



Data Structures for Symbol Tables

Complement to Lecture 2, pages 80–88

Peter Fritzon, Christoph Kessler,
IDA, Linköpings universitet, 2008.

Symbol table



Set of symbol table items

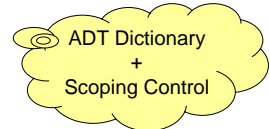
- searchable by name + scope

Data stored for each entry:

- name
- attributes
 - type (int, bool, array, ptr, function)
 - address (block, offset)
 - declared or not, used or not
 - ...

Operations

- lookup (name)
- insert (name)
- put (name, attribute, value)
- get (name, attribute)
- enterscope ()
- exitscope ()



TDDD16/TDDDB44, P. Fritzon, C. Kessler, IDA, LIU, 2008.

2b.2

Data Structures for Symbol Tables



For flat symbol tables: (one block of scope)

- Linear lists
 - Hash tables
 - ...
- (see data structures for ADT Dictionary)

For nested scopes:

- Linear lists with scope control
- Trees of flat symbol tables
- Hash tables with scope control (see following slides)

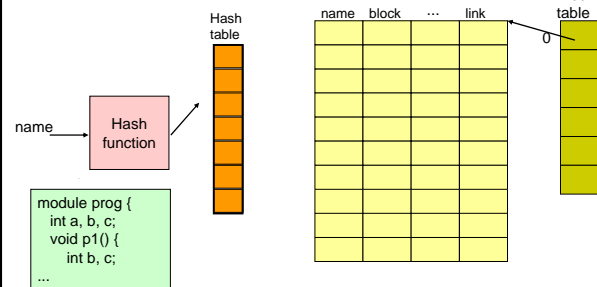
TDDD16/TDDDB44, P. Fritzon, C. Kessler, IDA, LIU, 2008.

2b.3

Hash tables with chaining



Current scope block: 0



insert p1 and enter a new scope block (2)

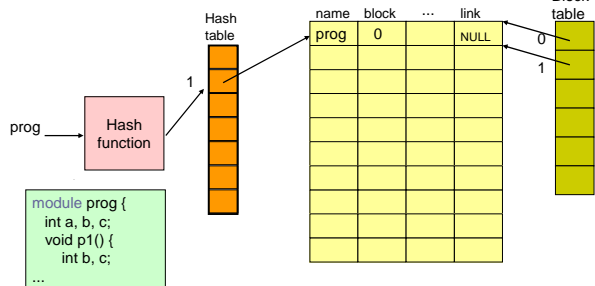
TDDD16/TDDDB44, P. Fritzon, C. Kessler, IDA, LIU, 2008.

2b.4

Hash tables with chaining



Current scope block: 1



insert prog and enter a new scope block (1)

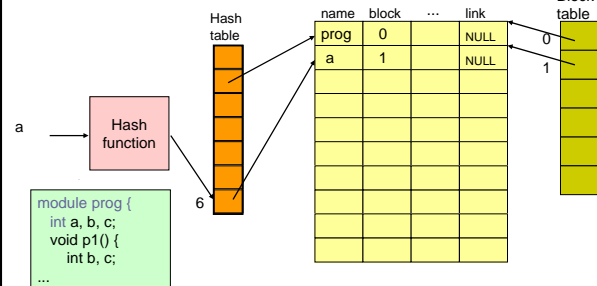
TDDD16/TDDDB44, P. Fritzon, C. Kessler, IDA, LIU, 2008.

2b.5

Hash tables with chaining



Current scope block: 1



TDDD16/TDDDB44, P. Fritzon, C. Kessler, IDA, LIU, 2008.

2b.6

