NAME

X509_new, X509_new_ex, X509_free, X509_up_ref, X509_chain_up_ref - X509 certificate ASN1 allocation functions

SYNOPSIS

```
#include <openssl/x509.h>

X509 *X509_new(void);
X509 *X509_new_ex(OSSL_LIB_CTX *libctx, const char *propq);
void X509_free(X509 *a);
int X509_up_ref(X509 *a);
STACK_OF(X509) *X509_chain_up_ref(STACK_OF(X509) *x);
```

DESCRIPTION

The X509 ASN1 allocation routines, allocate and free an X509 structure, which represents an X509 certificate.

X509_new_ex() allocates and initializes a X509 structure with a library context of *libctx*, property query of *propq* and a reference count of **1**. Many X509 functions such as **X509_check_purpose()**, and **X509_verify()** use this library context to select which providers supply the fetched algorithms (SHA1 is used internally). This created X509 object can then be used when loading binary data using **d2i_X509()**.

X509_new() is similar to **X509_new_ex()** but sets the library context and property query to NULL. This results in the default (NULL) library context being used for any X509 operations requiring algorithm fetches.

X509_free() decrements the reference count of **X509** structure **a** and frees it up if the reference count is zero. If **a** is NULL nothing is done.

X509_up_ref() increments the reference count of **a**.

X509_chain_up_ref() increases the reference count of all certificates in chain **x** and returns a copy of the stack, or an empty stack if **a** is NULL.

NOTES

The function **X509_up_ref()** if useful if a certificate structure is being used by several different operations each of which will free it up after use: this avoids the need to duplicate the entire certificate structure.

The function **X509_chain_up_ref()** doesn't just up the reference count of each certificate. It also returns a copy of the stack, using **sk_X509_dup()**, but it serves a similar purpose: the returned chain persists after the original has been freed.

RETURN VALUES

If the allocation fails, **X509_new()** returns NULL and sets an error code that can be obtained by **ERR_get_error**(3). Otherwise it returns a pointer to the newly allocated structure.

X509_up_ref() returns 1 for success and 0 for failure.

X509_chain_up_ref() returns a copy of the stack or NULL if an error occurred.

SEE ALSO

d2i_X509(3), **ERR_get_error**(3), **X509_CRL_get0_by_serial**(3), **X509_get0_signature**(3), **X509_get_ext_d2i**(3), **X509_get_extension_flags**(3), **X509_get_pubkey**(3), **X509_get_subject_name**(3), **X509_get_version**(3), **X509_NAME_add_entry_by_txt**(3), **X509_NAME_ENTRY_get_object**(3), **X509_NAME_get_index_by_NID**(3), **X509_NAME_print_ex**(3), **X509_sign**(3), **X509V3_get_d2i**(3), **X509_verify_cert**(3)

HISTORY

The function **X509_new_ex()** was added in OpenSSL 3.0.

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