PolymakeInterface

A package to provide algorithms for fans and cones of polymake to other packages

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(*this manual is still under construction*)

This manual is best viewed as an HTML document. An OFFLINE version should be included in the documentation subfolder of the package.

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Acknowledgements

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Chapter 1

Introduction

1.1 What is the idea of PolymakeInterface

PolymakeInterface is an GAP-Package that provides a link to the callable library of the CAS polymake. It is not supposed to do any work by itself, but to provide the methods in polymake to GAP. All the functions in this package are supposed to be capsuled by functions in the Convex package, which provides needed structures and datatypes. Also the functions the have nicer names. This fact also causes that there are no doumentations for functions in this package. To get an overview about the supported functions, one might look at the polymake_main.cpp file or simply message the author. Working with this package alone without Convex is not recommended.

Chapter 2

Installation

2.1 Install polymake

["To make GAP and polymake work together porperly, one has to make sure that the two systems", "are using the same GMP library.\n", "You can choose the GMP which polymake uses by the flag –with-gmp=", "in the polymake configure skript.\n", "However, having BOTH systems using your systems GMP is HIGHLY recommended."]

2.2 How to install this package

This package can only be compiled on a system that has polymake correctly installed, like it is said in the polymake wiki itself. For more information about this please visit www.polymake.org. For installing this package, first make sure you have polymake installed. Copy it in your GAP pkg-directory and run the configure script (./configure) with your GAP root-directory as argument. The default is ../../... Then run make. After this, the package can be loaded via LoadPackage("PolymakeInterface");.

Chapter 3

Sketch

3.1 Sketch methods

3.1.1 POLYMAKE_SKETCH_WITH_OPTIONS (for IsExternalPolymakeObject, IsList)

▷ `POLYMAKE_SKETCH_WITH_OPTIONS(`*`arg1, arg2`*`)` (operation)

Returns: nothing

This method produces the sketch output from polymake. Sketch have to be installed to use this method. The first argument must be a polymake external object, the second can be a filename, as a string, or a list of pairs specifying polymakes VISUAL\ options. In each pair the first entry needs to be the name of the option, the second should be the value it has to be given. As value strings and lists of integers are allowed. Please see the polymake documentation for more informations.

3.1.2 POLYMAKE_SKETCH_WITH_OPTIONS (for IsExternalPolymakeObject, IsString, IsList)

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

Returns: nothing

This works like the other POLYMAKE_SKETCH_WITH_DOCUMENTATION method but one can give a filename and options at the same time. Second argument here needs to be the filename, third the list of VISUAL option pairs.

3.1.3 POLYMAKE_CREATE_TIKZ_FILE (for IsExternalPolymakeObject, IsString)

▷ `POLYMAKE_CREATE_TIKZ_FILE(`*`arg1, arg2`*`)` (operation)

Returns: nothing

Given a polymake object and a filename, this method produces the tikz output given by sketch and stores it in the file.

3.1.4 POLYMAKE_CREATE_TIKZ_FILE (for IsExternalPolymakeObject, IsString, IsList)

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

Returns: nothing

This does the same as POLYMAKE_CREATE_TIKZ_FILE but the third argument is passed to the VISUAL command of polymake. It need to be a (possibly empty) list of options. The list must be consist of pairs, where the first entry is the name of the opti\ on the second the value. As values strings and lists of integers are allowed.

3.1.5 POLYMAKE_CREATE_TIKZ_FILE_WITH_SKETCH_OPTIONS (for IsExternalPolymakeObject, IsString, IsList, IsString)

▷ `POLYMAKE_CREATE_TIKZ_FILE_WITH_SKETCH_OPTIONS(arg1, arg2, arg3, arg4)` (operation)

Returns: nothing

Works like POLYMAKE_CREATE_TIKZ_FILE with 3 arguments, but the last argument has to be a string of options passed directly to sketch. For example, if you want to have a compilable tex file build, add "-T".

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