Algorithms and Data Structure Lab 4

1. Use Monte Carlo simulation to estimate the value of the mathematical constant *e*, the base of the natural logarithm. The idea is to simulate a continuous process using discrete steps, much like compound interest, and estimate the value of *e*.

   Input:

   The number of discrete steps (N) for the simulation, which can be used to control the granularity of the simulation.

   Output:

   The estimated value of *e* and the absolute error (the absolute difference between the estimated value and the actual value of e, which is approximately 2.71828)

2. Use Monte Carlo simulation to estimate the value of PI. Generate points within a square and determine the ratio of points that fall within the inscribed circle to the total number of points. This ratio is used to estimate PI.

   Input:

   The number of random points to generate (N)

   Output:

   The estimated value of PI