

DRAFT REPORT ON THE

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) $s[i] \leftarrow$

b) 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) $[1:n] \underline{\text{real}} \; x1 \; ;$
- b) $[1:20, 1:20] \underline{\text{int}} \; n2 \; ;$
- c) $[1:m, 1:n] \underline{\text{char}} \; page \; ;$

6

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

7

- a) `x1[3:n:1]` ;
- b) `e[3:5:1]` ;
- c) `SUBSTR(S,2,4)` ;

8

a) n2[i] ;

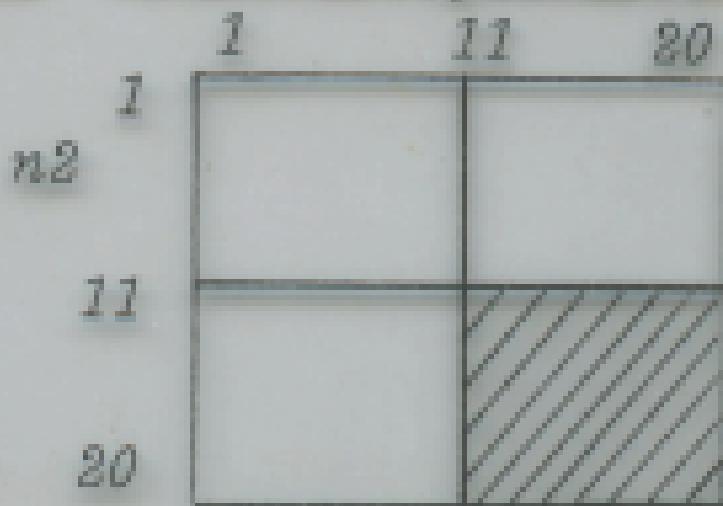
n2[,j] ;

b) N2(I,*) ;

N2(*,J) ;

9

a) $n2[11:20:1, 11:20:1]$;



10

- a) struct compl =
(real re, im) ;
- b) compl z ;
re of z := 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, *james*) ;

b) *john* :=

person(0, 9, *janes*);

14

- a) struct cell =
(ref strcell car, cdr) ;

- b) union strcell =
(string, cell) ;

15

a) cell(a, nil) ;

b) CONS(A, NIL) ;

16

a) car of x ;

b) CAR(X) ;

17

- a) proc gcd = (int a, b)int :
 (b = 0 | abs a | 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 ;

19

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

20

- a) $[1:n] \underline{\text{real}} \text{ xl, yl, zl ;}$
- b) xl := yl + zl ;
- c) xl = yl + zl ;

21

a) priority d = ? ;

b) op d = (int a, b) int :
 $(b = 0 \mid \underline{abs} \ a \mid b \not\in (a +: b))$;

c) $n + m \not\in k$;

22

a) real x ;

b) ref ref real xx ;

c) real pi = 3.14159 ;

d) pi := 3 ;

23

- a) `read(x) ;`
`print(x) ;`
- b) `GET LIST(X) ;`
`PUT LIST(X) ;`

24

- a) *instand in, f6d. 2df, x* ;
- b) GET EDIT(X) (F(6,2)) ;

8.8. Assignations.

8.8.1. Syntax.

a) NODE assignment :

reference to NODE destination, becomes symbol, NODE source.

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

c) NODE source : hdp-adapted-unitary NODE expression.

[Examples :

a) $x := 0 ; z := g; x := \text{random} ; \text{as} := x ; \underline{\text{val}} \text{ as} := 1.3 ;$
 $\underline{\text{val}} \text{ as} := g?[\epsilon] := (d = g + 2 + d) ; (\text{random} < .5 + x + g) := 1$
 $x := g := d.d ;$

(For peeled-formaries see 8.0.1.b and for hdp-adapted-unitary-expressions see 8.0.1.c)