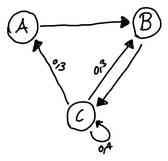
23/04/2009

domenica 13 dicembre 2020 11:48



DATI:

$N=4$

$\mu_1 = 3$ min

$\mu_2 = 2$ min

$\mu_3 = 2{,}50$ p/h

(A) = 3 serventi e centro di rif

DOMANDE:

1. W_{q3}
2. Eq (4,1,2)
3. W_q

CALCOLO VISIT COUNT

$\gamma_A = 1$

$\gamma_B = \gamma_A + 0{,}3\gamma_C \rightarrow \gamma_B = 1 + 0{,}3 \cdot 3{,}33 \rightarrow (2)$

$\gamma_C = 0{,}4\gamma_C + \gamma_B \rightarrow \gamma_C = 0{,}4\gamma_C + 1 + 0{,}3\gamma_C \rightarrow \frac{0{,}3\gamma_C}{0{,}3} = \frac{1}{0{,}3} \rightarrow \gamma_C = 3{,}33$

CALCOLO X

$X_A = \frac{\gamma_A}{\mu_A} = \gamma_A \cdot \frac{1}{\mu_A} = \frac{1}{\gamma_A} \cdot W_{q_A} = (3)$

$X_B = \frac{\gamma_B}{\mu_B} = \gamma_B \cdot \frac{1}{\mu_B} = \frac{2}{\gamma_B} \cdot W_{q_B} = (4)$

$X_C = \frac{3{,}33}{\frac{2{,}50}{60}} = \frac{3{,}33}{0{,}833} = (4)$

CALCOLO f_3 MS

$\frac{X_S^{ms}}{ms!}$ $m<s$

$\frac{X_S^{ms}}{S_S! \cdot S_S^{ms-ss}}$ $m>s$

$f_1(0) = 1$ | $f_1(1) = 3$ | $f_1(2) = \frac{3^2}{2!} = 4{,}5$ | $f_1(3) = \frac{3^3}{3!} = 4{,}5$ | $f_1(4) = \frac{3^4}{4! \, 3^{4-3}} = 6{,}75$

$f_2(0) = 1$ | $f_2(1) = 4$ | $f_2(2) = 4^2 = 16$ | $f_2(3) = 4^3 = 64$ | $f_2(4) = 256$

$f_3(0) = 1$ | $f_3(1) = 4$ | $f_3(2) = 4^2 = 16$ | $f_3(3) = 4^3 = 64$ | $f_3(4) = 256$

MACCHINE

$G(n,N)$	A	A, B	A, B, C
0	1	1	1
1	3	7	11
2	4,5	32,5	76,5
3	4,5	134,5	440,5
4	4,5	542,5	2304,5

CLIENTI

$G(2,2) = 4{,}5 \cdot f_2(0) + 3 \cdot f_2(1) + f_2(2) = 32{,}5$

$G(2,3) = 4{,}5 \cdot f_2(0) + 4{,}5 \cdot f_2(1) + 3 \cdot f_2(2) + f_2(3) = 134{,}5$

ALLA 2° MACCHINA NO POSSO DAR 0 ESSENDO TUTTI IN A

ALLA 2° MACCHINA NO POSSO DAR 1

$G(2,4) = 4{,}5 \cdot f_2(0) + 4{,}5 \cdot f_2(1) + 4{,}5 \cdot f_2(2) + 3 f_2(3) + f_2(4) = 542{,}5$

$G(3,2) = 32{,}5 \cdot f_3(0) + 7 \cdot f_3(1) + f_3(2) = 76{,}5$

$G(3,3) = 134{,}5 \cdot f_3(0) + 32{,}5 \cdot f_3(1) + 7 \cdot f_3(2) + 1 \cdot f_3(3) = 440{,}5$

$G(3,4) = 542{,}5 \cdot f_3(0) + 134{,}5 \cdot f_3(1) + 32{,}5 \cdot f_3(2) + 7 \cdot f_3(3) + 1 \cdot f_3(4) = 2304{,}5$

CALCOLO W_{q_C}

$W_{q_C} = \frac{\overset{q}{\sim} N_C}{X_R} - X_3 \rightarrow$ NOTA

$X_R = \frac{440{,}5}{2304{,}5} = (0{,}19)$

$N_C = 1 \cdot P(n_C=1) + 2 \cdot P(n_C=2) + 3 \cdot P(n_C=3) + 4 \cdot P(n_C=4)$

$P(n_C = \underset{k}{1}) = f_3(1) \cdot \frac{G(n-1, N-K)}{G(n,N)} = 4 \cdot \frac{G(2,3)}{G(3,4)} = 4 \cdot \frac{134{,}5}{2304{,}5} = (0{,}23)$

$P(n_C=2) = f_3(2) \cdot \frac{G(2,2)}{G(3,4)} = 16 \cdot \frac{32{,}5}{2304{,}5} = 0{,}23$

$P(n_C=3) = f_3(3) \cdot \frac{G(2,1)}{G(3,4)} = 64 \cdot \frac{7}{2304{,}5} = 0{,}19$

$P(n_C=4) = f_3(4) \cdot \frac{G(2,0)}{G(3,4)} = 0{,}11$

$N_C = 0{,}23 + 2 \cdot 0{,}23 + 3 \cdot 0{,}19 + 4 \cdot 0{,}11 = (1{,}7)$

$W_{q_C} = \frac{1{,}7}{0{,}19} - 4 = (4{,}95)$

Eq (4,1,2)

$USCITA = (\underset{SERV}{3\mu_1} + \mu_2 + \overset{1-0,4}{0{,}6\mu_3}) \, P(4,1,2)$

$ENTRATE = 3\mu_1 \cdot P(5,0,2) + \mu_2 \cdot P(4,2,1) + 0{,}3\mu_3 \cdot P(4,0,3) + 0{,}4\mu_3 \cdot P(4,1,2) + 0{,}3\mu_3 \cdot P(3,1,3)$

$W_q = \frac{N}{X_R} - X_S = \frac{4}{0{,}19}(3+4+4) = (40)$

DATI:

$N=4$

$W_{S_1} = 3$ min

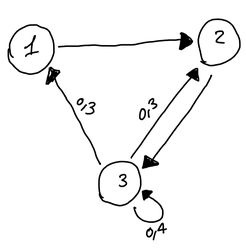
$W_{S_2} = 2$ min

$\mu_3 = 50$ p/h

(A) = 3 serventi e centro di rif

DOMANDE:

1. W_{q3}
2. Eq (4,1,2)
3. W_q



$\gamma_1 = 1$ PERCHÈ 1 È LA STAZIONE DI RIFERIMENTO

$\gamma_2 = \gamma_1 + 0{,}3\gamma_3 \rightarrow \gamma_2 = 1 + 0{,}3\gamma_3 \rightarrow \gamma_2 = 1 + 1 \rightarrow \gamma_2 = 2$

$\gamma_3 = \gamma_2 + 0{,}4\gamma_3 \rightarrow \gamma_3 = 1 + 0{,}3\gamma_3 + 0{,}4\gamma_3 \rightarrow \frac{0{,}3}{0{,}9}\gamma_3 = 3{,}33$

$X_1 = \gamma_1 \cdot w_{s_1} = 1 \cdot 3 = 3$

$X_2 = \gamma_2 \cdot w_{s_2} = 2 \cdot 2 = 4$

$X_3 = \frac{\gamma_3}{\mu_3} = \frac{3{,}33}{0{,}83} = 4$

ORA CALCOLO I $f_3(n_3)$

$f_1(0) = 1$; $f_1(1) = 3$; $f_1(2) = \frac{3^2}{2!} = 4{,}5$; $f_1(3) = \frac{3^3}{3!} = 4{,}5$; $f_1(4) = \frac{3^4}{3! \cdot 3^{4-3}} = 4{,}5$

$f_2(0) = 1$; $f_2(1) = 4$; $f_2(2) = \frac{4^2}{1} = 16$; $f_2(3) = 64$; $f_2(4) = 256$

$f_3(0) = 1$; $f_3(1) = 4$; $f_3(2) = \frac{4^2}{1} = 16$; $f_3(3) = 64$; $f_3(4) = 256$

ORA COSTRUISCO LA TABELLA

$G(n,N)$	1	1,2	1,2,3
0	1	1	1
1	3	7	11
2	4,5	32,5	76,5
3	4,5	134,5	440,5
4	4,5	542,5	2304,5

→ FATTORE DI NORMALIZZAZIONE

$G(2,2) = 4{,}5 \cdot f_2(0) + 3 \cdot f_2(1) + f_1(2) = 32{,}5$

$G(2,3) = 4{,}5 \cdot f_2(0) + 4{,}5 \cdot f_2(4) + 3 \cdot f_2(2) + f_2(3) = 134{,}5$

$G(2,4) = 4{,}5 \cdot f_2(0) + 4{,}5 f_2(1) + 4{,}5 \cdot f_2(2) + 3 \cdot f_2(8) + f_2(4) = 542{,}5$

$G(3,2) = 32{,}5 \cdot f_3(0) + 7 \cdot f_3(1) + f_3(2) = 76{,}5$

$G(3,3) = 134{,}5 \cdot f_3(0) + 32{,}5 \cdot f_3(1) + 7 \cdot f_3(2) + f_3(8) = 440{,}5$

$G(3,4) = 542{,}5 \cdot f_3(0) + 134{,}5 \cdot f_3(1) + 32{,}5 \cdot f_3(2) + 7 \cdot f_3(8) + f_3(4) = 2304{,}5$

ORA ANDIAMO A CALCOLARE Wq_3

$Wq_3 = \frac{N_i}{X_R} - X_i \rightarrow \frac{N_3}{X_R} - X_3$

$X_R = \frac{G(\pi, N-1)}{G(\pi,N)} = \frac{440{,}5}{2304{,}5} = 0{,}19$

$N_3 = 1 \cdot P(m_3 = 1) + 2 \cdot P(m_3 = 2 + 3 \cdot P(m_3 = 3) + 4 \cdot P(m_3 = 4)$

$P(m_n = K) = \frac{f_3(m_3) \cdot G(\pi - 1, N - K)}{G(\pi, N)}$

$P(1) = \frac{f_3(1) \cdot G(2,3)}{G(3,4)} = 4 \cdot \frac{134{,}5}{2309{,}5} = 0{,}23$

$P(2) = \frac{f_3(2) \cdot G(2,2)}{G(3,4)} = 16 \cdot \frac{32{,}5}{2304{,}5} = 0{,}23$

$P(3) = \frac{f_3(3) \cdot G(2,1)}{G(3,4)} = 64 \cdot \frac{7}{2304{,}5} = 0{,}19$

$P(4) = \frac{f_3(4) \cdot G(2,0)}{G(3,4)} = 0{,}11$

$N_3 = 1 \cdot (0{,}23) + 2(0{,}23) + 3(0{,}19) + 4(0{,}11) = 1{,}7$

$Wq_3 = \frac{1{,}7}{0{,}19} - 4 = 4{,}95$ min

CALCOLO Eq DI EQUILIBRIO (4, 1, 2)

$USCITE = \left(\sum d_{OUT} + \sum_{i=1}^{n} (1 - P_{LOOP_i}) \cdot \min(s_i, n_i) \cdot \mu_i\right)$

$U = (3 \cdot \mu_1 + \mu_2 + 0{,}6 \cdot \mu_3)$

$E =$

$Wq = \frac{4}{0{,}19} - 11 = 10$