7. Library of Specification Modules

A reusable specification modul

- solves a frequently occurring task,
 e.g. name analysis according Algol-like scope rules,
- provides abstract symbol roles (CLASS) with computations that contribute to the solution of the task, z. B. IdUseEnv for applied occurrences,
- contains all specifications, functions, etc. that are necessary to implement the task's solution (FunnelWeb file)
- is a member of a library of modules that support related topics, e.g. name analysis according to different scope rules
- has a descriptive documentation

Users

- select a suitable module,
- instantiate it,
- let symbols of their abstract syntax inherit some of the symbol roles,
- use the computed attributes for their own computations.

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Objectives:

Recognize reusable specification modules

In the lecture:

The topics of the slide are explained.

GSS-7.1

GSS-7.2 **Basic Module for Name Analysis** Symbol roles: Instantiation Grammar root: in a .specs file for Algol-like scope rules: SYMBOL Program INHERITS RootScope END; \$/Name/AlgScope.gnrc:inst **Ranges containing definitions:** SYMBOL Block INHERITS RangeScope END; for C-like scope rules: Defining identifier occurrence: \$/Name/CScope.gnrc: inst SYMBOL Defident INHERITS IdDefScope END; for a new name space Applied identifier occurrence: SYMBOL UseIdent \$/Name/AlgScope.gnrc INHERITS IdUseEnv, ChkIdUse END; +instance=Label :inst **Provided attributes:** DefIdent, UseIdent: Key, Bind Symbol roles: Program, Block: Env LabelRootScope, LabelRangeScope, ...

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Objectives:

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Get an idea of a particular specification module

In the lecture:

- The module and its variants are explained.
- The documentation is shown.
- The module is shown.

 Specification Libraries in Eli the Eli Documentation n Module Library:	GSS-7.4
 Introduction of a running example 	
 How to use Specification Modules 	
 Name analysis according to scope rules 	
 Association of properties to definitions 	
 Type analysis tasks 	
 Tasks related to input processing 	
 Tasks related to generating output 	
 Abstract data types to be used in specifications 	
 Solutions of common problems 	
 Migration of Old Library Module Usage 	

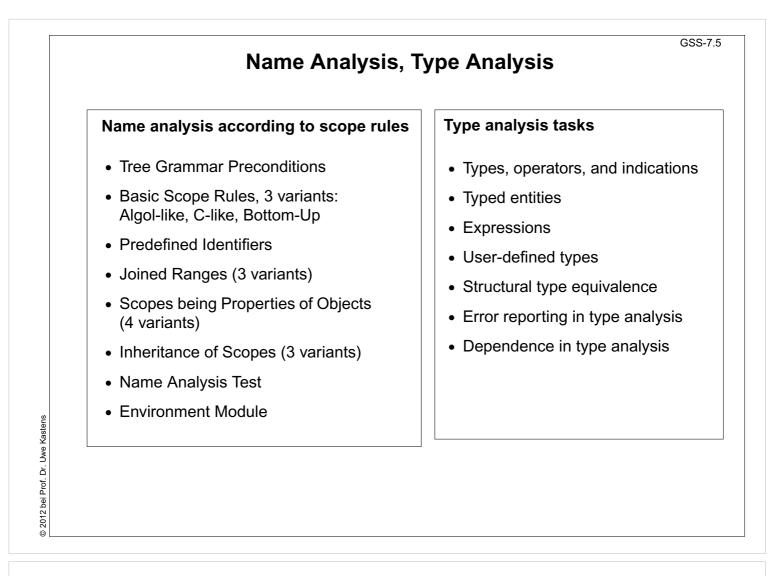
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Objectives:

Overview over library themes

In the lecture:

The themes are explained.



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Objectives:

Overview over modules

In the lecture:

Association of Properties to Entities
Association of properties to definitions

Common Aspects of Property Modules
Count Occurrences of Objects
Set a Property at the First Object
Occurrence
Check for Unique Object Occurrences
Determine First Object Occurrence
Map Objects to Integers
Associate Kinds to Objects
Associate Sets of Kinds to Objects
Reflexive Relations Between Objects
Some Useful PDL Specifications

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Objectives:

Overview over modules

In the lecture:

Input and Output

Tasks related to input processing

- Insert a File into the Input Stream
- Accessing the Current Token
- Command Line Arguments for Included Files

Tasks related to generating output

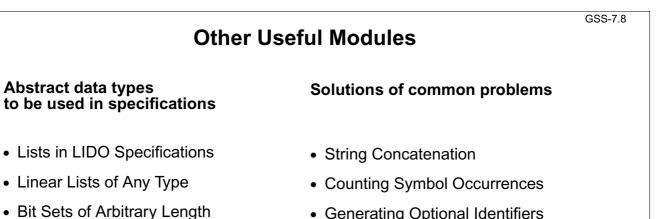
- PTG Output for Leaf Nodes
- Commonly used Output patterns for PTG
- Indentation
- Output String Conversion
- Pretty Printing
- Typesetting for Block Structured Output
- Processing Ptg-Output into String Buffers
- Introduce Separators in PTG Output

Lecture Generating Software from Specifications SS 2012 / Slide 707

Objectives:

Overview over modules

In the lecture:



- Bit Sets of Integer Size
- Stacks of Any Type
- Mapping Integral Values To Other Types
- Dynamic Storage Allocation

- Generating Optional Identifiers
- Computing a hash value
- Sorting Elements of an Array
- Character string arithmetic

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Objectives:

Overview over modules

In the lecture: