

HAL/S PROGRAMMING FUNDAMENTALS

QUIZ 1

1. HAL/S was named for 1) the computer HAL in SPACE ODYSSEY 2001, 2) Dr. J. Halcombe Laning of the MIT Draper Laboratory, or 3) both of the foregoing. Ans. _____
2. True or False. Of the 6 legal HAL/S block types only COMPOOLs, PROGRAMs,PROCEDUREs, and FUNCTIONs are used in FSW. TASK blocks are no longer used, and UPDATE blocks have never been used. Ans. _____
3. True or False. COMPOOLs may not contain executable code. Ans. _____
4. True or False. In order to utilize any external compilation unit (e.g., reference a COMPOOL data item, call an external PROCEDURE, etc.) you must have a compiler INCLUDE TEMPLATE directive (D card) in your source code. Ans. _____
5. True or False. If you have a 'D INCLUDE TEMPLATE' directive it may be placed anywhere as long as it precedes any use of its components. Ans. _____
6. True or False. HAL/S source statements can start in column 2 but must not extend into the PMF SRN (Statement Reference Number) area which begins in column 73. Ans. _____
7. True or False. Column 1 of a HAL/S source line can never be used by the programmer. Ans. _____
8. True or False. The NAME SCOPE of a HAL/S code or data block is the region within which data declared in the block is visible. Ans. _____
9. True or False. COMPOOL data is only visible to the outermost (enclosing) block of a compilation unit. Ans. _____
10. True or False. RECURSION is illegal in HAL/S. Ans. _____
11. True or False. PROCEDUREs and FUNCTIONs can be called/invoked prior to their definition in the source code, but it is better to define such blocks before they are referenced. Ans. _____
12. Which of the following is an illegal identifier: 1) VECTOR2 2) POS_VECTOR
3) #UPDATES Ans. _____
13. True or False. HAL/S (like FORTRAN) requires that integral values utilized in floating point expressions be marked with a decimal point, e.g., $S = S + 1.0;$ Ans. _____
14. True or False. HAL/S statements end with a semicolon. Ans. _____

15. What is the value of the constant 3B3? Ans. _____
16. How many characters are there in the string: CHAR(4)'ABCD' ? Ans. _____
17. How many characters are there in the string: 'DON'T' ? Ans. _____
18. True or False. A BOOLEAN variable is identical in all respects to a BIT(1) (a length 1 bit string).
Ans. _____
19. How many bits are there in the bit string: OCT(3)'337' ? Ans. _____
20. Which of the following is NOT equivalent to a Boolean TRUE: 1) TRUE 2) ON
3) BIN'1111', 4) BIN '0001' ? Ans. _____
21. True or False. Which of the following characters is not normally allowed in column 1 of a HAL/S source line: 1) C 2) D 3) * 4) E 5) M 6) S 7) blank ? Ans. _____
22. True or False. The following statement is legal in HAL/S: I, J, K = 1; Ans. _____
23. True or False. A RETURN statement is always required at the end of a code block to return control to the FCOS (PROGRAMS) or to the caller (PROCEDURES). Ans. _____
24. The maximum number of dimensions that a HAL/S array can have is: Ans. _____
25. True or False. All HAL/S data items must be DECLARED before they can be used.
Ans. _____
26. How many AP-101 halfwords are required for the data items defined in the following
DECLARES?
- | | |
|---------------------------|------------|
| DECLARE I INTEGER; | Ans. _____ |
| DECLARE I INTEGER DOUBLE; | Ans. _____ |
| DECLARE S; | Ans. _____ |
26. True or False. The following is an illegal statement: DECLARE I DOUBLE INTEGER;
Ans. _____
27. What is the data type of the variable J? DECLARE I INTEGER, J; Ans. _____
28. How many digits of accuracy (approximately) do you get in a single precision floating point number on the AP-101? Ans. _____
29. How many digits of accuracy (approximately) do you get in a double precision floating point number on the AP-101? Ans. _____

30. True or False. The HAL/S VECTOR/MATRIX library routines (built-in functions) return significantly less accuracy than the preceding expected values. Ans. _____
31. True or False. The HAL/S MATH routines (SIN, COS, LOG, EXP, ATAN, etc.) return significantly less accuracy than the preceding expected values. Ans. _____
32. True or False. HAL/S vectors and matrices can be defined with either INTEGER or SCALAR components. Ans. _____
33. True or False. The DEFAULT data type is SCALAR. Ans. _____
34. True or False. The DEFAULT precision is DOUBLE. Ans. _____
35. True or False. The maximum length of a character string is 255. Ans. _____
36. True or False. HAL/S does not distinguish between the following 2 statements:
a) $A = 2 B + 5;$
b) $A = 2.0 B + 5.0;$
Ans. _____
37. True or False. HAL/S can precalculate many expressions at compile-time and thus save code and space at run-time. This process is greatly helped if user variables are initialized with the CONSTANT attribute. Ans. _____
38. True or False. HAL/S matrices are initialized by COLUMN. Ans. _____
39. True or False. The only disadvantage of initializing a variable with the CONSTANT attribute is that it may become inaccessible to the ILOAD system or very difficult to alter via in-flight patching. Ans. _____