CSCI330

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Homework 2.

Question 2.

2. Plankalkül included two main data structures: arrays and records.

5. In the early 1950s, programs ran slowly because computers didn't have floating-point hardware, but this was acceptable at the time.

6. The IBM 704 supported floating-point operations with its hardware, making interpretive systems less effective. This led to the growth of compiled languages like Fortran, which benefited from faster processing.

7. The development of Fortran started in November 1954.

8.When Fortran was created, its main use was for scientific calculations.

9. The control flow statements in Fortran I were based directly on the IBM 704's machine instructions.

10.The key feature added to Fortran I to create Fortran II was the ability to compile subroutines separately. This meant changes in one part of a program didn't require recompiling the whole program, making it easier to handle large projects.

11. Fortran 77 introduced logical loop control and an If statement with an optional Else, improving how loops and conditions were handled compared to Fortran IV.

14. In the late 1950s, linguists became interested in artificial intelligence because they wanted to develop ways for computers to understand human languages through natural language processing.

15. Lisp was created at MIT by John McCarthy and Marvin Minsky as part of their work on the MIT AI Project.

20. ALGOL 60 struggled to become widely used because it lacked input/output (I/O) capabilities, which made it less practical for everyday programming tasks that required user interaction or data handling.

21.Backus-Naur Form (BNF) was designed to describe ALGOL 60's syntax. John Backus and his team developed it to formally define the language's grammar.

22. COBOL was influenced by FLOW-MATIC, a business-oriented language developed by UNIVAC. The COBOL design process started in 1959.

23.The year COBOL's design process began was 1959.

24. COBOL's record data structure was inspired by Plankalkül.

25.The U.S. Department of Defense played a major role in COBOL's early success by sponsoring its development and promoting its use in government systems.

36. A non-procedural language lets you describe what you want to achieve without detailing how to do it. The system handles the execution. Examples include SQL, Prolog, and HTML.

37.In Prolog, facts are basic truths like "John is a man," while rules explain how new facts can be deduced, such as "If X is wise, X is a philosopher." This setup helps Prolog solve queries using logical reasoning.

46. Both Ada and COBOL focus on strong typing, clear syntax, and structured programming. Ada is used for real-time and embedded systems, while COBOL is meant for business tasks. Both are standardized languages designed for reliability.

51. Perl was initially created to replace sh (a shell scripting tool) and awk (used for text processing).

52. JavaScript is mainly used in web development, especially for checking form data and dynamically updating HTML content. It runs in web browsers to make websites interactive.

57. In Ruby, arithmetic operators like +, -, and * are actually methods, not just built-in functions. This means they can be redefined, offering more flexibility than languages where operators are fixed.

59. Lua is partially interpreted. It converts code into an intermediate form before interpreting it, similar to how early versions of Java worked. This approach improves flexibility and portability.

60. C# improved on C's switch statement by allowing string cases, while C's version only works with integers or characters. This makes C# more versatile when handling different data types.