Week 20 11.28

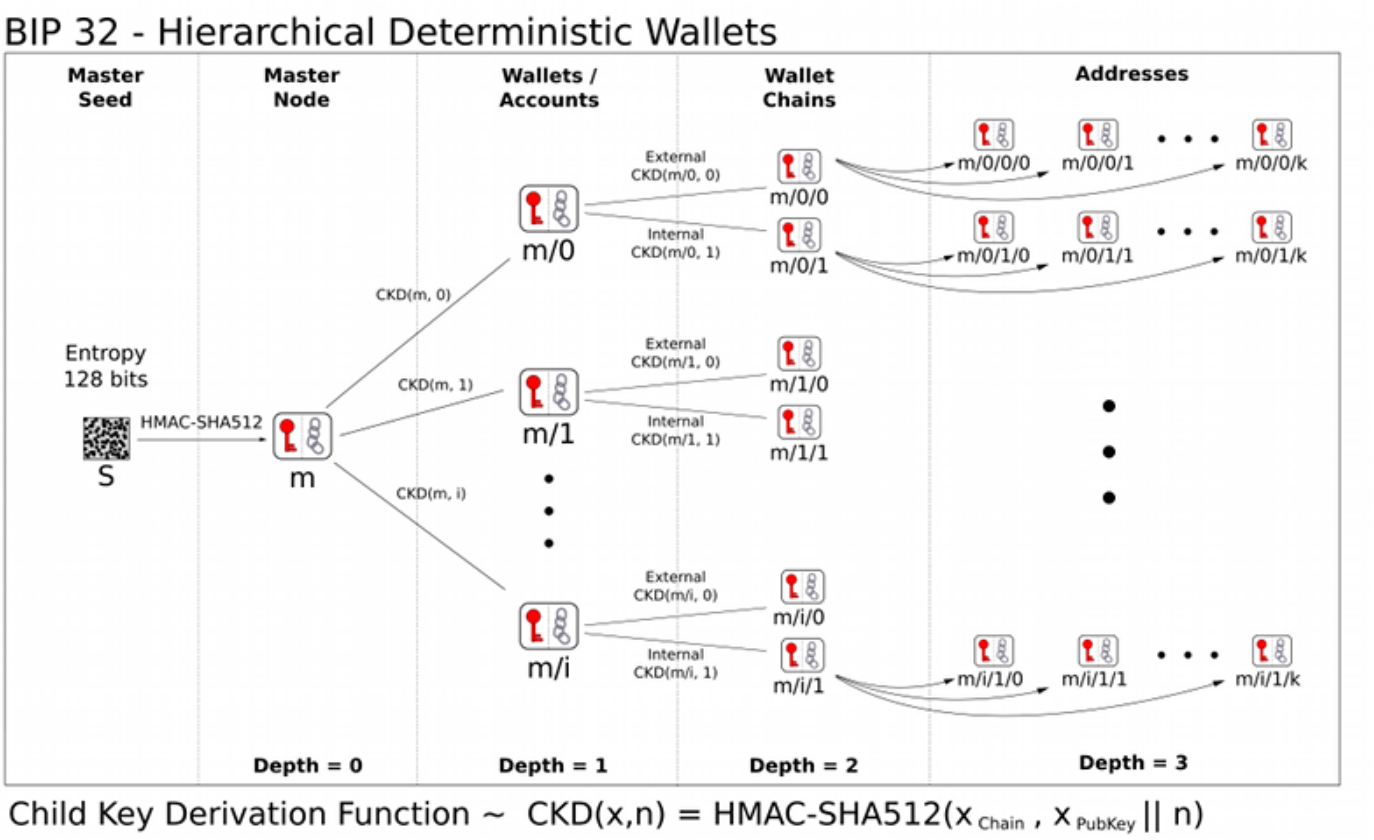
11.28 HD Wallet

BIP-32 HD Wallet / Hierarchical Deterministic BIP-44

```
m / purpose' / coin_type' / account' / change / address_index
```

`coin_type` `coin_type` 0 60 Conflux 503

HD Wallet BIP-32 Master Seed 128bit 512bit



11.29 HD Wallet

HD HD Master Seed “ ” fluent, meta

BIP-39 HD Master Seed PBKDF2 password-based key derivation funciton 2

```
DK = PBKDF2(PRF, Password, Salt, c, dkLen)
```

5 BIP39

- `PRF` BIP-39 HMAC-SHA512
- `Password` PBKDF2 BIP-39 Master Seed utf-8
- `Salt` `mnemonic` `123456` `mnemonic` + `mnemonic123456`
- `c` BIP-39 2048.
- `dkLen` BIP-39 512

HD Wallet Master Seed HD Master Seed

11.30

BIP-39

- 2048
- 12

```
nurse silk fiber machine jelly reduce coffee language fox forum cause team
```

204 `nurse` `1212` `10010111100` 12 (12*11=)132bit 132 128

1. `ENT` bit E `128<=ENT<=256` `os.urandom` python
2. S `ENT` 256 `ENT/32` `ENT=128` 4
3. `3/32*ENT`

12.1 Keystore

Keystore Keystore

```
{
    "version": 3,
    "id": "db029583-f1bd-41cc-aeb5-b2ed5b33227b",
    "address": "1cad0b19bb29d4674531d6f115237e16afce377c",
    "crypto": {
        "ciphertext": "3198706577b0880234ecbb5233012a8ca0495bf2cfa2e45121b4f09434187aba",
```

```
        "cipherparams": {"iv": "a9a1f9565fd9831e669e8a9a0ec68818"},
        "cipher": "aes-128-ctr",
        "kdf": "scrypt",
        "kdfparams": {
            "dklen": 32,
            "salt": "3ce2d51bed702f2f31545be66fa73d1467d24686059776430df9508407b74231",
            "n": 8192,
            "r": 8,
            "p": 1,
        },
        "mac": "cf73832f328f3d5d1e0ec7b0f9c220facf951e8bba86c9f26e706d2df1e34890",
    },
}
```

`ciphertext` `cipher` `cipherparams` `kdf` `kdfparams` keystore

SDK Keystore Keystore

12.2

`random` pyt`random.random` jav`java.util.random` win~~ter~~mute

SDK `/dev/urandom` `/dev/random` Linux SDK

```
extra_key_bytes = text_if_str(to_bytes, extra_entropy)
key_bytes = keccak(os.urandom(32) + extra_key_bytes)
```

`/dev/urandom` urandom u "u`/dev/random` `/dev/urandom` `/dev/urandom` `/dev/random` `/dev/urandom` `/dev/random`

```
with open("/dev/random", 'rb') as f:
    print(f.read(32).hex())
```

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