Technical Correspondence

On Landwehr's "An Abstract Type for Statistics Collection"

Nielsen's letter

□ I would like to point out two minor errors in the SIMULA program in [1]. Both errors are in the procedure phist (Figure 7, p. 556).

(1) The formal parameter htype should not be declared as type *real* but rather as type *integer*, since this is the type of the actual parameter.

(2) The test for an empty histogram should not be

if nscale = 0 **then**

but rather

if xmax = 0.0 **then**

The first test does not work if htype = hevent, since nscale in that case is one even if the histogram is empty because of the statement

```
if htype = hevent then
   nscale := entier(xmax/hwidth) +1
```

(emphasis added). The variable xmax is always zero, however, if there are no observations in the histogram, and it is nonzero otherwise.

JAKOB NIELSEN
Department of Computer Science
University of Aarhus
Ny Munkegade
DK-8000 Aarhus C, Denmark

Landwehr's reply

□ Nielsen is correct on both counts. The first error has not caused any problems in practice, however, since the version of SIMULA I used apparently accepts an *integer* actual parameter for a *real* formal parameter without complaint and executes as intended. I am told that this usage was actually explicitly allowed in the original ALGOL report (though I freely admit I didn't intend to take advantage of it). The second error reflects improper handling of a subcase which, in my experience, had never occurred.

In reviewing the published version of procedure phist to verify Nielsen's comments, I noticed a typographical error as well. In the statement that sets nscale to the appropriate scale factor, an "x" has been omitted in the final line. As published, the line reads

```
nscale := max/hwidth;
```

when it should read

```
nscale := xmax/hwidth;
```

CARL E. LANDWEHR
Code 7522
Naval Research Laboratory
Washington, DC 20375

REFERENCE

1. LANDWEHR, C.E. An abstract type for statistics collection in SIMULA. *ACM Trans. Program. Lang. Syst. 2,* 4 (Oct. 1980), 544-563.

Please photocopy this form; do not tear out

ACM ALGORITHMS ORDER FORM

Send the items checked below. If payment is not enclosed, bill to:

Name _____ Signature _____

Organization _____ Department _____

Street _____ ACM member # _____

City, State, Zip, Country _____

Computer Type _____ Telephone _____ Date _____

BY ALGORITHM

No.	Name (abbr.)	Listing ($10)‡	029 cards ($25.50 ACM members; $30 others)*	Extra Cards*	TOTAL
_____	_____	☐	☐	$ _____	$ _____
_____	_____	☐	☐	$ _____	$ _____
_____	_____	☐	☐	$ _____	$ _____

BY JOURNAL ISSUE

	Mag Tape ($76.50 ACM members; $90 others)†	42 to 1 Microfiche ($12.75 ACM members; $15 others)‡ Vol. 6 No. 1 and later	
Journal_____ Vol._____ Issue_____	☐	☐	$ _____

BY COMPLETE YEAR

	Mag Tape ($102 ACM members; $120 others)†	42 to 1 Microfiche ($42.50 ACM members; $50.00 others)‡ Vol. 6 No. 1 and later	
Journal_____ (specify) Year_____	☐	☐	$ _____

MULTI-YEAR TAPE

☐ All algorithms 1975 through 1979 on one tape ($156 ACM members; $180 others) $ _____

*Basic price includes 1000 cards. Additional are $8 per 500 or fraction thereof. Customer is billed for postage. Allow three weeks for processing.

†MAGNETIC TAPE CHARACTERISTICS AND SHIPPING COSTS:

Outside North America add $10 for first tape plus $5 for each additional tape and allow 3-5 weeks _____ $ _____

9-track tape 1600 bpi, EBCDIC ☐ 800 bpi, EBCDIC ☐ 1600 bpi, ASCII ☐ 800 bpi, ASCII ☐

7-track tape 556 bpi, BCD ☐ (add $5 handling cost and allow 3 weeks for processing) ..... $ _____

‡LISTINGS and MICROFICHE: Outside North America add $2 per algorithm (per order for microfiche) and allow 6-8 weeks for listings, 3 weeks for microfiche ..... $ _____

Deduct $5 if payment is enclosed ... $ _____

TOTAL $ _____

Send order to: ACM ALGORITHMS DISTRIBUTION SERVICE
International Mathematical and Statistical Libraries, Inc.
Sixth Floor, NBC Building, 7500 Bellaire Boulevard
Houston, TX 77036

Line Count of ACM Algorithms (September 1977–April 1981)*

Vol. Issue (Number)	Line Count	Title
3,3 (520)	498	An Automatic Revised Simplex Method for Constrained Resource Network Scheduling
3,3 (521)	237	Repeated Integrals of the Coerror Function
3,4 (522)	1404	ESOLVE, Congruence Techniques for the Exact Solution of Integer Systems of Linear Equations
3,4 (523)	368	CONVEX, A New Convex Hull Algorithm for Planar Sets
4,1 (524)	8424	MP, A Fortran Multiple-Precision Arithmetic Package
4,1 (525)	2251	ADAPT, Adaptive Smooth Curve Fitting
4,2 (526)	1800	Bivariate Interpolation and Smooth Surface Fitting for Irregularly Distributed Data Points
4,2 (527)	2656	A Fortran Implementation of the Generalized Marching Algorithm
4,2 (528)	2844	Framework for a Portable Library
4,2 (529)	280	Permutations to Block Triangular Form
4,3 (530)	612	An Algorithm for Computing the Eigensystem of Skew-Symmetric Matrices and a Class of Symmetric Matrices
4,3 (531)	684	Contour Plotting
4,4 (532)	8102	Software for Roundoff Analysis
4,4 (533)	1548	NSPIV, A Fortran Subroutine for Sparse Gaussian Elimination with Partial Pivoting
4,4 (534)	1152	STINT: STiff (differential equations) INTegrator
4,4 (535)	1152	The QZ Algorithm to Solve the Generalized Eigenvalue Problem for Complex Matrices
5,1 (536)	720	An Efficient One-Way Enciphering Algorithm
5,1 (537)	360	Characteristic Values of Mathieu's Differential Equations
5,1 (538)	1512	Eigenvectors and Eigenvalues of Real Generalized Symmetric Matrices by Simultaneous Iteration
5,3 (539)	14,472	Basic Linear Algebra Subprogram for Fortran Usage
5,3 (540)	3312	PDECOL, General Collocation Software for Partial Differential Equations
5,3 (541)	5472	Efficient Fortran Subprograms for the Solution of Separable Elliptic Partial Differential Equations
5,4 (542)	900	Incomplete Gamma Functions
5,4 (543)	1296	FFT9, Fast Solution of Helmholtz-Type Partial Differential Equations
5,4 (544)	2304	L2A and L2B, Weighted Least Squares Solutions by Modified Gram-Schmidt with Iterative Refinement
5,4 (545)	2592	An Optimized Mass Storage FFT
6,1 (546)	540	SOLVEBLOK
6,1 (547)	612	Fortran Routines for Discrete Cubic Spline Interpolation and Smoothing
6,1 (548)	252	Solution of the Assignment Problem
6,1 (549)	360	Weierstrass' Elliptic Functions
6,1 (550)	648	Solid Polyhedron Measures
6,2 (551)	828	A Fortran Subroutine for the L_1 Solution of Overdetermined Systems of Linear Equations
6,2 (552)	504	Solution of the Constrained l_1 Linear Approximation Problem
6,2 (553)	1404	M3RK, An Explicit Time Integrator for Semidiscrete Parabolic Equations
6,2 (554)	612	BRENTM, A Fortran Subroutine for the Numerical Solution of Systems of Nonlinear Equations
6,2 (555)	1260	Chow-Yorke Algorithm for Fixed Points or Zeros of C^2 Maps
6,3 (556)	864	Exponential Integrals
6,3 (557)	792	PAGP, A Partitioning Algorithm for (Linear) Goal Programming Problems
6,3 (558)	720	A Program for the Multifacility Location Problem with Rectilinear Distance by the Minimum-Cut Approach
6,3 (559)	576	The Stationary Point of a Quadratic Function Subject to Linear Constraints
6,3 (560)	3132	JNF, An Algorithm for Numerical Computation of the Jordan Normal Form of a Complex Matrix
6,3 (561)	396	Fortran Implementation of Heap Programs for Efficient Table Maintenance
6,3 (562)	288	Shortest Path Lengths
6,4 (563)	3610	A Program for Linearly Constrained Discrete ℓ_1 Problems
6,4 (564)	1042	A Test Problem Generator for Discrete Linear ℓ_1 Approximation Problems
7,1 (565)	3159	PDETWO/PSETM/GEARB: Solution of Systems of Two-Dimensional Nonlinear Partial Differential Equations
7,1 (566)	6760	FORTRAN Subroutines for Testing Unconstrained Optimization Software
7,1 (567)	1114	Extended-Range Arithmetic and Normalized Legendre Polynomials
3,2 (568)	16,891	PDS-A Portable Directory System (in TOPLAS)

* For algorithms prior to 1975, see *Communications of the ACM.*