

Suppose G1, G2 and G3 are three separate Congruential Generators. The specification and recursive relation of the generators are given below:

G1: $Z_{1,i} = (13Z_{1,i-1} + Z_{1,i-2} + 3) \bmod 16$

$Z_{1,0} = 12, Z_{1,1} = 7$

($Z_{1,i}$ means Z_i of first CG)

G2: $Z_{2,i} = (12Z_{2,i-1}^2 + 13Z_{2,i-2}) \bmod 17$

$Z_{2,0} = 3, Z_{2,1} = 5$

($Z_{2,i}$ means Z_i of second CG)

G3: $Z_{3,i} = (Z_{3,i-1}^3 + Z_{3,i-2}) \bmod 15$

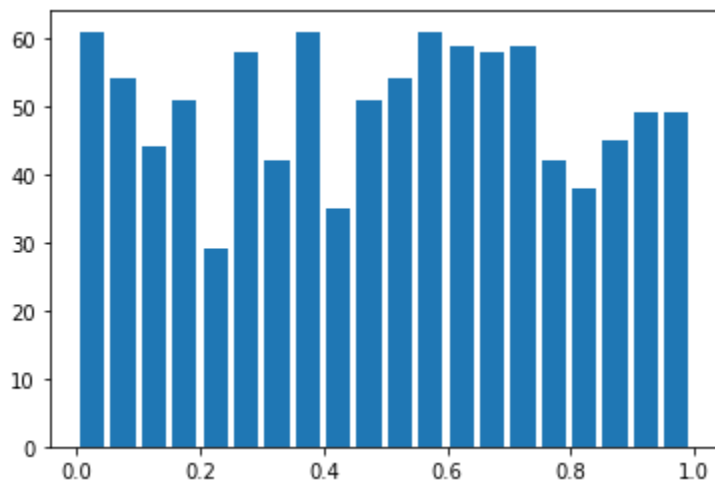
$Z_{3,0} = 2, Z_{3,1} = 7$

($Z_{3,i}$ means Z_i of third CG)

Now G1, G2 and G3 are combined together to generate a random number (U_i).

Write a code to implement Wichman / Hill Method. Generate 100, 1000 and 5000 random numbers. Show a histogram with all the generated random numbers for each case.

Example: (For 1000 random numbers)



[Use bins=20 in plt.hist() for getting 20 bars in the histogram.]

Instructions:

1. Code each problem in separate python files. (problem1.py, problem2.py etc.)
2. Create a folder. Rename it with your 9-digit student ID.
3. Put all your python files into the folder.
4. ZIP the folder and upload to LMS submission window.
5. Deadline: Saturday 11:55 PM.
6. Do not copy! Copy checker will be used during evaluation. Negative marking is possible.