Substrate

River

Kitties-001

Generating Random Data

https://substrate.dev/substrate-collectables-workshop/#/2/generating-random-data

为什么需要随机数

我们需要创建很多Kitty，需要对生成的Kitty做区分，每一个Kitty都需要唯一的id

生成随机数的方法

1- Generating a Random Seed

<system::Module<T>>::random_seed()： 对于同一块中的多个事务，随机种子不会改变

Substrate使用一种安全的混合算法，它使用前面块的熵为后面块生成新的随机数据。

2- Using a Nonce

let nonce = <Nonce<T>>::get();

生成随机数的方法

3 - Hashing Data

```
let sender = ensure_signed(origin)?;
let nonce = <Nonce<T>>::get();
let random_seed = <system::Module<T>>::random_seed();

let random_hash = (random_seed, sender, nonce).using_encoded(<T as
system::Trait>::Hashing::hash);

<Nonce<T>>::mutate(|n| *n += 1);
```

Checking for Collision

```
ensure!(!<Kitties<T>>::exists(new_id), "This new id already exists");
```

support::ensure

You turn

1-create unique id

2- create a new kitties storage : map id=>kitty

3- create a KittyOwner storage: map id=>AccountId

4- function: create_kitty()

Rust中变量的借用问题： 所有权的转移

```
error[E0382]: borrow of moved value: `sender`
  --> /Users/*/blockchain/substrate/record-substrate/substrate-package/substratekitties/
runtime/src/substratekitties.rs:62:50
   |
39 |             let sender = ensure_signed(origin)?;
   |                 ------ move occurs because `sender` has type `<T as
srml_system::Trait>::AccountId`, which does not implement the `Copy` trait
...
47 |             let random_hash = (random_seed, sender, nonce).using_encoded(<T as
system::Trait>::Hashing::hash);
   |                                                    ------ value moved here
...
62 |             <KittyOwner<T>>::insert(random_hash, &sender); //&sender是sender的引用
   |                                                  ^^^^^^^^ value borrowed here after move
```

视频内容备注

```
Kitties get(kitty): map T::Hash => Kitty<T::Hash, T::Balance>;
        1- kitty_id和Kitty对象的对应关系

KittyOwner get(owner_of): map T::Hash => Option<T::AccountId>;
        2- kitty_id和创建者账户的对应关系

OwnedKitty get(kitty_of_owner): map T::AccountId => T::Hash;
        3- 创建者账户和kitty_id的对应关系
```

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Thanks