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$P(x_1, \pi_1) = p(\pi_1) \cdot p(x_1 | \pi_1)$

$P(x, \pi) = P(x_1, \ldots, x_N, \pi_1, \ldots\ldots, \pi_N) =$ #N-1 #2 #1

#N $P(x_N, \pi_N \mid \pi_{N-1})\, P(x_{N-1}, \pi_{N-1} \mid \pi_{N-2}) \ldots\ldots P(x_2, \pi_2 \mid \pi_1)\, P(x_1, \pi_1) =$

$P(x_N \mid \pi_N)\, P(\pi_N \mid \pi_{N-1}) \ldots\ldots P(x_2 \mid \pi_2)\, P(\pi_2 \mid \pi_1)\, P(x_1 \mid \pi_1)\, P(\pi_1) =$

$a_{0\pi1}\, a_{\pi1\pi2} \ldots\ldots a_{\pi N-1\pi N}\, e_{\pi1}(x_1) \ldots\ldots e_{\pi N}(x_N)$

$e_{\pi_2}(x_2)$ $a_{\pi_1\pi_2}$ $e_{\pi_1}(x_1)$ $a_{0\pi_1}$

#2: $p(x_2 \pi_2 | \pi_1)$

$= p(\pi_2 | \pi_1) \cdot p(x_2 | \pi_2)$

$\pi = $(Fair, Fair, Fair, Fair, Fair, Fair, Fair, Fair, Fair, Fair) x = 1, 2, 1, 5, 6, 2, 1, 6, 2, 4

$P(\pi, x) = \frac{1}{2} \times P(1 \mid \text{Fair})\, P(\text{Fair} \mid \text{Fair})\, P(2 \mid \text{Fair})\, P(\text{Fair} \mid \text{Fair}) \ldots P(4 \mid \text{Fair})$

$e_F(1)$ a_{π_1, π_2}

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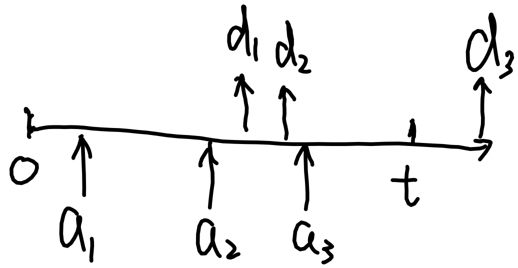
$$\gamma(t) = \sum_{n=1}^{\alpha(t)} \min\{d_n, t\} - a_n = \int_0^t N(s)ds$$



$$\gamma(t) = (d_1 - a_1) + (\underline{d_2} - a_2) + (\underline{t} - a_3)$$

suppose $T = E[X] = 10$ min arrival 1 paitent / 30 min

$$\rho = \lambda \cdot E[T] = \frac{1}{30} \cdot 10 = \frac{1}{3}$$