

/doc/FlexCat_english

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Chapter 1

/doc/FlexCat_english

1.1 /doc/FlexCat_english.guide

FlexCat V1.0 Documentation

This file describes the Usage of FlexCat V1.0, a program which generates catalogs and the source to handle them. FlexCat works similar to CatComp and KitCat, but differs in generating any source you want. This is done by using the so called Source descriptions, which are a template for the code to generate. They can be edited and hence adapted to any programming language and individual needs. (Hopefully!)

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1.2 FlexCat_english.guide/Disclaimer

Copyright and other legal stuff

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1.3 FlexCat_english.guide/Survey

Survey

Since Workbench 2.1 the Amiga offers a rather pleasant system of using programs in different languages: The locale.library. (This is called localizing, that's what the name's for.)

The idea is simple: You select a language, the english in most cases and write your program in the same manner as you did without localizing, except that constant strings are replaced by certain function calls. Another function call makes it possible that the user selects another language when the program starts. (The latter function call loads an external file, the so called catalog and makes the former to read the strings from the catalog instead of using the predefined strings.)

These catalogs are independent from the program. All you need to do for adding another language is to create a new catalog file and this is possible at any time without changing the program.

But there are additional tasks for the programmer: He needs to create the catalogs, the predefined strings and some source to handle them all. (The functions that are mentioned above.) FlexCat is designed to make this in an easy and nearly automatic manner without losing flexibility especially in creating the source. Using catalogs with FlexCat works like this:

1. You start by creating a file containing the predefined strings and their description: The catalog description. The description consists of the string itself, an identifier which is used in the program in place of the string and informations on the strings minimal and maximal length. See Catalog description.
2. A source description file is used to create source from the catalog description: This is a template file containing certain patterns which

are substituted with predefined values, for example the strings. This source description can be edited and hence adapted to any programming language and any individual needs. Some source descriptions (Assembler, Oberon and C, the latter allowing localizing under 2.0 or 2.1 and above) are already part of the FlexCat distribution. These can be used as examples or as they are without any further thinking. See Source description.

3. Using FlexCat you create a so called catalog translation file for every additional language. These are very similar to the catalog description except that they contain empty lines instead of the strings and miss the string description which is still part of the catalog description. All you need to do is replace the empty lines with the respective strings in the new language. FlexCat makes this easy by adding the original strings as comment lines, hence it is clear, what words you should insert. Finally FlexCat is used again to create a catalog file from the catalog description and the catalog translation. (This can be done at any time, even if the program is finished without any changes.) See Catalog translation.

1.4 FlexCat_english.guide/Installation

Installation

FlexCat is written in pure Ansii-C (except for the localization), hence it should run on any Amiga and hopefully on other machines after recompiling. (The localizing is commented out in that case.) This holds for the created programs too: FlexCat is written using itself. All distributed source descriptions should create programs running on any Amiga and even any machine. (Of course you must ensure that the variable LocaleBase has the value NULL in the latter case.) Localizing, however, is possible beginning with Workbench 2.1 because the locale.library isn't available below.

It is not impossible to offer localizing without the locale.library: The source description files C_c_V20.sd and C_h_V20.sd give an example, where the iffparse.library is used to replace the locale.library, if it is not available. This gives Localizing for Workbench 2.0. See C.

Installing FlexCat is simple: Just copy the program to a directory in your search path and select a place for the source descriptions you need. (These are the files called something like xx_yy.sd, where xx is the programming language.) If you want to use FlexCat in another language than the english you need to copy the respective catalog files too. For the german language for example (actually this is the only one available) copy the file Catalogs/Deutsch/FlexCat.catalog to
 Locale:Catalogs/Deutsch/FlexCat.catalog or to
 PROGDIR:Catalogs/Deutsch/FlexCat.catalog, where PROGDIR: is FlexCat's program directory. See Using FlexCat source.

1.5 FlexCat_english.guide/Program start

Calling FlexCat from the CLI

FlexCat is a CLI based program and doesn't operate from the workbench.
It's calling syntax is

```
FlexCat CDFILE/a,CTFILE,CATALOG/k,NEWCTFILE/k,SOURCES/m
```

where the arguments mean

CDFILE

is the name of a catalog description to be read. This is always needed.
Please not, that the base name of the source description is created
from it end hence this is case significant. See Source description.

CTFILE

is the name of a catalog translation file to be read. This is needed
for creating catalogs or for updating an old catalog translation file
using the NEWCTFILE argument: FlexCat reads the old file and the
catalog description and creates a new catalog translation file
containing the old strings and possibly some empty lines for new
strings.

CATALOG

is the name of a catalog file to be created. This argument requires
giving CDFILE as well.

NEWCTFILE

is the name of a catalog translation file to create. FlexCat reads
strings from CTFILE, if this is given, strings missing in the catalog
translation are replaced by empty lines. (The new catalog translation
will contain only empty lines as strings, if CTFILE is omitted.)

SOURCES

are the names of source files to be created. These should be given in
the form source=template where source is the file to create and
template is the name of a source description file to be scanned.

An example:

```
FlexCat Prog.cd NEWCTFILE NewCatalog.ct prog_cat.c=C_c_V21.sd
```

reads the catalog description Prog.cd and creates the catalog translation
NewCatalog.ct and the source file prog_cat.c from it. The latter is created
using the source description file C_c_V21.sd. The base name of the source
description is Prog. (Please not the uppercase letter!)

1.6 FlexCat_english.guide/Catalog description

Catalog description files

A catalog description file contains four kinds of lines.

Comment lines

Any line beginning with a semicolon is assumed to be a comment line and hence ignored. (The string lines below are an exception. These may begin with a semicolon.)

Command lines

Any line beginning with a '#' (with the same exception as above) are assumed to be command lines. Possible commands are:

#language <str>

gives the programs default language, the language of the strings in the catalog description. Default is #language english.

#version <num>

gives the version number of catalogs to be opened. Note that this number must be exact and not same or higher as in 'Exec.OpenLibrary'. An exception is the number 0, which accepts any catalog. Default is #version 0. See Locale.OpenCatalog for further information on catalog language and version.

#lengthbytes <num>

Instructs FlexCat to put the given number of bytes before a string containing its length. The length is the number of bytes in the string without length bytes and a trailing NUL byte. (Catalog files and hence catalog strings will have a trailing NUL byte. This is not always true for the default strings, depending on the source description file.) <num> must be lower or equal sizeof(long), that is lower or equal four. Default is #lengthbytes 0.

#basename <str>

Sets the basename of the source description. See Source description. This overwrites the basename from the command line argument CDFILE. See Program start. Commands are case insensitive.

Description lines

declare a string. They look like IDSTR (id/minlen/maxlen) where IDSTR is a identifier (a string consisting of the characters a-z,A-Z and 0-9), id is a unic number (from now on called as ID), minlen and maxlen are the strings minimum and maximum length, respectively. The latter three may be missing (but not the characters (//)!) in which case FlexCat chooses a number and makes no restrictions on the string length. Better don't use the ID's, if you don't need. The lines following are the

String lines

containing the string itself and nothing else. These may contain certain control characters beginning with a backslash:

\b

Backspace (Ascii 8)

\c

Control Sequence Introducer (Ascii 155)

\e

Escape (Ascii 27)

```

\f      Form Feed (Ascii 12)

\g      Display beep (Ascii 7)

\n      Line Feed, newline (Ascii 10)

\r      Carriage Return (Ascii 13)

\t      Tab (Ascii 9)

\v      Vertical tab (Ascii 11)

\)      The trailing bracket which is possibly needed as part of a (..)
        sequence, see Source description.

\       The backslash itself

\xHH    The character given by the ascii code HH, where HH are hex digits.

\000    The character given by the ascii code 000, where 000 are octal
        digits. Finally a single backslash at the end of the line causes
        concatenating the following line. This makes it possible to use strings
        of any length, FlexCat makes no assumptions on string length.

```

A string is hence given by a description line and the following string line. Let's see an example:

```

msgHello (/4/)
Hello, this is english!\n

```

The ID is missing here, so FlexCat chooses a suitable number. The number 4 instructs FlexCat, that the following string must not have less than four characters and it may be of any length. See the file FlexCat.cd for a further example.

1.7 FlexCat_english.guide/Catalog translation

Catalog translation files

Catalog translation files are very similar to catalog descriptions, except that for other commands and having no informations on string ID and length. (These are taken from the catalog description.) Of any string from the catalog description must be present (However, FlexCat omits writing strings into the catalog which are identical to the default string.) and no

additional identifiers may occur. This is easily assured by using FlexCat to create new catalog translation files. See Program start.

The commands allowed in catalog translations are:

##version <str>

Gives the catalog version as AmigaDOS version string. Example:

##version \$VER: Deutsch.ct 8.1 (27.09.93)

The version number of this catalog is 8. Hence the catalog descriptions version number must be 0 or 8.

##language <str>

The catalog's language. Of course this should be another language than the catalog descriptions language. The **##language** and **##version** commands must be present in a catalog translation.

##codeset <num>

Currently not used, must be 0. This is the default value.

The string from above looks like this in the catalog translation:

msgHello

Hallo, dies ist deutsch!\n

See Deutsch.ct as further example of a catalog translation.

1.8 FlexCat_english.guide/Source description

Source description files

This is the special part of FlexCat. Until now there is nothing that CatComp, KitCat and others don't offer too. The created source should make it easy to use the catalogs without losing flexibility. Any programming language should be possible and any requirements should be satisfiable. This seems like a contradiction, but FlexCat's solution are the source description files containing a template of the source to be created. These are editable as the catalog description and catalog translation files are, hence FlexCat can create any code.

The source descriptions are searched for certain symbols which are replaced by certain values. Possible symbols are the backslash characters from above and additionally sequences beginning with a %. (This is well known for C programmers.)

%b

is the base name of the catalog description. See Program start.

%v

is the version number of the catalog description. Don't mix this up with the catalog version string from the catalog translation.

%l

is the catalog descriptions language. Please note, that this is inserted as a string. See %s below. below.

%n

is the number of strings in the catalog description.

%%

is the character % itself.

But the most important thing are the following sequences. These represent the catalog strings in different ways. Lines containing one or more of these symbols are repeated for any String.

%i

is the identifier from the catalog description.

%d

is the strings ID.

%s

is the string itself; this will be inserted in a way depending on the programming language and can be controlled using the commands `##stringtype` and `##shortstrings`.

%(...)

inserts the text between the brackets for any string except the last. This is probably needed in Arrays, if the array entries should be separated by commas, but the last entry must not be followed by a comma. You can use `%(,)` in that case. Note that within the brackets there is no replacing of % sequences. Backslash sequences, however, are still allowed.

The control sequences `%l` and `%s` create strings. But how strings look depends on the program language. That's why the source description allows command lines similar to the catalog translation. These must begin with the first character of the line and any command must have its own line.

Possible commands are:

`##shortstrings`

makes longer strings to be splitted on different lines. This is probably not always possible or not implemented into FlexCat and hence the default is to create one, probably very long string.

`##stringtype <type>`

Tells FlexCat how strings should look like. Possible types are

None

No additional characters are created. An image of the string is inserted and nothing else. No output of binary characters (the backslash sequences) is possible.

C

creates strings according to C. The strings are preceded and followed by the character ". Strings are splitted using the sequences "\ at the end of the line and " at the beginning of the new line. (The backslash is needed in macros.) Binary characters are inserted using \000. See C.

Oberon

is like string type C, except for the trailing backslash at the end of the line.

Assembler

Strings are created using dc.b. Readable ascii characters are preceded and followed by the character ', binary characters are inserted as \$XX. See Assembler.

Let's look at an excerpt from the file C_h.sd creating an include file for the programming language C.

```
##stringtype C
##shortstrings

#ifdef %b_CAT_H      /* Assure that this is read only once. */
#define %b_CAT_H

/* Get other include files */
#include <exec/types.h>
#include <libraries/locale.h>

/* Prototypes */
extern void Open%bCatalog(struct Locale *, STRPTR);
extern void Close%bCatalog(void);
extern STRPTR Get%bString(LONG);

/* Definitions of the identifiers and their ID's          */
/* This line will be repeated for any string.             */
#define %i %d

#endif
```

1.9 FlexCat_english.guide/Using FlexCat source

Including FlexCat source in own programs

Of course this depends on how the source is created and hence on the source description. What we are talking here about are the source description files distributed with FlexCat. See Source description.

All source descriptions should allow using the program without locale.library. However, a globale variable called LocaleBase (_LocaleBase for assembler) must be present and ininitialized with NULL or by a call to 'Exec.OpenLibrary'. No localizing is possible in the former case except when using the source description C_c_V20.sd. This allows localizing on 2.0 by repacing the locale.library with the iffparse.library. (A variable IFFParseBase has to be present for this and initialized LocaleBase.) See C. The programmer does not need knowledge of these libraries except when creating own source descriptions.

There are three functions and calling them is rather simple.

- : OpenCatalog (locale, language)

This function possibly opens a catalog. The argument locale is a pointer to a Locale structure amd language is a string containing the name of the language that should be opened. In most cases these should

both be NULL or NIL, respectively, because the user's defaults are overwritten otherwise. See 'Locale.OpenCatalog' for details.

If the user has Deutsch and Francais as default languages and the programs base name is XXX this looks for the following files:

```
PROGDIR:Catalogs/Deutsch/XXX.catalog
LOCALE:Catalogs/Deutsch/XXX.catalog
PROGDIR:Catalogs/Francais/XXX.catalog
LOCALE:Catalogs/Francais/XXX.catalog
```

where PROGDIR: is the programs current directory. (The order of PROGDIR: and LOCALE: can be changed to suppress a requester like Insert volume YYY.

OpenCatalog is of type void (a procedure for Pascal programmers) and hence gives no result.

- : GetString (ID)

Gives a pointer to the string with the given ID from the catalog description. Of course these strings are owned by locale.library and must not be modified.

An example might be useful. Take the string from the catalog description example, which was called msgHello. The source descriptions declare a constant msgHello representing the ID. This could be printed in C using

```
printf("%s\n", GetString(msgHello));
```

- : CloseCatalog (void)

This function frees the catalog (that is the allocated RAM) before terminating the program. You can call this function at any time even before OpenCatalog is called.

C	FlexCat source in C programs
Oberon	FlexCat source in Oberon programs
Assembler	FlexCat source in Assembler programs

1.10 FlexCat_english.guide/C

FlexCat source in C programs

=====

C source consists of two parts: A .c file which should be compiled and linked without further notice and an include file which should be included from any source part using catalog strings and which defines the IS's as macros using #define.

Two different versions are available for the .c part: C_c_V21.sd is a rather simple version using the respective functions of the locale.library and allowing localizing beginning with Workbench 2.1. But C_c_V20.sd replaces the locale.library with the iffparselibrary if the former isn't available and the latter is. This allows localizing for Workbench 2.0 too. Programs using this should have an option Language and give the

corresponding argument to OpenCatalog. This option should not be used in 2.1 and above and hence the language argument of OpenCatalog should still be NULL.

Of course it would be possible to write a third version using catalogs with Ansii C, but I don't want to support 1.3 anymore.

To separate the FlexCat functions OpenCatalog and CloseCatalog from the corresponding Locale functions with the same names and to allow different catalogs in one program the FlexCat functions get slightly modified names here: OpenXXXCatalog, CloseXXXCatalog and GetXXXString, where XXX is the base name from the source description. The concept is copied from the GadToolsBox and proved good, as I think. See Source description.

The function prototypes are:

```
void OpenXXXCatalog(struct Locale *loc, char *language);
STRPTR GetXXXString(ULONG);
void CloseXXXCatalog(void);
```

Finally an example of a program using FlexCat:

```
#include <stdio.h>
#include <stdlib.h>
#include <XXX.h>      /* Including this is a must! */
#include <clib/exec_protos.h>

/* Open the library for yourself, even if the compiler */
/* supports automatic opening.          */
struct Library *LocaleBase;

void main(int argc, char *argv[])

{
    LocaleBase = OpenLibrary("locale.library", 38);
    /* NO exit, if OpenLibrary fails and you don't need */
    /* Locale functions elsewhere.          */
    OpenXXXCatalog(NULL, NULL);

    ... /* other functions */

    printf("%s\n", GetXXXString(msgHello));

    ... /* other functions again */

    CloseXXXCatalog();
    if (LocaleBase)
        CloseLibrary(LocaleBase);
}
```

1.11 FlexCat_english.guide/Oberon

FlexCat source in Oberon programs

=====

There are two different source descriptions: Oberon_V38.sd creates

source using Locale.mod from Hartmut Goebel. Oberon_V39.sd creates source using the Locale.mod distributed with AmigaOberon.

The function prototypes are

```
XXX.OpenCatalog(loc: Locale.LocalePtr; language : ARRAY OF CHAR);
XXX.GetString(num: LONGINT): Exec.StrPtr;
XXX.CloseCatalog();
```

where XXX is the basename from the source description. See Source description.

Finally an example using FlexCat source:

```
MODULE Anything;

IMPORT  x:=XXX; Dos;

BEGIN
  x.OpenCatalog(NIL, "");

  ... (* Other functions      *)

  Dos.Printf("%s\n", x.GetString(x.msgHello));

  ... (* other functions again          *)
  (* Catalog will be closed automatically *)
  (* when program exits.                  *)
END Anything;
```

1.12 FlexCat_english.guide/Assembler

FlexCat source in Assembler programs

=====

Assembler source is created for usage with the Aztec Assembler. This should not be very different to other assemblers and you should be able to implement own source descriptions. The source consists of two parts: A .asm file which should be assembled and linked without further notice and an .i include file which defines the string ID's and must be included by the using program.

The FLexCat-function names are slightly modified to allow the usage of different catalogs in one file: These are OpenXXXCatalog, CloseXXXCatalog and GetXXXString, where XXX is the base name from the source description. The concept is copied from the GadToolsBox and proved good, as I think. See Source description.

As usual the function result is given in d0 and the functions save registers d2-d7 and a2-a7. OpenCatalog expects its arguments in a0 (pointer to Locale structure) and a1 (Pointer to language string) which should be NULL in most cases. GetString expects an string ID in d0.

Finally an example of a program using FLexCat source:

```
include "XXX.i" ; Opening this is a must. This
; contains "xref OpenXXXCatalog",...
```

```

xref _LV0OpenLibrary
xref _LV0CloseLibrary
xref _AbsExecBase

dseg
LocNam: dc.b "locale.library",0
dc.l _LocaleBase,4 ; Must be present under this name

cseg

main: move.l #38,d0 ; Open locale.library
      lea LocName,a1
      move.l _AbsExecBase,a6
      jsr _LV0OpenLibrary(a6)
* NO exit, if OpenLibrary fails and you don't need Locale
* functions elsewhere

      move.l #0,a0 ; Open catalog
      move.l #0,a1
      jsr OpenXXXCatalog

      ... ; other functions

      move.l #msgHello,d0 ; Get pointer to string
      jsr GetXXXString
      jsr PrintD0 ; and print it

      ... ; other functions again

Ende:
      jsr CloseXXXCatalog ; Close Catalog
      move.l _LocaleBase,a1 ; Close locale.library
      move.l a1,d0 ; this test is a must for 1.3
      beq Endel
      jsr CloseLibrary
Endel:
      rts
      end

```

1.13 FlexCat_english.guide/Future

Further development of FlexCat

I don't expect much further development for I think FlexCat to be rather complete. Of course I'm open for suggestions, tips or critics. Especially I offer to include new string types because this is possible with very minor changes.

I would be pleased, if someone would send me new source descriptions and I could introduce them into further distributions. Any programming language, any extensions depending testing the source in a real existing program. And I would appreciate receiving new catalogs. It is enough to insert the

strings in the file NewCatalogs.ct which is part of the distribution.

1.14 FlexCat_english.guide/Credits

Credits

My thanks go to:

Albert Weinert

for KitCat, the predecessor of FlexCat which has done me valuable things, but finally wasn't flexible enough.

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for the Amiga and Kickstart 2.0. Keep on developing it and I'll be an Amiga-user for the next 8 years too. ;-)

1.15 FlexCat_english.guide/Index

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