Intermediate Scala

Practical Exercises

Lab4 FunctionalDesignPatternsPart1

1. Set union is a Monoid. Is set intersection a Monoid? If not, why not?.

2. Define a Monoid that can be used to “combine” Option[T] values. To combine two Some values, assume you can use a function
   combineT: (T, T) => T

3. Using the ProductMonoid from the slides, write a function that calculates the average value of a List of Integers. (Hint: You will need to calculate the sum of the elements, and the number of elements.)

4. Write a Monoid for the combination of two Function objects using composition. Note that for this to work, the functions should return a value that is the same as that of their argument. (Such functions are known as ***endofunctions***).

5. Study the MapMergeMonoid from the slides. Using this, implement a method that will construct a ***Bag[T]*** (from the earlier lab exercise) from an ***IndexedSeq[T]***.