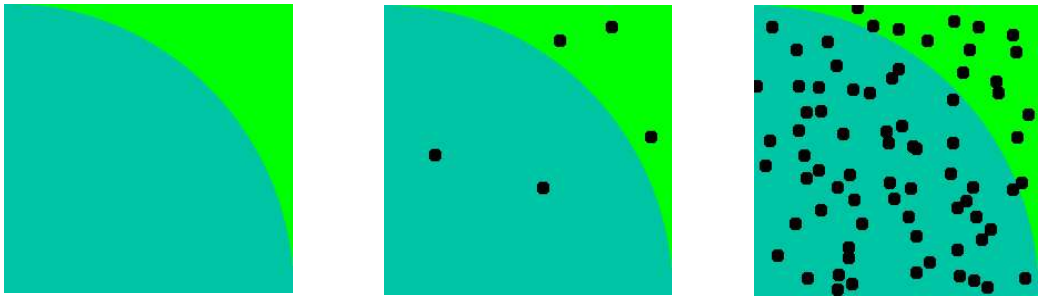
Assignment: Approximate Pi by a Monte Carlo method of random numbers.

Consider a unit quarter disc inscribed in a unit square. As the number of random points in the square grows, the ratio of points in the quarter disc to points in the square approaches the ratio of the area of the quarter disc to the area of the square, allowing calculation of Pi as the number of random points becomes large.



Write a C++ program that:

1. approximates Pi with random points and outputs the result to std::cout
2. creates a two dimensional histogram filled only with random points within the unit quarter disc
3. creates a one dimensional histogram graphing your calculated Pi as a function of the number of random points

Extra credit for creating the function that returns the value of radius squared (required to test the quarter disc condition) outside the main function.