N=100000



PLOT OF HALTON SEQUENCE FOR N=100



OBSERVATIONS:

We obtain all points in range [0,1] and they are close to uniform distribution.
Moreover the since the sequence is generated in higher dimension (R2 in this case), we reduce variance also when compared to numeric method.