

# Online Learning Techniques Lab 3

Q0:  $P_n = \binom{n}{x} p^x q^{n-x}$

$$\begin{aligned} P(x \geq 2) &= 1 - P(x=0) - P(x=1) \\ &= 1 - \binom{n}{0} p^0 q^n - \binom{n}{1} p^1 q^{n-1} \\ &= 1 - q^n - n p q^{n-1} \\ &= 1 - (n+1) \left(\frac{1}{2}\right)^n \\ 0.2 &= (n+1) \left(\frac{1}{2}\right)^n \end{aligned}$$

Q1: 10.1.5.65

0000 1010. 0000 0001. 00000 101. 01000001  
0000 1010. 0000 0001. 00000 101. 01000000

It will go to 10.1.5.64/29 as it is the longest match to where the packet needs to go to.

Q2: Address: 131.23.151.76

Binary: 10000011. ~~00010000~~. 00010111. 10010111. 01001100  
10000011. 00010000. 00000000. 000010000  
10000011. 00011100. 00000000. 00000000  
10000011. 00010110. 00000000. 00000000

131.22.0.0/15 is the closest match as it matches the longest prefix with 131.23.151.76

192.24.0.0/18

11000000. 00011000. 0000 0000. 00000000 : D

192.24.12.0/22

11000000. 00011000. 0000 1100. 00000000 : B

192.24.6.0 will go to D

11000000. 00011000. 0000 0110. 0000 0000

192.24.14.32 will go to B

11000000. 00011000. 0000 1110. 00100000

192.24.54.0 will go to B

11000000. 00011000. 00110110. 00000000