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Topics Covered

Binding Time
Static Time
Name-declaration binding

Binding Time

- Attributes of parts of programs must be “bound” to object before or during computation
- A binding fixes a value or other property of an object (from a set of possible values)
- Time at which choice for binding occurs is called binding time
  - Dynamic binding — at execution
  - Static binding — at translation, language implementation, or language definition
- At entry to block or subprogram
  - Bind actual to formal parameter
  - Determine location of local variable
- At arbitrary times in program
  - bind values to variables via assignment

Static Time

- **At translation**
  - Determined by programmer — bind type to variable name, values to constants
  - Determined by translator — bind global variable to location (at load time), bind source program to object program representation
- **At implementation**
  - Bind values to representation in computer
  - Bind operations and statements to semantics (if not uniform may lead to different results with different implmentations)
- **At language definition**
  - Structure of language
  - Built-in and definable types
  - Notation for values

Name-declaration binding

- The same identifier, e.g. x , can be declared several times in a program. An important question is: Given a use of x, to which declaration of x is it associated?
- Definition: name-declaration binding the association between the name of an identifier and the declaration of that identifier
- When does name-declaration binding occur?
- Compile time: Pascal, Java and C++: the name-declaration binding can be determined by examining the program text alone.
- Definition: scope the piece of program text in which an identifier is visible Definition: scope rules Another name for the name-declaration binding rules.
- Pascal, Java and C++ have static scope because the scope can be determined statically (ie at compile time)