

ALGORITHMIC LANGUAGE

ALGOL 68

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1

a) real x ;
 bool p ;
 char c ;

b) DCL X FLOAT,
 P BIT(1),
 C CHAR(1) ;

2

a) $s[i]$;

b) $\text{SUBSTR}(S, I, 1)$;

3

a) mode string =
[1:] char ;

b) mode bits =
[1:bits width] bool ;

4

a) string s ;

b) bits b ;

c) bits b(101) ;

5

a) [1:n]real x1 ;

b) [1:20, 1:20]int n2 ;

c) [1:m, 1:n]char page ;

6

- a) DCL X1(N) FLOAT ;
- b) DCL N2(20,20) FIXED ;
- c) DCL PAGE(M) CHAR(N) ;

7

a) `x1[2:n:1] ;`

b) `s[2:5:1] ;`

c) `SUBSTR(S,2,4) ;`

8

a) $n2[i]$;

$n2[,j]$;

b) $N2(I,*)$;

$N2(*,J)$;

9

a) $n_2[11:20:1, 11:20:1]$;

	1	11	20
1			
11			
20			

a) struct compl =
 (real re, im) ;

b) compl s ;
 re of s := 1 ;

c) DCL Z CPLX ;
 REAL(Z) = 1 ;

11

a) struct person =

(int age,

real weight,

ref person father) ;

12

a) person john ;

b) DCL 1 JOHN,
2 AGE FIXED,
2 WEIGHT FLOAT,
2 FATHER POINTER ;

13

a) person(0, 9, jones) ;

b) john :=

person(0, 9, jones) ;

14

- a) struct cell =
 (ref strell car, cdr) ;
- b) union strell =
 (string, cell) ;

15

a) cell(a, nil) ;

b) CONS(A, NIL) ;

16

a) car of x ;

b) CAR(X) ;

a) $\underline{\text{proc}} \text{ gcd} = (\underline{\text{int}} \ a, \ b) \underline{\text{int}} :$
 $(b = 0 \mid \underline{\text{abs}} \ a \mid \text{gcd}(b, a +: b)) ;$

b) GCD : PROC(A,B) RECURSIVE FIXED ;
 DCL (A,B) FIXED ;
 IF A = 0 THEN RETURN(ABS(A)) ;
 ELSE RETURN(GCD(B,MOD(A,B))) ;
 END ;

18

a) proc go ;

b) go := go to exit ;

a) op + = ([1:int n]real a, b) []real :
([1:n]real c ;
for i to n do
c[i] := a[i] + b[i] ; c) ;

20

a) $[1:n]$ real x_l, y_l, z_l ;

b) $x_l := y_l + z_l$;

c) $X_l = Y_l + Z_l$;

a) priority d = ? ;

b) op d = (int a, b) int :
 (b = 0 | abs a | b d (a +: b)) ;

c) n + m d k ;

a) real x ;

b) ref ref real x ;

c) real pi = 3.14159 ;

~~d) pi := 3 ;~~

23

a) *read(x)* ;
 print(x) ;

b) GET LIST(X) ;
 PUT LIST(X) ;

24

a) `in(stand in, f6d.2df, x) ;`

b) `GET EDIT(X) (F(6,2)) ;`

5.8. Assignations

5.8.1. Syntax

a) NDCS assignation :

reference to NDCS destination, becomes symbol, NDCS source.

b) reference to NDCS destination : peeled reference to NDCS formary.

c) NDCS source : hdp adapted unitary NDCS expression.

(Examples:

- a) $x := 0 ; x := y ; x := \text{random} ; \text{see} := x ; \underline{\text{end}} \text{ see} := 1.3 ;$
 $x[i] := y[j] := (i = j \mid j \mid 0) ; (\text{random} < .5 \mid x \mid y) := 1$
 $x \text{ or } y := 3.4)$

(For peeled-formaries see 5.0.1.b and for hdp-adapted-unitary-expressions see 5.0.1.a)