

IEMappedFile

INHERITS FROM

Object

WRITTEN BY

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SUPPORT

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CLASS DESCRIPTION

IEMappedFile is a public domain class. It is designed as a central resource to map files into memory and make sure that only one object corresponds to one filename. It encapsulates the following information:

- the filename (which has been NXUniqueString'ed)

- the open file descriptor
- the pointer to the memory which is mapped to the file
- the size of the file
- the last modify time of the file

The factory object keeps a HashTable of filenames and objects to insure that only one instance is created for a given filename. There are two methods which return the pointer to the memory map. The -data method just returns the pointer. The -dataUpdated method first checks to see if the file has been modified, and if it has it remaps the file and returns the data pointer.

This is a read only object and does not support writing memory to disk, or even writing to memory.

Internal methods are denoted by a leading underscore, such as `_initWithName`. These methods are only meant to be called from within the object's methods.

Feel free to use and modify as long as you acknowledge me (Monty Zukowski) as the original author.

INSTANCE VARIABLES

Declared in `NumberedExtensionManager`

```
int          fd;
int          size;
NXAtom      name;
void        *data;
time_t      lastModifyTime;
```

| | |
|----------------|---|
| fd | The file descriptor of the open read only file. |
| size | The size of the file. |
| name | The name of the file. |
| data | A pointer to the memory map of the file. |
| lastModifyTime | The last modify time obtained during +newForFilename or -dataUpdated. |

METHOD TYPES

Class Methods

- + instances
- + newForFilename:

Data

- data
- dataUpdated

File information

- fd
- size
- name
- lastModifyTime

Archiving

- write:
- read:
- finishUnarchiving

Internal Methods

- + _removeFromHashTable:
- + _addName::
- _initWithName:
- _inactivate

CLASS METHODS

- + instances
- + (HashTable *) **instances**

Returns the HashTable which holds the (NXAtom) names as keys and the corresponding (id) instances as the values.

- + newForFilename:
- + **newForFilename:**(const char *) *filename*

Returns an instance for the given *filename*. The **name** of the instance = NXUniqueString(*filename*). If an instance for *filename* already exists that instance is returned. Otherwise a new instance is created. If there are any problems opening or mapping *filename*, nil is returned.

+_removeFromHashTable:

+**_removeFromHashTable**:(IEMappedFile *)*obj*;

Internal method which removes *obj* from the class' HashTable. Returns self;

+_addName::

+**_addName**:(NXAtom) *theName* andObject:*obj*;

Internal method which adds *theName* and *obj* to the class' HashTable if they are not already in the HashTable and returns self. If *theName* is already in the HashTable, it is not inserted and nil is returned.

INSTANCE METHODS

-data

-(const void *) **data**

Returns the pointer to the memory map of the file. May be NULL resulting from a **-dataUpdated** or **-read:** method inactivating the instance.

-dataUpdated

-(const void *) dataUpdated

Tries to synchronize the instance with the file on disk. Remaps the file if it has been modified since **lastModifyTime**. If the instance's memory map has become inactive it tries to reinitialize the instance. If there are any problems, the instance is inactivated and NULL is returned. Always check the return value before using, and **-size** so you don't go out of bounds.

- fd

-(int) **fd**

Returns the file descriptor for the open file which is memory mapped.

-finishUnarchiving

-finishUnarchiving

Inherited from Object and implemented to insure that only one instance of IEMappedFile exists for any filename.

- _inactivate

-_inactivate

Internal method used to inactivate an instance.

- _initWithName

-_initWithName

Internal method used to initialize the **fd**, **data**, **size**, and **lastModifyTime** instance variables from the **name** instance variable.

- lastModifyTime

-(time_t) lastModifyTime

Returns the modify time (st_mtime from the stat struct) from when the file was last mapped by the instance.

- name

-(NXAtom) **name**

Returns the filename this instance represents.

-read:

-read:(NXTypedStream *) *typedStream*

Reads an IEMappedFile from *typedStream*. If there are any problems with opening or mapping the file, the instance may be inactivated.

- size

-(int) **size**

Returns the size in bytes of the memory map of the file.

-write:

-write:(NXTypedStream *) *typedStream*

Writes an IEMappedFile instance to *typedStream*.

CONSTANTS AND DEFINED TYPES

None.