Jonathan Davis

CSC 4010 - 800 - Programming Languages

7L7W - Scala Days 1, 2, and 3

Due: November 29th, 2017 @ 11:59pm

Dr. Martha J. Kosa

5 Similarities and 5 Differences Between C++ and Scala

Both C++ and Scala are statically typed languages, so all type checking is done at compile time.

Both C++ and Scala support the object-oriented paradigm, though C++ also supports the procedural paradigm while Scala also supports the functional paradigm.

Traits in Scala are used in the same manner that C++ uses multiple inheritance; the author likens traits in Scala as being like an interface with an implementation.

Both languages allow variables to be either mutable or immutable; variables in Scala and C++ can be made immutable with “val” and “const”, respectively. Variables are mutable by default in C++, while mutable variables in Scala require the use of “var”.

Both languages support the use of loops, such as while loops and for loops. Scala’s way of implementing for loops in particular work much in the same manner as C++’s for loop iteration.

Scala has a type inferencing system much like OCaml, while C++ does not as it requires the programmer to declare the type of every variable, argument, or parameter before use.

Everything is an Object in Scala, but this is not true in C++, as it contains primitives as well as other non-object types.

Scala, supporting the functional paradigm, was always capable of inferring anonymous functions. This functionality was added to C++11, but did not exist in any prior C or C++ versions.

In C++, 0 and NULL can evaluate to the Boolean value of false. In Scala however, the NULL equivalent of “nil” represents an empty list, and neither 0 nor “nil” can be tested in an expression that evaluates a Boolean value (a type mismatch error will occur).

C++ supports the use of explicit pointers, while Scala does not. However, as Scala runs on the JVM it will take care of garbage collection for the programmer, while in C++ the programmer must take care to delete allocated memory as necessary.