Micro Overview and Symbol Tables

CS316 Spring 2021

Example Micro Program

- Refer to the grammar in PA2 to know the programming constructs fully.

    - MicroProgram

Symbol Table

- A *symbol table* records
  - Symbolic names
  - Attributes of a name
    - E.g. type, scope, accessibility
- Used to manage declarations of symbols and their correct usage

Symbol Table – implementation strategy

- AST is the input to symbol table construction

- Walk the tree, process declarations and usage

- Should accommodate:
    - Efficient retrieval of names
    - Frequent insertion and deletion of names

- Should consider *scopes*

Symbol Table – Example

Input program – not a Micro program

```
PROGRAM scope_test
BEGIN
#global declarations
FUNCTION void f(float, float, float)
FUNCTION void g(int)
{
    INT w, x;
    {
        FLOAT x, z;
        f(x, w, z);
    }
    g(x);
}

END
```

Symbol Table – an implementation

Hash table of names

Hash table of scopes

| f | void (float, float, float) | V | L | H |

| g | void (int) | V | L | H |

| z | float | V | L | H |

| w | int | V | L | H |

| x | float | V | L | H |

| x | int | V | L | H |

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