

Concept of Binding:

The process of assigning values to attributes of program entities.
A set of attribute-value pairs of program entities.

Binding Time: the time a program entity's attribute is assigned a value.

Language Design time
Language Implementation time
Compile time
Linking time
Load time
Run time

Attributes of Variables:

Name:

Address: l-value

Value: r-value

Lifetime: the period of time a storage area is allocated to a variable

Type: domain of values and a set of operators

Scope: the set of statements where a variable is visible, i.e., can be referenced.

Characterized variables in terms of storage binding and lifetime:

Static variables:

History-sensitive:

Stack-Dynamic variables:

Explicit heap-dynamic variables:

Implicit heap-dynamic variables:

Characterized variables in terms of type bindings:**Type Checking:**

Compatibility of Types:

Name-equivalence:

Structural-equivalence:

Characterized variables in terms of scope:

Concept of blocks:

Static scoped:

Dynamic scoped:

Referencing Environment: a set of names visible in a statement.

Named Constant: a variable that is bound to a value only one.

Static binding named constants (manifest constants): only constant values, named constants, and their combinations are allowed.

Fortran 95:

C#: const

Dynamic binding: allowing expressions containing variables to be assigned to constants

C++: const

C#: readonly

Java: final

Initialization: the binding of a variable to a value at the time it is bound to storage.