Monte Carlo Simulation Assignment 11

Name: **Naman Goyal**

Roll No. **180123029**

Problem.

- To execute the .py file, run the following command:
  $ python3 180123029_NamanGoyal_q.py

- Firstly generating the uniform random variables using **Linear Congruence Generator.** The value of **N** taken was: **10, 20, 50, 100**.
- For the **Linear Congruence Generator** the value of **m = 4294967296, a = 134775813, b = 1, seed value = 0.42.**
- Then a data point set with **10000** values (**n = 10000**) is taken.
- The discrepancy of this set is calculated using the formula:

$$\sup_{A \in \mathcal{A}} \left| \frac{\# \{x_i \in A\}}{n} - \text{vol}(A) \right|,$$

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naman-ubuntu    naman-ubuntu    ../Folders/MonteCarlo/Lab11    python3 180123029_NamanGoyal_q.py

Number of sub-intervals of [0,1] of equal lengths : 10
The value of discrepancy when N = 10 is 0.007000000000000006

Number of sub-intervals of [0,1] of equal lengths : 20
The value of discrepancy when N = 20 is 0.0063

Number of sub-intervals of [0,1] of equal lengths : 50
The value of discrepancy when N = 50 is 0.003700000000000002

Number of sub-intervals of [0,1] of equal lengths : 100
The value of discrepancy when N = 100 is 0.0022000000000000006

naman-ubuntu    naman-ubuntu    ../Folders/MonteCarlo/Lab11
```

Value of N	Discrepancy
10	0.0070
20	0.0063
50	0.0037
100	0.0022