Assignment 2

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P1 and P2

Please see attached MATLAB files...

P3

We can write each number $x \in (0,1)$ as a possibly infinite series

$$x = \sum_{i=1}^{\infty} b_i * 2^{-i} \tag{1}$$

where $b_i \in \{0,1\}$ and $b = (b_1, b_2, ...)$ is a binary representation of x.

We can then use the random number generator to create the b_i via the mapping

$$b_i = \begin{cases} 1 & \text{if result is } a \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

This will result in uniformly distributed random numbers in $(0,1)$. However, note that infinitely many samples of the RNG would have to be produced in order to generate the infinitely many b_i's.