CNC 2012
Programming Languages
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Assignment 4
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4.1)
Perl:
a. It is optional to declare variables before use.
b. User defined types do allow operator overloading. And Perl allows user defined operators.
c. Array size is bound during run time, unless the array is declared immutable in which it is at compile time.
d. The different scopes in Perl are global, functions, conditionals, and lambdas.
e. A variable can be declared anywhere in some scope, and the scope of the variable is from the point of it's declaration to the end of it's containing scope.
“Perl gives you enough rope to shoot yourself.” -Larry Wall

4.2)
a. Variables declared in the global scope can be accessed in a local scope the same way local variables can.
b. Global variables can be hidden from local scope with local declarations of the same name.
c. One may desire to hide global variables from local scope when there is some risk of the global state becoming tainted by goings on within some local scope.

4.3)
A declaration provides the name and type of some variable. A definition instantiates it as well. Defining is inclusive of declaring.

4.5)
a. Types alone cannot distinguish between two variables of the same name/different type because some statement that uses said variable may be using it in some context where either type could be accepted. Therefore the compiler wouldn't be able to tell which variable is intended.
b. This is distinguished from overloading which does allow the same name to be used by two different functions by the fact that there can only every be one type signature match from the arguments provided in some call to either function.

4.6)
r-values that cannot be l-values:

Strings
Floats
Boolean

All l-values can be used as r-values. The types that are allowable/meaningful as l-values are a subset of the types that are allowable as r-values.