Variables

Six properties:
1. name
2. address
3. type
4. value
5. lifetime
6. scope

• Binding times of properties:
  – language specification time
  – language implementation time
  – compile time
  – run time

• Broad classification:
  – static
  – dynamic
1. Name

- Syntax of language specifies valid names.
- Languages used to limit length of names
  - Fortran77: 6 characters
  - Fortran95: 31 characters
  - Java, C#: no limit
- Restrictions:
  - keywords have special meaning (e.g. ‘for’)
  - reserved words cannot be used as names
  - generally keywords are reserved
2. Address

• The memory address at which the value associated with the name is stored.
• This is called the l-value (because it is the value used on the left hand side of an assignment operator). In Scheme terms, an unevaluated symbol.
• A given name can be associated with multiple addresses during program execution (e.g. parameters of a recursive function, an instance variable defined in a multiply-instantiated class).
• Aliasing occurs when many variables share an address.