Introduction

Monte Carlo methods (or Monte Carlo experiments) are a broad class of [computational](http://en.wikipedia.org/wiki/Computation) algorithms that rely on repeated random sampling to obtain numerical results; typically one runs simulations many times over in order to obtain the distribution of an unknown probabilistic entity. They are often used in physical and mathematical problems and are most useful when it is difficult or impossible to obtain a closed-form expression, or infeasible to apply a deterministic algorithm. Monte Carlo methods are mainly used in three distinct problem classes: optimization, numerical integration and generation of draws from a probability distribution.

The number π is a mathematical constant, the ratio of a circle's circumference to its diameter, commonly approximated as 3.14159. It is a commonly used mathematical constant in many areas. In the current homework, we propose to estimate π, using Monte Carlo methods. Such method counts the fraction of points fall within a circle that inner-touches a square. And the estimated π is four times of that fraction according to the following formula. We also plan to investigate the effect of factors, such as radius of the circle and the seed number, which may impact the accuracy of the estimation.

Method

Results

Conclusion

• 1/2 page introduction

• 1/2-1 page to describe the method you are using

• 1-2 pages of results

• 1/2 page of conclusions (summarize the results; what did you learn)