Compilers

Java Coercions

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- Java allows primitive types to be *coerced* in certain contexts.

- In 1 + 2.0, the int 1 is widened to a float 1.0

- A coercion is really just a primitive function the compiler inserts for you
  - Most languages have extensive coercions between base numeric types

- Java distinguishes two kinds of coercions & casts:
  - *Widening*   always succeed   (int $\rightarrow$ float)
  - *Narrowing* may fail if data can't be converted to desired type (float $\rightarrow$ int, downcasts)

- Narrowing casts must be explicit

- Widening casts/coercions can be implicit

What is the only type in Java for which there are no coercions/casts defined?

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- Coercions can lead to surprising behavior
  - Consider an example from PL/I
  - Let A,B,C be strings of 3 characters

B = '123'
C = '456'
A = B + C

- What is A?