

Questions from LISP text:

2.2. Which of these are well-formed lists? That is, which ones have properly balanced parentheses?

((A) (B))

(A (B (C)))

((((A) (B)) (C)))

2.4. What is the parenthesis notation for this cons cell structure?

((BOWS ARROWS) (FLOWERS CHOCOLATES))

2.6. Match each list on the left with a corresponding list on the right by substituting NIL for () wherever possible. Pay careful attention to levels of parenthesization.

() = NIL

(()) = (NIL)

((())) = ((NIL))

(() ()) = (NIL NIL)

(() (())) = (NIL (NIL))

2.13. Write down tables similar to the one above to illustrate how to get to each word in the list (((FUN)) (IN THE) (SUN)).

Step:	Result:
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CAAAR	FUN
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CAADR	IN
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CADADR	THE
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CAADDR	SUN
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2.15. Using the list ((A B) (C D) (E F)), fill in the missing parts of this table.

Function	Result
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CAR	(A B)
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CDDR	((E F))
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CADR	(C D)
------	-------

CDAR	(B)
------	-----

B	CADAR
---	-------

CDDAR	NIL
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A	CAAR
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CDADDR	(F)
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F	CADADDR
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2.16. What does CAAR do when given the input (FRED NIL)?

CAAR throws an error because the first CAR returns the item FRED NIL and is no longer a list.

Questions from Sebesta chapter 1:

6. Most of UNIX is written in C.

7. The disadvantage of having too many features in a language is that it affects its overall simplicity. It makes the language harder to read and understand by having so many different features.

8. Operator overloading can affect the readability of a program if the programmer does not do it in the way expected by the reader causing confusion.

9. An example of a lack of orthogonality in C is that records can be returned from functions, but arrays cannot.

10. ALGOL 68 used orthogonality as a primary design criterion.

11. The goto statement allows for more complex control statements.

12. A program is reliable if it performs to its specifications under all circumstances.

13. Checking the parameters of a subprogram is important to make sure that the correct type is passed to the function, so the correct result is produced.

14. Aliasing is two or more distinct names in a program that point to the same memory cell.

15. Exception handling is the ability of a program to detect run-time errors, correct them, and continue running.

16. The easier a language is to read, more than likely the easier the language is to write in.

Being easy to read and write in affects the overall reliability of the program.

20. The primary programming language deficiencies in the 1970's were incompleteness of type checking and inadequacy of control statements.

21. The three fundamental features of object-oriented programming languages are data abstraction, inheritance, and dynamic method binding.

22. Simula 67 was the first language to use all three fundamental features.

23. Two criteria that directly conflict are reliability and cost of execution.

24. The three general methods of implementing a programming language are compilation, pure interpretation, and hybrid implementation.

25. A compiler results in faster program execution.

29. Languages with pure interpreters have the advantage of allowing easy implementation of many source-level debugging operations.