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CSCI 4330

Homework 3

1. **The designers of Java decided not to implement pointers like those of C++. What was gained and what was lost?**

By not implementing pointers in Java, the designers made Java more secure and less complex. However, at the same time, they caused Java to be less efficient and more flexible. To be more specific, pointers require resource management which means if they are not handled properly, they can lead to resource leaks. Pointers are great in certain situations though and can make life easier by using indirect references to avoid copy synchronization.

1. **What are the arguments for and against the use of a single memory bit for Boolean values?**

The obvious argument for using a single memory bit for Boolean values is that it will take up less space, and in a perfect system, using a bit to store a Boolean value instead of a byte could save you 8 times as much space. However, a byte is the basic addressable unit for computing. So it is very difficult for a computer (would basically require a different type of architecture, perhaps 4-bit bytes) to access just one bit in order to read a Boolean value.

1. **Explain how coercion rules weaken the beneficial effect of strong typing.**

Coercion is basically type conversion and typecasting in an implicit or explicit way. So if the types, values, and variables in a program are implicitly changed, it can subvert the typing rules of the language and won’t reap the benefits of strong typing.

1. **What are all of the differences between enumeration and types of C++ and those of Java?**

In Java, an enumeration is a named instance of a class where the user has the ability to customize the available members. In C++, an enumeration is a set of named, integral constants. When it comes to types, as mentioned earlier, C++ has pointers and Java does not. Java also has no struct or union types. Java’s main supported data types are byte, Boolean, char, short, int, long, float, and double. C++’s main supported data types are int, char, Boolean, float, double, void, and wide character.