

Lecture 18: Behavioral Subtyping and Eiffel



Must it be assumed that because we are engineers beauty is not our concern, and that while we make our constructions robust and durable we do not also strive to make them elegant?

Is it not true that the genuine conditions of strength always comply with the secret conditions of harmony?

Gustav Eiffel



CS655: Programming Languages
University of Virginia
Computer Science

David Evans

<http://www.cs.virginia.edu/~evans>

Menu

- Behavioral Subtyping Recap and Example
- Eiffel's Type System
- Method overriding in C++

Subtype Definition ($S \subseteq T$)

1. Subtype methods preserve the supertype methods' behavior:
 - Signatures have contravariant arguments, covariant results
 - Pre-conditions of T imply preconditions of S ; post-conditions of S imply post-conditions of T .
2. Subtypes preserve supertype properties
 - Invariant of S implies invariant of T .
 - Constraint of S implies constraint of T .