latexgen

Automatic LaTeX string generation for common GAP objects

0.1

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Zachariah Newbery

Zachariah Newbery
Email: zn6@st-andrews.ac.uk
Homepage: https://zachnewbery.com

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Chapter 1

Introduction

latexgen is a package that implements an operation Typeset that can generate LaTeX string representations of a commonly used subset of mathematical objects within the GAP system.

Typeset is also built to be incredibly extensible, and can be easily extended to also support the generation of strings for other mark-up languages.

1.1 Example Methods

1.1.1 InfoLatexgen

▷ `InfoLatexgen` (info class)

Info class for the latexgen package. Set this to the following levels for different levels of information:

- 0 - No messages
- 1 - Problems only: messages describing what went wrong, with no messages if an operation is successful
- 2 - Required preamble packages: displays informations about any required LaTeX packages that need to be added to the preamble to be rendered.
- 3 - Progress: also shows step-by-step progress of operations

Set this using, for example `SetInfoLevel(InfoLatexgen, 1)`. Default value is 2.

1.1.2 Typeset (for IsObject)

▷ `Typeset(`*arg*`)` (operation)

Returns: String representation of object in given mark-up language.

Typeset takes a mathematical object and generates a mark-up string representing that object in the given mark-up language (default: LaTeX). Optional records can be added to modify the result: TODO: list of optional parameters

1.1.3 TypesetString (for IsObject)

▷ `TypesetString(arg)` (operation)

Returns: Typesetable String representation of object.

TypesetString generates a string representation of a passed mathematical object that can be rendered by a typesetter.

1.1.4 GenLatexTmpl (for IsObject)

▷ `GenLatexTmpl(arg)` (operation)

Returns: Unpopulated LaTeX format string representing the structural description of the passed object.

GenLatexTmpl generates a format string that represents the structural definition of the given mathematical object in LaTeX. It contains no parameter values, and will need to be populated with the arguments representing the semantic values of the object before it can be rendered in a LaTeX environment.

1.1.5 GenArgs (for IsObject)

▷ `GenArgs(arg)` (operation)

Returns: List of strings that describe the semantic structure of an object.

GenArgs generates the arguments describing the semantic definition of the passed mathematical object. This should result in a list that can be used to populate a format string in any mark-up language.

1.1.6 CtblLatexLegend (for IsRecord)

▷ `CtblLatexLegend(arg)` (operation)

Returns: Strings that describe the calculated substitutions.

CtblLatexLegend generates a string representation of the mathematical substitutions for entries within a character table.

1.1.7 FactoriseAssocWordLatex (for IsList, IsList, IsList)

▷ `FactoriseAssocWordLatex(arg1, arg2, arg3)` (operation)

Returns: String describing the factorised assoc word.

FactoriseAssocWordLatex generates a factorised string representation of an assoc word in letter representation, based on the return value from FindSubstringPowers.

1.1.8 MergeSubOptions (for IsRecord)

▷ `MergeSubOptions(arg)` (operation)

Returns: Records representing the options that should be passed to any sub calls within the current method.

MergeSubOptions will merge the options records passed optionally within a function call to GenArgs. It allows for the subOpts record value to specify any option values that should be altered on nested subcalls when generating typesetting strings.

Chapter 2

Structure Descriptions

latexgen is a package that implements an operation Typeset that can generate LaTeX string representations of a commonly used subset of mathematical objects within the GAP system.

Typeset is also built to be incredibly extensible, and can be easily extended to also support the generation of strings for other mark-up languages.

2.1 Structure Description of Groups

2.1.1 TypesetStructureDescription (for IsString)

▷ `TypesetStructureDescription(`*arg*`)` (operation)

Returns: Typesettable representation of the given structure description of a group.

TypesetStructureDescription generates a typesettable representation equivalent to a given structure description of a group. These structure descriptions can be calculated via the method StructureDescription.

2.1.2 LatexStructureDescription (for IsString)

▷ `LatexStructureDescription(`*arg*`)` (operation)

Returns: LaTeX renderable representation of the given structure description of a group.

LatexStructureDescription generates a LaTeX representation equivalent to a given structure description of a group. These structure descriptions can be calculated via the method StructureDescription.

2.1.3 ConcatStructDescOperands (for IsString, IsString, IsString)

▷ `ConcatStructDescOperands(`*arg1, arg2, arg3*`)` (operation)

Returns: Concatenated string of processed tokens with new separator.

ConcatStructDescOperands will concatenate the tokens parsed from splitting the first input string with the provided separator. It will then process the tokens with LatexStructureDescription, and concatenate the results with the given new separator.