STATISTICAL COMPUTING: ASSIGNMENT 1

Exercise 1: Work through the R tutorials available at `http://www.isid.ac.in/~deepayan/R-tutorials/`. In particular, solve all the exercises in the *Language Overview II* and *Introduction to Statistical Inference* tutorials.

Exercise 2: (From Knuth, TAOCP Volume 2) Leonhard Euler conjectured in 1772 that the equation $w^4 + x^4 + y^4 = z^4$ has no solution in positive integers, but Noam Elkies proved in 1987 that infinitely many solutions exist (see *Math. Comp.* **51** (1988), 825–835). Find all integer solutions such that $0 \leq w \leq x \leq y < z < 10^6$.

Exercise 3: Given a $U(0, 1)$ random number generator, describe and implement an algorithm to generate random numbers from

(1) the $Exp(1)$, the exponential distribution with mean 1,
(2) the $Exp(1)$ distribution left-truncated at 1 (i.e., with support $[1, \infty)$),
(3) the $Exp(1)$ distribution right-truncated at 1 (i.e., with support $[0, 1]$),

You may use any programming language you wish.

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