NMD: Numerical Metadata library Reference Manual

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Version 2

Abstract

The NMD library offers a convenient storage mechanism for numerical data that is organised in a two-level structure of categories and components. It has routines for creating, deleting, and manipulating metadata objects, as well as routines for output to various formats.

Contents

1 NMD: the Numerical MetaData library

The NMD library serves to store two-level data structures of numerical metadata. - While this library was intended to be used with AnaMod in the Salsa project, it can be used on its own. Unlike other libraries in the Salsa project, it does not rely on Petsc.

1.1 General notes

All routines in NMD return an error code of type `NMDErrorCode`. This is zero for success and anything else for failure. Return codes can be caught with `NMD_ERR_RETURN(ierr)` and generate with `NMD_ERR_REPORT(msg)`.

Metadata object manipulation

Metadata category manipulation

Metadata component manipulation

Value handling

Viewing objects

Installing NMD

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Version

2.5

Date

unreleased

1.2 history

2.5 changes

- added routines: NMDUnsetValue(),NMDCategoryGetComponents(), NMDTypeGetMySQLName()
- NMDReportObject() now takes delimiter arguments. This is useful for generating MySQL strings and such.

2.4 changes

- minor

2.3 changes

- NMDGetValue now returns failure (instead of aborting) if cat/cmp do not exist
- removed occurrences of Petsc's CHKERRQ
- introduced NMDErrorCode
- new files nmdcat.c nmdcmp.c
- NMDGetValue and GetArrayValue now use NMDTruth
- NMDSetValue and NMDSetArrayValue are now analogous: use ampersand for all types of data
- NMDTrue and NMDFalse instead of 1 and 0

- unit tests added

2.3 bug fixes

- NMDGetValue missing case of string value added
- NMDTryGetCategory (and various other Get routines) were able to find non-existing category names. Fixed.
- lots of memory leaks plugged

2.2

- Completely revamped array handling; watch out for prototype changes
- CFLAGS is now NMD_CFLAGS

2 Installing NMD

Installing NMD takes the following steps:

- edit the Make.inc file for:
  - compiler options, and settings for your `ar` and `ranlib` program
  - add `"-DNMD_HAVE_PETSC"` to the compile line if you are using NMD with Petsc (see NMDReportObject())
  - `NMD_LIB_DIR` is the location where the library will be installed
- do `"make install"` to generate the binaries

3 Metadata object manipulation

Top level functions for manipulation metadata objects.

See NMDCreateObject(), NMDDestroyObject(), NMDBuildObjectStructure(), NMDCloneObject(), NMDCloneObjectStructure(), NMDViewObject()

4 Viewing objects

NMDViewObject() gives informal output; NMDReportObject() can be used for database records and such.

5 Value handling

NMD handles scalar and array values slightly differently. For scalar values use NMDSetValue() and NMDGetValue(); for array values use NMDSetArrayValue(), NMDGetArrayValue(), NMDCopyArrayValue(). The array routines take an extra parameter denoting the length of the array.

Note that scalar values have to be passed by reference:

```
int i,*ii;
NMDSetValue(nmd,....,&i);         // use an ampersand here
NMDSetValue(nmd,....,ii,length); // no ampersand needed here!
NMDGetValue(nmd,....,&i);
NMDGetValue(nmd,....,&ii,&length);
```

Furthermore, see NMDCopyItemValues(), NMDGetDataType(), NMDIsArrayType().

6 NMD Data Types

Most NMD datatypes have two different definitions, depending on whether Petsc is used or not.

NMDTruth is only used for success parameters in routines such as NMDGetValue(). It has possible values NMDTrue and NMDFalse.

7 Metadata category manipulation

A metadata object contains a number of categories, each containing multiple component which store the actual metadata. Here are the routines for manipulation the categories.

See NMDObjectTryGetCategory(), NMDObjectGetCategory(), NMDAllocateCategory(), NMDObjectAllocateNewCategory(), NMDObjectGetOrCreateCategory(), NMDRemoveCategory(), NMDGetCategories(), NMDCopyCategory().

8 Metadata component manipulation

Categories have components, much like metadata objects have categories. Most of the component functions work on a metadata object, and specify both category and component name.

See NMDCategoryAllocateNewComponent(), NMDCategoryGetOrCreateComponent(), NMDObjectHasCategoryComponent(), NMDCategoryTryGetComponent(), NMDCategoryGetComponent(), NMDGetCategoryIGetComponents()

9 NMD String Library

We have some routines for string handling.

10 Data Structure Index

10.1 Data Structures

Here are the data structures with brief descriptions:

11 File Index

11.1 File List

Here is a list of all files with brief descriptions:

12 Data Structure Documentation

12.1 NMD_intarray_struct Struct Reference

`#include <nmd_impl.h>`

Data Fields

- int length
- int unique
- int * data

12.1.1 Detailed Description

Definition at line 42 of file nmd_impl.h.

12.1.2 Field Documentation

12.1.2.1 int* NMD_intarray_struct::data

Definition at line 44 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDComponentUnsetValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDGetArrayValue(), and NMDReportObject().

12.1.2.2 int NMD_intarray_struct::length

Definition at line 43 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDGetArrayValue(), and NMDReportObject().

12.1.2.3 int NMD_intarray_struct::unique

Definition at line 43 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDCopyArrayValue(), and NMDCopyItemValues().

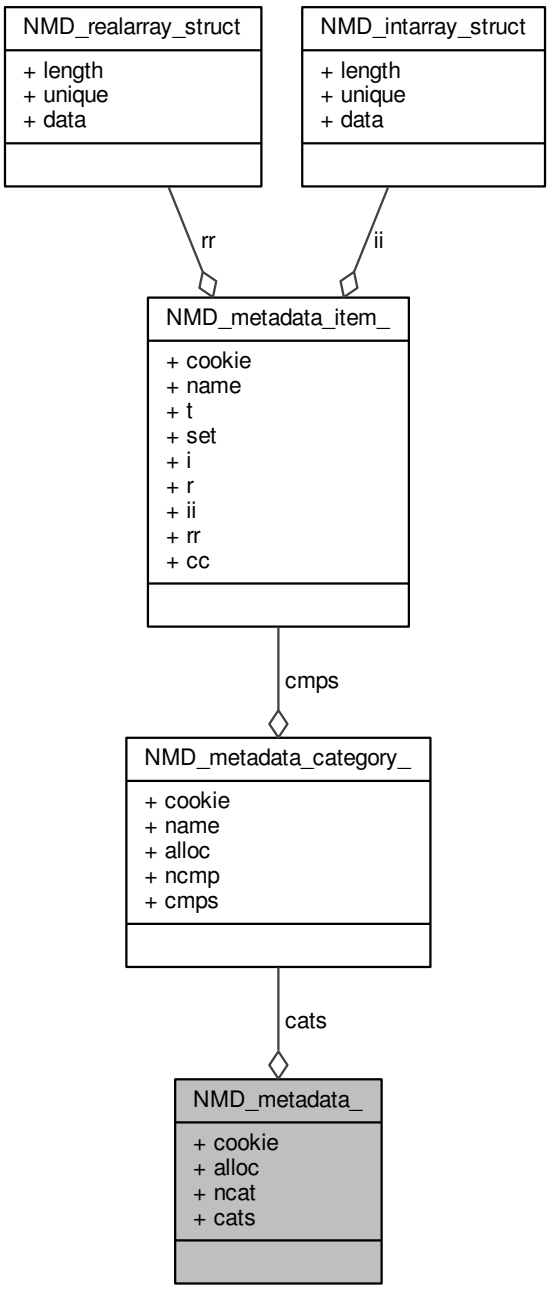
The documentation for this struct was generated from the following file:

- nmd_impl.h

12.2 NMD_metadata_ Struct Reference

`#include <nmd_impl.h>`

Collaboration diagram for NMD_metadata_:



Data Fields

- int cookie
- int alloc
- int ncat
- NMD_metadata_category * cats

12.2.1 Detailed Description

Definition at line 27 of file nmd_impl.h.

12.2.2 Field Documentation

12.2.2.1 int NMD_metadata_::alloc

Definition at line 29 of file nmd_impl.h.

Referenced by NMDCreateObject(), and NMDObjectAllocateNewCategory().

12.2.2.2 NMD_metadata_category* NMD_metadata_::cats

Definition at line 30 of file nmd_impl.h.

Referenced by NMDCloneObject(), NMDCloneObjectStructure(), NMDCreateObject(), NMDDestroyObject(), NMDGetCategories(), NMDGetCategoryIGetComponents(), - NMDObjectAllocateNewCategory(), NMDObjectDumpToMySQL(), NMDObjectTry- GetCategory(), NMDReportObject(), and NMDViewObject().

12.2.2.3 int NMD_metadata_::cookie

Definition at line 28 of file nmd_impl.h.

Referenced by NMDCreateObject().

12.2.2.4 int NMD_metadata_::ncat

Definition at line 29 of file nmd_impl.h.

Referenced by NMDCloneObject(), NMDCloneObjectStructure(), NMDCreateObject(), NMDDestroyObject(), NMDGetCategories(), NMDObjectAllocateNewCategory(), - NMDObjectDumpToMySQL(), NMDObjectTryGetCategory(), NMDReportObject(), and NMDViewObject().

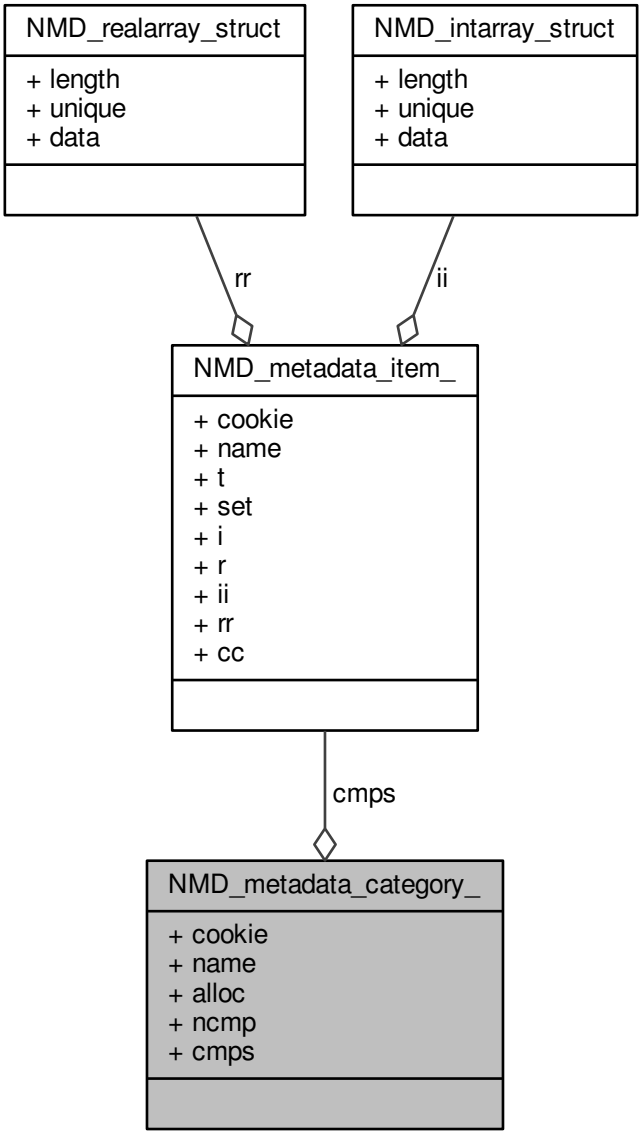
The documentation for this struct was generated from the following file:

- nmd_impl.h

12.3 NMD_metadata_category_ Struct Reference

```
#include <nmd_impl.h>
```

Collaboration diagram for NMD_metadata_category_:



Data Fields

- int cookie
- char * name
- int alloc
- int ncmp
- NMD_metadata_item * cmps

12.3.1 Detailed Description

Definition at line 20 of file nmd_impl.h.

12.3.2 Field Documentation

12.3.2.1 int NMD_metadata_category_::alloc

Definition at line 23 of file nmd_impl.h.

Referenced by NMDAllocateCategory(), and NMDCategoryAllocateNewComponent().

12.3.2.2 NMD_metadata_item* NMD_metadata_category_::cmps

Definition at line 24 of file nmd_impl.h.

Referenced by NMDAllocateCategory(), NMDCategoryAllocateNewComponent(), NMDCategoryGetComponents(), NMDCategoryTryGetComponent(), NMDCloneObject(), NMDCloneObjectStructure(), NMDCopyCategory(), NMDDestroyObject(), NMDGetCategoryIGetComponents(), NMDObjectDumpToMySQL(), NMDReportObject(), and NMDViewObject().

12.3.2.3 int NMD_metadata_category_::cookie

Definition at line 21 of file nmd_impl.h.

Referenced by NMDAllocateCategory().

12.3.2.4 char* NMD_metadata_category_::name

Definition at line 22 of file nmd_impl.h.

Referenced by NMDCategoryGetComponent(), NMDCloneObject(), NMDCloneObjectStructure(), NMDDestroyObject(), NMDGetCategories(), NMDObjectAllocateNewCategory(), NMDObjectDumpToMySQL(), NMDObjectTryGetCategory(), NMDRemoveCategory(), NMDReportObject(), and NMDViewObject().

12.3.2.5 int NMD_metadata_category_::ncmp

Definition at line 23 of file nmd_impl.h.

Referenced by NMDAllocateCategory(), NMDCategoryAllocateNewComponent(), NMDCategoryGetComponents(), NMDCategoryTryGetComponent(), NMDCloneObject(), NMDCloneObjectStructure(), NMDCopyCategory(), NMDDestroyObject(), NMDGetCategoryIGetComponents(), NMDObjectDumpToMySQL(), NMDReportObject(), and NMDViewObject().

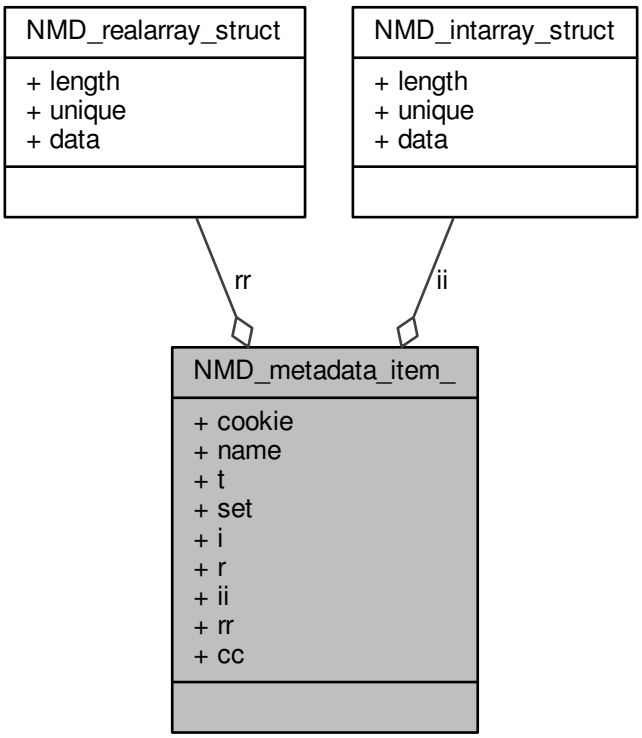
The documentation for this struct was generated from the following file:

- nmd_impl.h

12.4 NMD_metadata_item_ Struct Reference

```
#include <nmd_impl.h>
```

Collaboration diagram for NMD_metadata_item_:



Data Fields

- int cookie
- char * name
- NMDDataType t
- NMDTruth set
- int i
- double r
- struct NMD_intarray_struct * ii
- struct NMD_realarray_struct * rr
- char * cc

12.4.1 Detailed Description

Definition at line 10 of file nmd_impl.h.

12.4.2 Field Documentation

12.4.2.1 char* NMD_metadata_item_::cc

Definition at line 17 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetValue(), NMDComponentUnsetValue(), NMDCopyItemValues(), NMDGetValue(), NMDReportObject(), and NMDViewObject().

12.4.2.2 int NMD_metadata_item_::cookie

Definition at line 11 of file nmd_impl.h.

Referenced by NMDAllocateComponent().

12.4.2.3 int NMD_metadata_item_::i

Definition at line 13 of file nmd_impl.h.

Referenced by NMDComponentSetValue(), NMDCopyItemValues(), NMDGetValue(), NMDObjectDumpToMySQL(), NMDReportObject(), and NMDViewObject().

12.4.2.4 struct NMD_intarray_struct* NMD_metadata_item_::ii

Definition at line 15 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDComponentUnsetValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDGetArrayValue(), and NMDReportObject().

12.4.2.5 char* NMD_metadata_item_::name

Definition at line 12 of file nmd_impl.h.

Referenced by NMDCategoryAllocateNewComponent(), NMDCategoryGetComponents(), NMDCategoryTryGetComponent(), NMDCloneObject(), NMDCloneObjectStructure(), NMDComponentDestroy(), NMDCopyCategory(), NMDGetCategoryIGetComponents(), NMDObjectDumpToMySQL(), NMDReportObject(), and NMDViewObject().

12.4.2.6 double NMD_metadata_item_::r

Definition at line 14 of file nmd_impl.h.

Referenced by NMDComponentSetValue(), NMDCopyItemValues(), NMDGetValue(), NMDObjectDumpToMySQL(), NMDReportObject(), and NMDViewObject().

12.4.2.7 struct NMD_realarray_struct* NMD_metadata_item_::rr

Definition at line 16 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDComponentUnsetValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDGetArrayValue(), and NMDReportObject().

12.4.2.8 NMDTruth NMD_metadata_item_::set

Definition at line 12 of file nmd_impl.h.

Referenced by NMDAllocateComponent(), NMDCategoryAllocateNewComponent(), NMDComponentSetArrayValue(), NMDComponentSetValue(), NMDComponentUnsetValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDGetArrayValue(), NMDGetValue(), NMDReportObject(), and NMDViewObject().

12.4.2.9 NMDDataType NMD_metadata_item_::t

Definition at line 12 of file nmd_impl.h.

Referenced by NMDCategoryAllocateNewComponent(), NMDCategoryGetComponents(), NMDCategoryGetOrCreateComponent(), NMDCloneObject(), NMDCloneObjectStructure(), NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDComponentSetValue(), NMDComponentUnsetValue(), NMDCopyArrayValue(), NMDCopyCategory(), NMDCopyItemValues(), NMDGetArrayValue(), NMDGetCategoryIGetComponents(), NMDGetDataType(), NMDGetValue(), NMDObjectDumpToMySQL(), NMDObjectEnsureCategoryComponent(), NMDReportObject(), and NMDViewObject().

The documentation for this struct was generated from the following file:

- nmd_impl.h

12.5 NMD_object_ Struct Reference

```
#include <nmd_impl.h>
```

Data Fields

- int cookie

12.5.1 Detailed Description

Definition at line 38 of file nmd_impl.h.

12.5.2 Field Documentation

12.5.2.1 int NMD_object_::cookie

Definition at line 39 of file nmd_impl.h.

The documentation for this struct was generated from the following file:

- nmd_impl.h

12.6 NMD_realarray_struct Struct Reference

`#include <nmd_impl.h>`

Data Fields

- int length
- int unique
- NMDRealtype * data

12.6.1 Detailed Description

Definition at line 47 of file nmd_impl.h.

12.6.2 Field Documentation

12.6.2.1 NMDRealtype* NMD_realarray_struct::data

Definition at line 49 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDComponentUnsetValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDGetArrayValue(), and NMDReportObject().

12.6.2.2 int NMD_realarray_struct::length

Definition at line 48 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDGetArrayValue(), and NMDReportObject().

12.6.2.3 int NMD_realarray_struct::unique

Definition at line 48 of file nmd_impl.h.

Referenced by NMDComponentDestroy(), NMDComponentSetArrayValue(), NMDCopyArrayValue(), and NMDCopyItemValues().

The documentation for this struct was generated from the following file:

- nmd_impl.h

12.7 NMD_string_ Struct Reference

Data Fields

- int cookie
- int n
- char * t

12.7.1 Detailed Description

Definition at line 10 of file nmdutil.c.

12.7.2 Field Documentation

12.7.2.1 int NMD_string_::cookie

Definition at line 11 of file nmdutil.c.

Referenced by NMDStringCreateOfSize().

12.7.2.2 int NMD_string_::n

Definition at line 12 of file nmdutil.c.

Referenced by NMDStringConcat(), and NMDStringCreateOfSize().

12.7.2.3 char* NMD_string_::t

Definition at line 12 of file nmdutil.c.

Referenced by NMDStringConcat(), NMDStringCreate(), NMDStringCreateOfSize(), NMDStringDestroy(), and NMDStringGetString().

The documentation for this struct was generated from the following file:

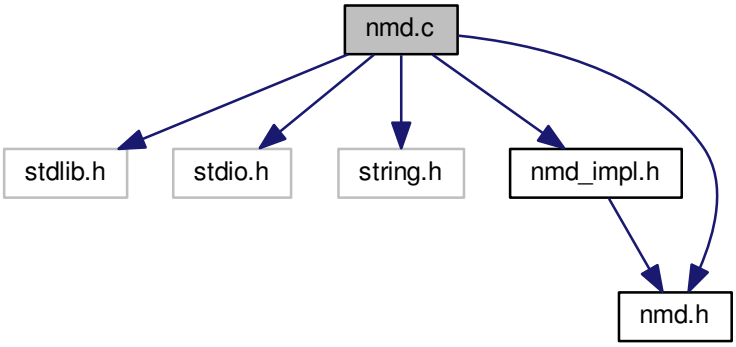
- nmdutil.c

13 File Documentation

13.1 Make.inc File Reference

13.2 nmd.c File Reference

`#include <stdlib.h>` `#include <stdio.h>` `#include <string.h>` `#include "nmd_impl.h"` `#include "nmd.h"` Include dependency graph for nmd.c:



Defines

- #define CATCHUNK 10
- #define CHKLEN 500
- #define CHKSPACEFOR(ar, arlen, fmt, str) {int nr; memset(scratch,0,CHKLEN); sprintf(scratch,fmt,str); nr=strlen(scratch); if (write==0) {arlen = arlen+nr+2; } else {int l = strlen(ar); if (l+nr<arlen) {sprintf(ar+l,fmt,str);} else SETERRQ(MPI_COMM_WORLD,1,"sprintf would overflow allocated buffer");}}

Functions

- NMDErrorCode NMDCreateObject (NMD_metadata *obj)
- NMDErrorCode NMDDestroyObject (NMD_metadata obj)
- NMDErrorCode NMDCloneObjectStructure (NMD_metadata old, NMD_metadata *ret)
- NMDErrorCode NMDCloneObject (NMD_metadata old, NMD_metadata nnew)
- NMDErrorCode NMDViewObject (NMD_metadata obj)

- NMDErrorCode NMDReportObject (NMD_metadata obj, NMDTruth arrays, const char **rkey, const char **rval, const char delim, const char itemdelim1, const char itemdelim2)
- NMDErrorCode NMDSetValue (NMD_metadata obj, const char *cat, const char *cmp, NMDDataType t, void *v)
- NMDErrorCode NMDUnsetValue (NMD_metadata obj, const char *cat, const char *cmp)
- NMDErrorCode NMDSetArrayValue (NMD_metadata obj, const char *cat, const char *cmp, NMDDataType t, void *v, int l)
- NMDErrorCode NMDCopyArrayValue (NMD_metadata obj, const char *cat, const char *cmp, NMDDataType t, void *v, int l)
- NMDErrorCode NMDGetValue (NMD_metadata obj, const char *cat, const char *cmp, NMDDataType *t, void *v, NMDTruth *f)
- NMDErrorCode NMDGetArrayValue (NMD_metadata obj, const char *cat, const char *cmp, NMDDataType *t, void *v, int *len, NMDTruth *f)
- NMDErrorCode NMDGetDataType (NMD_metadata obj, const char *cat, const char *cmp, NMDDataType *t)
- NMDErrorCode NMDIsArrayType (NMDDataType type, NMDTruth *flg)
- PetscErrorCode NMDGetTypeMySQLName (NMDDataType type, const char **name)

Variables

- const char * typenames [ ]
- const char * mysqltypenames [ ]
- static const int nnmdtypenames = 6

13.2.1 Define Documentation

13.2.1.1 #define CATCHUNK 10

Definition at line 91 of file nmd.c.

Referenced by NMDCreateObject().

13.2.1.2 #define CHKLEN 500

Referenced by NMDReportObject().

13.2.1.3 #define CHKSPACEFOR(*ar, arlen, fmt, str*) {int nr; memset(scratch,0,CHKLEN); sprintf(scratch,fmt,str); nr=strlen(scratch); if (write==0) {arlen = arlen+nr+2; } else {int l = strlen(ar); if (l+nr<arlen) {sprintf(ar+l,fmt,str);} else SETERRQ(MPI_COMM_WORLD,1,"sprintf would overflow allocated buffer");}}

Referenced by NMDReportObject().

13.2.2 Function Documentation

13.2.2.1 NMDErrorCode NMDCloneObject (NMD_metadata *old*, NMD_metadata *nnew*)

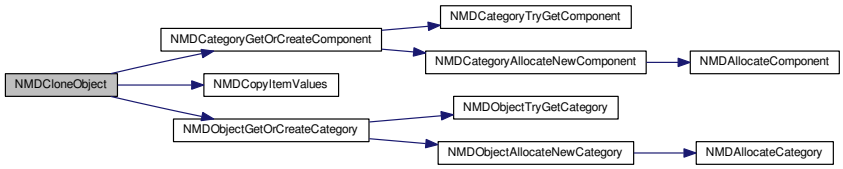
Given an already created NMD_metadata object, fill it with the data of a template object. See also NMDCloneObjectStructure().

Definition at line 210 of file nmd.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDCategoryGetOrCreateComponent(), NMDCopyItemValues(), NMDObjectGetOrCreateCategory(), and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:



13.2.2.2 NMDErrorCode NMDCloneObjectStructure (NMD_metadata *old*, NMD_metadata * *ret*)

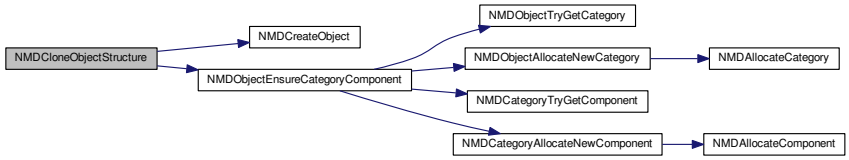
This routine creates an NMD_metadata object, and fills it in with the categories and components of a template object. Data is not copied; for that, see NMDCloneObject() and NMDCopyCategory().

Definition at line 181 of file nmd.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDCreateObject(), NMDObjectEnsureCategoryComponent(), and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:



13.2.2.3 NMDErrorCode NMDCopyArrayValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType *t*, void * *v*, int *l*)

Set a metadata array value; the user array is copied.

This call can be used to create categories and components; there is no checking of slight misspellings.

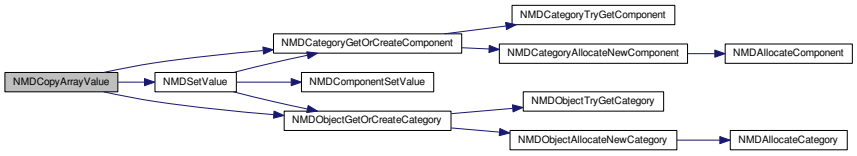
See also Value handling.

Definition at line 518 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMD_MALLOC, NMDCategoryGetOrCreateComponent(), NMDInt, NMDIntarray, NMDObjectGetOrCreateCategory(), NMDReal, NMDRealarray, NMDSetValue(), NMDString, NMDTrue, NMD_metadata_item_::rr, NMD_metadata_item_::set, NMD_metadata_item_::t, NMD_intarray_struct::unique, and NMD_realarray_struct::unique.

Referenced by main().

Here is the call graph for this function:



13.2.2.4 NMDErrorCode NMDCreateObject (NMD_metadata * *obj*)

This routine create an NMD_metadata object, and allocates enough space in it for 10 categories of 20 elements each. Currently this can not be reallocated. In the future we want to be a bit more flexible.

Definition at line 108 of file nmd.c.

References NMD_metadata_::alloc, CATCHUNK, NMD_metadata_::cats, CHKMEMQ, NMD_metadata_::cookie, NMD_metadata_::ncat, NMD_MALLOC, and NMDCOOKIE.

Referenced by main(), and NMDCloneObjectStructure().

13.2.2.5 NMDErrorCode NMDDestroyObject (NMD_metadata *obj*)

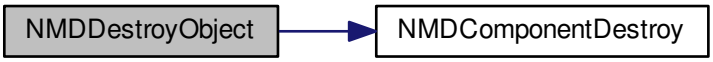
Deallocate all the data in a metadata object.

Definition at line 130 of file nmd.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMD_FREE, and NMDComponentDestroy().

Referenced by main().

Here is the call graph for this function:



13.2.2.6 NMDErrorCode NMDGetArrayValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType * *t*, void * *v*, int * *len*, NMDTruth * *f*)

Retrieve a stored value. If no value has been stored under the specified category and component, a zero flag is returned. The flag parameter can be null.

Null pointers can be passed for the datatype or value, for instance to test only for the existence of a set value.

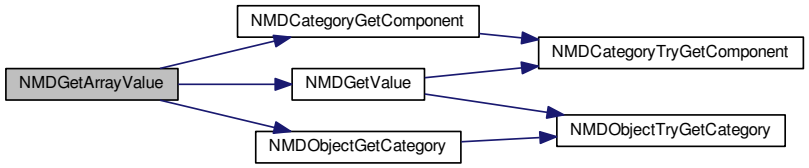
See also Value handling.

Definition at line 632 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMDCategoryGetComponent(), NMDFalse, NMDGetValue(), NMDInt, NMDIntarray, NMDObjectGetCategory(), NMDReal, NMDRealarray, NMDString, NMDTrue, NMD_metadata_item_::rr, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:

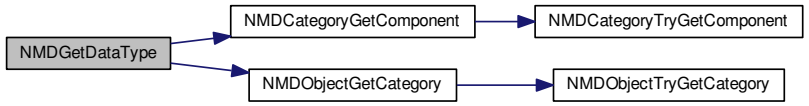


13.2.2.7 NMDErrorCode NMDGetDataType (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType * *t*)

Definition at line 720 of file nmd.c.

References CHECKHASNMDCOOKIE, NMDCategoryGetComponent(), NMDObjectGetCategory(), and NMD_metadata_item_::t.

Here is the call graph for this function:



13.2.2.8 PetscErrorCode NMDGetTypeMySQLName (NMDDataType *type*, const char ** *name*)

Definition at line 745 of file nmd.c.

References mysqltypenames, and nnmdtypenames.

Referenced by main().

13.2.2.9 NMDErrorCode NMDGetValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType * *t*, void * *v*, NMDTruth * *f*)

Retrieve a stored scalar value. If no value has been stored under the specified category and component, a zero flag is returned. The flag parameter can be null.

Null pointers can be passed for the datatype or value, for instance to test only for the existence of a set value.

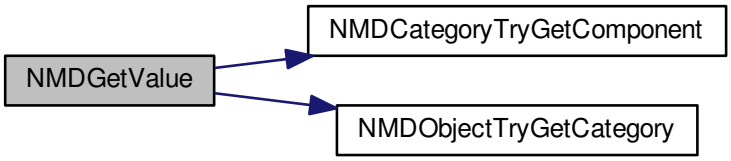
See also Value handling.

Definition at line 571 of file nmd.c.

References NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_item_::i, NMDCategoryTryGetComponent(), NMDFalse, NMDInt, NMDIntarray, NMDObjectTryGetCategory(), NMDReal, NMDRealarray, NMDString, NMDTrue, NMD_metadata_item_::r, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main(), NMDGetArrayValue(), and NMDTabReportData().

Here is the call graph for this function:



13.2.2.10 NMDErrorCode NMDIsArrayType (NMDDataType *type*, NMDTruth * *flg*)

Test whether a data type is an array type

Definition at line 737 of file nmd.c.

References NMDFalse, NMDIntarray, NMDRealarray, and NMDTrue.

Referenced by main().

13.2.2.11 NMDErrorCode NMDReportObject (NMD_metadata *obj*, NMDTruth *arrays*, const char ** *rkey*, const char ** *rval*, const char *delim*, const char *itemdelim1*, const char *itemdelim2*)

Generate a delimited representation of a metadata object.

The returned strings are allocated in this routine and it is the user's responsibility to free them with NMD_FREE().

Arguments:

- obj : the metadata object
- ar : boolean to indicate whether arrays need to be written out in full. If this is false, only the first and last couple of elements are given.
- rkey : a string containing the names of the metadata items
- rval : the metadata items
- delim : delimiter character used in `rkey` and `rval`
- itemdelim1 : an optional opening quote, used for both keys and values. (A NULL value will cause no delimiter to be printed, rather than a null character.) For instance, use the backquote when generating MySQL strings.
- itemdelim2 : an optional closing quote

Definition at line 297 of file nmd.c.

References NMD_metadata_::cats, NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, CHKLEN, CHKMEMQ, CHKSPACEFOR, NMD_metadata_category_::cmps, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::i, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMD_FREE, NMD_MALLOC, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMD_metadata_item_::r, NMD_metadata_item_::rr, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main().

13.2.2.12 NMDErrorCode NMDSetArrayValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType *t*, void * *v*, int *l*)

Set a metadata value, if it is an array type.

The arrays are not copied, so the user is responsible for freeing the array. Use NMDCopyArrayValue() to have the array copied; NMD will then free the array when the metadata object is freed.

This call can be used to create categories and components; there is no checking of slight misspellings.

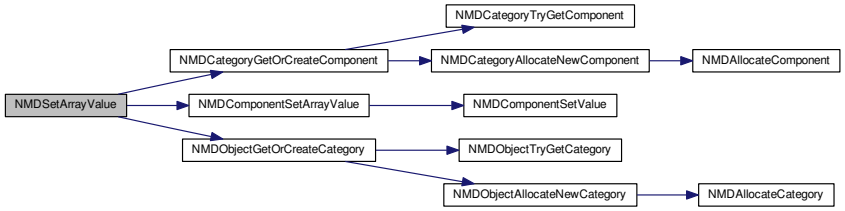
See also Value handling.

Definition at line 494 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryGetOrCreateComponent(), NMDComponentSetArrayValue(), and NMDObjectGetOrCreateCategory().

Referenced by main().

Here is the call graph for this function:



13.2.2.13 NMDErrorCode NMDSetValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType *t*, void * *v*)

Set a metadata value, indexed by category and component name.

The value has to be passed by reference

String values are copied. (Reason: literal strings are treated differently from allocated, and Petsc has its own way of doing strings.)

This call can be used to create categories and components; there is no checking of slight misspellings.

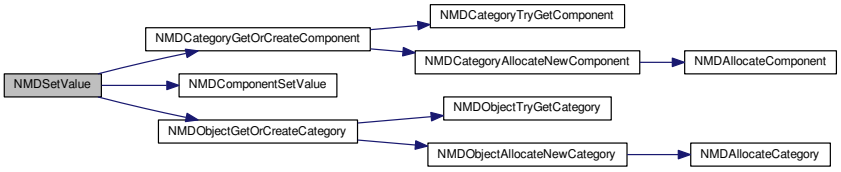
See also Value handling.

Definition at line 451 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryGetOrCreateComponent(), NMDComponentSetValue(), and NMDObjectGetOrCreateCategory().

Referenced by main(), and NMDCopyArrayValue().

Here is the call graph for this function:

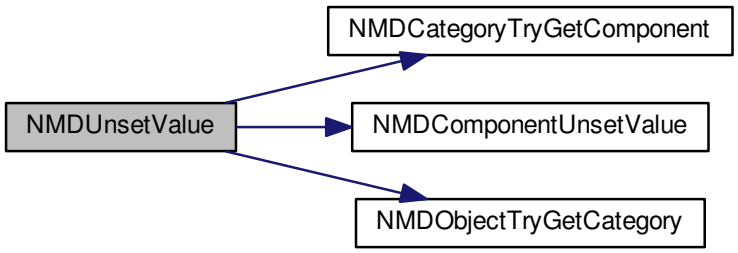


13.2.2.14 NMDErrorCode NMDUnsetValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*)

Definition at line 464 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryTryGetComponent(), NMDComponentUnsetValue(), and NMDObjectTryGetCategory().

Here is the call graph for this function:



13.2.2.15 NMDErrorCode NMDViewObject (NMD_metadata *obj*)

Print out an NMD object.

Currently only int, real, string fields are displayed, others are displayed as "***".

Definition at line 245 of file nmd.c.

References NMD_metadata_::cats, NMD_metadata_item_::cc, CHECKHASNMDC-

OOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::i, -NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDInt, NMDReal, NMDString, NMD_metadata-_item_::r, NMD_metadata_item_::set, and NMD_metadata_item_::t.

13.2.3 Variable Documentation

13.2.3.1 const char* mysqltypenames[ ]

Initial value:

```
{"VARCHAR(256)","INTEGER","DOUBLE","VARCHAR(1024)",
 "VARCHAR(1024)","VARCHAR(1024)"}
```

Definition at line 86 of file nmd.c.

Referenced by NMDGetTypeMySQLName().

13.2.3.2 const int nnmdtypenames = 6 [static]

Definition at line 89 of file nmd.c.

Referenced by NMDGetTypeMySQLName().

13.2.3.3 const char* typenames[ ]

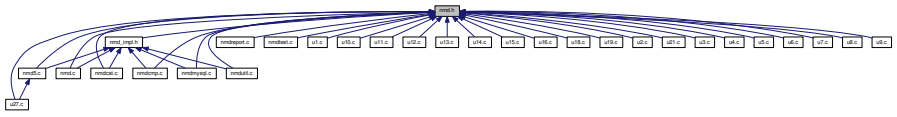
Initial value:

```
{"invalid","int","real","string","intarray","realarray"}
```

Definition at line 84 of file nmd.c.

13.3 nmd.h File Reference

This graph shows which files directly or indirectly include this file:



Defines

- #define NMDTrue 1

- #define NMDFalse 0
- #define NMDCOOKIE 32897432
- #define CHECKHASNMDCOOKIE(obj) { if (!obj) NMD_ERR_REPORT("-Null object"); if (((NMD_object)(obj))->cookie!=NMDCOOKIE) NMD_ERR-_REPORTi("Object has invalid cookie",((NMD_object)(obj))->cookie); }
- #define NMD_MALLOC(a, b, c, d)
- #define NMD_FREE(a) {free(a);}
- #define NMD_STRDUP(a, b) b = strdup(a);

Typedefs

- typedef double NMDRealtype
- typedef int NMDTruth
- typedef int NMDErrorCode
- typedef struct NMD_metadata_item_ * NMD_metadata_item
- typedef struct NMD_metadata_category_ * NMD_metadata_category
- typedef struct NMD_metadata_ * NMD_metadata
- typedef struct NMD_object_ * NMD_object
- typedef struct NMD_string_ * NMD_string

Enumerations

- enum NMDDataType { NMDInvalid, NMDInt, NMDReal, NMDString, NM-DIntarray, NMDRealarray }

Functions

- NMDErrorCode NMDCreateObject (NMD_metadata *)
- NMDErrorCode NMDDestroyObject (NMD_metadata)
- NMDErrorCode NMDViewObject (NMD_metadata)
- NMDErrorCode NMDBuildObjectStructure (NMD_metadata)
- NMDErrorCode NMDDestroyObjectStructure (NMD_metadata)
- NMDErrorCode NMDCloneObjectStructure (NMD_metadata, NMD_metadata *)
- NMDErrorCode NMDCloneObject (NMD_metadata, NMD_metadata)
- NMDErrorCode NMDReportObject (NMD_metadata, NMDTruth, const char **, const char **, const char, const char, const char)
- NMDErrorCode NMDObjectAllocateNewCategory (NMD_metadata, const char *, NMD_metadata_category *)
- NMDErrorCode NMDObjectTryGetCategory (NMD_metadata, const char *, -NMD_metadata_category *, NMDTruth *)
- NMDErrorCode NMDObjectGetCategory (NMD_metadata, const char *, NM-D_metadata_category *)

- NMDErrorCode NMDObjectGetOrCreateCategory (NMD_metadata obj, const char *cat, NMD_metadata_category *ctg)
- NMDErrorCode NMDRemoveCategory (NMD_metadata, const char *)
- NMDErrorCode NMDCopyCategory (NMD_metadata_category, NMD_metadata_category)
- NMDErrorCode NMDGetCategories (NMD_metadata, int *, char ***)
- NMDErrorCode NMDCategoryAllocateNewComponent (NMD_metadata_category, const char *, NMDDataType, NMD_metadata_item *)
- NMDErrorCode NMDComponentDestroy (NMD_metadata_item)
- NMDErrorCode NMDCategoryCreateComponent (NMD_metadata, char *, char *)
- NMDErrorCode NMDCategoryGetComponents (NMD_metadata, const char *, int *, const char ***, NMDDataType **)
- NMDErrorCode NMDCategoryGetOrCreateComponent (NMD_metadata_category, const char *, NMDDataType, NMD_metadata_item *)
- NMDErrorCode NMDCategoryTryGetComponent (NMD_metadata_category, const char *, NMD_metadata_item *, NMDTruth *)
- NMDErrorCode NMDObjectHasCategoryComponent (NMD_metadata, const char *, const char *, NMDTruth *)
- NMDErrorCode NMDObjectEnsureCategoryComponent (NMD_metadata, const char *, const char *, NMDDataType, NMDTruth *)
- NMDErrorCode NMDCategoryGetComponent (NMD_metadata_category, const char *, NMD_metadata_item *)
- NMDErrorCode NMDGetCategoryIGetComponents (NMD_metadata, int, int *, char ***, NMDDataType **)
- NMDErrorCode NMDSetValue (NMD_metadata, const char *, const char *, NMDDataType, void *)
- NMDErrorCode NMDComponentSetValue (NMD_metadata_item, NMDDataType, void *)
- NMDErrorCode NMDComponentUnsetValue (NMD_metadata_item)
- NMDErrorCode NMDSetArrayValue (NMD_metadata, const char *, const char *, NMDDataType, void *, int)
- NMDErrorCode NMDComponentSetArrayValue (NMD_metadata_item, NMDDataType, void *, int)
- NMDErrorCode NMDCopyArrayValue (NMD_metadata, const char *, const char *, NMDDataType, void *, int)
- NMDErrorCode NMDGetValue (NMD_metadata, const char *, const char *, NMDDataType *, void *, NMDTruth *)
- NMDErrorCode NMDGetArrayValue (NMD_metadata, const char *, const char *, NMDDataType *, void *, int *, NMDTruth *)
- NMDErrorCode NMDCopyItemValues (NMD_metadata_item, NMD_metadata_item)
- NMDErrorCode NMDGetDataType (NMD_metadata, const char *, const char *, NMDDataType *t)

- NMDErrorCode NMDIsArrayType (NMDDataType type, NMDTruth ∗)
- NMDErrorCode NMDUnsetValue (NMD_metadata, const char ∗, const char ∗)
- NMDErrorCode NMDGetTypeMySQLName (NMDDataType, const char ∗∗)
- NMDErrorCode NMDObjectDumpToMySQL (NMD_metadata obj)
- NMDErrorCode NMDStringCreate (const char ∗, NMD_string ∗)
- NMDErrorCode NMDStringDestroy (NMD_string)
- NMDErrorCode NMDStringGetString (NMD_string str, const char ∗∗t)
- NMDErrorCode NMDStringConcat (char, NMD_string, char, NMD_string, char, NMD_string ∗)
- NMDErrorCode NMDStringAppend (char, NMD_string ∗, char, NMD_string, char)

Variables

- const char ∗ typenames [ ]

13.3.1 Define Documentation

13.3.1.1 #define CHECKHASNMDCOOKIE(*obj*) { if (!obj) NMD_ERR_REPORT("Null object"); if (((NMD_object)(obj))->cookie!=NMDCOOKIE) NMD_ERR_REPORTi("Object has invalid cookie",((NMD_object)(obj))->cookie); }

Definition at line 39 of file nmd.h.

Referenced by NMDCategoryGetComponent(), NMDCategoryGetComponents(), NMDCategoryGetOrCreateComponent(), NMDCategoryTryGetComponent(), NMDCloneObject(), NMDCloneObjectStructure(), NMDComponentSetArrayValue(), NMDComponentSetValue(), NMDComponentUnsetValue(), NMDCopyArrayValue(), NMDCopyCategory(), NMDDestroyObject(), NMDGetArrayValue(), NMDGetCategories(), NMDGetCategoryIGetComponents(), NMDGetDataType(), NMDGetValue(), NMDObjectDumpToMySQL(), NMDObjectEnsureCategoryComponent(), NMDObjectGetCategory(), NMDObjectGetOrCreateCategory(), NMDObjectHasCategoryComponent(), NMDObjectTryGetCategory(), NMDRemoveCategory(), NMDReportObject(), NMDSetArrayValue(), NMDSetValue(), NMDStringAppend(), NMDStringConcat(), NMDStringDestroy(), NMDStringGetString(), NMDUnsetValue(), and NMDViewObject().

13.3.1.2 #define NMD_FREE(*a*) {free(a);}

Definition at line 145 of file nmd.h.

Referenced by main(), NMDComponentDestroy(), NMDComponentUnsetValue(), NMDDestroyObject(), NMDRemoveCategory(), NMDReportObject(), and NMDStringDestroy().

13.3.1.3 #define NMD_MALLOC(a, b, c, d)

Value:

```
{ a = (c*)malloc((b)*sizeof(c));                    \
    if (!a) NMD_ERR_REPORTs("Could not allocate",d); \
    memset(a,0,(b)*sizeof(c)); }
```

Definition at line 141 of file nmd.h.

Referenced by main(), NMDAllocateCategory(), NMDAllocateComponent(), NMDCategoryGetComponents(), NMDComponentSetArrayValue(), NMDCopyArrayValue(), NMDCopyItemValues(), NMDCreateObject(), NMDGetCategories(), NMDGetCategoryIGetComponents(), NMDReportObject(), NMDStringCreateOfSize(), and NMDTabReportData().

13.3.1.4 #define NMD_STRDUP(a, b) b = strdup(a);

Definition at line 146 of file nmd.h.

Referenced by NMDCategoryAllocateNewComponent(), NMDComponentSetValue(), NMDCopyItemValues(), NMDObjectAllocateNewCategory(), and NMDRemoveCategory().

13.3.1.5 #define NMDCOOKIE 32897432

Definition at line 38 of file nmd.h.

Referenced by NMDAllocateCategory(), NMDAllocateComponent(), NMDCreateObject(), and NMDStringCreateOfSize().

13.3.1.6 #define NMDFalse 0

Definition at line 24 of file nmd.h.

Referenced by main(), NMDAllocateComponent(), NMDCategoryAllocateNewComponent(), NMDCategoryTryGetComponent(), NMDComponentUnsetValue(), NMDGetArrayValue(), NMDGetValue(), NMDIsArrayType(), NMDObjectEnsureCategoryComponent(), and NMDObjectTryGetCategory().

13.3.1.7 #define NMDTrue 1

Definition at line 23 of file nmd.h.

Referenced by main(), NMDCategoryTryGetComponent(), NMDComponentSetArrayValue(), NMDComponentSetValue(), NMDCopyArrayValue(), NMDGetArrayValue(), NMDGetValue(), NMDIsArrayType(), NMDObjectEnsureCategoryComponent(), and NMDObjectTryGetCategory().

13.3.2 Typedef Documentation

13.3.2.1 typedef struct NMD_metadata_* NMD_metadata

Definition at line 35 of file nmd.h.

13.3.2.2 typedef struct NMD_metadata_category_* NMD_metadata_category

Definition at line 34 of file nmd.h.

13.3.2.3 typedef struct NMD_metadata_item_* NMD_metadata_item

Definition at line 33 of file nmd.h.

13.3.2.4 typedef struct NMD_object_* NMD_object

Definition at line 36 of file nmd.h.

13.3.2.5 typedef struct NMD_string_* NMD_string

Definition at line 119 of file nmd.h.

13.3.2.6 typedef int NMDErrorCode

Definition at line 25 of file nmd.h.

13.3.2.7 typedef double NMDRealtype

Definition at line 21 of file nmd.h.

13.3.2.8 typedef int NMDTruth

Definition at line 22 of file nmd.h.

13.3.3 Enumeration Type Documentation

13.3.3.1 enum NMDDataType

Enumerator:

NMDInvalid
NMDInt
NMDReal
NMDString
NMDIntarray
NMDRealarray

Definition at line 28 of file nmd.h.

13.3.4 Function Documentation

13.3.4.1 NMDErrorCode NMDBuildObjectStructure (NMD_metadata)

13.3.4.2 NMDErrorCode NMDCategoryAllocateNewComponent (NMD_metadata_category *cat*, const char * *cmp*, NMDDataType *type*, NMD_metadata_item * *rcpt*)

Create a new component by name in an existing category object. If a component pointer is supplied, the new component object is returned, but this pointer is allowed to be NULL.

Definition at line 41 of file nmdcmp.c.

References NMD_metadata_category_::alloc, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMD_STRDUP, NMDAllocateComponent(), NMDFalse, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main(), NMDCategoryGetOrCreateComponent(), and NMDObjectEnsureCategoryComponent().

Here is the call graph for this function:

13.3.4.3 NMDErrorCode NMDCategoryCreateComponent (NMD_metadata , char * , char *)

13.3.4.4 NMDErrorCode NMDCategoryGetComponent (NMD_metadata_category *cat*, const char * *cmp*, NMD_metadata_item * *cpt*)

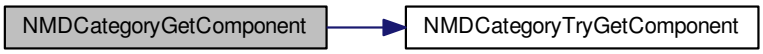
Test whether a metadata category has a certain component. The component has to exist.

Definition at line 234 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::name, and NMDCategoryTryGetComponent().

Referenced by NMDGetArrayValue(), and NMDGetDataType().

Here is the call graph for this function:



13.3.4.5 NMDErrorCode NMDCategoryGetComponents (NMD_metadata *obj*, const char * *cat*, int * *ncmp*, const char *** *cmps*, NMDDataType ** *typs*)

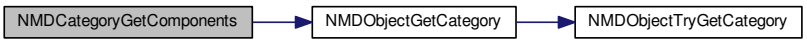
Get a list of all component names and types in a category. All three output arguments are optional. The names and types arrays are allocated and should be freed by the user by NMD_FREE(). The names in the name array points to the strings in the database object, so they do not need to be freed.

Definition at line 205 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMD_MALLOC, -NMDObjectGetCategory(), and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:



13.3.4.6 NMDErrorCode NMDCategoryGetOrCreateComponent (NMD_metadata_category *cat*, const char * *cmp*, NMDDataType *type*, NMD_metadata_item * *cpt*)

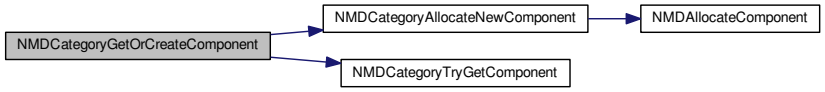
Retrieve a component, creating it if it doesn't already exist.

Definition at line 108 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryAllocateNew-Component(), NMDCategoryTryGetComponent(), and NMD_metadata_item_::t.

Referenced by main(), NMDCloneObject(), NMDCopyArrayValue(), NMDCopyCategory(), NMDSetArrayValue(), and NMDSetValue().

Here is the call graph for this function:



13.3.4.7 NMDErrorCode NMDCategoryTryGetComponent (NMD_metadata_category *cat*, const char * *cmp*, NMD_metadata_item * *rcpt*, NMDTruth * *f*)

Test whether a metadata category has a certain component.

Definition at line 178 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMDFalse, and NMDTrue.

Referenced by main(), NMDCategoryGetComponent(), NMDCategoryGetOrCreateComponent(), NMDGetValue(), NMDObjectEnsureCategoryComponent(), NMDObjectHasCategoryComponent(), and NMDUnsetValue().

13.3.4.8 NMDErrorCode NMDCloneObject (NMD_metadata *old*, NMD_metadata *nnew*)

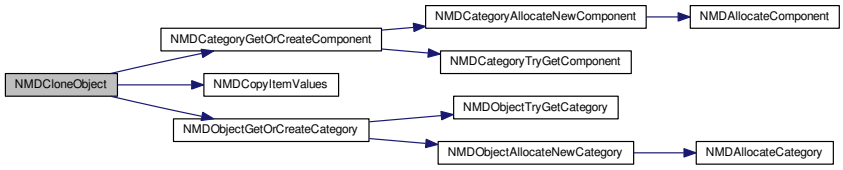
Given an already created NMD_metadata object, fill it with the data of a template object. See also NMDCloneObjectStructure().

Definition at line 210 of file nmd.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDCategoryGetOrCreateComponent(), NMDCopyItemValues(), NMDObjectGetOrCreateCategory(), and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:



13.3.4.9 NMDErrorCode NMDCloneObjectStructure (NMD_metadata *old*, NMD_metadata * *ret*)

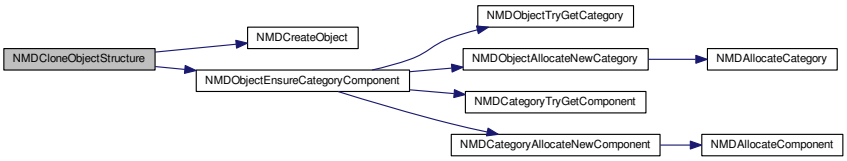
This routine creates an NMD_metadata object, and fills it in with the categories and components of a template object. Data is not copied; for that, see NMDCloneObject() and NMDCopyCategory().

Definition at line 181 of file nmd.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDCreateObject(), NMDObjectEnsureCategoryComponent(), and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:



13.3.4.10 NMDErrorCode NMDComponentDestroy (NMD_metadata_item)

Definition at line 72 of file nmdcmp.c.

References NMD_metadata_item_::cc, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMD_metadata_item_::name, NMD_FREE, NMDIntarray, NMDRealarray,

NMDString, NMD_metadata_item_::rr, NMD_metadata_item_::t, NMD_intarray_struct-::unique, and NMD_realarray_struct::unique.

Referenced by NMDDestroyObject().

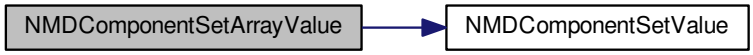
13.3.4.11 NMDErrorCode NMDComponentSetArrayValue (NMD_metadata_item , NMDDataType , void * , int)

Definition at line 323 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, NMD_intarray_struct::data, NMD_realarray-_struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray-_struct::length, NMD_MALLOC, NMDComponentSetValue(), NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMDTrue, NMD_metadata_item_::rr, NM-D_metadata_item_::set, NMD_metadata_item_::t, NMD_intarray_struct::unique, and NMD_realarray_struct::unique.

Referenced by NMDSetArrayValue().

Here is the call graph for this function:



13.3.4.12 NMDErrorCode NMDComponentSetValue (NMD_metadata_item , NMDDataType , void *)

Definition at line 278 of file nmdcmp.c.

References NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, NMD_metadata-_item_::i, NMD_STRDUP, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NM-DString, NMDTrue, NMD_metadata_item_::r, NMD_metadata_item_::set, and NM-D_metadata_item_::t.

Referenced by NMDComponentSetArrayValue(), and NMDSetValue().

13.3.4.13 NMDErrorCode NMDComponentUnsetValue (NMD_metadata_item)

Definition at line 297 of file nmdcmp.c.

References NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, NMD_intarray-_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::ii, NMD_FREE, -

NMDFalse, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMD_-metadata_item_::rr, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by NMDUnsetValue().

13.3.4.14 NMDErrorCode NMDCopyArrayValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType *t*, void * *v*, int *l*)

Set a metadata array value; the user array is copied.

This call can be used to create categories and components; there is no checking of slight misspellings.

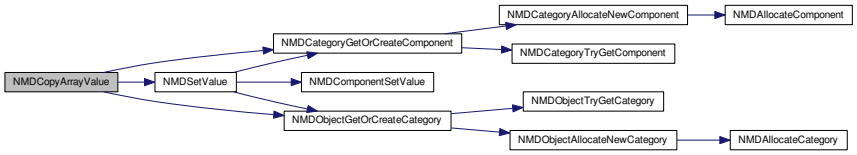
See also Value handling.

Definition at line 518 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_intarray_struct::data, -NMD_realarray_struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMD_MALLOC, NMDCategoryGetOrCreateComponent(), NMDInt, NMDIntarray, NMDObjectGetOrCreateCategory(), NMDReal, NMDRealarray, NMDSetValue(), NMDString, NMDTrue, NMD_metadata_item_::rr, NMD_metadata-_item_::set, NMD_metadata_item_::t, NMD_intarray_struct::unique, and NMD_realarray-_struct::unique.

Referenced by main().

Here is the call graph for this function:



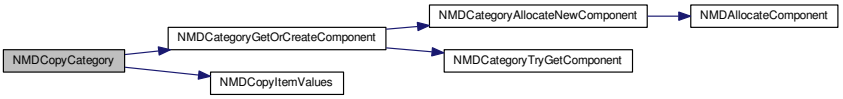
13.3.4.15 NMDErrorCode NMDCopyCategory (NMD_metadata_category *incat*, NMD_metadata_category *outcat*)

Copy category data from one metadata structure into another. This assumes that the category already exists in the target; see for instance NMDHasCategory(), NMDClone-Object(), NMDCloneObjectStructure().

Definition at line 180 of file nmdcat.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMDCategoryGet-OrCreateComponent(), NMDCopyItemValues(), and NMD_metadata_item_::t.

Here is the call graph for this function:



13.3.4.16 NMDErrorCode NMDCopyItemValues (NMD_metadata_item *src*, NMD_metadata_item *tar*)

Copy data between two item structures. If the original has unique data, so does the clone.

Definition at line 359 of file nmdcmp.c.

References NMD_metadata_item_::cc, CHKMEMQ, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::i, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMD_MALLOC, NMD_STRDUP, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMD_metadata_item_::r, NMD_metadata_item_::rr, NMD_metadata_item_::set, NMD_metadata_item_::t, NMD_intarray_struct::unique, and NMD_realarray_struct::unique.

Referenced by NMDCloneObject(), and NMDCopyCategory().

13.3.4.17 NMDErrorCode NMDCreateObject (NMD_metadata * *obj*)

This routine create an NMD_metadata object, and allocates enough space in it for 10 categories of 20 elements each. Currently this can not be reallocated. In the future we want to be a bit more flexible.

Definition at line 108 of file nmd.c.

References NMD_metadata_::alloc, CATCHUNK, NMD_metadata_::cats, CHKMEMQ, NMD_metadata_::cookie, NMD_metadata_::ncat, NMD_MALLOC, and NMDCOOKIE.

Referenced by main(), and NMDCloneObjectStructure().

13.3.4.18 NMDErrorCode NMDDestroyObject (NMD_metadata *obj*)

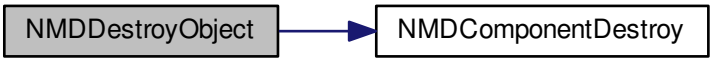
Deallocate all the data in a metadata object.

Definition at line 130 of file nmd.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMD_FREE, and NMDComponentDestroy().

Referenced by main().

Here is the call graph for this function:



13.3.4.19 NMDErrorCode NMDDestroyObjectStructure (NMD_metadata)

13.3.4.20 NMDErrorCode NMDGetArrayValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType * *t*, void * *v*, int * *len*, NMDTruth * *f*)

Retrieve a stored value. If no value has been stored under the specified category and component, a zero flag is returned. The flag parameter can be null.

Null pointers can be passed for the datatype or value, for instance to test only for the existence of a set value.

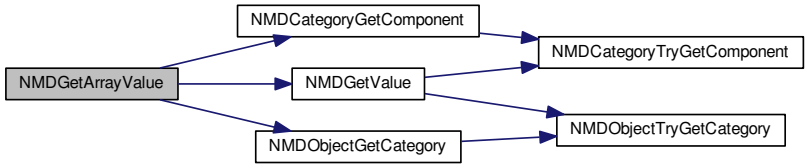
See also Value handling.

Definition at line 632 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMDCategoryGetComponent(), NMDFalse, NMDGetValue(), NMDInt, NMDIntarray, NMDObjectGetCategory(), NMDReal, NMDRealarray, NMDString, NMDTrue, NMD_metadata_item_::rr, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:



13.3.4.21 NMDErrorCode NMDGetCategories (NMD_metadata *obj*, int * *ncat*, char *** *cats*)

Get the number of categories and their names. Both arguments can be NULL. The names array is allocated; the user needs to free it. The names themselves are pointers to the strings in the metadata object, so they do not need to be freed.

Definition at line 137 of file nmdcat.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::name, NMD_metadata_::ncat, and NMD_MALLOC.

Referenced by main(), and NMDTabReportData().

13.3.4.22 NMDErrorCode NMDGetCategoryIGetComponents (NMD_metadata *obj*, int *icat*, int * *ncmp*, char *** *cmps*, NMDDataType ** *typs*)

For a given category, get the number of components and their names.

All output arguments can be NULL. The names array is allocated; the user needs to free it. The names themselves are pointers to the strings in the metadata object, so they do not need to be freed. The types array is also allocated and needs to be freed.

Definition at line 255 of file nmdcmp.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMD_MALLOC, and NMD_metadata_item_::t.

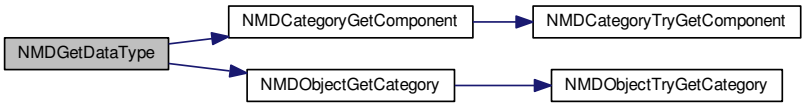
13.3.4.23 NMDErrorCode NMDGetDataType (NMD_metadata , const char * , const char * , NMDDataType * *t*)

Definition at line 720 of file nmd.c.

References CHECKHASNMDCOOKIE, NMDCategoryGetComponent(), NMDObject-

GetCategory(), and NMD_metadata_item_::t.

Here is the call graph for this function:



13.3.4.24 NMDErrorCode NMDGetTypeMySQLName (NMDDataType , const char **)

Definition at line 745 of file nmd.c.

References mysqltypenames, and nnmdtypenames.

Referenced by main().

13.3.4.25 NMDErrorCode NMDGetValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType * *t*, void * *v*, NMDTruth * *f*)

Retrieve a stored scalar value. If no value has been stored under the specified category and component, a zero flag is returned. The flag parameter can be null.

Null pointers can be passed for the datatype or value, for instance to test only for the existence of a set value.

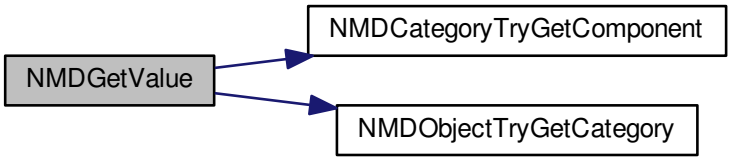
See also Value handling.

Definition at line 571 of file nmd.c.

References NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_item_::i, NMDCategoryTryGetComponent(), NMDFalse, NMDInt, NMDIntarray, NMDObjectTryGetCategory(), NMDReal, NMDRealarray, NMDString, NMDTrue, NMD_metadata_item_::r, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main(), NMDGetArrayValue(), and NMDTabReportData().

Here is the call graph for this function:



13.3.4.26 NMDErrorCode NMDIsArrayType (NMDDataType *type,* NMDTruth * *flg*)

Test whether a data type is an array type

Definition at line 737 of file nmd.c.

References NMDFalse, NMDIntarray, NMDRealarray, and NMDTrue.

Referenced by main().

13.3.4.27 NMDErrorCode NMDObjectAllocateNewCategory (NMD_metadata *obj,* const char * *cat,* NMD_metadata_category * *rctg*)

Allocate a category in a metadata object. There is no testing whether the category name is already in use.

If a category pointer is supplied, the category is returned, but this pointer is allowed to be null.

Definition at line 84 of file nmdcat.c.

References NMD_metadata_::alloc, NMD_metadata_::cats, CHKMEMQ, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_STRDUP, and NMDAllocateCategory().

Referenced by main(), NMDObjectEnsureCategoryComponent(), and NMDObjectGetOrCreateCategory().

Here is the call graph for this function:

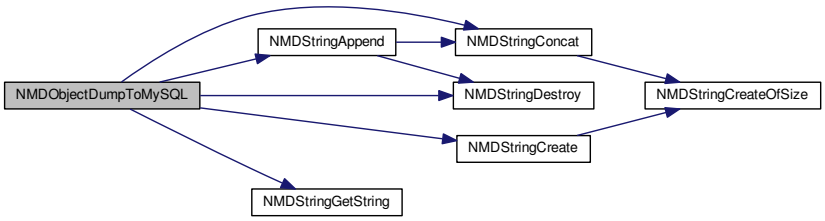
13.3.4.28 NMDErrorCode NMDObjectDumpToMySQL (NMD_metadata *obj*)

Generate an mysql dump of an object

Definition at line 11 of file nmdmysql.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, NMD_metadata_category_::cmps, NMD_metadata_item_::i, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDInt, NMDReal, NMDStringAppend(), NMDStringConcat(), NMDStringCreate(), NMDStringDestroy(), NMDStringGetString(), NMD_metadata_item_::r, and NMD_metadata_item_::t.

Here is the call graph for this function:



13.3.4.29 NMDErrorCode NMDObjectEnsureCategoryComponent (NMD_metadata , const char * , const char * , NMDDataType , NMDTruth *)

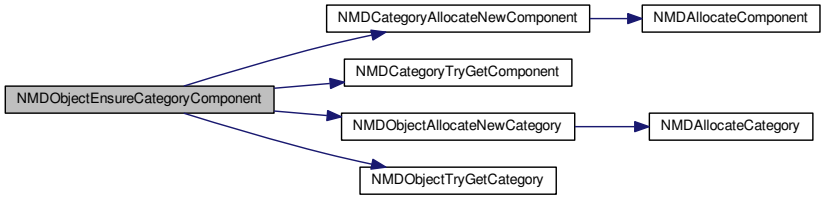
Definition at line 134 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryAllocateNewComponent(), NMDCategoryTryGetComponent(), NMDFalse, NMDObjectAllocate-

NewCategory(), NMDObjectTryGetCategory(), NMDTrue, and NMD_metadata_item-_::t.

Referenced by main(), and NMDCloneObjectStructure().

Here is the call graph for this function:



13.3.4.30 NMDErrorCode NMDObjectGetCategory (NMD_metadata *obj,* const char * *cat,* NMD_metadata_category * *ctg*)

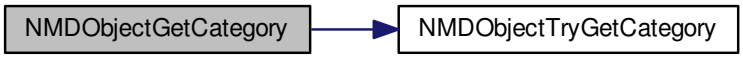
Retrieve a category from a metadata object. The category has to exist.

Definition at line 49 of file nmdcat.c.

References CHECKHASNMDCOOKIE, and NMDObjectTryGetCategory().

Referenced by NMDCategoryGetComponents(), NMDGetArrayValue(), NMDGetDataType(), and NMDRemoveCategory().

Here is the call graph for this function:



13.3.4.31 NMDErrorCode NMDObjectGetOrCreateCategory (NMD_metadata *obj,* const char * *cat,* NMD_metadata_category * *ctg*)

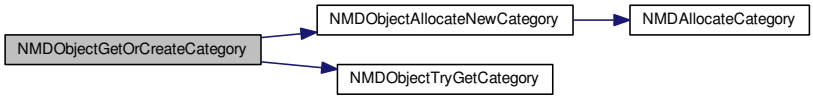
Retrieve a category from a metadata object, or create it if it doesn't exist yet.

Definition at line 118 of file nmdcat.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDObjectAllocateNewCategory(), and NMDObjectTryGetCategory().

Referenced by NMDCloneObject(), NMDCopyArrayValue(), NMDSetArrayValue(), and NMDSetValue().

Here is the call graph for this function:



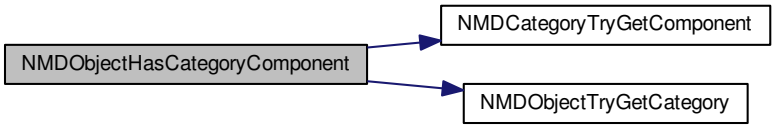
13.3.4.32 NMDErrorCode NMDObjectHasCategoryComponent (NMD_metadata , const char * , const char * , NMDTruth *)

Definition at line 161 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryTryGetComponent(), and NMDObjectTryGetCategory().

Referenced by main().

Here is the call graph for this function:



13.3.4.33 NMDErrorCode NMDObjectTryGetCategory (NMD_metadata *obj*, const char * *cat*, NMD_metadata_category * *rctg*, NMDTruth * *f*)

Test whether a metadata object has a certain category, if so yield up its pointer.

The category pointer parameter can be null, in which case only existence is tested.

Definition at line 29 of file nmdcat.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, NMD_metadata_category_::name, NMD_metadata_::ncat, NMDFalse, and NMDTrue.

Referenced by main(), NMDGetValue(), NMDObjectEnsureCategoryComponent(), NMDObjectGetCategory(), NMDObjectGetOrCreateCategory(), NMDObjectHasCategoryComponent(), and NMDUnsetValue().

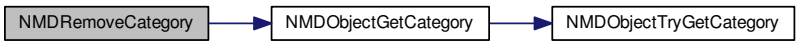
13.3.4.34 NMDErrorCode NMDRemoveCategory (NMD_metadata , const char *)

Definition at line 160 of file nmdcat.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::name, NMD_FREE, NMD_STRDUP, and NMDObjectGetCategory().

Referenced by main().

Here is the call graph for this function:



13.3.4.35 NMDErrorCode NMDReportObject (NMD_metadata *obj*, NMDTruth *arrays*, const char ** *rkey*, const char ** *rval*, const char *delim*, const char *itemdelim1*, const char *itemdelim2*)

Generate a delimited representation of a metadata object.

The returned strings are allocated in this routine and it is the user's responsibility to free them with NMD_FREE().

Arguments:

- obj : the metadata object
- ar : boolean to indicate whether arrays need to be written out in full. If this is false, only the first and last couple of elements are given.
- rkey : a string containing the names of the metadata items
- rval : the metadata items
- delim : delimiter character used in `rkey` and `rval`
- itemdelim1 : an optional opening quote, used for both keys and values. (A NULL value will cause no delimiter to be printed, rather than a null character.) For instance, use the backquote when generating MySQL strings.

- itemdelim2 : an optional closing quote

Definition at line 297 of file nmd.c.

References NMD_metadata_::cats, NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, CHKLEN, CHKMEMQ, CHKSPACEFOR, NMD_metadata_category_::cmps, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::i, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMD_FREE, NMD_MALLOC, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMD_metadata_item_::r, NMD_metadata_item_::rr, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main().

13.3.4.36 NMDErrorCode NMDSetArrayValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType *t*, void * *v*, int *l*)

Set a metadata value, if it is an array type.

The arrays are not copied, so the user is responsible for freeing the array. Use NMDCopyArrayValue() to have the array copied; NMD will then free the array when the metadata object is freed.

This call can be used to create categories and components; there is no checking of slight misspellings.

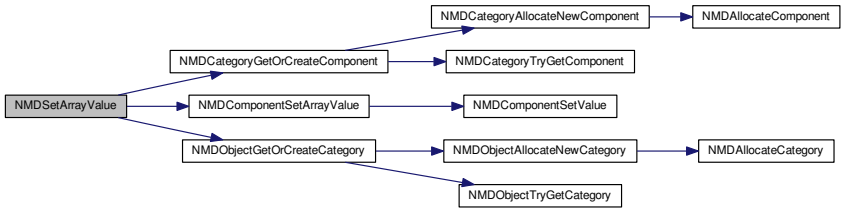
See also Value handling.

Definition at line 494 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryGetOrCreateComponent(), NMDComponentSetArrayValue(), and NMDObjectGetOrCreateCategory().

Referenced by main().

Here is the call graph for this function:



13.3.4.37 NMDErrorCode NMDSetValue (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType *t*, void * *v*)

Set a metadata value, indexed by category and component name.

The value has to be passed by reference

String values are copied. (Reason: literal strings are treated differently from allocated, and Petsc has its own way of doing strings.)

This call can be used to create categories and components; there is no checking of slight misspellings.

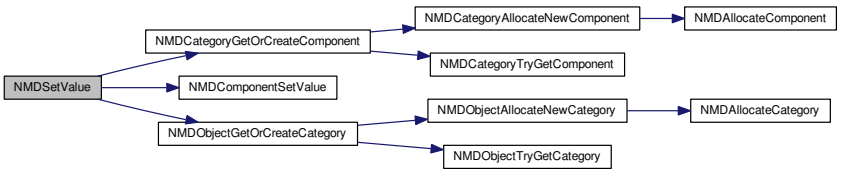
See also Value handling.

Definition at line 451 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryGetOrCreateComponent(), NMDComponentSetValue(), and NMDObjectGetOrCreateCategory().

Referenced by main(), and NMDCopyArrayValue().

Here is the call graph for this function:



13.3.4.38 NMDErrorCode NMDStringAppend (char *s1*, NMD_string * *str1*, char *s2*, NMD_string *str2*, char *s3*)

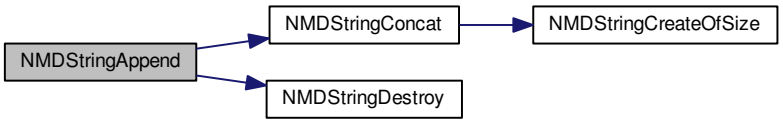
A version of NMDStringConcat() that appends to string 1, rather than creating a new string.

Definition at line 121 of file nmdutil.c.

References CHECKHASNMDCOOKIE, NMDStringConcat(), and NMDStringDestroy().

Referenced by NMDObjectDumpToMySQL().

Here is the call graph for this function:



13.3.4.39 NMDErrorCode NMDStringConcat (char *s1*, NMD_string *str1*, char *s2*, NMD_string *str2*, char *s3*, NMD_string * *r_str*)

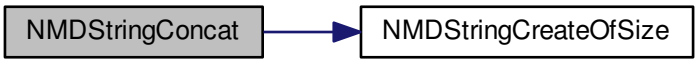
Concatenate string objects, with delimiter characters before, after, in between. All delimiters, and the second string, can be null.

Definition at line 74 of file nmdutil.c.

References CHECKHASNMDCOOKIE, NMD_string_::n, NMDStringCreateOfSize(), and NMD_string_::t.

Referenced by NMDObjectDumpToMySQL(), and NMDStringAppend().

Here is the call graph for this function:



13.3.4.40 NMDErrorCode NMDStringCreate (const char * *txt*, NMD_string * *r_str*)

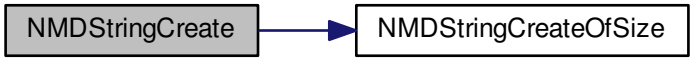
Create a string object around a C string; the C string is copied, so it can be freed by the calling environment.

Definition at line 36 of file nmdutil.c.

References NMDStringCreateOfSize(), and NMD_string_::t.

Referenced by NMDObjectDumpToMySQL().

Here is the call graph for this function:



13.3.4.41 NMDErrorCode NMDStringDestroy (NMD_string *str*)

Destroy a string object, and free the stored string.

Definition at line 49 of file nmdutil.c.

References CHECKHASNMDCOOKIE, NMD_FREE, and NMD_string_::t.

Referenced by NMDObjectDumpToMySQL(), and NMDStringAppend().

13.3.4.42 NMDErrorCode NMDStringGetString (NMD_string *str*, const char ** *t*)

Return a pointer to the string in a string object

Definition at line 60 of file nmdutil.c.

References CHECKHASNMDCOOKIE, and NMD_string_::t.

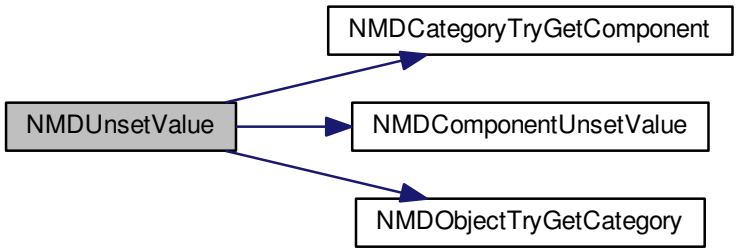
Referenced by NMDObjectDumpToMySQL().

13.3.4.43 NMDErrorCode NMDUnsetValue (NMD_metadata , const char * , const char *)

Definition at line 464 of file nmd.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryTryGetComponent(), NMDComponentUnsetValue(), and NMDObjectTryGetCategory().

Here is the call graph for this function:



13.3.4.44 NMDErrorCode NMDViewObject (NMD_metadata *obj*)

Print out an NMD object.

Currently only int, real, string fields are displayed, others are displayed as "***".

Definition at line 245 of file nmd.c.

References NMD_metadata_::cats, NMD_metadata_item_::cc, CHECKHASNMDC-OOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::i, -NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDInt, NMDReal, NMDString, NMD_metadata-_item_::r, NMD_metadata_item_::set, and NMD_metadata_item_::t.

13.3.5 Variable Documentation

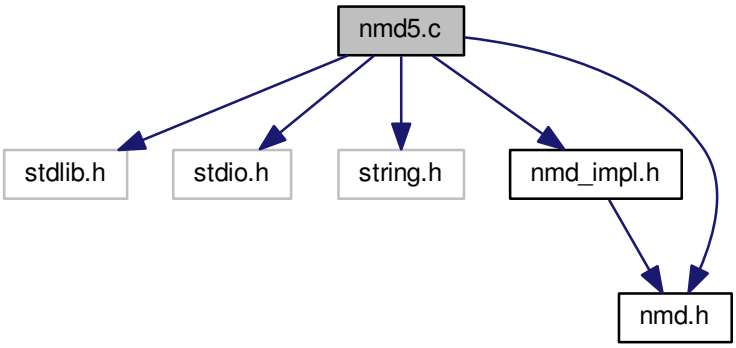
13.3.5.1 const char* typenames[ ]

Definition at line 84 of file nmd.c.

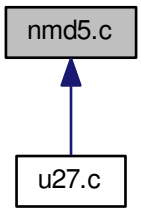
13.4 nmd5.c File Reference

`#include <stdlib.h>` `#include <stdio.h>` `#include <string.-h>` `#include "nmd_impl.h"` `#include "nmd.h"` Include dependency graph

for nmd5.c:

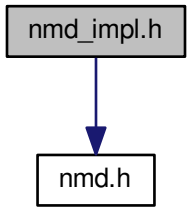


This graph shows which files directly or indirectly include this file:

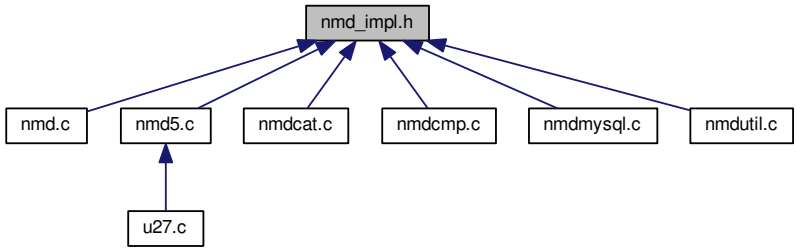


13.5 nmd_impl.h File Reference

`#include "nmd.h"` Include dependency graph for nmd_impl.h:



This graph shows which files directly or indirectly include this file:



Data Structures

- struct NMD_metadata_item_
- struct NMD_metadata_category_
- struct NMD_metadata_
- struct NMD_object_
- struct NMD_intarray_struct
- struct NMD_realarray_struct

Defines

- #define CHKMEMQ

13.5.1 Define Documentation

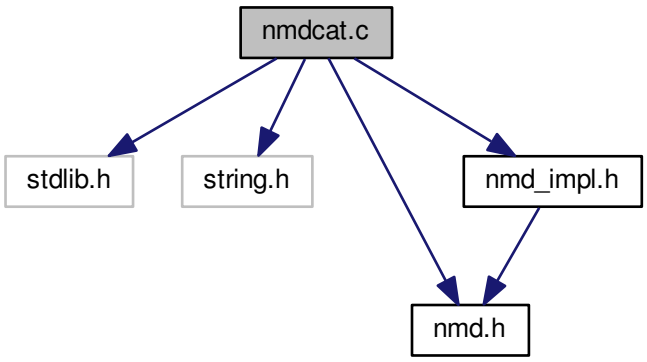
13.5.1.1 #define CHKMEMQ

Definition at line 7 of file nmd_impl.h.

Referenced by NMDAllocateCategory(), NMDAllocateComponent(), NMDCategory-AllocateNewComponent(), NMDCategoryGetComponent(), NMDCategoryGetComponents(), NMDCategoryGetOrCreateComponent(), NMDCategoryTryGetComponent(), NMD-CloneObject(), NMDCloneObjectStructure(), NMDCopyArrayValue(), NMDCopyCategory(), NMDCopyItemValues(), NMDCreateObject(), NMDDestroyObject(), NMDGetArray-Value(), NMDGetCategories(), NMDGetValue(), NMDObjectAllocateNewCategory(), NMDObjectEnsureCategoryComponent(), NMDObjectGetOrCreateCategory(), NM-DObjectHasCategoryComponent(), NMDRemoveCategory(), NMDReportObject(), -NMDSetArrayValue(), NMDSetValue(), NMDUnsetValue(), and NMDViewObject().

13.6 nmdcat.c File Reference

`#include <stdlib.h> #include "string.h" #include "nmd.h"` × `#include "nmd_impl.h"` Include dependency graph for nmdcat.c:



Defines

- #define CMPCHUNK 30

Functions

- NMDErrorCode NMDObjectTryGetCategory (NMD_metadata obj, const char *cat, NMD_metadata_category *rctg, NMDTruth *f)
- NMDErrorCode NMDObjectGetCategory (NMD_metadata obj, const char *cat, NMD_metadata_category *ctg)
- static NMDErrorCode NMDAllocateCategory (NMD_metadata_category *rcat)
- NMDErrorCode NMDObjectAllocateNewCategory (NMD_metadata obj, const char *cat, NMD_metadata_category *rctg)
- NMDErrorCode NMDObjectGetOrCreateCategory (NMD_metadata obj, const char *cat, NMD_metadata_category *ctg)
- NMDErrorCode NMDGetCategories (NMD_metadata obj, int *ncat, char ***cats)
- NMDErrorCode NMDRemoveCategory (NMD_metadata obj, const char *cat)
- NMDErrorCode NMDCopyCategory (NMD_metadata_category incat, NMD_metadata_category outcat)

13.6.1 Define Documentation

13.6.1.1 #define CMPCHUNK 30

Definition at line 6 of file nmdcat.c.

Referenced by NMDAllocateCategory().

13.6.2 Function Documentation

13.6.2.1 static NMDErrorCode NMDAllocateCategory (NMD_metadata_category * *rcat*) [static]

This is an internal routine that merely allocates the data structure for storing a category.

Definition at line 63 of file nmdcat.c.

References NMD_metadata_category_::alloc, CHKMEMQ, CMPCHUNK, NMD_metadata_category_::cmps, NMD_metadata_category_::cookie, NMD_metadata_category_::ncmp, NMD_MALLOC, and NMDCOOKIE.

Referenced by NMDObjectAllocateNewCategory().

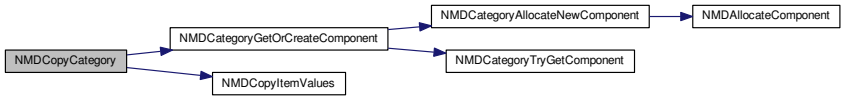
13.6.2.2 NMDErrorCode NMDCopyCategory (NMD_metadata_category *incat*, NMD_metadata_category *outcat*)

Copy category data from one metadata structure into another. This assumes that the category already exists in the target; see for instance NMDHasCategory(), NMDCloneObject(), NMDCloneObjectStructure().

Definition at line 180 of file nmdcat.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMDCategoryGetOrCreateComponent(), NMDCopyItemValues(), and NMD_metadata_item_::t.

Here is the call graph for this function:



13.6.2.3 NMDErrorCode NMDGetCategories (NMD_metadata *obj*, int * *ncat*, char *** *cats*)

Get the number of categories and their names. Both arguments can be NULL. The names array is allocated; the user needs to free it. The names themselves are pointers to the strings in the metadata object, so they do not need to be freed.

Definition at line 137 of file nmdcat.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::name, NMD_metadata_::ncat, and NMD_MALLOC.

Referenced by main(), and NMDTabReportData().

13.6.2.4 NMDErrorCode NMDObjectAllocateNewCategory (NMD_metadata *obj*, const char * *cat*, NMD_metadata_category * *rctg*)

Allocate a category in a metadata object. There is no testing whether the category name is already in use.

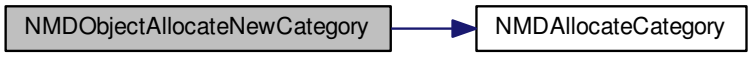
If a category pointer is supplied, the category is returned, but this pointer is allowed to be null.

Definition at line 84 of file nmdcat.c.

References NMD_metadata_::alloc, NMD_metadata_::cats, CHKMEMQ, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_STRDUP, and NMDAllocateCategory().

Referenced by main(), NMDObjectEnsureCategoryComponent(), and NMDObject-GetOrCreateCategory().

Here is the call graph for this function:



13.6.2.5 NMDErrorCode NMDObjectGetCategory (NMD_metadata *obj,* const char * *cat,* NMD_metadata_category * *ctg*)

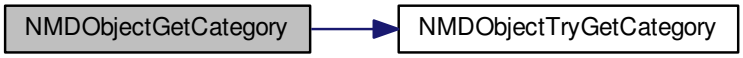
Retrieve a category from a metadata object. The category has to exist.

Definition at line 49 of file nmdcat.c.

References CHECKHASNMDCOOKIE, and NMDObjectTryGetCategory().

Referenced by NMDCategoryGetComponents(), NMDGetArrayValue(), NMDGetData-Type(), and NMDRemoveCategory().

Here is the call graph for this function:



13.6.2.6 NMDErrorCode NMDObjectGetOrCreateCategory (NMD_metadata *obj,* const char * *cat,* NMD_metadata_category * *ctg*)

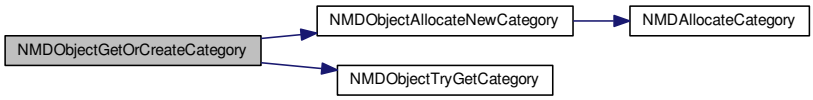
Retrieve a category from a metadata object, or create it if it doesn't exist yet.

Definition at line 118 of file nmdcat.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDObjectAllocateNewCategory(), and NMDObjectTryGetCategory().

Referenced by NMDCloneObject(), NMDCopyArrayValue(), NMDSetArrayValue(), and NMDSetValue().

Here is the call graph for this function:



13.6.2.7 NMDErrorCode NMDObjectTryGetCategory (NMD_metadata *obj*, const char * *cat*, NMD_metadata_category * *rctg*, NMDTruth * *f*)

Test whether a metadata object has a certain category, if so yield up its pointer.

The category pointer parameter can be null, in which case only existence is tested.

Definition at line 29 of file nmdcat.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, NMD_metadata_category_::name, NMD_metadata_::ncat, NMDFalse, and NMDTrue.

Referenced by main(), NMDGetValue(), NMDObjectEnsureCategoryComponent(), NMDObjectGetCategory(), NMDObjectGetOrCreateCategory(), NMDObjectHasCategoryComponent(), and NMDUnsetValue().

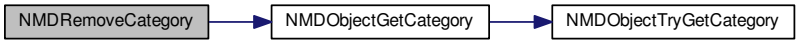
13.6.2.8 NMDErrorCode NMDRemoveCategory (NMD_metadata *obj*, const char * *cat*)

Definition at line 160 of file nmdcat.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::name, NMD_FREE, NMD_STRDUP, and NMDObjectGetCategory().

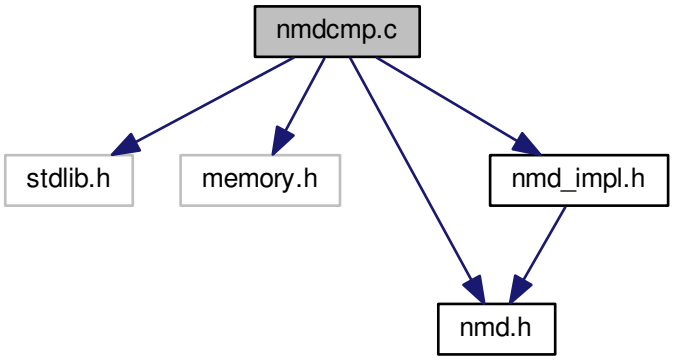
Referenced by main().

Here is the call graph for this function:



13.7 nmdcmp.c File Reference

`#include <stdlib.h> #include "memory.h" #include "nmd.h"` × `#include "nmd_impl.h"` Include dependency graph for nmdcmp.c:



Functions

- static NMDErrorCode NMDAllocateComponent (NMD_metadata_item ∗rcmp)
- NMDErrorCode NMDCategoryAllocateNewComponent (NMD_metadata_category cat, const char ∗cmp, NMDDataType type, NMD_metadata_item ∗rcpt)
- NMDErrorCode NMDComponentDestroy (NMD_metadata_item cmp)
- NMDErrorCode NMDCategoryGetOrCreateComponent (NMD_metadata_category cat, const char ∗cmp, NMDDataType type, NMD_metadata_item ∗cpt)
- NMDErrorCode NMDObjectEnsureCategoryComponent (NMD_metadata obj, const char ∗cat, const char ∗cmp, NMDDataType type, NMDTruth ∗nnew)
- NMDErrorCode NMDObjectHasCategoryComponent (NMD_metadata obj, const char ∗cat, const char ∗cmp, NMDTruth ∗f)
- NMDErrorCode NMDCategoryTryGetComponent (NMD_metadata_category cat, const char ∗cmp, NMD_metadata_item ∗rcpt, NMDTruth ∗f)
- NMDErrorCode NMDCategoryGetComponents (NMD_metadata obj, const char ∗cat, int ∗ncmp, const char ∗∗∗cmps, NMDDataType ∗∗typs)
- NMDErrorCode NMDCategoryGetComponent (NMD_metadata_category cat, const char ∗cmp, NMD_metadata_item ∗cpt)
- NMDErrorCode NMDGetCategoryIGetComponents (NMD_metadata obj, int icat, int ∗ncmp, char ∗∗∗cmps, NMDDataType ∗∗typs)

- NMDErrorCode NMDComponentSetValue (NMD_metadata_item cpt, NMDDataType t, void *v)
- NMDErrorCode NMDComponentUnsetValue (NMD_metadata_item cpt)
- NMDErrorCode NMDComponentSetArrayValue (NMD_metadata_item cpt, NMDDataType t, void *v, int l)
- PetscErrorCode NMDCopyItemValues (NMD_metadata_item src, NMD_metadata_item tar)

13.7.1 Function Documentation

13.7.1.1 static NMDErrorCode NMDAllocateComponent (NMD_metadata_item * *rcmp*) [static]

An internal routine that only allocates the component data structure

Definition at line 24 of file nmdcmp.c.

References CHKMEMQ, NMD_metadata_item_::cookie, NMD_MALLOC, NMDCOOKIE, NMDFalse, and NMD_metadata_item_::set.

Referenced by NMDCategoryAllocateNewComponent().

13.7.1.2 NMDErrorCode NMDCategoryAllocateNewComponent (NMD_metadata_category *cat*, const char * *cmp*, NMDDataType *type*, NMD_metadata_item * *rcpt*)

Create a new component by name in an existing category object. If a component pointer is supplied, the new component object is returned, but this pointer is allowed to be NULL.

Definition at line 41 of file nmdcmp.c.

References NMD_metadata_category_::alloc, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMD_STRDUP, NMDAllocateComponent(), NMDFalse, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by main(), NMDCategoryGetOrCreateComponent(), and NMDObjectEnsureCategoryComponent().

Here is the call graph for this function:

13.7.1.3 NMDErrorCode NMDCategoryGetComponent (NMD_metadata_category *cat*, const char * *cmp*, NMD_metadata_item * *cpt*)

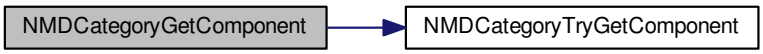
Test whether a metadata category has a certain component. The component has to exist.

Definition at line 234 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::name, and NMDCategoryTryGetComponent().

Referenced by NMDGetArrayValue(), and NMDGetDataType().

Here is the call graph for this function:



13.7.1.4 NMDErrorCode NMDCategoryGetComponents (NMD_metadata *obj*, const char * *cat*, int * *ncmp*, const char *** *cmps*, NMDDataType ** *typs*)

Get a list of all component names and types in a category. All three output arguments are optional. The names and types arrays are allocated and should be freed by the user by NMD_FREE(). The names in the name array points to the strings in the database object, so they do not need to be freed.

Definition at line 205 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps,

NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMD_MALLOC, -NMDObjectGetCategory(), and NMD_metadata_item_::t.

Referenced by main().

Here is the call graph for this function:

13.7.1.5 NMDErrorCode NMDCategoryGetOrCreateComponent (NMD_metadata_category *cat*, const char * *cmp*, NMDDataType *type*, NMD_metadata_item * *cpt*)

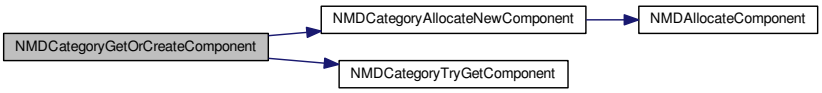
Retrieve a component, creating it if it doesn't already exist.

Definition at line 108 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryAllocateNew-Component(), NMDCategoryTryGetComponent(), and NMD_metadata_item_::t.

Referenced by main(), NMDCloneObject(), NMDCopyArrayValue(), NMDCopyCategory(), NMDSetArrayValue(), and NMDSetValue().

Here is the call graph for this function:



13.7.1.6 NMDErrorCode NMDCategoryTryGetComponent (NMD_metadata_category *cat*, const char * *cmp*, NMD_metadata_item * *rcpt*, NMDTruth * *f*)

Test whether a metadata category has a certain component.

Definition at line 178 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMDFalse, and N-

MDTrue.

Referenced by main(), NMDCategoryGetComponent(), NMDCategoryGetOrCreate-Component(), NMDGetValue(), NMDObjectEnsureCategoryComponent(), NMDObject-HasCategoryComponent(), and NMDUnsetValue().

13.7.1.7 NMDErrorCode NMDComponentDestroy (NMD_metadata_item *cmp*)

Definition at line 72 of file nmdcmp.c.

References NMD_metadata_item_::cc, NMD_intarray_struct::data, NMD_realarray_-struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray-_struct::length, NMD_metadata_item_::name, NMD_FREE, NMDIntarray, NMDRealarray, NMDString, NMD_metadata_item_::rr, NMD_metadata_item_::t, NMD_intarray_struct-::unique, and NMD_realarray_struct::unique.

Referenced by NMDDestroyObject().

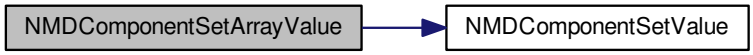
13.7.1.8 NMDErrorCode NMDComponentSetArrayValue (NMD_metadata_item *cpt*, NMDDataType *t*, void * *v*, int *l*)

Definition at line 323 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, NMD_intarray_struct::data, NMD_realarray-_struct::data, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray-_struct::length, NMD_MALLOC, NMDComponentSetValue(), NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMDTrue, NMD_metadata_item_::rr, NM-D_metadata_item_::set, NMD_metadata_item_::t, NMD_intarray_struct::unique, and NMD_realarray_struct::unique.

Referenced by NMDSetArrayValue().

Here is the call graph for this function:



13.7.1.9 NMDErrorCode NMDComponentSetValue (NMD_metadata_item *cpt*, NMDDataType *t*, void * *v*)

Definition at line 278 of file nmdcmp.c.

References NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, NMD_metadata_item_::i, NMD_STRDUP, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMDTrue, NMD_metadata_item_::r, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by NMDComponentSetArrayValue(), and NMDSetValue().

13.7.1.10 NMDErrorCode NMDComponentUnsetValue (NMD_metadata_item *cpt*)

Definition at line 297 of file nmdcmp.c.

References NMD_metadata_item_::cc, CHECKHASNMDCOOKIE, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::ii, NMD_FREE, NMDFalse, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMD_metadata_item_::rr, NMD_metadata_item_::set, and NMD_metadata_item_::t.

Referenced by NMDUnsetValue().

13.7.1.11 PetscErrorCode NMDCopyItemValues (NMD_metadata_item *src,* NMD_metadata_item *tar*)

Copy data between two item structures. If the original has unique data, so does the clone.

Definition at line 359 of file nmdcmp.c.

References NMD_metadata_item_::cc, CHKMEMQ, NMD_intarray_struct::data, NMD_realarray_struct::data, NMD_metadata_item_::i, NMD_metadata_item_::ii, NMD_intarray_struct::length, NMD_realarray_struct::length, NMD_MALLOC, NMD_STRDUP, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDString, NMD_metadata_item_::r, NMD_metadata_item_::rr, NMD_metadata_item_::set, NMD_metadata_item_::t, NMD_intarray_struct::unique, and NMD_realarray_struct::unique.

Referenced by NMDCloneObject(), and NMDCopyCategory().

13.7.1.12 NMDErrorCode NMDGetCategoryIGetComponents (NMD_metadata *obj,* int *icat,* int * *ncmp,* char *** *cmps,* NMDDataType ** *typs*)

For a given category, get the number of components and their names.

All output arguments can be NULL. The names array is allocated; the user needs to free it. The names themselves are pointers to the strings in the metadata object, so they do not need to be freed. The types array is also allocated and needs to be freed.

Definition at line 255 of file nmdcmp.c.

References NMD_metadata_::cats, CHECKHASNMDCOOKIE, NMD_metadata_category_::cmps, NMD_metadata_item_::name, NMD_metadata_category_::ncmp, NMD_MALLOC, and NMD_metadata_item_::t.

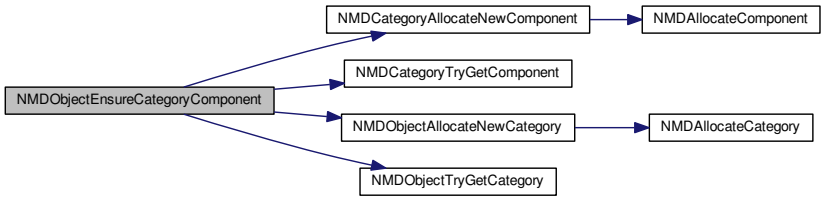
13.7.1.13 NMDErrorCode NMDObjectEnsureCategoryComponent (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDDataType *type*, NMDTruth * *nnew*)

Definition at line 134 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryAllocateNewComponent(), NMDCategoryTryGetComponent(), NMDFalse, NMDObjectAllocateNewCategory(), NMDObjectTryGetCategory(), NMDTrue, and NMD_metadata_item_::t.

Referenced by main(), and NMDCloneObjectStructure().

Here is the call graph for this function:



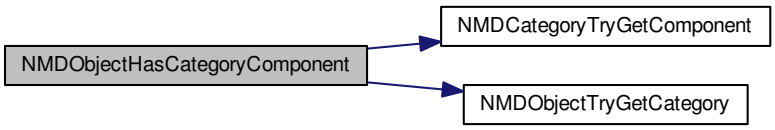
13.7.1.14 NMDErrorCode NMDObjectHasCategoryComponent (NMD_metadata *obj*, const char * *cat*, const char * *cmp*, NMDTruth * *f*)

Definition at line 161 of file nmdcmp.c.

References CHECKHASNMDCOOKIE, CHKMEMQ, NMDCategoryTryGetComponent(), and NMDObjectTryGetCategory().

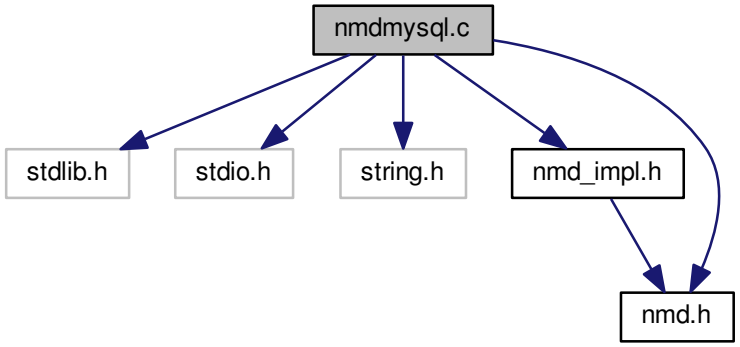
Referenced by main().

Here is the call graph for this function:



13.8 nmdmysql.c File Reference

`#include <stdlib.h>` `#include <stdio.h>` `#include <string.h>` `#include "nmd_impl.h"` `#include "nmd.h"` Include dependency graph for nmdmysql.c:



Functions

- NMDErrorCode NMDObjectDumpToMySQL (NMD_metadata obj)

13.8.1 Function Documentation

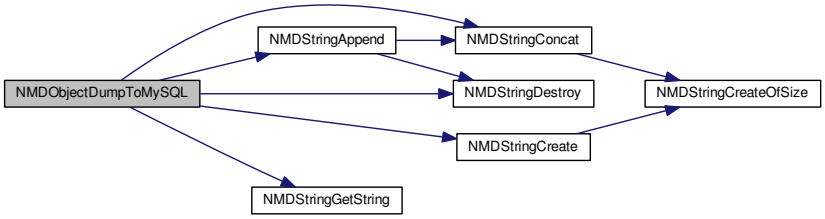
13.8.1.1 NMDErrorCode NMDObjectDumpToMySQL (NMD_metadata *obj*)

Generate an mysql dump of an object

Definition at line 11 of file nmdmysql.c.

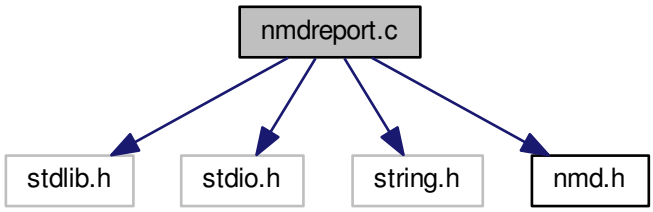
References NMD_metadata_::cats, CHECKHASNMDCOOKIE, NMD_metadata_category_::cmps, NMD_metadata_item_::i, NMD_metadata_item_::name, NMD_metadata_category_::name, NMD_metadata_::ncat, NMD_metadata_category_::ncmp, NMDInt, NMDReal, NMDStringAppend(), NMDStringConcat(), NMDStringCreate(), NMDStringDestroy(), NMDStringGetString(), NMD_metadata_item_::r, and NMD_metadata_item_::t.

Here is the call graph for this function:



13.9 nmdreport.c File Reference

`#include <stdlib.h>` `#include <stdio.h>` `#include <string.h>` `#include "nmd.h"` Include dependency graph for nmdreport.c:



Functions

- int NMDTabReportData (NMD_metadata nmd, char **rkey, char **rval, int separator)

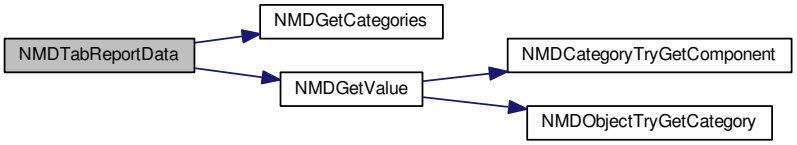
13.9.1 Function Documentation

13.9.1.1 int NMDTabReportData (NMD_metadata *nmd*, char ** *rkey*, char ** *rval*, int *separator*)

Definition at line 8 of file nmdreport.c.

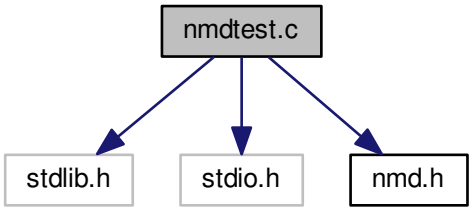
References NMD_MALLOC, NMDGetCategories(), NMDGetValue(), NMDIntarray, and NMDRealarray.

Here is the call graph for this function:



13.10 nmdtest.c File Reference

`#include <stdlib.h>` `#include <stdio.h>` `#include "nmd.h"` Include dependency graph for nmdtest.c:



Functions

- int main (int argc, char **argv)

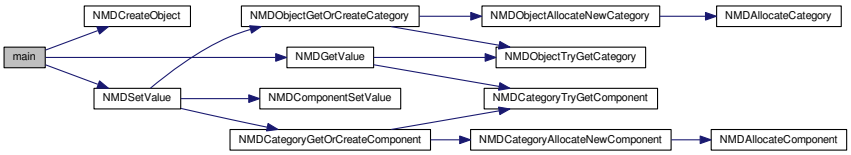
13.10.1 Function Documentation

13.10.1.1 int main (int *argc*, char ** *argv*)

Definition at line 5 of file nmdtest.c.

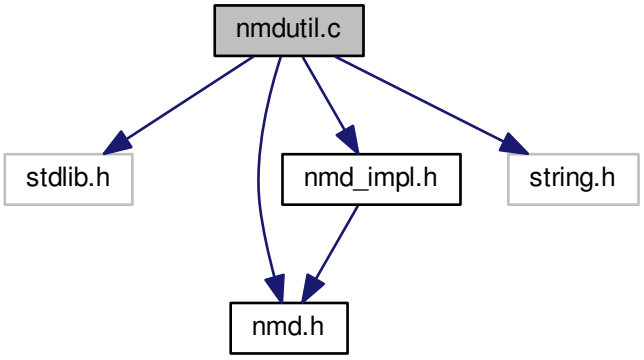
References NMDCreateObject(), NMDGetValue(), NMDInt, NMDReal, and NMDSetValue().

Here is the call graph for this function:



13.11 nmdutil.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` `#include "nmd_impl.h"` × `#include "string.h"` Include dependency graph for nmdutil.c:



Data Structures

- struct NMD_string_

Functions

- static NMDErrorCode NMDStringCreateOfSize (int n, NMD_string *r_str)
- NMDErrorCode NMDStringCreate (const char *txt, NMD_string *r_str)
- NMDErrorCode NMDStringDestroy (NMD_string str)
- NMDErrorCode NMDStringGetString (NMD_string str, const char **t)
- NMDErrorCode NMDStringConcat (char s1, NMD_string str1, char s2, NMD_string str2, char s3, NMD_string *r_str)
- NMDErrorCode NMDStringAppend (char s1, NMD_string *str1, char s2, NMD_string str2, char s3)

13.11.1 Function Documentation

13.11.1.1 NMDErrorCode NMDStringAppend (char *s1*, NMD_string * *str1*, char *s2*, NMD_string *str2*, char *s3*)

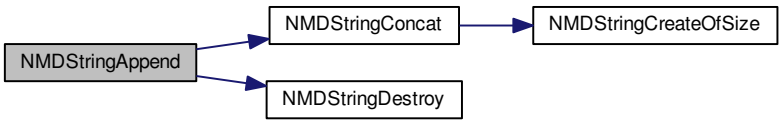
A version of NMDStringConcat() that appends to string 1, rather than creating a new string.

Definition at line 121 of file nmdutil.c.

References CHECKHASNMDCOOKIE, NMDStringConcat(), and NMDStringDestroy().

Referenced by NMDObjectDumpToMySQL().

Here is the call graph for this function:



13.11.1.2 NMDErrorCode NMDStringConcat (char *s1*, NMD_string *str1*, char *s2*, NMD_string *str2*, char *s3*, NMD_string * *r_str*)

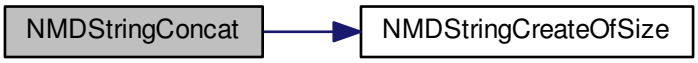
Concatenate string objects, with delimiter characters before, after, in between. All delimiters, and the second string, can be null.

Definition at line 74 of file nmdutil.c.

References CHECKHASNMDCOOKIE, NMD_string_::n, NMDStringCreateOfSize(), and NMD_string_::t.

Referenced by NMDObjectDumpToMySQL(), and NMDStringAppend().

Here is the call graph for this function:



13.11.1.3 NMDErrorCode NMDStringCreate (const char * *txt*, NMD_string * *r_str*)

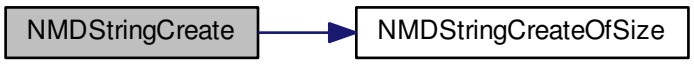
Create a string object around a C string; the C string is copied, so it can be freed by the calling environment.

Definition at line 36 of file nmdutil.c.

References NMDStringCreateOfSize(), and NMD_string_::t.

Referenced by NMDObjectDumpToMySQL().

Here is the call graph for this function:



13.11.1.4 static NMDErrorCode NMDStringCreateOfSize (int *n*, NMD_string * *r_str*) [static]

Internal auxiliary function for creating a string object of a given length. Zero length is allowed.

Definition at line 21 of file nmdutil.c.

References NMD_string_::cookie, NMD_string_::n, NMD_MALLOC, NMDCOOKIE, and NMD_string_::t.

Referenced by NMDStringConcat(), and NMDStringCreate().

13.11.1.5 NMDErrorCode NMDStringDestroy (NMD_string *str*)

Destroy a string object, and free the stored string.

Definition at line 49 of file nmdutil.c.

References CHECKHASNMDCOOKIE, NMD_FREE, and NMD_string_::t.

Referenced by NMDObjectDumpToMySQL(), and NMDStringAppend().

13.11.1.6 NMDErrorCode NMDStringGetString (NMD_string *str*, const char ** *t*)

Return a pointer to the string in a string object

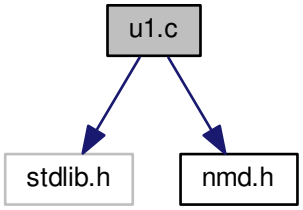
Definition at line 60 of file nmdutil.c.

References CHECKHASNMDCOOKIE, and NMD_string_::t.

Referenced by NMDObjectDumpToMySQL().

13.12 u1.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u1.c:



Functions

- int main (int argc, char **argv)

13.12.1 Function Documentation

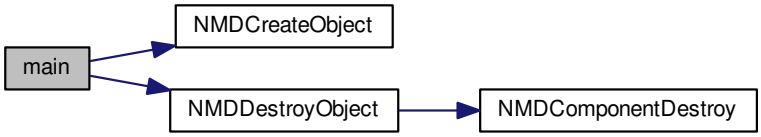
13.12.1.1 int main (int *argc*, char ** *argv*)

Test setting and getting values

Definition at line 5 of file u1.c.

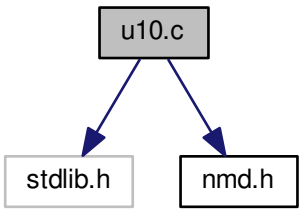
References NMDCreateObject(), and NMDDestroyObject().

Here is the call graph for this function:



13.13 u10.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u10.c:



Functions

- int main (int argc, char **argv)

13.13.1 Function Documentation

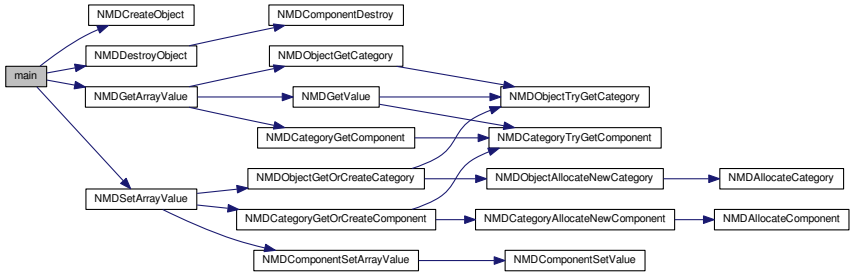
13.13.1.1 int main (int *argc*, char ** *argv*)

Test setting and getting of array values

Definition at line 5 of file u10.c.

References NMD_FREE, NMD_MALLOC, NMDCreateObject(), NMDDestroyObject(), NMDGetArrayValue(), NMDIntarray, NMDRealarray, and NMDSetArrayValue().

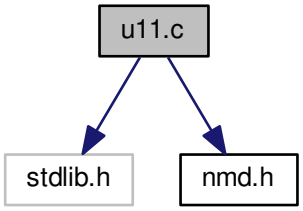
Here is the call graph for this function:



13.14 u11.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for

u11.c:



Functions

- int main (int argc, char **argv)

13.14.1 Function Documentation

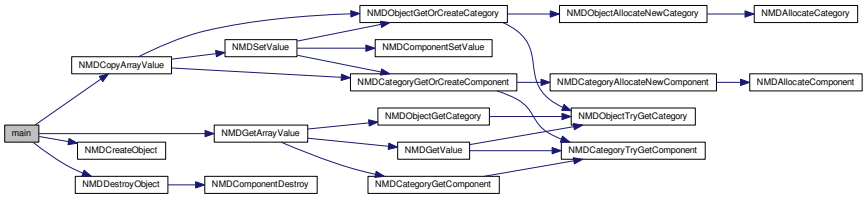
13.14.1.1 int main (int *argc*, char ** *argv*)

Test setting and getting of array values with internal copy

Definition at line 5 of file u11.c.

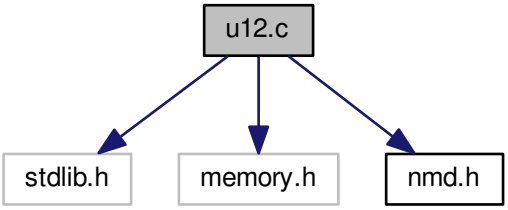
References NMD_FREE, NMD_MALLOC, NMDCopyArrayValue(), NMDCreateObject(), NMDDestroyObject(), NMDGetArrayValue(), and NMDIntarray.

Here is the call graph for this function:



13.15 u12.c File Reference

`#include <stdlib.h> #include "memory.h" #include "nmd.h"` ×
Include dependency graph for u12.c:



Functions

- int main (int argc, char **argv)

13.15.1 Function Documentation

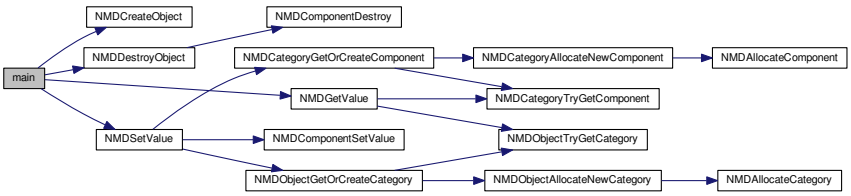
13.15.1.1 int main (int *argc*, char ** *argv*)

Stress test

Definition at line 6 of file u12.c.

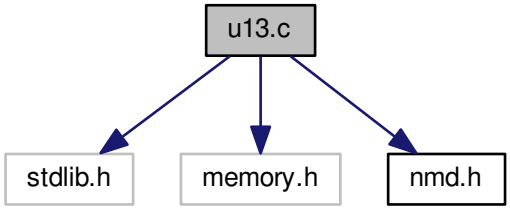
References NMDCreateObject(), NMDDestroyObject(), NMDGetValue(), NMDInt, and NMDSetValue().

Here is the call graph for this function:



13.16 u13.c File Reference

`#include <stdlib.h> #include "memory.h" #include "nmd.h"` ×
Include dependency graph for u13.c:



Defines

- #define ILEN 4
- #define RLEN 6

Functions

- int main (int argc, char **argv)

13.16.1 Define Documentation

13.16.1.1 #define ILEN 4

Referenced by main().

13.16.1.2 #define RLEN 6

Referenced by main().

13.16.2 Function Documentation

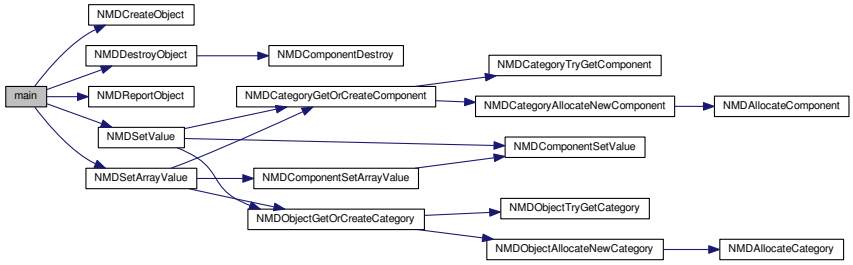
13.16.2.1 int main (int *argc*, char ** *argv*)

Object reporting

Definition at line 6 of file u13.c.

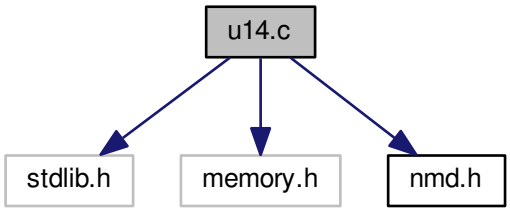
References ILEN, NMD_FREE, NMD_MALLOC, NMDCreateObject(), NMDDestroyObject(), NMDFalse, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDReportObject(), NMDSetArrayValue(), NMDSetValue(), NMDTrue, and RLEN.

Here is the call graph for this function:



13.17 u14.c File Reference

`#include <stdlib.h> #include "memory.h" #include "nmd.h"` ×
Include dependency graph for u14.c:



Functions

- int main (int argc, char **argv)

13.17.1 Function Documentation

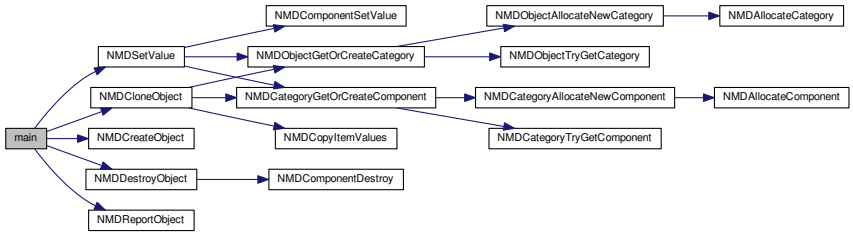
13.17.1.1 int main (int *argc*, char ** *argv*)

Object cloning with scalars

Definition at line 6 of file u14.c.

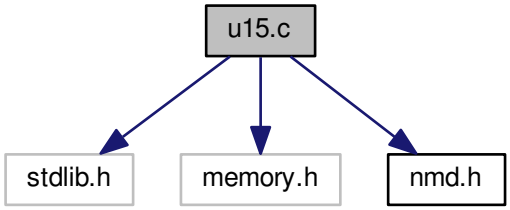
References NMD_FREE, NMDCloneObject(), NMDCreateObject(), NMDDestroyObject(), NMDFalse, NMDInt, NMDReal, NMDReportObject(), and NMDSetValue().

Here is the call graph for this function:



13.18 u15.c File Reference

`#include <stdlib.h> #include "memory.h" #include "nmd.h"` ×
Include dependency graph for u15.c:



Defines

- #define ILEN 4
- #define RLEN 6

Functions

- int main (int argc, char **argv)

13.18.1 Define Documentation

13.18.1.1 #define ILEN 4

13.18.1.2 #define RLEN 6

13.18.2 Function Documentation

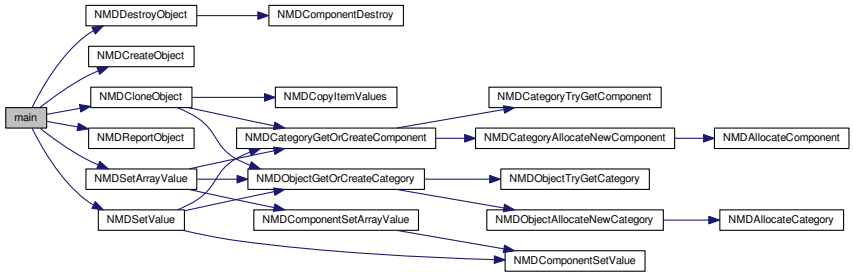
13.18.2.1 int main (int *argc*, char ** *argv*)

Object cloning including arrays

Definition at line 6 of file u15.c.

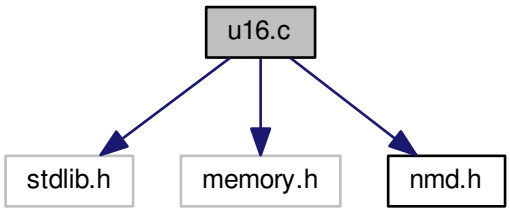
References ILEN, NMD_FREE, NMD_MALLOC, NMDCloneObject(), NMDCreateObject(), NMDDestroyObject(), NMDFalse, NMDInt, NMDIntarray, NMDReal, NMDRealarray, NMDReportObject(), NMDSetArrayValue(), NMDSetValue(), NMDTrue, and RLEN.

Here is the call graph for this function:



13.19 u16.c File Reference

`#include <stdlib.h> #include "memory.h" #include "nmd.h"` ×
Include dependency graph for u16.c:



Functions

- int main (int argc, char **argv)

13.19.1 Function Documentation

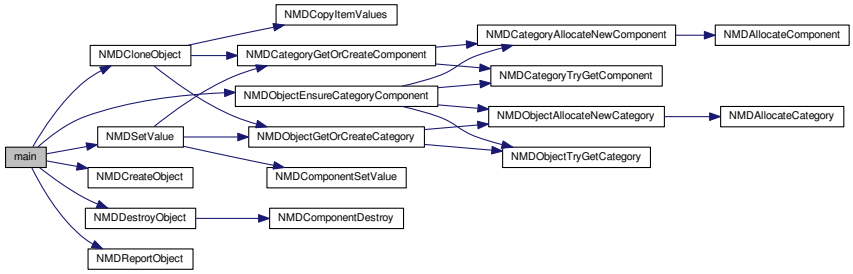
13.19.1.1 int main (int *argc,* char ** *argv*)

Object cloning and reporting in the presence of place holder empty components

Definition at line 7 of file u16.c.

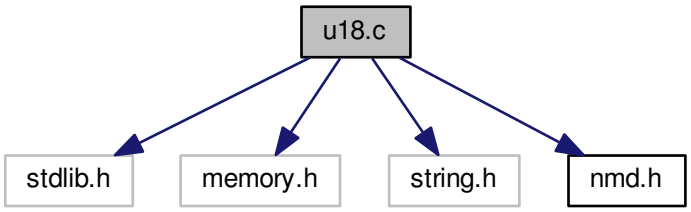
References NMD_FREE, NMDCloneObject(), NMDCreateObject(), NMDDestroyObject(), NMDFalse, NMDInt, NMDObjectEnsureCategoryComponent(), NMDReal, NMDReportObject(), and NMDSetValue().

Here is the call graph for this function:



13.20 u18.c File Reference

`#include <stdlib.h>` `#include "memory.h"` `#include "string.-h"` `#include "nmd.h"` Include dependency graph for u18.c:



Functions

- int main (int argc, char **argv)

13.20.1 Function Documentation

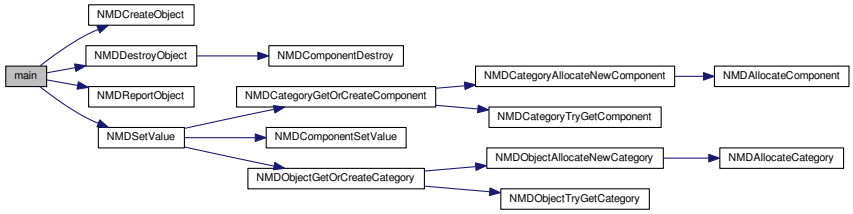
13.20.1.1 int main (int *argc*, char ** *argv*)

Object reporting

Definition at line 7 of file u18.c.

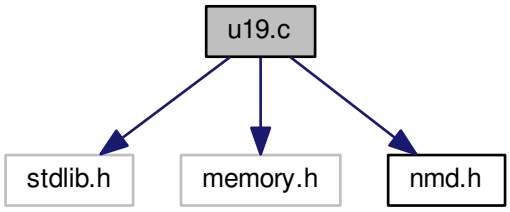
References NMD_FREE, NMDCreateObject(), NMDDestroyObject(), NMDFalse, NMDInt, NMDReportObject(), and NMDSetValue().

Here is the call graph for this function:



13.21 u19.c File Reference

`#include <stdlib.h> #include "memory.h" #include "nmd.h"` ×
Include dependency graph for u19.c:



Functions

- int main (int argc, char **argv)

13.21.1 Function Documentation

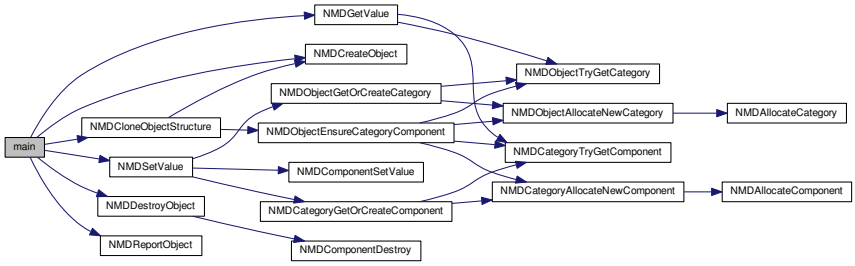
13.21.1.1 int main (int *argc*, char ** *argv*)

Object structure cloning

Definition at line 6 of file u19.c.

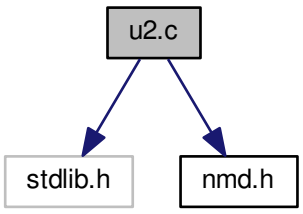
References NMD_FREE, NMDCloneObjectStructure(), NMDCreateObject(), NMDDestroyObject(), NMDFalse, NMDGetValue(), NMDInt, NMDReportObject(), and NMDSetValue().

Here is the call graph for this function:



13.22 u2.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u2.c:



Functions

- int main (int argc, char **argv)

13.22.1 Function Documentation

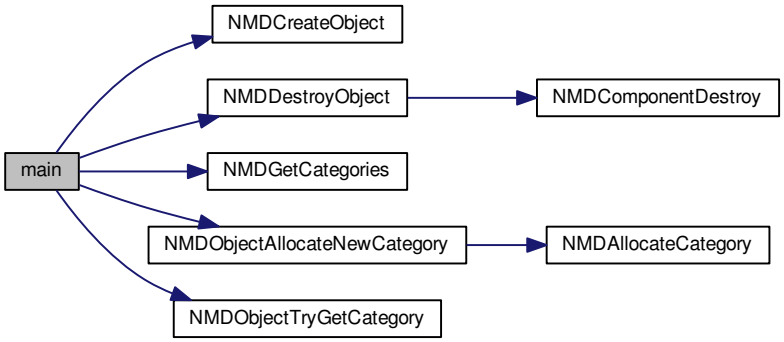
13.22.1.1 int main (int *argc*, char ** *argv*)

Test different ways of creating a category

Definition at line 5 of file u2.c.

References NMD_FREE, NMDCreateObject(), NMDDestroyObject(), NMDGetCategories(), NMDObjectAllocateNewCategory(), and NMDObjectTryGetCategory().

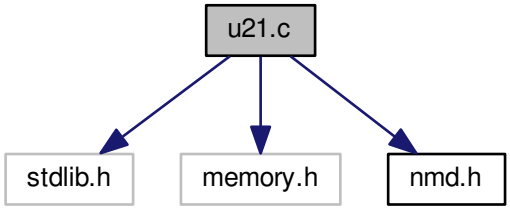
Here is the call graph for this function:



13.23 u21.c File Reference

```
#include <stdlib.h> #include "memory.h" #include "nmd.h" ×
```

Include dependency graph for u21.c:



Defines

- #define ILEN 4
- #define RLEN 6

Functions

- int main (int argc, char **argv)

13.23.1 Define Documentation

13.23.1.1 #define ILEN 4

13.23.1.2 #define RLEN 6

13.23.2 Function Documentation

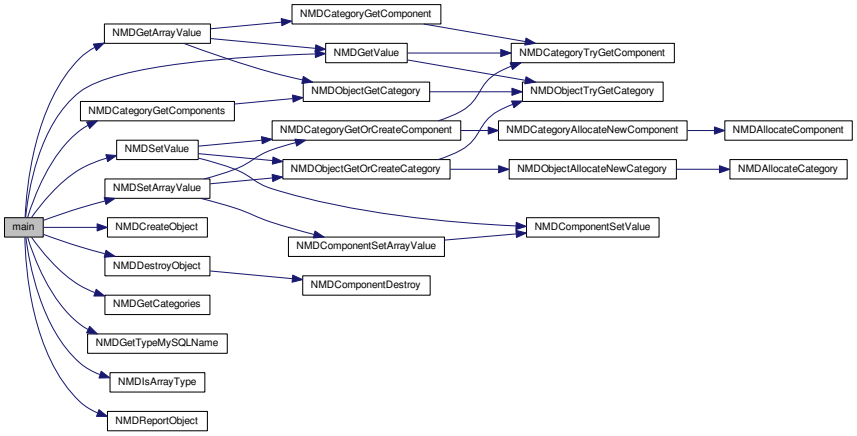
13.23.2.1 int main (int *argc,* char ** *argv*)

Object database output

Definition at line 10 of file u21.c.

References ILEN, NMD_FREE, NMD_MALLOC, NMDCategoryGetComponents(), NMDCreateObject(), NMDDestroyObject(), NMDFalse, NMDGetArrayValue(), NMDGetCategories(), NMDGetTypeMySQLName(), NMDGetValue(), NMDInt, NMDIntarray, NMDIsArrayType(), NMDReal, NMDRealarray, NMDReportObject(), NMDSetArrayValue(), NMDSetValue(), NMDTrue, and RLEN.

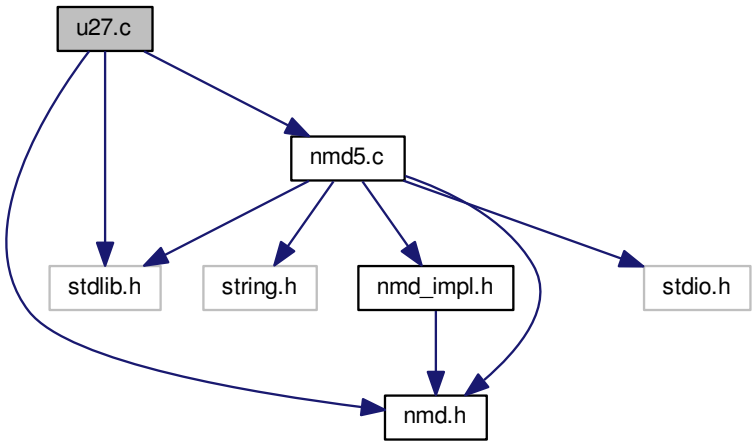
Here is the call graph for this function:



13.24 u27.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` `#include "nmd5.c"` Include

dependency graph for u27.c:



Functions

- int main (int argc, char **argv)

13.24.1 Function Documentation

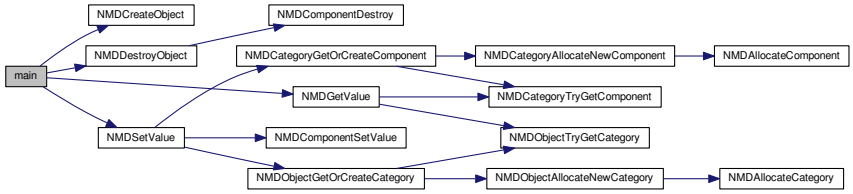
13.24.1.1 int main (int *argc,* char ** *argv*)

Test hdf5 dumping of scalar values

Definition at line 6 of file u27.c.

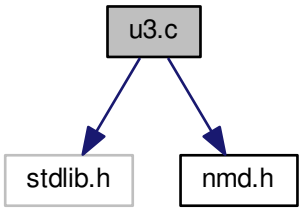
References NMDCreateObject(), NMDDestroyObject(), NMDGetValue(), NMDInt, - NMDReal, and NMDSetValue().

Here is the call graph for this function:



13.25 u3.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u3.c:



Functions

- int main (int argc, char **argv)

13.25.1 Function Documentation

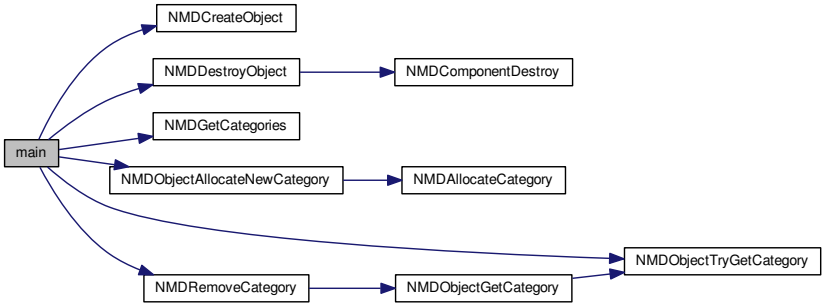
13.25.1.1 int main (int *argc*, char ** *argv*)

Test removal of a category

Definition at line 5 of file u3.c.

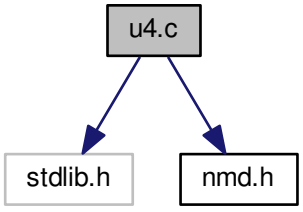
References NMD_FREE, NMDCreateObject(), NMDDestroyObject(), NMDGetCategories(), NMDObjectAllocateNewCategory(), NMDObjectTryGetCategory(), and NMDRemove-Category().

Here is the call graph for this function:



13.26 u4.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u4.c:



Functions

- int main (int argc, char **argv)

13.26.1 Function Documentation

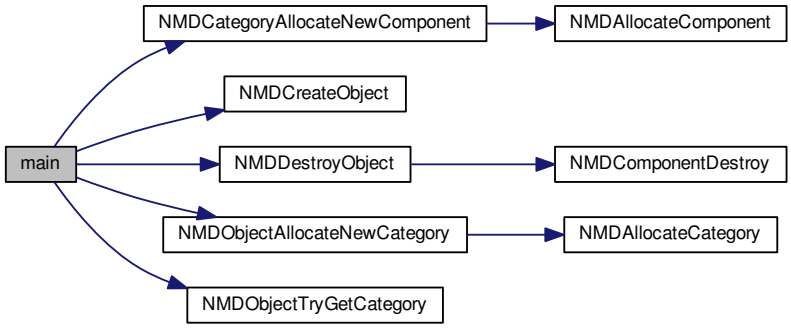
13.26.1.1 int main (int *argc*, char ** *argv*)

Test creation of components

Definition at line 5 of file u4.c.

References NMDCategoryAllocateNewComponent(), NMDCreateObject(), NMDDestroyObject(), NMDInt, NMDIntarray, NMDObjectAllocateNewCategory(), NMDObjectTryGetCategory(), NMDReal, NMDRealarray, and NMDString.

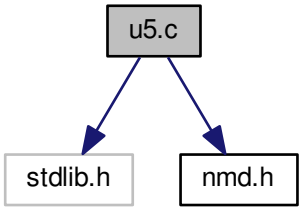
Here is the call graph for this function:



13.27 u5.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for

u5.c:



Functions

- int main (int argc, char **argv)

13.27.1 Function Documentation

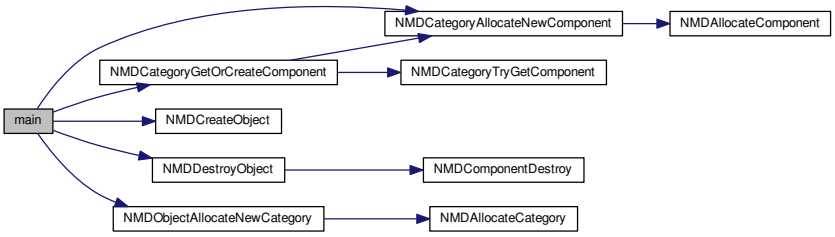
13.27.1.1 int main (int *argc*, char ** *argv*)

Test GetOrCreate components

Definition at line 5 of file u5.c.

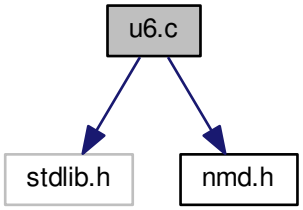
References NMDCategoryAllocateNewComponent(), NMDCategoryGetOrCreateComponent(), NMDCreateObject(), NMDDestroyObject(), NMDInt, NMDObjectAllocateNewCategory(), NMDReal, and NMDString.

Here is the call graph for this function:



13.28 u6.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u6.c:



Functions

- int main (int argc, char **argv)

13.28.1 Function Documentation

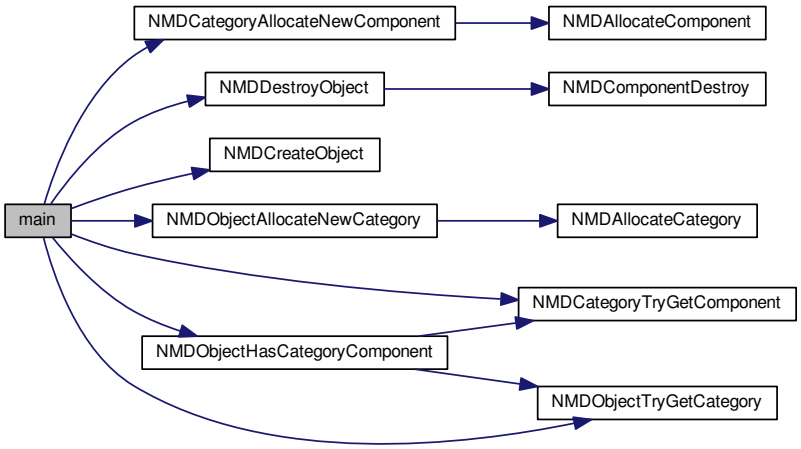
13.28.1.1 int main (int *argc*, char ** *argv*)

Test existence tests of components

Definition at line 5 of file u6.c.

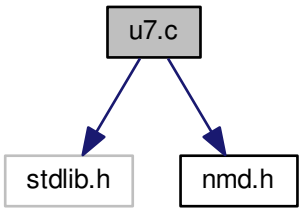
References NMDCategoryAllocateNewComponent(), NMDCategoryTryGetComponent(), NMDCreateObject(), NMDDestroyObject(), NMDInt, NMDIntarray, NMDObjectAllocateNewCategory(), NMDObjectHasCategoryComponent(), NMDObjectTryGetCategory(), NMDReal, NMDRealarray, and NMDString.

Here is the call graph for this function:



13.29 u7.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u7.c:



Functions

- int main (int argc, char **argv)

13.29.1 Function Documentation

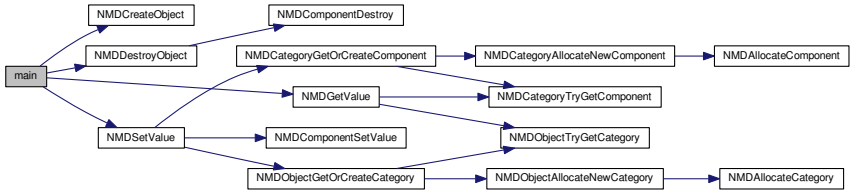
13.29.1.1 int main (int *argc*, char ** *argv*)

Test setting and getting of scalar values

Definition at line 5 of file u7.c.

References NMDCreateObject(), NMDDestroyObject(), NMDGetValue(), NMDInt, and NMDSetValue().

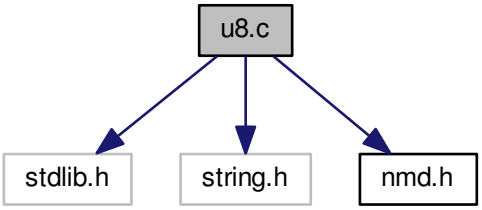
Here is the call graph for this function:



13.30 u8.c File Reference

```
#include <stdlib.h> #include "string.h" #include "nmd.h" ×
```

Include dependency graph for u8.c:



Functions

- int main (int argc, char **argv)

13.30.1 Function Documentation

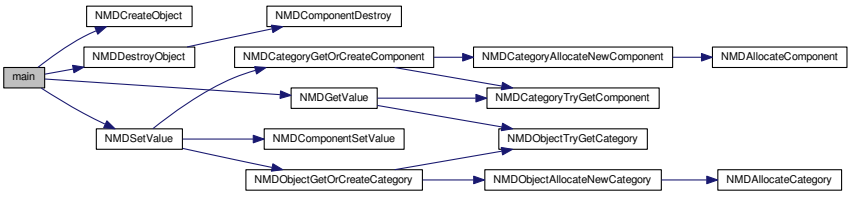
13.30.1.1 int main (int *argc*, char ** *argv*)

Test setting and getting of array values

Definition at line 6 of file u8.c.

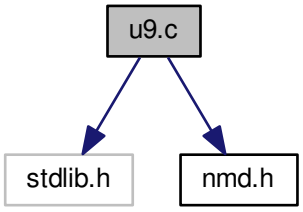
References NMDCreateObject(), NMDDestroyObject(), NMDGetValue(), NMDSetValue(), and NMDString.

Here is the call graph for this function:



13.31 u9.c File Reference

`#include <stdlib.h>` `#include "nmd.h"` Include dependency graph for u9.c:



Functions

- int main (int argc, char **argv)

13.31.1 Function Documentation

13.31.1.1 int main (int *argc*, char ** *argv*)

Test setting and getting of array values

Definition at line 5 of file u9.c.

References NMD_FREE, NMD_MALLOC, NMDCreateObject(), NMDDestroyObject(), NMDGetArrayValue(), NMDIntarray, NMDRealarray, and NMDSetArrayValue().

Here is the call graph for this function: