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## ***Red Hat Enterprise Linux Release 9.2 Manual Pages on 'X448.7oss1' command***

***\$ man X448.7oss1***

X25519(7oss1)                      OpenSSL                      X25519(7oss1)

### NAME

X25519, X448 - EVP\_PKEY X25519 and X448 support

### DESCRIPTION

The X25519 and X448 EVP\_PKEY implementation supports key generation and key derivation using X25519 and X448. It has associated private and public key formats compatible with RFC 8410.

No additional parameters can be set during key generation.

The peer public key must be set using `EVP_PKEY_derive_set_peer()` when performing key derivation.

### NOTES

A context for the X25519 algorithm can be obtained by calling:

```
EVP_PKEY_CTX *pctx = EVP_PKEY_CTX_new_id(EVP_PKEY_X25519, NULL);
```

For the X448 algorithm a context can be obtained by calling:

```
EVP_PKEY_CTX *pctx = EVP_PKEY_CTX_new_id(EVP_PKEY_X448, NULL);
```

X25519 or X448 private keys can be set directly using `EVP_PKEY_new_raw_private_key(3)` or loaded from a PKCS#8 private key file using `PEM_read_bio_PrivateKey(3)` (or similar function). Completely new keys can also be generated (see the example below). Setting a private key also sets the associated public key.

X25519 or X448 public keys can be set directly using `EVP_PKEY_new_raw_public_key(3)` or loaded from a `SubjectPublicKeyInfo` structure in a PEM file using `PEM_read_bio_PUBKEY(3)` (or similar function).

## EXAMPLES

This example generates an X25519 private key and writes it to standard output in PEM format:

```
#include <openssl/evp.h>
#include <openssl/pem.h>
...
EVP_PKEY *pkey = NULL;
EVP_PKEY_CTX *pctx = EVP_PKEY_CTX_new_id(EVP_PKEY_X25519, NULL);
EVP_PKEY_keygen_init(pctx);
EVP_PKEY_keygen(pctx, &pkey);
EVP_PKEY_CTX_free(pctx);
PEM_write_PrivateKey(stdout, pkey, NULL, NULL, 0, NULL, NULL);
```

The key derivation example in `EVP_PKEY_derive(3)` can be used with X25519 and X448.

## SEE ALSO

`EVP_PKEY_CTX_new(3)`, `EVP_PKEY_keygen(3)`, `EVP_PKEY_derive(3)`,  
`EVP_PKEY_derive_set_peer(3)`

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