

Errata List for the book
“A Primer on Scientific Programming with Python
by H. P. Langtangen

Simple typos are not reported in the list below – only more serious errors that may lead to confusion.

1. Page 39: The output from running the program should be $y = 1.6$ m, not $y = 0.7$ m.
2. Page 103, Exercise 2.18: (x_1, y_2) should be (x_1, y_1) .
3. Page 105, Exercise 2.26: To get exactly $(-1.0, 1.0)$ as output, n must be larger than 1000, typically `maxmin(cos, -pi/2, 2*pi, 100001)` will result in $(-1.0, 1.0)$ as output.
4. Page 106, Exercise 2.32: There are $n + 1$ roots and the polynomial is of degree $n + 1$ (not n).
5. Page 108, Exercise 2.38: $c_0 = 1$, not 0.
6. Page 228, Exercise 4.13: Since the program has a darker blue left margin, the program is supposed to be complete, but an initial line is then missing: `from scitools.std import *`.
7. Page 231, Exercise 4.23: $t \in \frac{2v_0}{g}$ should read $t \in [0, \frac{2v_0}{g}]$.
8. Page 241/242: In the time interval $[t_{n-1}, t_n]$, we must have that bx_{n-1} individuals are born and dx_{n-1} individuals die to get (5.9).
9. Page 246: In the equations above (5.23), denominators are missing on the left-hand side of the equations: $n!$ and $(n - 1)!$. Moreover, in (5.23) the expression in the middle has a fraction $\frac{x}{n}$ too much.
10. Page 247: “Equation” (5.27) should not be there, and the reference on page 261 to (5.16)-(5.17) in Exercise 5.7 should read (5.16) and (5.18).
11. Page 248: An equality sign ($=$) is missing after $\tilde{f}(x)$ in (5.30).
12. Page 277: A 6 megapixel camera stores $3 \times 6 \cdot 10^6 = 18$ megabytes per picture (3 bytes with 256 values of red, green, and blue per pixel).
13. Page 327, Exercise 6.14: The file `human_evolution.txt` was unfortunately in UTF-8 format, and not plain ASCII format, in early distributions of the `book-examples.tar.gz` file with the software from the book.
14. Page 328, Exercise 6.17: The formula `dp[j-1] = k*p[j]` should be `dp[j-1] = j*p[j]`.

15. Page 366, `__mul__` method: the length of the `result_coeff` array must be $M+N+1$, not $M+N-1$ (the text above the code explains the correct length).
16. Page 405, Exercise 7.24: The reference to Exercise 9.25 is not inappropriate, but unnecessary – replacing “Exercise 9.95” by “Exercise B.7” makes more sense.
17. Page 407, Exercise 7.27: “ N corresponds to a 2nd-order Runge-Kutta method” should read “ $N = 2$ corresponds to a...”. It is not (7.18) that is to be repeated until the change in v_q is small, but formula (7.17).
18. Page 408, Exercise 7.30: PDE should read ODE.
19. Page 497, Chapter 9.2.6: The formula (9.7) lacks a factor h^{-1} , i.e., it should read $h^{-1} \sum_{i=-r}^r w_i f(x_i)$. Sums $\sum_i w_i f(x_i)$ in the running text must also have a factor h^{-1} in front.
20. Page 540, second line in *Problem* paragraph: The interval $[a, n]$ should be $[a, b]$.
21. Page 554, Exercise 9.23: The last function, expressing the exact solution, should read $u(t) = e^{-at}$.
22. Page 554, Exercise 9.25: The page reference to Exercise B.7 is 623, not 554. Last line: the (0) after h should be removed.
23. Page 554, Exercise 9.25: The reference to page 554 should be to page 623 instead.
24. Page 563, Exercise 9.46: The expression for the potential energy in a string reads $P = \int_0^u s(v)dv$ ($= \frac{1}{2}u^2$ for a linear spring, $s(v) = v$), i.e., the m parameter should not enter any expression for P .
25. Page 566, Exercise 9.49: The references to Exercise 9.46 are wrong – the references are to Exercise 9.47.
26. Page 569, Exercise 9.50: A parenthesis is missing in the expression for the “Bump” force. The correct expression is $F(t) = H(t-t_1)(1-H(t-t_2))F_0$.
27. ODE solvers in Chapters 7 and 9: the class implementations of the `solve` method must have a `while` loop with `while t < T` and not `while t <= T` for `unew` at `t=T` to be the last computed value (`while t <= T` computes `unew` at `T+dt`).