Sprint 4 Deliverables CMS_360

Yet more light bulbs

$$\lambda = \frac{1}{E[x]} = \frac{1}{2000} = .0005$$

Use CCDF to find probability lightbulbs will last longer than 3000 hours

$$CCDF = e^{-\lambda x} = e^{-.0005(3,000)}$$

$= .223130$ or 22% one lightbulb lasts more than 3000 hours

to find two use joint Probability

$.223130^2 = .0497870683$ or approx 4%

NON Persistence of memory

$\lambda = \frac{1}{2000}$

$\left(e^{-\frac{1}{2000} \cdot 2000}\right)\left(e^{-\frac{1}{2000} \cdot 500}\right) = .2865047969$

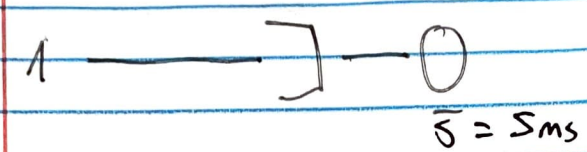
28.65 % chance both lightbulbs will last longer than 3000 hours

$X = 500 \quad 3000 - 2500 = 500$

$X = 2000 \quad 3000 - 1000 = 2000$

Sprint 4 Deliverables CMS. 380

Check My Math



$$1 = \frac{\bar{N}}{\bar{R}} = \frac{120}{1}$$

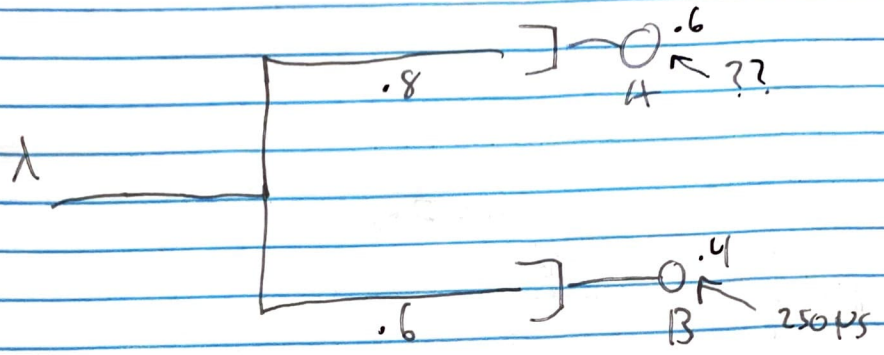
$$\Delta L = 120$$

$$V = \lambda \bar{S} = 120 \cdot .01$$

$$V = 1.2$$

Sprint 4 Deliverables CMS 380

Unbalanced Server loads



B is able to process one request at 250 μs on average

Calculate average service time at server A

Throughput of server B = $\frac{V}{S}$ $\frac{.6}{250}$ = .0024

Throughput of system = $\frac{\lambda_B}{V_B} = \frac{.0024}{.4} = .006$

$\lambda = .006$

$\lambda_A = V_A \lambda = .6 \times .006 = .0036$

$\bar{S} = \frac{U_A}{\lambda_A} = \frac{.8}{.0036} = 222\,\mu s$