Scripting Languages

CPSC 310 - Programming Languages

Scripting Languages

- A "scripting language" is a programming language typically designed for integrating and communicating with other programming languages
- There is no general consensus about what makes a programming language a scripting language
- For our purposes, we will consider a language a scripting language if it has the following properties:
  - interpreted (this is a bit of gray area that we will explore later)
  - dynamically typed

Static Type Checking

- Type information is checked before the program is run
  - The type of all values are determined ahead of time
  - Operations with invalid types cause a compile-time error
- Static types are often explicit
  - That is, specified in the program text
  - But, some languages can infer type information at compile-time

Dynamic Type Checking

- Type information is checked during program execution
  - The type of value is based on run-time information
  - Operations with invalid types cause a run-time error
- Dynamic types are not explicit
  - Variables are introduced without type information

Tradeoffs

- Static Types
  - More work for the programmer
  - Catches more errors at compile time
  - Some correct programs are rejected
  - Typically more efficient code
- Dynamic Types
  - Less work for the programmer
  - Delays some errors until run-time
  - Allows more programs (including programs that will fail)
  - Typically less efficient code