

## Assignment 1: Random Number Generation

---

January 4, 2019

For this simulation assignment, each student has to hand in their own report and code.

**Deadline: Monday January 14, 2017 at 11:00**

ASSIGNMENT: Given the dataset (*game\_lengths.csv*) that is provided on Canvas, in which the lengths of games in seconds from a 9-ball pool billiards tournament are given, you are asked to determine the distribution of the match length.

Matches are a best of 9 games, so the first player to win 5 games wins the match. Matches are played between two players of equal level, therefore, the probability that either player wins a game is 50%. Three parts have to be completed for this assignment.

1. **Generate random numbers using a LCG:** Implement the pseudo-code algorithm for the LCG pseudo random number generator in the lecture slides.
2. **ECDF of Game Length:** Determine the empirical cumulative distribution function of the game length.
3. **Simulate 5000 matches:** Use this empirical distribution and your own LCG to simulate the length of 5000 matches.

HAND IN THE FOLLOWING:

- A one-page report (pdf-format, 11pt) in which you (at least) present:
  - The parameters used for your LCG implementation.
  - A plot of the empirical CDF of the game length
  - A short description of how you simulated a match
- The compiled version of your Business Simulation project (\*.jar file) See Canvas for instructions on the .jar file.