# Monte Carlo Simulations (MA323) Lab 11

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**Run the code using - python3 180123021.py**

The point set $\{x_1, x_2, \ldots, x_n\}$ is generated using a Linear congruence generator with a = 1229, b = 9, m = 2048, $x_0$ = 417.

$$x_{n+1} = (ax_n + b)\%m$$

$$u_{n+1} = x_{n+1}/m$$

The value of n (number of elements in the sequence) is taken to be m-1 as it would be the period of the LCG for the given values.

Then, the interval [0,1] is divided into N uniform equal sized intervals, and the discrepancy is calculated using the formula given in the assignment.

**The observed values of discrepancies are -**

| Value of N | Discrepancy |
|---|---|
| **10** | **0.000830** |
| **20** | **0.000660** |
| **50** | **0.000948** |
| **100** | **0.000718** |