The G-Counter is a vector of integers ${ m V}$ with the size of the number of replicas

Each replica ${ m i}$ is allowed to increment $V[{ m i}]$

The value of the counter is the sum of its components

Merging two counters takes the maximum value for each component

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The G-Counter

From a programmer's perspective

```
newtype GCounter
  = GCounter (Map.HashMap ReplicaId Int)
instance gCounterStateBasedCRDT :: StateBasedCRDT GCounter where
  merge (GCounter a) (GCounter b) = GCounter $ Map.unionWith max a b
query :: GCounter → Int
query (GCounter map) = sum map
increment :: ReplicaId → GCounter → GCounter
increment replica (GCounter map) = GCounter $ Map.insertWith add replica 1 map
```