

HAL/S PROGRAMMING FUNDAMENTALS QUIZ 7

1. True or False. A semicolon is mandatory in the subscripting of V1:

Ans. _____

STRUCTURE Q:

```
1 A,  
  2 V1 ARRAY(2,5) MATRIX,  
  2 V2 ARRAY(2,5) VECTOR;  
DECLARE Q Q-STRUCTURE(30) INITIAL(10#(9#1),10#(3#2));  
V1$(10;) = V1$(20);
```

2. Based on the preceding structure, how many scalars result from the subscript form:

Q.V1\$(3 AT 10; 1,* : *,2); Ans. _____

3. True or False. Based on the preceding structure, the colon is optional in the subscripting of V1: V1\$(*; 2,4:)

Ans. _____

4. Based on the preceding structure, what data type and organization is:

V1\$(1 TO 10; *,3 AT 2: *,2) Ans. _____

5. True or False. In order to assign or compare two major or minor structures, tree-equivalency is mandatory.

Ans. _____

6. True or False. The trailing semicolons are optional in the assignment in the following case:

Ans. _____

STRUCTURE G:

```
  1 I INTEGER,  
  1 S;  
DECLARE G G-STRUCTURE(100);  
G$(3;),G$(9;),G$(10;) = G$(51);
```

7. True or False. In the structure template in question 6, S is a minor node.

Ans. _____

8. True or False. Two structures can be compared for greater-than (>) or less-than (<) if and only if they are: 1) tree equivalent, and 2) all terminals are unarrayed integers or scalars.

Ans. _____

9. True or False. Two structures (or minor structures) can be compared in WHILE or UNTIL clauses added on to iterative or discrete DO FOR loops. Ans. _____

10. True or False. Two structures (or minor structures) are equal if and only if all corresponding terminals are equal – and, of course, they must be tree-equivalent. Ans. _____

11. True or False. If a major or minor structure is passed as an input or assign argument to a PROCEDURE, then each of the structures must be tree-equivalent to the corresponding formal parameter. Ans. _____

12. True or False. If a multicopied major structure, multicopied minor structure, or multicopied structure terminal is passed as an input argument to a PROCEDURE, then the argument must either be left with “full copyness” (i.e., no copy subscripting at all), or subscripting must be supplied that specifies only a single copy. Ans. _____

13. True or False. In the following example VAR1 is a properly formed input to PROC1. Ans. _____

STRUCTURE ZZ:

```
1 A,  
  2 VAR1 MATRIX(5,5),  
    2 CVAR CHARACTER(20);  
DECLARE W ZZ-STRUCTURE(10) INITIAL(1,*);  
CALL PROC1(W.A.VAR1$(3 AT 5;));
```

14. True or False. In the preceding example the subscripted W.A.VAR1 form would be legal in an ASSIGN list. Ans. _____

15. True or False. A multicopy structure acts like a 1-dimensional array – for example, an input parameter can be defined to be a structure with * copies which would allow the actual number of copies passed to be determined at run time by using the SIZE function. Ans. _____

16. True or False. A HAL/S FUNCTION can be defined to be of STRUCTURE type. It is essential, however, that the structure template be defined “prior” to the definition of the function (e.g., in a COMPOOL or at PROGRAM level). The following FUNCTION header is correct: Ans. _____

```
STRFUNC: FUNCTION(I1,I2) Q-STRUCTURE(10);
```

17. True or False. Although a STRUCTURE function has a template and acts like a real STRUCTURE in the right-hand-sides of assignments or compares, unlike a real structure no reference may be made to any of its minor structures or terminals.

Ans. _____

18. True or False. Arrays can be added to one another (or compared for equality or non-equality) as long as “arraynesses” match. Such arrayness is defined as an n-tuple wherein the first number represents the number of dimensions and the remaining integers define the legal range of each dimension, e.g., (3:2,10,4). Moreover, the first dimension of “arrayness” can arise as a result of the data item residing in a multicopy structure.

Ans. _____

19. True or False. It is not necessary for all variables in an arrayed expression to have “arrayness”.

Ans. _____

20. True or False. HAL/S allows one array to be set equal to the product of two other arrays provided all arraynesses match. Also, the following example will compile:

Ans. _____

```
DECLARE ARR1 ARRAY(10,4,6) SCALAR INITIAL(0);  
DECLARE ARR2 ARRAY(10,10,10) INTEGER DOUBLE INITIAL(0);  
DECLARE ARR3 ARRAY(12,8,11) SCALAR DOUBLE INITIAL(0);  
ARR3$(1 TO 10,4 AT 3,6 AT 2) = ARR1 ARR2$(*,4 AT 1,2 TO 7);
```

21. True or False. Arrayness is a function of subscripting as is the choice of an annotation mark placed over the variable in the output listing.

Ans. _____

22. True or False. Any arrayness remaining after the subscripting operation is termed ‘residual arrayness’. If the subscripting results in a 1-dimensional array with only 1 element, however, we say that the NO arrayness is present.

Ans. _____

23. True or False. The occurrences of arrays in the output writer listing are enclosed in curly braces ({}).

Ans. _____

24. What is the annotation symbol placed over a STRUCTURE?

Ans. _____

25. True or False. To build a COMSUB (separately compiled function) FUNCTION of STRUCTURE type, the structure template would necessarily have to be defined in an INCLUDE.

Ans. _____