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CSE 2221 Homework 2

Professor Bucci

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1. This program prompts the user to enter an integer number of points, and stores this value as an integer n. If n is not positive, the program returns an error. If n is a natural number, the program takes a random sample of size n from the unit normal distribution, and estimates as a percentage of type double the number of trials in which the normally distributed variable x is less than 0.5. It then prints this percentage for the user.

2. The program will print a varying percentage which is close to 50% because the sample size of 10000 is very large. This makes the probability of getting an estimate closer to the bounds of the distribution (0% or 100%) extremely low.

3. My answer is the same as that written above for question 2 if the is changed to a $\leq$ because the unit normal distribution is a continuous density function which means $\forall c \in \mathbb{R}, P(X = c) = 0$. Thus, even though the set $\{x \in \mathbb{R} : 0 \leq x \leq 0.5\}$ for which the number of points in the sub interval is incremented now includes the boundary point x = 0.5, this does not change the probability of x being in that set, since $P(X = 0.5) = 0$ and thus the program will function the same as described in question 2.