Homework 2 CSCI 330
Due date: Tuesday, February 4th
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1. From Lisp text: Questions 3.1, 3.2, 3.3 (page 81), 3.7 (pg 83) 3.10 (pg 90), 3.20, 3.21 (pg 96), and 3.25 (pg 111). See script for answers

2. From Sebesta Chapter 2 review questions: Questions 2, 5, 6 through 11, 14, 15, 20 through 25, 36, 37, 46, 51, 52, 57, 59, and 60.

Sabesta Questions Q2

2. In Plankalkül, arrays and records were the two most often used data structures.

5. Since computation time was already much faster than human calculation, the slowness was tolerable. Additionally, early programming focused on feasibility rather than speed optimization.

6. The index registers and floating-point arithmetic hardware introduced in the IBM 704 were significant because they allowed more efficient implementation of high-level language constructs, facilitating the development of Fortran.

7. The Fortran design project began in 1954.

8. The primary application area of computers at the time Fortran was designed was scientific and engineering computations.

9. The source of all of the control flow statements of Fortran I was mathematical formulas and assembly language constructs.

10. The most significant feature added to Fortran I to get Fortran II was the ability to define and call subroutines with separate compilation.

11. The control flow statements that were added to Fortran IV to get Fortran 77 were IF-THEN-ELSE statements.

14. Linguists were interested in artificial intelligence in the late 1950s because they wanted to explore machine translation and natural language processing for computers to analyze and generate human language.

15. Lisp was developed at MIT by John McCarthy in 1958.

20. The missing language element of ALGOL 60 that damaged its chances for widespread use was the lack of input/output (I/O) statements.

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

22. COBOL was based on FLOW-MATIC, an early business-oriented programming language developed by Grace Hopper.

23. The COBOL design process began in 1959.

24. The data structure that appeared in COBOL and originated with Plankalkül was the record structure.

25. The organization most responsible for the early success of COBOL was the U.S. Department of Defense (DoD), which mandated COBOL for government and military applications.

36. Java and C# reference type variables have advantages over pointers in other languages because they offer automatic memory management, garbage collection, and better security, reducing the risks of memory leaks and dangling pointers.

37. The lazy approach to reclaiming garbage waits until memory is needed before deallocating unused objects, whereas the eager approach actively reclaims memory as soon as objects become unreachable.

46. Name type equivalence means that two variables are considered to be of the same type only if they are explicitly declared with the same type name.

51. JavaScript is most widely used for web development, particularly for client-side scripting in web browsers.

52. The relationship between JavaScript and PHP is that JavaScript is mainly used for client-side scripting, while PHP is used for server-side scripting to process data and generate dynamic web pages.

57. The deficiency of the switch statement of C that was addressed by C# is the implicit fall-through behavior, which C# prevents by requiring explicit break statements unless goto case is used.

59. The inputs to an XSLT processor are an XML document and an XSLT stylesheet.

60. The output of an XSLT processor is a transformed XML or HTML document.