

CLI

Command Line Interface Compiler for C++

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Code Synthesis

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***CODE
SYNTHESIS***

What is CLI?

- Command line interface DSL
- C++ class-like
- Translated to real C++ class by the CLI compiler
- Which also generates documentation (usage, man, HTML)
- Result is “*source-only*”

What is CLI?

- Option, name, aliases, type, def value, and documentation
- *All in one place*
- Any fund or user C++ type can be used as option type
- Multi-value options: `std::vector`, `std::set`, `std::map`
- Read from `argv/argc`, file, custom sources
- Custom option formats

hello.cli

```
// hello.cli
//
include <string>;

class options
{
    bool --help | -h;
    std::string --greeting = "Hello";
    unsigned int --exclamations = 1;
};
```

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```
$ cli hello.cli
```

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{
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```
$ cli hello.cli
```

```
$ ls
```

```
hello.hxx
```

```
hello.ixx
```

```
hello.cxx
```

hello.hxx

```
#include <string>

class options
{
public:
    options (int argc, char** argv);

public:
    bool
    help () const;

    const std::string&
    greeting () const;

    unsigned int
    exclamations () const;

    ...
};
```

Adding Documentation

```
class options
{
    bool --help | -h
    {
        "Print usage information and exit."
    };

    std::string --greeting = "Hello"
    {
        "<text>",
        "Use <text> as greeting instead of default Hello."
    };

    unsigned int --exclamations = 1
    {
        "<num>",
        "Print <num> exclamations instead of 1 by default."
    };
};
```


Options File

- Special option, e.g., `--options-file`
- One option per line
- Supports quoting and comments
- Flexible “who overrides who” semantics

Options File Example

```
# test.options
#
--greeting "Hello 'HEY' There"

# Let's be generous with these!!!
#
--exclamations 3
```

Config File?

```
// config.cli
//
class config
{
    std::string greeting = "Hello";
    unsigned int exclamations = 1;
};
```

Config File?

```
// config.cli
//
class config
{
    std::string greeting = "Hello";
    unsigned int exclamations = 1;
};
```

```
$ cli --option-prefix "" config.cli
```

Config File?

```
// config.cli
//
class config
{
    std::string greeting = "Hello";
    unsigned int exclamations = 1;
};
```

```
$ cli --option-prefix "" config.cli
```

```
# test.conf
#
greeting "Hello There"
```

```
# Not in the mood today.
#
exclamations 0
```

Advanced CLI

- Multiple inheritance
- Runtime option description (option)
- Specifiers and modifiers (option)

Questions?

codesynthesis.com/projects/cli/