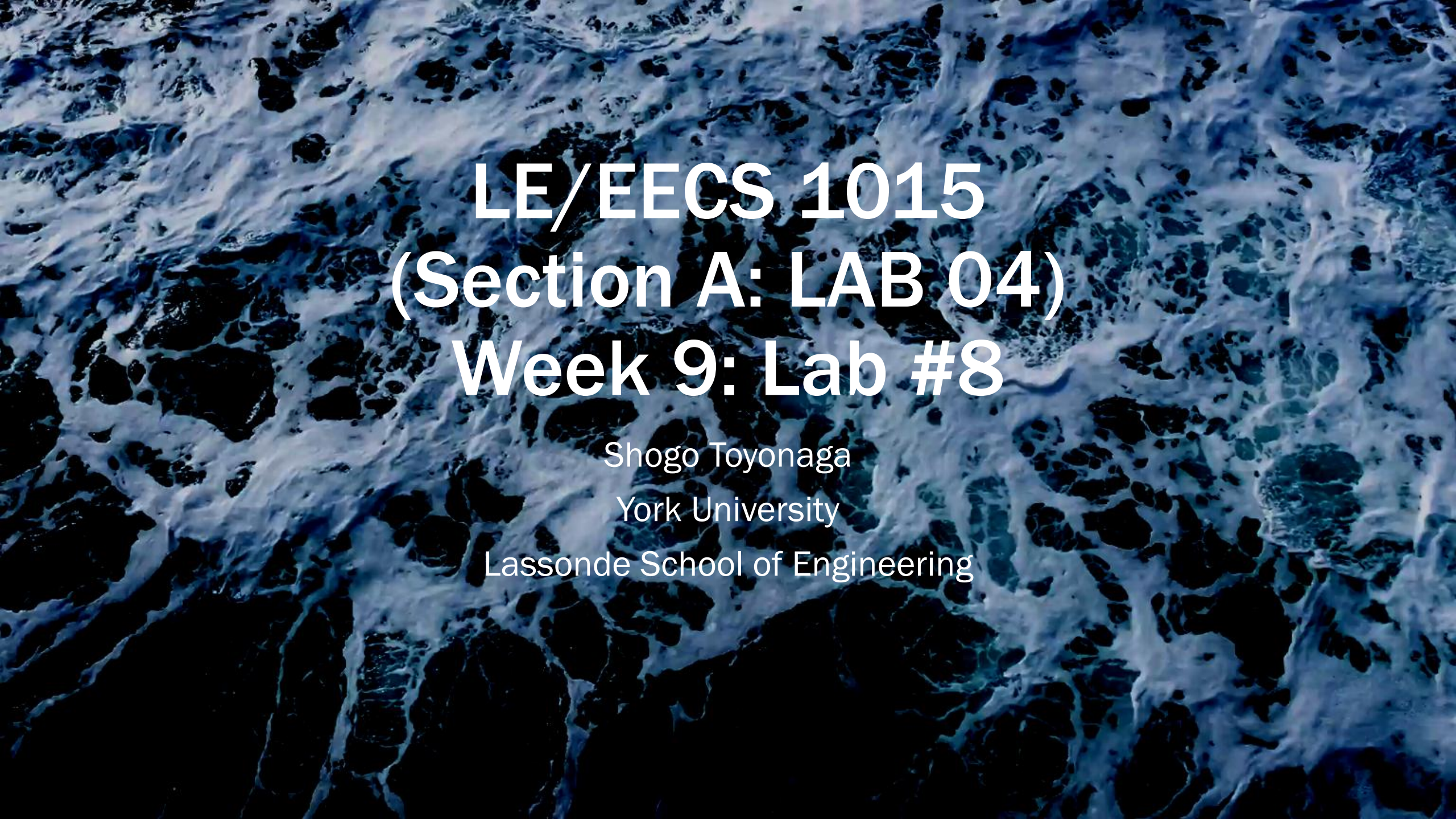

LE/EECS 1015 (Section A: LAB 04) Week 9: Lab #8

Shogo Toyonaga

York University

Lassonde School of Engineering

Goals of Lab 8

1. Computational thinking with collections II
2. Debugging
3. Software Engineering
4. Time and Space Complexity

Concept Review

1. Argument Lists (Functions)
2. Iterables
    - Constructors (Conversions)
    - Looping
3. Coding Style
4. Collection Memory Model

Function Arguments

- A flexible number of arguments can be supported with functions by using the two styles:
  - $*\,args$ denotes that the function can take in n arguments as a tuple.
  - $**\,kwargs$ denotes that the function can take in n arguments as a dictionary
- You can index individual elements using the standard notation $(e.g., args[0])$

Converting Between Iterables

- You can use constructors to convert between iterables (collections) or data types:
  - $set()$
  - $dict()$
  - $tuple()$
  - $dict()$
  - $str()$
  - $int()$
  - $float()$
  - $bool()$

Coding Style

1. In general, you should ensure that all items in your collection are the same data type.
    - For dictionaries, each of the keys should have the same data type. The same follows for values to be consistent.
2. Comprehension (e.g., list, set) generally makes code cleaner and more readable. Be reasonable with it.

Coding Style & Collection Memory Model

1. Pass by Value (Copy): Copies the value of an argument to a non-pointer or non-reference. If the original value or copy changes, they do not affect each other.
    - Changes to a copy in a method are not seen globally unless you return it and assign it to another variable.
2. Pass by Reference (Assign): Passes the reference of an argument to a pointer or new variable. Changes to the variable affect the original reference and vice-versa.
    - e.g., Passing a collection data type
    - When you update a mutable collection data type in a function, the data will be updated globally.

Lab 8 – Objectives

Task 1: Follow the Steps (Merge Sorted Lists) (/30)

Task 2: Debugging (Duplicates) (/30)

Task 3: Implementation (Majority Elements) (/10)

Task 4.1: Implementation (Update Gradebook) (/10)

Task 4.2: Implementation (Return Gradebook) (/10)

Task 5: Implementation (Inverted Dictionary) (/10)

Thank You!

Shogo Toyonaga

Lassonde School of Engineering