

```
stateBasedCRDTLaws ::
  forall t. StateBasedCRDT t => Arbitrary t => String -> Eq t => Show t => Proxy t -> Spec Unit
stateBasedCRDTLaws name _ =
  describe name do
    it "should be associative"
      $ quickCheck associativity
    it "should be commutative" do
      quickCheck commutativity
    it "should be idempotent" do
      quickCheck idempotence
    it "should have a neutral element" do
      quickCheck identity'
  where
    associativity a b c = (merge (merge a b) c) == (merge a (merge b c))

    commutativity a b = merge a b == merge b a

    idempotence a = merge a a == a

    identity' a = (merge a mempty) == a
```

Since the laws are the same for every state-based CRDT, I can reuse my tests

```
spec =  
  describe "State-based CRDTs" do  
    stateBasedCRDTLaws "GSet of integers" (Proxy :: Proxy (GSet Int))  
    stateBasedCRDTLaws "GSet of strings" (Proxy :: Proxy (GSet String))  
    stateBasedCRDTLaws "GCounter" (Proxy :: Proxy GCounter)  
    stateBasedCRDTLaws "2PSet of integers" (Proxy :: Proxy (TwoPhaseSet Int))  
    stateBasedCRDTLaws "2PSet of strings" (Proxy :: Proxy (TwoPhaseSet String))  
    -- and so on
```