

## Assignment 1a. Random Numbers

Marks 10

Posted on 13.08.2025 @ 2:30 pm and due on 13.08.2025 @ 5:45 pm

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1. Use the iterative equation  $x_{i+1} = cx_i(1 - x_i)$  to generate 10,000 random numbers. Show the correlation among them by plotting  $x_i$  vs  $x_{i+k}$ . Use seed  $x_0 = 0.1$  but choose your own five different  $c$ . Try various  $k$ , say 5, 10, 15, 20 etc. [5]
2. Write your own LCG random generator with the following set of parameters  $a = 1103515245$ ,  $c = 12345$ ,  $m = 32768$  and again check for correlation by plotting for  $k = 5$ . You must store your LCG code in the library file for all future use till Endsem. [5]