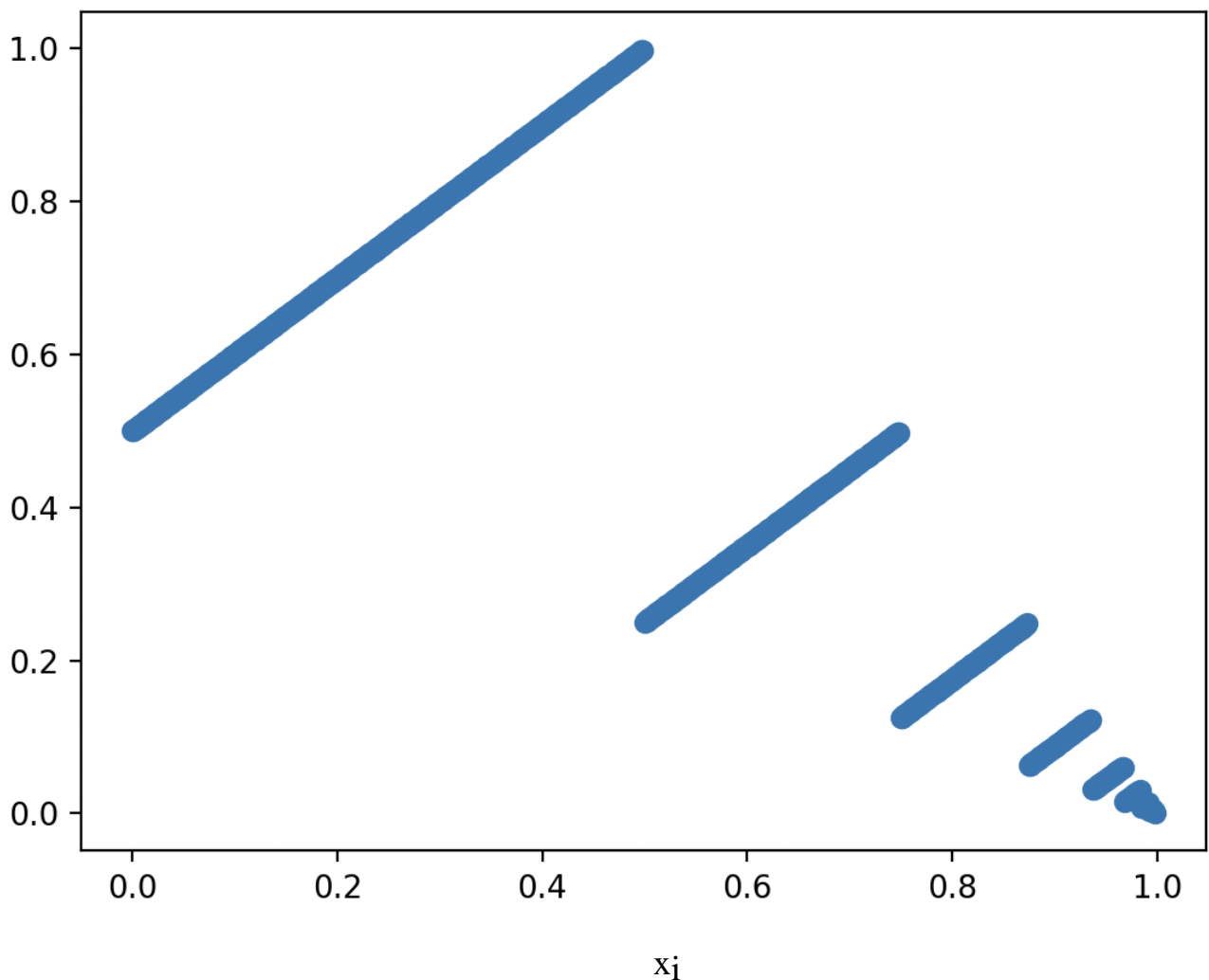# Lab - 10

NAVEEN KUMAR A G   210123075

1) First 25 values of the Van der Corput sequence using the radical function with base $b = 2$:
   [0, 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]

   (x_i, x_{i+1}) plot of 1000 values generated with this sequence.

Observation: A linear pattern can be observed. This means that successive points are linearly related to their previous points.
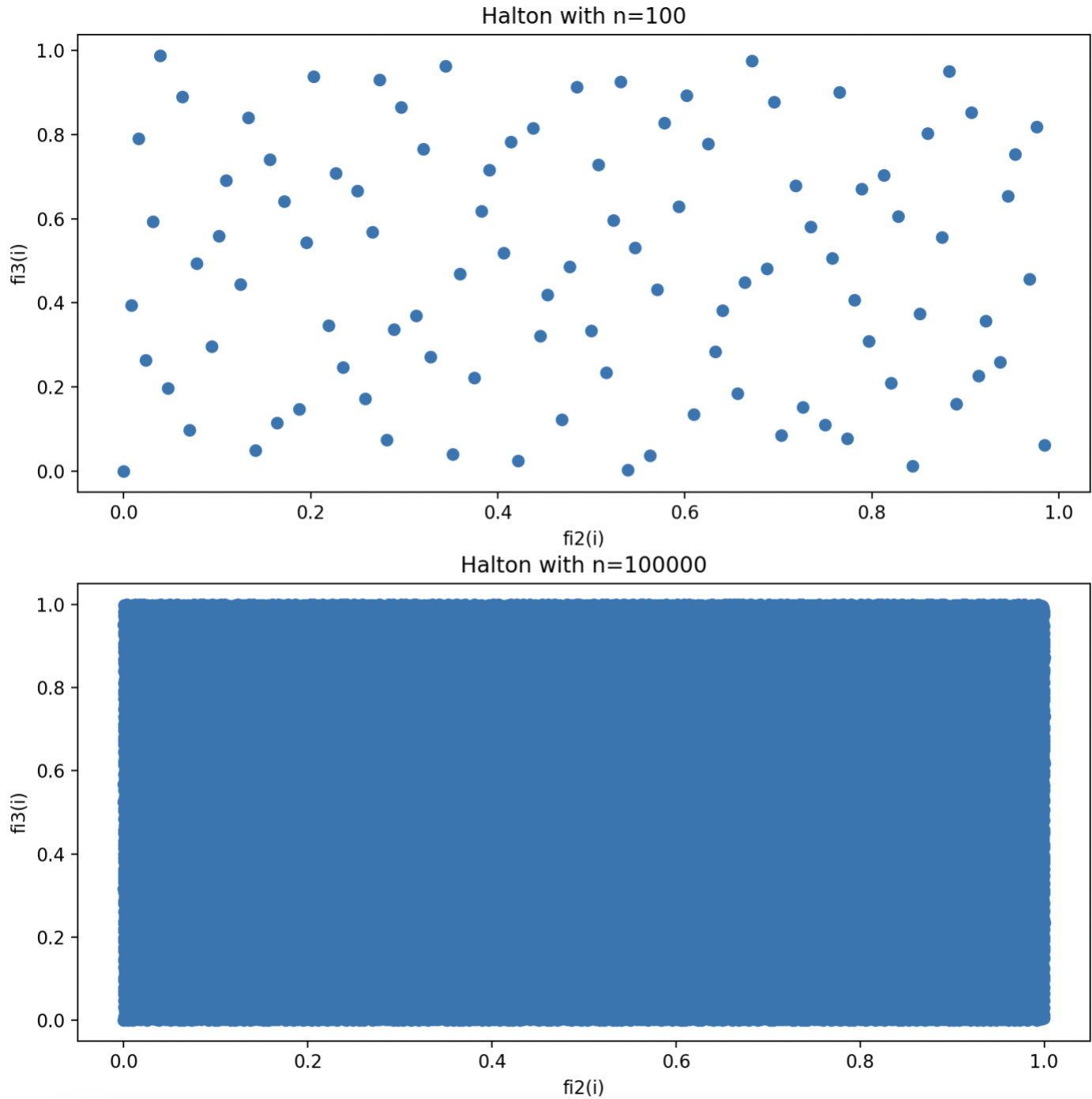
2) The values used for generating LCG are: $x_0 = 100$, $a = 1597$, $b = 0$, $m = 244944$.
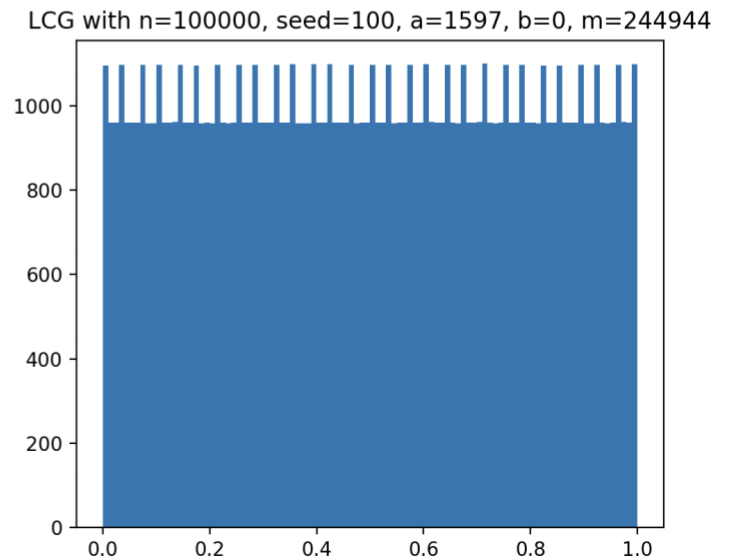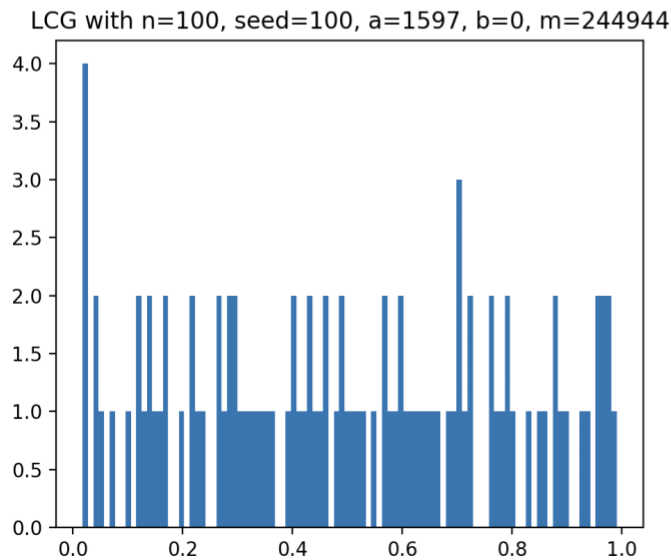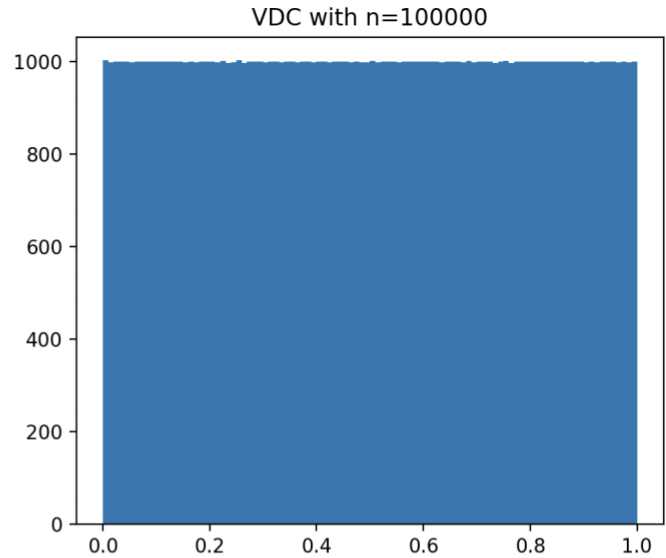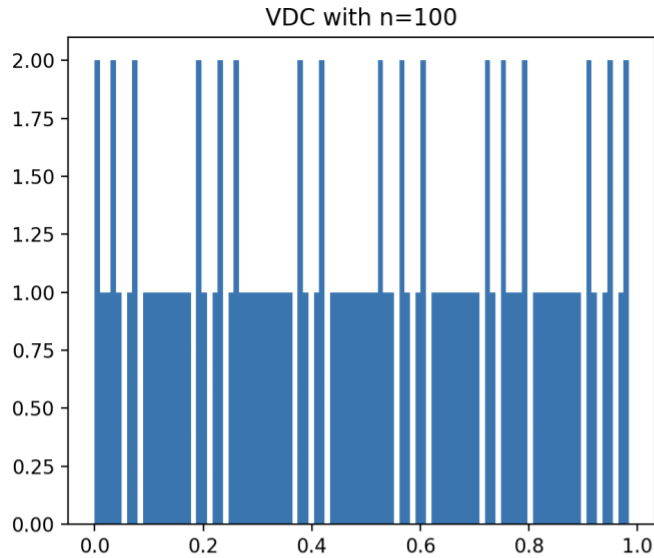
Observations:

1) As n (sample size) increases both LCG and VDC are more uniform distribution.
2) VDC has a better uniform distribution than LCG for both n = 100, n = 100000.

3) Halton sequence plots for both n = 100, 100000 in R^2.

Halton with n=100

Halton with n=100000

Observations:

1) For both values of n, the points are scattered uniformly. This suggests that Halton sequence has nearly uniform distribution.

2) For n = 100000, the plot is much denser than the one for n = 100.