Using random variables to estimate π

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In the exercise:

http://gtribello.github.io/mathNET/geometric-probability.html

you learnt how we can arrive at an estimate of π by generating pairs of uniform random variables. Write a python notebook that can be used to estimate in π using the technique that you learnt. At variance with what you did for the blockly exercise generate a large number of random variables in your code (at least 10,000). Discuss the sources of error in your calculation and make sure that you give suitable confidence limits on the value of π that you extract from your calculation.