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CIS 346

Chapter 1 Review Questions

#3. Fortran dominated scientific computing.

#4. Cobol dominated business applications.

#5. Lisp dominated AI applications.

#6. Most of UNIX is written in C.

#13. A program is reliable if it performs to its specifications under all conditions. For example, being able to detect errors earlier rather than later will help with the cost. Also, if it is able to intercept run-time errors and fix or protect them and then continue to run helps the program be more reliable.

#20. Imperative languages are dictated by von Neumann architecture.

#22. The three fundamental features of object-oriented programming languages are data abstraction (processing with data objects and controls access to data), inheritance (potential reuse of existing software) and dynamic method binding (flexible use of inheritance).

#23. Smalltalk was the first language to support object-oriented programming.

#26. A compiler produces faster execution than a pure interpreter.

#29. A von Neumann bottleneck is important because it is the primary limiting factor in the speed of the von Neumann architecture computers. The speed of the connection between a computer’s memory and it’s processor usually determines the speed of the computer. A faster speed equals a faster computer.

Chapter 1 Problem Set

#3. A single language for all programming domains can be beneficial because everyone would only have to know one language and it can be used everywhere. It would be easier for people to learn and try to expand on that language.

#4. One language limits people the creativity to try other languages or expand some form of technology using a different language. Also, everything being one language can cause bigger problems with security or hacking of some sort.

#9. The costs of a programming language includes the cost of training programmers to use the language, cost of writing programs in the language, cost of compiling programs in the language, cost of executing programs written in a language (greatly influenced by a program’s design), cost of language implementation system, cost of poor reliability, and the cost of maintaining the programs (including corrections and modifications).

#12. In my opinion, a perfect programming language would include great syntax (easy to read and understand), error messages that provide for easier debugging, and multi-platform functionality (work on Mac and PC).

#16. Generally, C++ has great readability. It is pretty simple and includes a nice amount of data types. Writability is okay for C++. It is not hard to write the program but sometimes remembering semi colons and brackets can be annoying when debugging. Also, programs can get a little extensive if you are not using functions or classes. C++ is reliable for using on Mac and PC. It does require a compiler, so without one, it’ll be hard to run the program. I also do not think it costs a lot for people to learn C++ as compared to other languages.