

NAME

ctg – generate pretty class trees from C++ source files

SYNOPSIS

ctg [**-m**] [**-oname**] [**-p**] [**-rname**] [**-s**] [**-Sname**] [**-v**] name ...

DESCRIPTION

ctg reads a number of C++ source files, extracts class and struct definitions and generates a graphical representation of the resulting class hierarchy as a PostScript source. The output may be constrained to a subset of classes according to the contents of a given configuration file.

OPTIONS

If run without options, **ctg** processes all input files silently and writes the generated class tree to the standard output.

- m** Micro size output. By default **ctg** uses 80x12 boxes and font size 10 for the PostScript output which suffices for trees with depth 6. With this option 60x10 boxes and font size 8 are used. This might suffice for larger class libraries.
- oname** Output file specification. By default **ctg** writes the PostScript source to the standard. With this option the output is written to *name*.
- p** Also include privates. By default **ctg** ignores *private* sections within class definitions. With this option also private classes are included into the hierarchy.
- rname** Root class specification. Only descendants of class *name* are included into the output. This option overrides any **root** specification in a given configuration file. Without this option all classes are sons of the overall root *.
- s** Also include structs. By default **ctg** ignores struct definitions. With this option also structs are included into the hierarchy.
- Sname** Configuration file specification. By default **ctg** tries to read the configuration from **~/l.ctgrc**. This options causes **ctg** to read it from the file *name*.
- v** Verbose option. By default **ctg** processes the input files silently. With this option **ctg** generates messages about all actions and writes them to the standard output. If no output file specification is given, the PostScript source is written to the file *out.ps*.

FILES

If the **-S** option has been omitted, **ctg** tries to read the configuration from **~/l.ctgrc**. Note that the argument to **-r** overrides a given **root** specification in the configuration file.

A configuration for **ctg** consists of a number of specification statements which affect the preprocessing stage and the PostScript code generation.

```
Config = { Stmt }.
Stmt   = "preprocess" string
        | "exclude" file_identifier { file_identifier }
        | "root" Node
        | "collapse" class_identifier { class_identifier }.
Node   = (class_identifier | "*") [ "(" Node { "," Node } ")" ] .
```

preprocess *string*

In order to enable accurate parsing all sources are preprocessed before they are passed on **ctg**'s parser. The statement specifies a command template used for the invocation of an external preprocessor. The template *string* must contain two **%s** fill-ins where at each invocation the first one is replaced by the source file name and the second one by the preprocessor output file (extension **.i** required). Example: *preprocess "gcc -E %s >%s"*.

exclude *file_identifier* { *file_identifier* }

This statement specifies a number of header files which will be excluded from the final preprocessor output. Typically this list consists of C and C++ standard headers. The *iostream.h* header should always be specified, since it contains classes with multiple inheritance (see diagnostics).

root *Node*

The root of the generated class hierarchy is specified with this statement. Optionally *class_identifier* may be followed by a list of (direct) son nodes enclosed in brackets. In such a case only these sons are included into

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the output, all other sons do not appear. Each son node may in turn consist of a class_identifier and a list of son nodes. The special class node "*" is regarded as the father of all class and struct definitions.

collapse *class_identifier* { *class_identifier* }

This statement specifies a number of class nodes whose sons will not be included in the generated class tree.

EXAMPLE

```
$
preprocess      "gcc      -E      cat      my_ctgrc
exclude         -I/home/gup/rk/misc/include %s      >%s"

    iostream.h iomanip.h fstream.h
    assert.h  ctype.h  errno.h  float.h  limits.h  locale.h  math.h
    setjmp.h  signal.h  stdarg.h  stddef.h  stdio.h  stdlib.h
    string.h  time.h
    sys/types.h      sys/param.h      sys/time.h      unistd.h      pwd.h
root                *                  (Preprocessor,
                                TObject  (FuzzyParser,  ClassTree,  Scanner)
                                )

$ ctg -o ctg.ps -S my_ctgrc *.cc
```

DIAGNOSTICS

Error messages generated by the semantic actions of the fuzzy parser:

<i>duplicate</i>	<i>class</i>	<i>definition</i>
two class definitions with the same identifier		
<i>undefined</i>	<i>base</i>	<i>class</i>
definition of a derived class where the ancestor is unknown		
<i>multiple</i>	<i>inheritance</i>	<i>not supported</i>
class definition with more than one base class (reported for iostream.h classes)		

Error messages generated by the PostScript code generator:

<i>tree</i>	<i>width</i>	<i>exceeds</i>	<i>n</i>
tree width exceeds paper size			
<i>tree</i>	<i>height</i>	<i>exceeds</i>	<i>n</i>
tree height exceeds paper size			

Fatal errors that should not occur under normal conditions:

file *file*, line *line*: unhandled exception: *code* - exiting

code = -2 out of memory

code = -200 scanner could not open source file

code = -201 hash table error

BUGS

ctg does not support multiple inheritance, so only *true* trees are generated.

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