Errata for

Algorithms Sequential & Parallel, A Unified Approach (Second Edition)

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Chapter 1

- P. 23, l. 14- to 13-

  k in the worst case, and $k/2$ in the average case

  should be

  $k-1$ in the worst case, and $(k-1)/2$ in the average case

- P. 30, l. 5:

  The *O*-notation was apparently

  should be

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- P. 33, top of page: In the algorithm for MinimumIndex, there are three occurrences of "at" that aren't, but should be, italicized.

Chapter 2

- P. 36, l. 9-10: The list items should be numbered 1), 2), rather than a), b).

- P. 38, l. 2: There should be a period at the end of the line.

- P. 51, 2 paragraphs above Subprogram Split:

  Therefore, the running time of this simple merge algorithm is $\Theta(k)$, where k is the length of the first input list to be exhausted.

  should be

  Therefore, the running time of this simple merge algorithm is $\Theta(k)$, where k is the number of nodes (from both input lists) that have been merged when the first input list is exhausted.

- P. 56, l. 6-: In the function header, the argument **n** should be italicized.

Chapter 3

- P. 61, l. 3: "Let $f(n)$, be" should be "Let $f(n)$ be"

- P. 64, l. 6- - 5- (colon for period):

… depends on the second summation.

$$g(n) = \Theta\left[\sum_{\substack{0 \le k \le \log_b n - 1, \\ n/b^k > N}} a^k f\left(\frac{n}{b^k}\right)\right].$$

should be

… depends on the second summation:

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Chapter 4

- P. 84, 2nd paragraph:

  exactly $\log^2 2n$ stages of merging

  should be

  exactly $\log_2 2n$ stages of merging

Chapter 5

- P. 99, ER PRAM Algorithm for Broadcasting:

  If $j + 2^{i-1} \le n$ then P_j writes d to $P_{j+2^{i-1}}$

  should be

  If $j + 2^{i-1} \le n$ then P_j writes d to $d_{j+2^{i-1}}$

- P. 100, RAM Minimum Algorithm: italicize "x_i" in "If $x_i < min\_so\_far$"

- P. 101, Figure 5.4: At Time Step 3, we should have $T[1] = 4$, not 15.

- P. 105, the algorithm:

  Output: succeeds, a flag indicating whether or not the search succeeds and location

  should be

  Output: *succeeds*, a flag indicating whether or not the search succeeds, and *location*

- P. 127 (italics):

  $$2n^{1/2}\left(2n^{1/2} - 1\right) - \text{n} = 3n - 2n^{1/2}$$

  should be

  $$2n^{1/2}\left(2n^{1/2} - 1\right) - n = 3n - 2n^{1/2}$$

- P. 136, 2nd and 3rd lines after caption:

  $(\log_2 n - i + 1)$ dimensional

  should be

  $(\log_2 n - i + 1)$-dimensional

- P. 140, **Cost/Work** paragraph:

  Let $T_{par}(n)$ *represent*

  should be

  Let $T_{par}(n)$ represent

Chapter 6
No errata reported.

Chapter 7
- P. 174, l. 3 up: “subcube_prefix” should be italicized.

Chapter 8
No errata reported.

Chapter 9

- P. 208: Item 7's "Else If" structure is more easily understood using the following alignment.

    Else If $k \le |smallList| + |equalList|$ then return AM
        Else {find result in *bigList*}
            CreateArray(*bigList*, *bigList_array*)
            return $Selection(k - |smallList| - |equalList|, bigList\_array, 1, |bigList|)$
        End Else {find result in *bigList*}

- P. 209, bullet item discussing Step 4:

    We can simplify notation by saying that this step requires less than $T(n/5)$ time.

    should be

    We can simplify notation by saying that this step requires $T(n/5)$ time.

- P. 210, item c), 2nd sentence:

    Thus, the recursive call to $Selection(k, smallList\_array, 1, |\ Selection(k, smallList\_array, 1\ |$ requires at most $T(7n/10)$ time.

    should be

    Thus, the recursive call to $Selection(k, smallList\_array, 1, |\ smallList\ |)$ requires at most $T(7n/10)$ time.

- P. 210, l. 2 up – p. 211, l. 3: Delete the two sentences
    An upper bound on the right side … we have $T(n) = O(n)$.

Chapter 10

- P. 265, middle paragraph:

  It is easy to see how such an approach yields a $\Theta(n^2)$ time RAM algorithm for the intersection query problem, …

  should be

  It is easy to see how such an approach yields an $O(n^2)$ time RAM algorithm for the intersection query problem, …

- P. 269, Item 5:

$$(a_i, b_j, i, j) \circ (a_k, b_m, k, m) = \begin{cases} (a_i, b_m, i, m) & \text{if } a_i \le a_k \le b_i < b_m \\ & \text{and } b \notin [a_i, b_j]; \\ (a_i, b_j, i, j) & \text{otherwise.} \end{cases}$$

  Thus, $A \circ B$ represents $[a_i, b_j] \cup [a_k, b_m]$, provided these arcs intersect, $b \notin [a_i, b_j]$, and $[a_k, b_m]$ extends $[a_i, b_i]$ to the right more than does $[a_j, b_j]$;…. Because the intervals are ordered by their right endpoints, ….

  should be

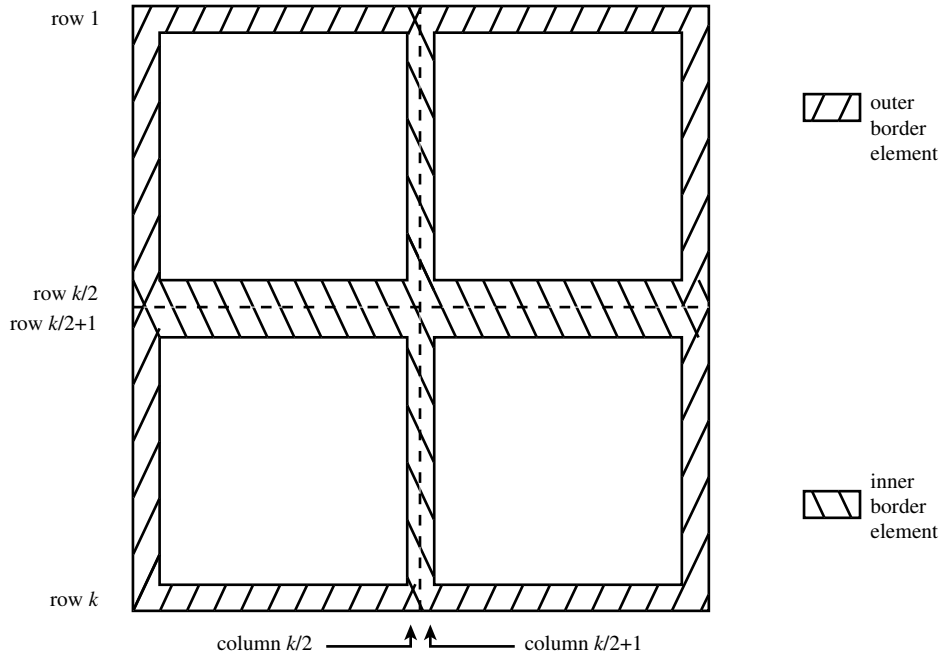
$$(a_i, b_j, i, j) \circ (a_k, b_m, k, m) = \begin{cases} (a_i, b_m, i, m) & \text{if } a_i \le a_k \le b_i < b_m; \\ (a_i, b_j, i, j) & \text{otherwise.} \end{cases}$$

  Thus, $A \circ B$ represents $[a_i, b_j] \cup [a_k, b_m]$, provided these arcs intersect and $[a_k, b_m]$ extends $[a_i, b_i]$ to the right more than does $[a_j, b_j]$;…. Because the intervals are ordered by their left endpoints, ….

- P. 275: The last paragraph should not be labeled as item d), as it is a part of item c).

Chapter 11

- P. 292, Figure 11.7: There should be an arrow from the words "column $k/2$" to the horizontal center of the figure:



- P. 292, paragraph following Figure: There's a bad line break in the equation

$$S_{k+1}(i,j) = \min\{S_k(i,j), S_k(i,k+1) + S_k(k+1,j)\}$$

Chapter 12

- P. 304, last paragraph:

  A *path* … such that $(v_i, v_i + 1) \in E$ ….

should be

  A *path* … such that $(v_i, v_{i+1}) \in E$ ….

- P. 323, item 1:

  Entry $A_k(i, j)$ … time $3k + |k - i| + k - j| - 2$.

  should be

  Entry $A_k(i, j)$ … time $3k + |k - i| + |k - j| - 2$.

- P. 324, caption of Fig. 12.22:

  "At time $t = 1$," should be "At time $t + 1$,"

- P. 326: In order to provide the line references that are used in Figure 12.25, the algorithm for the star function should be presented with lines numbered as follows:

1. Determine the Boolean function $star(v_i)$ for all $v_i \in V$, as follows.
2. For all vertices v_i, do in parallel
3. $star(v_i) \leftarrow true$
4. If $root(v_i) \neq root(root(v_i))$, then
5. $star(v_i) \leftarrow false$
6. $star(root(v_i)) \leftarrow false$
7. $star(root(root(v_i))) \leftarrow false$
8. End If
9. $star(v_i) \leftarrow star(root(v_i))$
10. End For

- P. 326 (sentence following star algorithm):

  See Figure 12-25 for an example that shows the necessity of the step marked {*}.

  should be

  See Figure 12.25 for an example that shows the necessity of Step 9.

- P. 332, last sentence of first paragraph:

  Therefore, the running time … is $O(E \log E)$, which is $O(E \log V)$.

  should be

  Therefore, the running time … is $\Theta(E \log E)$, which is $\Theta(E \log V)$.

- P. 332, 2nd paragraph, 2nd sentence:

  Suppose that instead of initially sorting … into decreasing order

  should be

  Suppose that instead of initially sorting … into nondecreasing order

- P. 346, problem 6, 3rd sentence: "comparing the component with" should be "comparing the component labels of"

- P. 349, Exercise 9:

  A *bipartite graph* … with subsets V_0, V_1

  should be

  A *bipartite graph* … with nonempty subsets V_0, V_1

Chapter 13

- P. 353, 6 lines from bottom (space):

  $nIs\ Prime \leftarrow true$

  should be

  $nIsPrime \leftarrow true$

- P. 361, Table 13.1: The column headers are transposed. The left column should have the column header "d". The right column should have the column header "n_d".