CSCI 330

Homework2

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Q1

1. (not (equal 3 (abs -3))) = NIL
2. (/ (+ 8 12) 2)
3. (+ (\* 3 3) (\* 4 4))

Q2.

2. What two common data structures were included in Plankalkül?

Arrays

Records (Structs)

5. Why was the slowness of interpretation of programs acceptable in the early 1950s?

Hardware was already slow, so the extra time for interpretation was not a major concern.

6. What hardware capability that first appeared in the IBM 704 computer strongly affected the evolution of programming languages? Explain why.

Floating-point arithmetic and index registers.

These features allowed for efficient mathematical computations, making high-level programming languages like Fortran practical.

7. In what year was the Fortran design project begun?

1954

8. What was the primary application area of computers at the time Fortran was designed?

Scientific and engineering computations

9. What was the source of all of the control flow statements of Fortran I?

IBM 704 machine instructions

10. What was the most significant feature added to Fortran I to get Fortran II?

Separate compilation of subroutines

11. What control flow statements were added to Fortran IV to get Fortran 77?

IF-THEN-ELSE statements

14. Why were linguists interested in artificial intelligence in the late 1950s?

They were working on natural language processing (NLP) to enable computers to understand human language.

15. Where was Lisp developed? By whom?

Developed at MIT by John McCarthy

20. What missing language element of ALGOL 60 damaged its chances for widespread use?

Lack of standard input/output (I/O) functionality

21. What language was designed to describe the syntax of ALGOL 60?

BNF (Backus-Naur Form)

22. On what programming language was COBOL based?

FLOW-MATIC

23. In what year did the COBOL design process begin?

1959

24.

What data structure that appeared in COBOL originated with Plankalkül?

Records (structs)

25.

What organization was most responsible for the early success of COBOL (in terms of extent of use)?

U.S. Department of Defense

36.

What is a nonprocedural language?

A language that specifies what to do rather than how to do it

37.

What are the two kinds of statements that populate a Prolog database?

Facts and Rules

46.

What was the first application for Java?

Embedded systems (originally for interactive TV set-top boxes)

51.

For what application area is JavaScript most widely used?

Web development