

1. Slideshow

a. Higher-order functions in Scala

i. What are higher-order functions?

1. Importance in programming
2. Real-world use cases
3. How to write a higher-order function

ii. foldLeft/foldRight

1. Using foldLeft/foldRight to recurse over trees
 - a. Using tree data structure
 - b. Using tree data structure with nodes being list of integers (links to map)
 - c. Time complexity/real world use cases

iii. Map

1. Summing list of integers within tree data structure (links to foldLeft/foldRight)
2. Time complexity/real world use cases
3. Look into parallelism

iv. flatMap

1. Different uses over list
2. Different uses over tree
3. Special case with tree containing lists
4. Time complexity/real world use cases

v. mapFirst

1. Using tree data structure
2. Using tree data structure with nodes being list of integers (links to foldLeft/foldRight)
3. Time complexity/real world use cases

b. Best languages for higher-order functions

i. Rust vs. Scala?

ii. Can this really only be implemented in functional programming?

c. Possibly have interactive last part where students can create their own higher-order function

****Notes****

- Make our own list class