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CSCI330

Sebesta Chapter 2 Review Questions

Question 2

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

Arrays and records (called structs).

Question 5

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

The slowness of interpretation was acceptable because the lack of floating-point hardware meant that program performance was bottlenecked by simulating floating points. Compared to this, the overhead of interpretation was relatively insignificant.

Question 6

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

The IBM 704 included hardware for handling floating-points, and indexing. This greatly increased performance (floating-point no longer had to be simulated in software) and as a result slow interpretation was no longer acceptable (placing an emphasis on compilation and performance).

Question 7

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

The Fortran design project began in 1954.

Question 8

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

When Fortran was designed, the primary application area was scientific computations.

Question 9

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

All of Fortran I's control statements were based on 704 instructions.

Question 10

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

Independent compilation of subroutines was the most significant feature added.

Question 11

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

Character string handling, logical loop control statements, and an if with an optional else clause were added.

Question 14

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

Linguists were interested in AI because they were concerned with natural language processing.

Question 15

15. Where was Lisp developed? By whom?

Lisp was developed at MIT by John McCarthy.

Question 20

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

The lack of input and output statements in ALGOL 60 damaged its chances for widespread use.

Question 21

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

BNF (Backus-Naur Form) was designed to describe the syntax of ALGOL 60.

Question 22

22. On what programming language was COBOL based?

COBOL was based on the FLOW-MATIC language.

Question 23

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

The COBOL design process began in 1959.

Question 24

24. What data structure that appeared in COBOL originated with Plankalkül?

Records (structs) were this structure.

Question 25

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

The Department of Defense was responsible for the early success of COBOL. The DoD mandated use of COBOL, despite its initial inefficient compilation raising costs.

Question 36

36. What is a nonprocedural language?

A nonprocedural language is one in which an algorithm is specified in general, and the and the specific order of execution of instructions or statements may not be included.

Question 37

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

Facts and rules are the 2 kinds of statements.

Question 46

46. What was the first application for Java?

Web software was the first application.

Question 51

51. For what application area is JavaScript most widely used?

JavaScript is most widely used in web software.

Question 52

52. What is the relationship between JavaScript and PHP, in terms of their use?

JavaScript is often used to process the content of an HTML doc and PHP is often used to provide dynamic content to HTML pages.

Question 57

57. What deficiency of the `switch` statement of C is addressed with the changes made by C# to that statement?

C#'s switch statement prevents implicit transfers of execution between cases – i.e. in C, if the cases were coded poorly, the first case could be triggered but the code could still execute on all subsequent cases.

Question 59

59. What are the inputs to an XSLT processor?

An XML data document and an XSLT document are the two inputs.

Question 60

60. What is the output of an XSLT processor?

The output of an XSLT document is another XML document.