Poisson Distribution

① Discrete Random Variable (pmf)

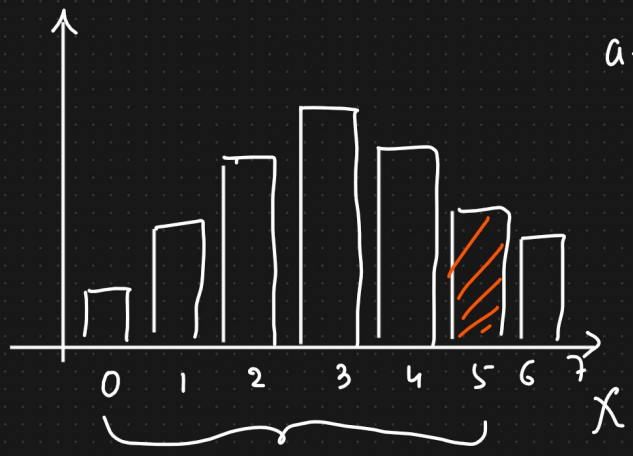
② Describes the number of events occuring in a fixed time interval

Eg: No. of people visiting hospital every hour

No. of people visiting banks every hour

$\lambda = 3 \Rightarrow$ Expected no. of event occur at every time interval

Pmf



PMF

$$P(X=5) = \frac{e^{-\lambda}\lambda^{x}}{x!} \qquad \boxed{\lambda = 3}$$

$$= \frac{e^{-3}\,3^{5}}{5!} = 0.101 = 10.1\%$$

λ

$P(x=4) + P_{\lambda}(x=5)$

Mean of Poisson Distribution

λ = Expected No. of events to occur at every time interval

t = Time interval

$$\text{Mean} = E(x) = \mu = \lambda * t$$

Variance =