

Names and Bindings

CS4700

Kenneth Sundberg

Identifiers

- Name forms
 - What are legal characters
 - Are names case sensitive
- Special words
 - Key words
 - Reserved Words

Binding

- Associating an attribute and an entity
- Binding is *static* if it begins before run time and remains unchanged otherwise it is *dynamic*

Binding Time

- Language Design
- Language Implementation
- Compile Time
- Link Time
- Load Time
- Run Time

Variables

- Type
- Value

Aliases

- If state changes made through one name are visible through another the two names are aliases
- Source of many subtle errors

Value

- L-values
- R-values

Type

- Static Type
- Dynamic Type

Named Constants

- Bound to a value only once

Lifetime

- Static Variables
- Stack-Dynamic
- Explicit Heap-Dynamic
- Implicit Heap-Dynamic

Scope

- Scope is the range of statements where something is visible
- An object is visible if it can be referenced
- An entity is local to a scope if it is defined there
- An entity is global if it is visible everywhere

Static Scope

- Also called lexical scoping
- Scoping can be determined prior to run time using only the program text

Dynamic Scope

- Scoping depends on run time context
- Generally considered to be less reliable
- Harder to reason about due to context dependence

Referencing Environment

- What is visible to a statement?

Block

- A set of statements
- Starts a new scope
- Generally used in statically scoped languages
- Introduced by ALGOL and available in many languages.

Declarations

- Beginning of Block
- Anywhere and scope if from declaration on
- Anywhere and scope is entire block

Textbook sections covered:

- Section 05-02 (frame 2)
- Section 05-03 (frame 5)
- Section 05-04 (frame 3)
- Section 05-05 (frame 11)
- Section 05-06 (frame 10)
- Section 05-07 (frame 14)
- Section 05-08 (frame 9)