

## CS 3723: Programming Languages

Mar 5, 2012

You Name:

1. Which of the following statements is incorrect?
  - (a) Each type is a collection of values that share some structural property.
  - (b) Different types of values have different implementations, so compilers need to know the type of each variable to properly allocate storage.
  - (c) Types can be used to organize different concepts of the problem domain
  - (d) Using more specific types can help identify errors early.
  - (e) Types can be used to detect all runtime errors of programs.
  - (f) Using more specific types can improve the runtime efficiency of programs.
2. Which of the following is NOT a component of the type system?
  - (a) basic types
  - (b) compound types
  - (c) rules on how to introduce new types
  - (d) rules on how to introduce new variables
  - (e) types of the input operands and return value of each operation
3. Which of following correctly defines the distinction between transparent and opaque type declarations?
  - (a) transparent type declarations introduce a new name for an existing type; opaque type declarations introduces a new type.
  - (b) both introduce new types, but transparent type declarations also give a new name for the type.
4. Which of following correctly defines the distinction between structural and name type equivalence?
  - (a) Structural equivalence considers two types to be equivalent if they share the same structure, while name quivalence considers two types to be equivalent only when they are given the same name.
  - (b) Structural equivalence is applied to built-in types (e.g., C arrays and pointers, ML lists) of the language, while name quivalence is applied to user-defined new types (e.g., C structs and unions, ML datatypes).