eGenix.com

mxUID

Fast Unique Identifiers
for Python

Version 3.2

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1. Introduction

This package provides a fast mechanism for generating unique identification strings (*UIDs*). The intent is to make these UIDs unique with high probability in order to serve as object or data set identifiers.

A typical use lies in generating object and session IDs. Other areas where unique IDs play an important role are RPC-implementations, ORBs, etc.

In order to improve interoperability with typical applications already using string to manage such ids, the UID extension does not introduce a new type, but instead uses standard Python strings to store the UIDs.

2. mx.UID.UID String

To simplify and speed up handling UIDs the package provides a fast constructor for building universal ID strings (UIDs). These strings are normal Python strings using a special predefined format.

The information encoded in the UID includes a timestamp, the process ID, a host ID, an optional ID code (up to 100 characters) and a CRC value to assure the integrity of the UID. This makes the UIDs unique with a high probability.

UID strings have a length of (32 + len(code)) bytes. If no code is used, their length will always be 32 bytes.

Since UID strings are really only Python strings, they behave in the same way, i.e. offer the same methods.

2.1 mx.UID.UID String Constructors

These constructors are available in the package:

`UID(object=None, code='', timestamp=None)`

Create a new UID string for `object`.

`code` is optionally included in the UID. In order to hide it using the `mangle()` helper, the code string should only contain lowercase HEX characters (0-9, a-f). Non-HEX parts will not be mangled.

`timestamp` must be a ticks float (or an mx.DateTime.DateTime instance) and defaults to the current time.

3. mx.UID Functions

These functions are available.

`verify(uid, code='')`

Verifies the validity of the given `uid`.

`uid` may be a string or object that has a `.__str__()` method. If code is given, the id must have been created using that code.

`timestamp(uid)`

Returns the timestamp encoded in the UID string `uid` as mx.DateTime.DateTime instance.

`mangle(uid, key)`

Mangle the UID string `uid` using the given key string.

The output has the same length as the input UID string and should make it hard to forge valid UIDs without knowledge of the key string.

Note that the output string is not a valid UID string in itself, i.e. it most likely won't `verify()`.

`demangle(euid, key)`

Demangle a `mangle()`d UID string `euid` using the given `key` string.

4. mx.UID Constants

`Error`

Error class used for package specific errors. It is a subclass of `StandardError`.

5. Examples of Use

Here is a very simple one:

```
from mx.UID import *
>>> uid = UID()
>>> print uid
003bb9f7e7080c6d0c0001400601693a4c
>>> verify(uid)
1
>>> verify(uid + '123')
0
>>> timestamp(uid)
<DateTime object for '2001-10-02 19:22:47.00' at 81cc330>
```

More examples will eventually appear in the Examples subdirectory of the package.

6. Package Structure

```
[UID]
       Doc/
       [mxUID]
       UID.py
```

Entries enclosed in brackets are packages (i.e. they are directories that include a `__init__.py` file). Ones without brackets are just simple subdirectories that are not accessible via `import`.

The package imports all symbols from the extension module, so you only need to '`from mx import UID`' to start working.

7. Support

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