Errata List for the book
“A Primer on Scientific Programming with Python
3rd edition
by H. P. Langtangen

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

1. Exercise 1.17, page 48: The hint may be misleading as $q$ should be complex
and will never be printed because the $\sqrt{}$ fails.

2. Exercise 3.2, page 120: The sample call $s(3)$ should be $\text{sum}_1\text{div}_k(3)$.

3. Exercise 3.8, page 122: The points in the Midpoint rule are wrong, they
should be $a - \frac{1}{2}h + ih$, so the rule reads $h \sum_{i=1}^{n} f(a - \frac{1}{2}h + ih)$.

4. Exercise 3.13, page 124: The text “case where 1, 3, 5, ...” should read “case
where $n = 1, 3, 5, 10, 30, 100$.

5. Exercise 4.23, page 184: Very large (and very small) values of the random
numbers cause problems in some of the mathematical operations. Try out
$A=1$ and $B=2$ as well as $A=1$ and $B=100$. The exercise also asks to import
three expressions from 4.21, but there are only two (this point is just
dropped in a new version of the exercise).

6. Exercise 5.16, page 247: The sentence “Compute $n+1$ interpolation points
taken from the curve $f(x) = |x|$ for $x \in [-2, 2]$: $x_k = -2 + 4k/n$ and
$y_k = |x_k|, k = 0, 1, \ldots, n$” does not make sense because $\text{graph}$
takes a function $f$ as argument and not the interpolation points ($x_p, y_p$).
The sentence should be removed and the next should read “Call the $\text{graph}$
function from Exercise 5.15 with $f(x) = |x|, x \in [-2, 2]$, for
$n = 2, 4, 6, 10$.”

7. Page 306: The file $\text{rw\_csv\_numpy.py}$ has several errors. A working version
can be downloaded from http://hplgit.github.com/scipro-primer/src/files.

8. Exercise 6.4, page 331: The last sentence “Make three separate plots of
the Name of the program...” does not make sense. Just ignore the “Make
three separate plots”.

9. Exercise 7.8, page 397:

(a) “We want to construct a class Lagrange” should be “We want to
construct a class LagrangeInterpolation”.

(b) The print statements in the code snippets lack a percentage sign
between the string and the tuple of variables.
(c) It is not sensible to reuse the `graph` function from the `Lagrange_poly2` module since `graph` works with an explicit function $f$ and not only the interpolation points $x_p$ and $y_p$, which is what the `LagrangeInterpolation` class knows about. This means that the `plot` method must be written particularly for this class.

10. Page 572, Equation (A.35): an equality sign is missing after the term $f(x)$.

11. Exercise E.19: The code snippet lacks the $T$ parameter in the class `Problem` constructor: `Problem(h_0, r, R, float(dt), T)`.

12. Page 720, Exercise E.36: The code snippet under `Example:` has two errors: 1) the call to `Problem` must also have parameters $R_0$ and $T$ (say $R_0=0$, $T=60$), and 2) the call to `ODESolver.ForwardEuler` should have just `problem`, not `problem.f`, as argument. The `Solver` class has also an error in the `solve` method: the call `method(problem)` must be `method(self.problem)`.

13. Page 725, Exercise E.42: The function $\omega(t)$ in (E.83) is meant to be a Gaussian function so there must be a minus sign in front of the factor $\frac{1}{2}$.