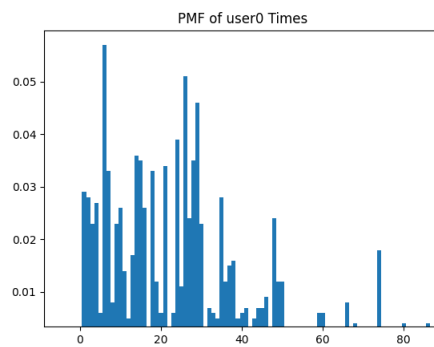


STATS MID-TERM ASSIGNMENT

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Q1(a)



Q1(b)

$$Prob(X_0 = 1) = 0.582$$

Q1(c)

Chebyshev:

$$\begin{aligned}\mu &= 0.582, \sigma = \sqrt{\mu(1-\mu)} = 0.493, N = 1000 \\ \mu - \frac{\sigma}{\sqrt{0.05N}} &\leq X_0 \leq \mu + \frac{\sigma}{\sqrt{0.05N}} = 0.582 - \frac{0.493}{\sqrt{0.05(1000)}} \leq X_0 \leq 0.582 + \frac{0.493}{\sqrt{0.05(1000)}} \\ 0.512 &\leq X_0 \leq 0.651\end{aligned}$$

CLT:

$$\frac{\frac{(X_1 + X_2 + \dots + X_n)}{n} - \mu}{\frac{\sigma}{\sqrt{n}}} =$$

Bootstrapping:

Q2

user1: 0.416 | **user2:** 0.399 | **user3:** 0.334