SFWR ENG 4E03

Fall 2015
Note: material covered in Stats 3Y03 Summary will not be covered in this summary

Expected Value [μ]: definition of expected (NOT RIGHT!!)
Poisson parameter [λ]: throughput, out-rate
Exponential distribution: not always for time

Probability Distribution Function (PDF):
Cumulative Distribution Function (CDF):

Uniform Distribution: no memoryless property
Exponential Distribution:

- Memoryless
- Either CDF or PDF of original equation $F = 1 - e^{-\lambda x}$

Think chemistry, i.e. cancelling units

Device [i]:
[k]: total number of devices
Utilization [ρ]: ratio that the time is busy
Service Time [S]: time to complete specific time
Expected Value [E]:
Time in system [T]: expected time the job is in the system
Visitation [V]: given or projected visits/jobs (closed system); cannot be calculated
[E(V)]: calculated visit/job ratio
Demand [D]: total service demand

$$D_i = E[S_i] \cdot V_i$$

$$D = \sum_{i=0}^{k} D_i$$

Response Time [r]:
[N]: number of jobs
Think time [Z]: time it takes the user to put a request in and start
Job rate [X]: jobs / hour

$$\rho_i = X_i E[S_i]$$

$$X_i = E[V_i] X$$

$$\rho_i = X D_i$$

$$E[Z] = E[T] - E[R]$$

$$E[N] = \lambda E[T], \lambda = X$$

If E[Z] = 0, R = N

$$E[N] = \lambda E[R], \lambda = X$$

$$X \le \min\left(\frac{1}{D_{\max}}, \frac{N}{D + E[Z]}\right)$$

$$E[T] \ge \max\left(D, ND_{\max} - E[Z]\right)$$