This is the complete list of typos that have been discovered so far in the first printing of my book "The Art of Computer Systems Performance Analysis," published by John Wiley & Sons, New York, NY. Most of these typos have been corrected in later printings of the book. Recently detected typos are indicated with an asterisk after the page number.

If you find any additional typos, please bring them to my attention.

Thanks.

February 25, 2017

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Errata for *The Art of Computer Systems Performance Analysis*

Page	Line	Current Text	Correct Text
xxvii	7	650Z	6502
1	14	compre	compare
10	28	Box 9280, Phoenix, AZ 85068)	Box 82266, Phoenix, AZ 85071)
26	17	procedurelike	procedure like
35	11	is equal to the product of	is equal to the quotient of
47	12	database systems, network, and	database systems, networks, and
49*	19	It must be pointed that	It must be pointed out that
58	36	8-queens	9-queens
59	16	the system under test and the reference system is	the reference system and the system under test is
59	18	taking 15 times as long	taking only 1/15th as long
59	24	of the SPECthruputs for	of the time ratios for single copies of
69	4	components, and timeliness are	components, and repeatability are
75	23	a large number of disks—	a large number of disk I/Os—
78*	Last	$\frac{567{,}119{,}488-18\times5353^2}{17}=1741.0$	$\frac{567{,}119{,}488-18\times5352^2}{17}=1741.0^2$
79*	2	$s_{x_r}^2=\frac{462{,}661{,}024-18\times4889.4^2}{17}=1379.5$	$s_{x_r}^2=\frac{462{,}661{,}024-18\times4889.4^2}{17}=1379.5^2$
79*	10	$R_{x_s,x_r}=\frac{1/n\sum_{i=1}^{n}(x_{si}-\bar{x}_s)(x_{ri}-\bar{x}_r)}{s_{x_s}s_{x_r}}=0.916$	$R_{x_s,x_r}=\frac{\frac{1}{n-1}\sum_{i=1}^{n}(x_{si}-\bar{x}_s)(x_{ri}-\bar{x}_r)}{s_{x_s}s_{x_r}}=0.970$
79*	10-22	916	970 (replace 916 by 970 every where on the page. Total 11 changes.)
79*	18	The eigenvalues are 1.916 and 0.084.	The eigen values are 1.970 and .030.
79	Last	$\mathbf{q}_1=\begin{bmatrix}\frac{1}{\sqrt{2}}\end{bmatrix}\frac{1}{\sqrt{2}}$	$\mathbf{q}_1=\begin{bmatrix}\frac{1}{\sqrt{2}}\\\frac{1}{\sqrt{2}}\end{bmatrix}$
89	9	$\sqrt{10.25}$	$\sqrt{8}$
89	1	2	$\sqrt{2}$
89	10	$\sqrt{24.4}$	$\sqrt{24.5}$
89	13	distance is 4.5	distance is $\sqrt{4.5}$
89	22	distance is 12.5	distance is $\sqrt{12.5}$
101	28-29	In this chapter,	In this section,
101	31	in this chapter	in this section
112	Last	instruction	instructions
113	16	elasped time.	elapsed time.
129	4	plus minus	plus or minus
135	8	12 seconds	18 seconds
141	15	Figure 10.2a	Figure 10.2b
141	18	Figure 10.2b	Figure 10.2a

Errata (Continued)

Page	Line	Current Text	Correct Text
145	16-17	The percentage of packets belonging to various protocol types are plotted on the chart.	The performance in MIPS for various CPU types are plotted on the chart.
146	1	protocol types	CPU types
147	8	goes up	goes down
150	9	**Computer Performance Evaluation**	computer performance evaluation
161	2	it may be	it may not be
162	Item 7	(Similarly,	(similarly,
162	Item 13	never	ever
162	Item 25	self-stablizing	self-stabilizing
166	13-end	650Z	6502
166	Case Study 11.1	650Z	6502
172	Table 11.10	$\frac{(z+y)}{2}$	$\frac{(x+y)}{2}$
181	6	$\text{Cov}(x,y) = \sigma_{xy} = \cdots$	$\text{Cov}(x,y) = \sigma^2_{xy} = \cdots$
181	8	$E(xy) - E(x)E(y)$	$E(xy) = E(x)E(y)$
182	25	all distributions.	all distributions with finite variances.
183	36	the mean of a sum is a sum of the means.	the mean of a sum of random variables is the sum of their means.
186	21	means if and only if	means if
192**	17	$\log c = \log b_i - \log a_i$	$\log c = \log a_i - \log b_i$
192**	18	$\log b_i - \log a_i$	$\log a_i - \log b_i$
192**	19	b_i/a_i	a_i/b_i
192	35	would your prefer	would you prefer
194	28	75% are less than the	75% are less than or equal to the
194	31-32	For quantities exactly half way between two integers, use the lower integer.	To be precise, for continuous variables use linear interpolation between two nearest observations.
195	3	median absolute deviation	mean absolute deviation
195	25	=16th element = 3.9	= 0.5(16th element +17th element) = 3.9
195	26	The third quartile Q_1 is	The third quartile Q_3 is
196	13	are not not stored; therefore,	are not stored; therefore,
197*	6	$\begin{cases} x_{(n-1)/2)} \\ 0.5(x_{(n/2)} + x_{(1+n)/2)}) \end{cases}$	$\begin{cases} x_{(n+1)/2)} \\ 0.5(x_{(n/2)} + x_{(n+2)/2)}) \end{cases}$
200	Exercise 12.2	$f(x) = (1-p)^{x-1}x$	$f(x) = (1-p)^{x-1}p$

Errata (Continued)

Page	Line	Current Text	Correct Text
201	3	$f(x) = \lambda^x \frac{e^{-\lambda x}}{x!}$	$f(x) = \lambda^x \frac{e^{-\lambda}}{x!}$
201	8	$f(x) = \lambda^x \frac{e^{-\lambda x}}{x!}$	$f(x) = \lambda^x \frac{e^{-\lambda}}{x!}$
201	9	$f(y) = \lambda^y \frac{e^{-\lambda y}}{y!}$	$f(y) = \lambda^y \frac{e^{-\lambda}}{y!}$
201*	16	Coefficent	Coefficient
201	19	$F(x) = 1 - e^{-x/a} \left[\sum_{i=0}^{m-1} \frac{(x/a)^i}{i!}\right]$	$F(x) = 1 - e^{-x/a} \left[\sum_{i=0}^{m-1} \frac{(x/a)^i}{i!}\right] \quad 0 \le x \le \infty$
201	23	$F(x) = 1 - x^{-a} \quad 1 \le x \le \infty$	$F(x) = 1 - x^{-a} \quad 1 \le x \le \infty \quad 0 < a$
204	16	For example,	For instance,
205	2-3 of Example 13.1	$n = 32$. Since $\cdots$ t-table:	$n = 32$:
207	7	$0 \mp 1.895 \times 0.138 = 0 \mp 0.262 = (-0.262, 0.262)$	$0 \mp 1.895 \times 0.138/\sqrt{8} = 0 \mp 0.0926 = (-0.0926, 0.0926)$
208	15	$1.03 \mp 0.6t$	$1.03 \mp 0.605t$
209	10	n experiments each on the	n experiments on each of the
210*	16	$\nu = \frac{\left(\frac{s_a^2}{n_a}+\frac{s_b^2}{n_b}\right)^2}{\frac{1}{n_a+1}\left(\frac{s_a^2}{n_a}\right)^2+\frac{1}{n_b+1}\left(\frac{s_b^2}{n_b}\right)^2} - 2$	$\nu = \frac{\left(\frac{s_a^2}{n_a}+\frac{s_b^2}{n_b}\right)^2}{\frac{1}{n_a-1}\left(\frac{s_a^2}{n_a}\right)^2+\frac{1}{n_b-1}\left(\frac{s_b^2}{n_b}\right)^2} - 2$
210*	20	freedom.	freedom. Note that we use s and not $s/\sqrt{\nu}$ in the above confidence interval. This is because s is the standard deviation of the *mean* and not standard deviation of the *sample*. Its magnitude is already of the order of $1/\sqrt{\nu}$th of the sample standard deviations.
211*	16	Effective number of degrees of freedom $f = 11.921$	Effective number of degrees of freedom $\nu = 7.943$
211*	17	The 0.95-quantile of a t-variate with 12 degrees of freedom = 1.71	The 0.95-quantile of a t-variate with 8 degrees of freedom = 1.860
211*	18	The 90% confidence interval for the difference = (-6.92, 6.26)	The 90% confidence interval for the difference = (-7.21, 6.54)
213	6	The test for zero mean $\cdots$ □	(Move the text and the example to just before Section 13.9. Renumber examples 13.8, 13.9, 13.10)

Errata (Continued)

Page	Line	Current Text	Correct Text
214*	7	$(\bar{x} - t_{[1-\alpha;n-1]}\frac{s}{\sqrt{n}}, \bar{x})$	$(\bar{x} - t_{[1-\alpha;n-1]}\frac{s}{\sqrt{n}}, \infty)$
214*	11	$\left(\bar{x}, \bar{x} + t_{[1-\alpha;n-1]}\frac{s}{\sqrt{n}}\right)$	$\left(-\infty, \bar{x} + t_{[1-\alpha;n-1]}\frac{s}{\sqrt{n}}\right)$
214*	18	The standard deviation of the difference is:	The standard deviation of the mean difference is:
214*	21	$\nu = \frac{\left(\frac{s_a^2}{n_a}+\frac{s_b^2}{n_b}\right)^2}{\frac{1}{n_a+1}\left(\frac{s_a^2}{n_a}\right)^2+\frac{1}{n_b+1}\left(\frac{s_b^2}{n_b}\right)^2} - 2$	$\nu = \frac{\left(\frac{s_a^2}{n_a}+\frac{s_b^2}{n_b}\right)^2}{\frac{1}{n_a-1}\left(\frac{s_a^2}{n_a}\right)^2+\frac{1}{n_b-1}\left(\frac{s_b^2}{n_b}\right)^2} - 2$
214*	22	$= \frac{\left(\frac{(198.20)^2}{972}+\frac{(226.11)^2}{153}\right)^2}{\frac{1}{972+1}\left(\frac{(198.20)^2}{972}\right)^2+\frac{1}{153+1}\left(\frac{(226.11)^2}{153}\right)^2} - 2$	$= \frac{\left(\frac{(198.20)^2}{972}+\frac{(226.11)^2}{153}\right)^2}{\frac{1}{972-1}\left(\frac{(198.20)^2}{972}\right)^2+\frac{1}{153-1}\left(\frac{(226.11)^2}{153}\right)^2} - 2$
214*	23	$= 191.05$	$= 188.56$
215*	4	$(-17.37, -17.37+1.28\times19.35) = (-17.37, 7.402)$	$(-\infty, -17.37 + 1.28 \times 19.35) = (-\infty, 7.402)$
219*	9	$(-\infty, \bar{x} + z_{1-\alpha}s/\sqrt{n})$ or $(\bar{x} - z_{1-\alpha}s/\sqrt{n}, \infty)$	$(-\infty, \bar{x} + z_{1-\alpha}s/\sqrt{n})$ or $(\bar{x} - z_{1-\alpha}s/\sqrt{n}, \infty)$
219*	10	If the $n \leq 30$:† $(\bar{x}, \bar{x} + t_{[1-\alpha;n-1]}s/\sqrt{n})$ or $(\bar{x} - t_{[1-\alpha;n-1]}s/\sqrt{n}, \bar{x})$	If the $n \leq 30$:† $(-\infty, \bar{x} + t_{[1-\alpha;n-1]}s/\sqrt{n})$ or $(\bar{x} - t_{[1-\alpha;n-1]}s/\sqrt{n}, \infty)$
219*	14	$\nu = \frac{\left(\frac{s_a^2}{n_a}+\frac{s_b^2}{n_b}\right)^2}{\frac{1}{n_a+1}\left(\frac{s_a^2}{n_a}\right)^2+\frac{1}{n_b+1}\left(\frac{s_b^2}{n_b}\right)^2} - 2$	$\nu = \frac{\left(\frac{s_a^2}{n_a}+\frac{s_b^2}{n_b}\right)^2}{\frac{1}{n_a-1}\left(\frac{s_a^2}{n_a}\right)^2+\frac{1}{n_b-1}\left(\frac{s_b^2}{n_b}\right)^2} - 2$
219	23	$\left(p, p + z_{1-\alpha}\sqrt{\frac{p(1-p)}{n}}\right)$ or $\left(p - z_{1-\alpha}\sqrt{\frac{p(1-p)}{n}}, p\right)$	$\left(0, p + z_{1-\alpha}\sqrt{\frac{p(1-p)}{n}}\right)$ or $\left(p - z_{1-\alpha}\sqrt{\frac{p(1-p)}{n}}, 1\right)$
220	13.2 **d.**	95%	90%
223	12-13	parameter b_0 and b_1	parameters b_0 and b_1
223	Eq 14.1	$b_1 = \frac{\Sigma xy - \bar{x}\bar{y}}{\Sigma x^2 - n(\bar{x})^2}$	$b_1 = \frac{\Sigma xy - n\bar{x}\bar{y}}{\Sigma x^2 - n(\bar{x})^2}$
224	19	estimate close the	estimate close to the
225	Last	$\sum_{i=1}^{n}[(y_i - \bar{y})^2 + 2b_1(y_i - \bar{y})\cdots]$	$\sum_{i=1}^{n}[(y_i - \bar{y})^2 - 2b_1(y_i - \bar{y})\cdots]$
226	1	$= \frac{1}{n-1}\cdots$	$\frac{\text{SSE}}{n-1} = \frac{1}{n-1}\cdots$
226	6	$\frac{d(\text{SSE})}{db_1} =$	$\frac{1}{n-1}\frac{d(\text{SSE})}{db_1} =$
226	8	$\cdots = \frac{\Sigma xy - \bar{x}\bar{y}}{\Sigma x^2 - n(\bar{x})^2}$	$\cdots = \frac{\Sigma xy - n\bar{x}\bar{y}}{\Sigma x^2 - n(\bar{x})^2}$
228	13	$s_e^2 = \sqrt{\frac{\text{SSE}}{n-2}}$	$s_e^2 = \frac{\text{SSE}}{n-2}$
230**	29	Time on UNIX = 0.030 (data size in bytes) + 24	Time on UNIX = 0.017 (data size in bytes) + 26.898
230**	30	Time on ARGUS = 0.034 (data size in bytes) + 30	Time on ARGUS = 0.034 (data size in bytes) + 31.068
234	12	$1.0834\left[1 + \frac{(100-38.71)^2}{13{,}855-7(38.71)^2}\right]^{1/2}$	$1.0834\left[1 + \frac{1}{7} + \frac{(100-38.71)^2}{13{,}855-7(38.71)^2}\right]^{1/2}$

Errata (Continued)

Page	Line	Current Text	Correct Text
235**	18	ϵ_i	e_i
240	Box 14.1 Item 2	$b_1 = \frac{\Sigma xy - \bar{x}\bar{y}}{\Sigma x^2 - n(\bar{x})^2}$	$b_1 = \frac{\Sigma xy - n\bar{x}\bar{y}}{\Sigma x^2 - n(\bar{x})^2}$
240	Box 14.1 Item 5	s_e^2	s_e
243	6	number of keys	number of keywords
243	16	keys	keywords
245	9	$y_1 = b_0 - b_1 x_{11} - b_2 x_{21} - \cdots - b_k x_{k1} + e_1$	$y_1 = b_0 + b_1 x_{11} + b_2 x_{21} + \cdots + b_k x_{k1} + e_1$
245	10	$y_2 = b_0 - b_1 x_{12} - b_2 x_{22} - \cdots - b_k x_{k2} + e_2$	$y_2 = b_0 + b_1 x_{12} + b_2 x_{22} + \cdots + b_k x_{k2} + e_2$
245	12	$y_n = -b_0 - b_1 x_{1n} - b_2 x_{2n} - \cdots - b_k x_{kn} + e_n$	$y_n = b_0 + b_1 x_{1n} + b_2 x_{2n} + \cdots + b_k x_{kn} + e_n$
249	11	$s_e = \sqrt{\frac{\text{SSE}}{n-2}} =$	$s_e = \sqrt{\frac{\text{SSE}}{n-3}} =$
249	16	The 90% t-value at four	The 0.95-quantile for a t-variate with four
252	Table 15.3, row: Regression, column: Degrees of Freedom	1	k
257	28 (left)	$y = x/(a + bx)$	$y = 1/(a + bx)$
257	30 (left)	$y = abx$	$y = ab^x$
257	31 (left)	$y = a + bx_n$	$y = a + bx^n$
263	4	$a \leftarrow 0$	$a \rightarrow 0$
265	30	based on the intuition.	based on intuition.
268	31	minimum R^2	maximum R^2
277	7	1215	1620
278	Figure 16.1 Y-axis Labels	2, 6, 8	2, 6, 10
280	31	2^k experiment.	2^k experiments.
283	9	factors and their level	factors and their levels
287	3	divided in to three	divided into three
288*	18	$\bar{y} = \frac{1}{4}(15 + 55 + 25 + 75) = 40$	$\bar{y} = \frac{1}{4}(15 + 45 + 25 + 75) = 40$
288*	19	$= (25^2 + 15^2 + 15^2 + 35^2)$	$= (25^2 + 5^2 + 15^2 + 35^2)$

Errata (Continued)

Page	Line	Current Text	Correct Text
290	Table 17.5 Row 1 Col T	0.0641	0.6041
290*	Table 17.5 Row 2 Col T	0.4220	0.7922
290**	Table 17.5 Row 2 Col N	5	2
290**	Table 17.5 Row 2 Col R	2.378	1.262
290*	Table 17.5 Row 3 Col T	0.7922	0.4220
290**	Table 17.5 Row 3 Col N	2	5
290**	Table 17.5 Row 3 Col R	1.262	2.378
292*	Table 17.9 Col: ABC Row: Total	9	8
299	16	$t_{[1-\alpha/2;2^2r]}$	$t_{[1-\alpha/2;2^2(r-1)]}$
299*	23	$\bar{u} = 21.5 + 9.5 - 2 \times 5 = 11$	$\bar{u} = 21.5 + 9.5 - 2 \times 5 = 21$
299*	30	$\bar{u} \mp ts_u = 11 \mp 1.86 \times 2.52 = (6.31, 15.69)$	$\bar{u} \mp ts_u = 21 \mp 1.86 \times 2.52 = (16.31, 25.69)$
301*	5	(8.09, 22.91)	(7.09,22.91)
301*	10	(9.79, 20.29)	(9.79, 20.21)
301*	20	$s_{\hat{y}_1} = \sqrt{\frac{s_e \sum h_i^2}{2^2 r}}$	$s_{\hat{y}_1} = \sqrt{\frac{s_e^2 \sum h_i^2}{2^2 r}}$
302	31	plot of y	plot of e
304**	11	$y_{ij} = v_i w_j$	$y_{ij} = \frac{w_j}{v_i}$
304**	14	$\log(y_{ij}) = \log(v_i) + \log(w_j)$	$\log(y_{ij}) = \log(w_j) - \log(v_i)$
308**	6	9	9.35
308**	7	one-ninth	1/9.35th
308**	8	81	87.4
308**	9	81	87.4
308**	10	81	87.4
310*	Last para	90% confidence	80% confidence
311*	5	= 3.52	= 3.75
311*	8	90% confidence	80% confidence
312*	Table 18.9 Last Col, Last Row	Total/8	Total/16
312**	Table 18.10 Col 3 Row 1	138.1	(delete)
316	13	Thus, the factors A through	Thus, factors A through

Errata (Continued)

Page	Line	Current Text	Correct Text
316**	14	4.74	4.47
316	15	that the further experimentation	that further experimentation
316	21	understanding the 2^{k-p} designs	understanding 2^{k-p} designs
317	4	Of the $2^{k-p}-k-p-1$ columns	Of the $2^{k-p}-k+p-1$ columns
321*	9	= BDFG = ABDG = CEFG = ABCDEFG	= BDFG = CEFG = ABCDEFG
321*	14	= ABDFG = BDG = ACEFG = BCDEFG	= ABDFG = ACEFG = BCDEFG
322*	16	= BDFG = ABDG = CEFG =	= BDFG = CEFG =
334*	Table 20.4 Col 1 Row 2	$y_{..}$	$\bar{y}_{..}$
334*	Table 20.4 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{..}$
335	11	at r(a-1) degrees of freedom	at a(r-1) degrees of freedom
336*	Table 20.5 Col 2 Row 3	$\bar{y}$	$\bar{y}_{.j}$
336*	Table 20.5 Col 3 Row 5	$\sum_{j=1}^{a} s_e^2 h_j^2/ar$	$\sum_{j=1}^{a} s_e^2 h_j^2/r$
336	8	$\alpha_j = s_e/\sqrt{\{(a-1)/(ar)\}}$ $= 88.7/\sqrt{(2/15)} = 32.4$	$\alpha_j = s_e\sqrt{\{(a-1)/(ar)\}}$ $= 88.7\sqrt{(2/15)} = 32.4$
336*	11	$\mu = 197.7\pm$	$\mu = 187.7\pm$
337*	3	$= \frac{s_e}{\sqrt{(\sum h_j^2/ar)}}$ $= \frac{88.7}{\sqrt{\frac{2}{15}}} = 56.1$	$= s_e\sqrt{\sum h_j^2/(r)}$ $= 88.7\sqrt{\frac{2}{5}} = 56.1$
340	11	$\alpha_3 = y_{.3} - y_{..}$	$\alpha_3 = \bar{y}_{.3} - \bar{y}_{..}$
340	Table 20.9 Col 1 Row 2	$y_{..}$	$\bar{y}_{..}$
340	Table 20.9 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{..}$
341*	Box 20.1 Item 2	$\mu = \bar{y}_{..} = \sum_{j=1}^{a}\sum_{i=1}^{r} y_{ij}$ $\alpha_j = \bar{y}_{.j} - \bar{y}_{..} = \sum_{i=1}^{r} y_{ij} - \bar{y}_{..}$ $j = 1, 2, \ldots, a$	$\mu = \bar{y}_{..} = \frac{1}{ar}\sum_{j=1}^{a}\sum_{i=1}^{r} y_{ij}$ $\alpha_j = \bar{y}_{.j} - \bar{y}_{..} = \frac{1}{r}\sum_{i=1}^{r} y_{ij} - \bar{y}_{..}$ $j = 1, 2, \ldots, a$
341**	Box 20.1 Item 3	$\sum_{ij} y_{ij}^2 = ar\mu^2 + r\sum_{j}\alpha_j^2 + \sum_{ijk} e_{ij}^2$	$\sum_{ij} y_{ij}^2 = ar\mu^2 + r\sum_{j}\alpha_j^2 + \sum_{ij} e_{ij}^2$
341*	Box 20.1 Item 9	Variance $= \sum_{j=1}^{a} s_e^2 h_j^2/ar$	Variance $= \sum_{j=1}^{a} s_e^2 h_j^2/r$
344*	19	factor A is at level i and factor B is at level j.	factor A is at level j and factor B is at level i.
346*	7	no-cache processor is 41.4-20.2, or 21.2, milliseconds.	no-cache processor is 41.4+20.2 or 61.6 milliseconds.

Errata (Continued)

Page	Line	Current Text	Correct Text
347**	3	$SSE = (3.5)^2 + (0.2)^2 + ... + (-2.4)^2 = 2368.00$	$SSE = (3.5)^2 + (0.2)^2 + ... + (-2.4)^2 = 236.8$
349	Table 21.4 Col 1 Row 2	$\bar{y}_{...}$	$\bar{y}_{..}$
349	Table 21.4 Col 1 Row 3	$y - \bar{y}_{...}$	$y - \bar{y}_{..}$
349	Table 21.5 Col 1 Row 2	$y_{..}$	$\bar{y}_{..}$
349	Table 21.5 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{..}$
351*	17	$5.4\sqrt{\frac{2}{15}} = 2.8$	$5.4\sqrt{\frac{2}{15}} = 2.0$
351*	19	$5.4\sqrt{\frac{4}{15}} = 2.0$	$5.4\sqrt{\frac{4}{15}} = 2.8$
352**	Table 21.7 Col 3 Row 3-5	2.8	2.0
352**	Table 21.7 Col 3 Row 7-11	2.0	2.8
354	10	125 microseconds	125 nanoseconds
355	Table 21.13 Line 9	0.00	0.0025
355	Table 21.13 Line 10	$\sqrt{0.00} = 0.05$	$\sqrt{0.0025} = 0.05$
355	Table 21.13 Col 1 Row 2	$y_{..}$	$\bar{y}_{..}$
355	Table 21.13 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{..}$
357	Table 21.16 Col 1 Row 2	$y_{..}$	$\bar{y}_{..}$
357	Table 21.16 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{..}$
358*	Case Study 21.4	only 0.6% variation is unexplained.	only 0.8% variation is unexplained.
358*	Table 21.17 Col 1 Row 2	$y_{..}$	$\bar{y}_{..}$
358*	Table 21.17 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{..}$

Errata (Continued)

Page	Line	Current Text	Correct Text
359*	Table 21.19 Col 1 Row 2	$y_{..}$	$\bar{y}_{..}$
359*	Table 21.19 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{..}$
370*	Table 22.1 Col 1 Row 13	W	M
371	7	Processor W requires	Processor X requires
371	7	0.02 more (a factor of 1.05 more)	0.02 less (a factor of 1.05 less)
371	8	ratio of log code sizes	difference of log code sizes
371*	9	is 0.25 (a factor of 1.78).	is 0.21 (a factor of 1.62).
371*	Table 22.3	Row Sum 49.1315 44.3377 47.3646 46.5887 49.1163	Row Sum 16.3772 14.7792 15.7882 15.5295 16.3720
372	5	Workload I on processor X	Workload I on processor W
373*	20	SSAB $= \cdots + (0.0200)^2] = 0.15$	SSAB $= \cdots + (0.0066)^2] = 0.15$
375*	Table 22.5 Col 2 Row 1	SSY $= \sum y_{ij}^2$	SSY $= \sum y_{ijk}^2$
375**	Table 22.5 Col 4 Row 6	$(a-1)$ $b-1)$	$(a-1)$ $(b-1)$
375**	Table 22.5 Col 6 Row 6	$\frac{\text{MSA}}{\text{MSE}}$	$\frac{\text{MSAB}}{\text{MSE}}$
375*	Table 22.6 Col 1 Row 2	$y_{..}$	$\bar{y}_{...}$
375*	Table 22.6 Col 1 Row 3	$y - y_{..}$	$y - \bar{y}_{...}$
381	18	For example, with three factors A, B, C at level a, b, c and r replications, the model is	For example, with three factors A, B, and C at a, b, and c levels, respectively and r replications, the model is
383	20	the number page swaps	the number of page swaps
384*	Table 23.5 Col 1 Row 2	$\bar{y}$	$\bar{y}_{....}$
393	4	– Brately, Fox, and Schrage	– Bratley, Fox, and Schrage
404	21	$I = E(y) = \frac{1}{n}\sum_{i=1}^{n} y_i 2e^{-x_i^2}$	$I = E(y) = \frac{1}{n}\sum_{i=1}^{n} y_i$
416	5	praph-plotting	graph-plotting
421	17	waiting to the	waiting till the

Errata (Continued)

Page	Line	Current Text	Correct Text
423*	34	run chosen in long enough.	run chosen is long enough.
424	32	trasient	transient
427	Figure 25.9a	**mean** $\bar{x}_j$	**mean** $\bar{\bar{x}}_j$
427	Figure 25.9b	**mean** $\bar{x}_j$	**mean** $\bar{\bar{x}}_j$
430*	16	$\bar{x} \mp z_{1-\alpha/2} Var(\bar{x})$	$\bar{x} \pm z_{1-\alpha/2} \sqrt{Var(\bar{x})}$
431*	1	times that obtained computed using	times that computed using
431	27	the mean response is	the mean response is* (Footnote:) *Throughout this section, use $t_{[1-\alpha/2;m-1]}$ in place of $z_{1-\alpha/2}$ if m is less than 30 as explained in Section 13.2.
431*	28	$[\bar{\bar{x}} \mp z_{1-\alpha/2} Var(\bar{x})]$	$[\bar{\bar{x}} \mp z_{1-\alpha/2} \sqrt{\frac{Var(\bar{x})}{m}}]$
431*	Footnote	use $t_{[1-\infty/2,m-1]}$ in place of $z_{1-\infty/2}$	use $t_{[1-\alpha/2,m-1]}$ in place of $z_{1-\alpha/2}$
432*	19	$[\bar{\bar{x}} \mp z_{1-\alpha/2} Var(\bar{x})]$	$[\bar{\bar{x}} \mp z_{1-\alpha/2} \sqrt{\frac{Var(\bar{x})}{m}}]$
441*	25	obtained using multiplicative LCGs	obtained using LCGs
443*	13	= 12,773	=127,773
443*	Figure 26.2	IF x_new > 0 THEN	IF x_new >= 0 THEN
444**	Figure 26.3	IF x_new > 0.0DO THEN	IF x_new >= 0.0DO THEN
445**	22	$b_{n+7} \oplus b_{n+4} \oplus b_n = 0$	$b_{n+7} \oplus b_{n+3} \oplus b_n = 0$
445**	24	$b_{n+7} = b_{n+4} \oplus b_n$	$b_{n+7} = b_{n+3} \oplus b_n$
452	17	26.2and 26.3	26.2 and 26.3
452	27	“RANDU” [27], was	“RANDU” (IBM 1968), was
457*	14	$x_n = (25,173x_{n-1} + 13,849)\text{mod } 2^{16}$	$x_n = 25,173x_{n-1}\text{mod } 2^{16}$
457*	18	**the LCG:** $x_n = (25,173x_{n-1} + 13,849)\text{mod } 2^{16}$	**the LCG:** $x_n = 25,173x_{n-1}\text{mod } 2^{16}$
457*	Table 26.3	**the LCG:** $x_n = (25,173x_{n-1} + 13,849)\text{mod } 2^{16}$	**the LCG:** $x_n = 25,173x_{n-1}\text{mod } 2^{16}$
457xx	xx	1000011 1000000.	1000011 1011110.
461*	16	is less than the $\chi^2_{[1-\alpha;k-1]}$	is less than the $\chi^2_{[\alpha;k-1]}$

Errata (Continued)

Page	Line	Current Text	Correct Text
462*	4	we see that $\chi^2_{[0.9,9]}$ is 14.68	we see that $\chi^2_{[0.1,9]}$ is 4.168
462*	5	10.380, is less	10.380, is more
462*	6	we accept	we reject
463*	4	than $K_{[1-\alpha;n]}$	than $K_{[\alpha;n]}$
464	7	0.03026	0.03226
464	8	0.03026	0.03226
465*	1	the $K_{[0.9,n]}$ value	the $K_{[0.1,n]}$ value
465*	2	is 1.0424	is 0.2006
477*	Table 28.1	$a + b \ln \ln u$	$a + b \ln \ln u^{-1}$
488*	28 $= \frac{(1-e^{-\lambda(x+t)})-(1-e^{-\lambda x})}{e^{-\lambda t}}$	$= \frac{(1-e^{-\lambda(x+t)})-(1-e^{-\lambda x})}{e^{-\lambda x}}$	
488*	29 $= 1 - e^{-\lambda x}$	$= 1 - e^{-\lambda t}$	
496*	xx	If $u \leq p$ return 0. Otherwise return 1.	If $u \leq (1-p)$ return 0. Otherwise return 1.
501*	Problem 29.1	Observatiosn	observations
502	3	Brately, Fox, and Schrage	Bratley, Fox, and Schrage
502	7	Bobillier, et al. (1986)	Bobillier, et al. (1976)
502	8	Markowitz et al. (1983)	Markowitz et al. (1963)
509	34	Exponential, Erlang, and hyperexponential distributions	Exponential and Erlang distributions
514*	24	This is the Little's law.	This is Little's law.
517	Figure 30.6b	$\Sigma p_k = 1$	$\Sigma p_i = 1$
521	9	$\Delta t \leftarrow 0$	$\Delta t \rightarrow 0$
521	12	$t \leftarrow \infty$	$t \rightarrow \infty$
521	14	$t \leftarrow \infty$	$t \rightarrow \infty$
521	Last	$p_0 = \frac{1}{1+{}^{\infty}_{n=1}{}^{n-1}_{j=0}[\lambda_j/\mu_{j+1}]}$	$p_0 = \frac{1}{1+\sum_{n=1}^{\infty}\prod_{j=0}^{n-1}[\lambda_j/\mu_{j+1}]}$
524*	26	$= \rho^{13} = 0.25^{13} = 1.49 \times 10^{-8}$	$= \rho^{14} = 0.25^{14} = 3.73 \times 10^{-9}$
524*	27	$= 15$	4
524*	27	≈ 15	≈ 4
526*	6	$1/[\mu^2(1-\rho)^3]$	$2/[\mu^2(1-\rho)^3]$
526*	9	10	9
528*	23 (Item 12)	$1 - e^{-\mu r} - \frac{\varrho}{1-m+m\rho} e^{-m\mu(1-\rho)r} - e^{-\mu r}$	$1 - e^{-\mu r} - \frac{\varrho}{1-m+m\rho} (e^{-m\mu(1-\rho)r} - e^{-\mu r})$
537‘	23	$E[n_q] = \sum_{n=m}^{B}(n-m)p_n = (2-1) \times 0.0476 = 0.0476$	$E[n_q] = \sum_{n=m+1}^{B}(n-m)p_n = (2-1) \times 0.0476 = 0.0476$
540	Box 31.5 Item 8	$\text{Var}[n_q] = \text{Var}[n] - \rho + \rho^2$	$\text{Var}[n_q] = \text{Var}[n] - \rho - \rho^2$
543*	Box 31.8 Item 3	$\rho < \infty$ is less than 1	$\rho < \infty$
554	2-3	Only fixed-capacity centers and delay centers are considered in this chapter.	Fixed-capacity centers and delay centers are considered in Chapters 34 and 35.

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Page	Line	Current Text	Correct Text
568	Exercise 33.6	For a transaction ⋯ For this system,	For the system of Exercise 33.5,
577*	Box 34.2 Line 20	$X = \frac{N}{Z+R}$	$X = \frac{n}{Z+R}$
589‘	21	$\frac{N}{4+6+(N-1)2\frac{6(N-1)}{6(N-1)+4}} \leq X(N) \leq \min\left\{\frac{1}{3}, \frac{N}{4+6+(N-1)3\frac{6}{6+4}}\right\}$	$\frac{N}{4+6+(N-1)3\frac{6(N-1)}{6(N-1)+4}} \leq X(N) \leq \min\left\{\frac{1}{3}, \frac{N}{4+6+(N-1)2\frac{6}{6+4}}\right\}$
589‘	22	$\max\left\{3N-4, 6+(N-1)3\frac{6}{6+4}\right\} \geq R(N) \leq 6+(N-1)2\frac{6(N-1)}{6(N-1)+4}$	$\max\left\{3N-4, 6+(N-1)2\frac{6}{6+4}\right\} \leq R(N) \leq 6+(N-1)3\frac{6(N-1)}{6(N-1)+4}$
590**	24	$R_{min}(n) = \min\{\ldots\}$	$R_{min}(n) = \max\{\ldots\}$
591*	xx	$\max\left\{3N-4, 6+(N-1)3\frac{6}{6+4}\right\} \geq R(N) \leq 6+(N-1)2\frac{6(N-1)}{6(N-1)+4}$	$\max\left\{3N-4, 6+(N-1)3\frac{6}{6+4}\right\} \leq R(N) \leq 6+(N-1)2\frac{6(N-1)}{6(N-1)+4}$
592*	Problem 34.2	For the system of Exercise 33.6	For the system of Exercise 33.5
595	Table 35.1	CPU Disk B Disk A	CPU Disk A Disk B
607*	Exercise 35.2	system of Exercise 33.6	system of Exercise 33.5
610*	Box 36.1 Line 17	$P_i(0) = 0$	$P_i(0) = 1$
616*	21	$R_i = Q_i X_i$	$R_i = Q_i / X_i$
619*	6	times are 4, 68, 6.54	times are 4.68, 6.54
624	4	Pujjole	Pujolle
628	3	0.3486	0.3485
629	4	gives $z_p = 1.958$	gives $z_p = 1.960$
632*	2	For example, the $\chi^2_{[0.95;13]}$	For example, the $\chi^2_{[0.05;13]}$
632*	3	is 22.362	is 5.892
635**	3	2.70	2.65
640*	10.1 **d.**	Line	Bar
640	12.4f	$5\lambda^{-1/2}$	$-5\lambda^{-1/2}$
640	12.6	mode=0	mode=1
640*	12.7 **a.**	0.2742	0.0013
640*	12.7 **b.**	0.5793	0.8413
640*	12.7 **c.**	0.2348	0.8185
640*	12.7 **d.**	6.644 seconds	6.645 seconds

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641*	13.1 **b.**	$N(0, 2/\sqrt{n})$	$N(0, \sqrt{2/n})$
641*	13.1 **c.**	$N(2\mu, 2/\sqrt{n})$	$N(2\mu, \sqrt{2/n})$
641*	13.2 **e.**	(24.79, 26.91) or (26.91, 29.03)	(24.79, ∞) or ($-\infty$, 29.03)
642	14.5	Elapsed time $= 0.074 + 0.009\times$	Elapsed time $= 0.635 + 0.063\times$
642	14.6	Number of disk I/O's = 13.494 + 1.634 $\times$	Number of disk I/O's $= -3.875+$ $6.625\times$
642	15.1 **c**	x_5	x_4
642	15.1 **d**	x_1	x_2
642	15.1 **e**	x_2, x_3, and x_4	All
642*	16.1 **b**	9	7
642*	16.1 **c**	7	9
643*	19.1 **a**	$q_0 + q_{ACD} = 48.13$, $q_A + q_{CD} = 1.88$, $q_B + q_{ABCD} = -13.13$, $q_C + q_{AD} = -21.88$, $q_{AB} + q_{BCD} = -1.88$, $q_{AC} + q_D = 1.88$, $q_{BC} + q_{ABD} = 26.88$, and $q_{ABC} + q_{BD} = 8.13$	$q_0 + q_{ACD} = 48.13$, $q_A + q_{CD} = 26.88$, $q_B + q_{ABCD} = 1.88$, $q_C + q_{AD} = -21.88$, $q_{AB} + q_{BCD} = 8.13$, $q_{AC} + q_D = -13.13$, $q_{BC} + q_{ABD} = 1.88$, and $q_{ABC} + q_{BD} = -1.88$
643*	19.1 **b**	0.24%, 11.88%, 33.01%, 0.24%, 0.24%, 49.82%, 4.55%	49.8%, 0.24%, 33.0%, 4.60%, 11.9%, 0.24%, 0.24%
643*	19.1 **c**	BC, C, B, BD, A, AB, D. Higher order interactions are assumed smaller.	A, C, D, AB, BC, B, BD. Higher order interactions are assumed smaller.
643**	19.1 **d**	See a above. The generator is $I = -ACD$.	$I = ACD$, $A = CD$, $B = ABCD$, $C = AD$, $D = AC$, $AB = BCD$, $BC = ABD$, $BD = ABC$
643*	22.1 **b**	16.8%	5.2%
644*	24.1**c**	continuous state,	discrete state,
644*	24.1**d**	Discrete time, deterministic,	Discrete time, discrete state, deterministic,
644*	24.1**f**	Discrete time, continuous state, probabilistic,	Discrete time, probabilistic,
644*	26.1	a must be 5 or 11.	a must be 3, 5, 11, or 13.

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Back Cover		Erol Gelenbe	Dr. Erol Gelenbe
Back Cover		Raymond L. Pickholtz	Dr. Raymond L. Pickholtz
Back Cover		Vinton G. Cerf	Dr. Vinton G. Cerf
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Cover Front Flap*	3	systems networks	systems, networks