SG SOFTWARE GUILD

Java Object-Oriented Concepts

Lesson 10 - Lambdas and Streams

Objectives

- **Understand Lambdas**

- **Understand the relationship between Lambdas and Anonymous Classes**

- **Understand the new Java 8 Aggregate Operations for Collections**

- **Understand how to use Lambdas in conjunction with Aggregate Operations to process data in a Collection**

SOFTWARE-GUILD

Lambdas

- So far we have only been able to pass data values as arguments into a method

- Sometimes it is useful to pass code, or functionality, into a method
  - Ex. what action should be taken when a button is clicked

- Lambdas allow us to do this — we can now treat code as data in Java

SOFTWARE GUILD

Lambdas and Anonymous Classes

- In previous versions of Java, we used anonymous classes to achieve the functionality of lambdas

- It worked (it still does) but the syntax is cumbersome and verbose

- Lambda syntax is much cleaner

SOFTWARE GUILD

Aggregate Operations

- Aggregate operations are operations that are applied to all of the items in a Collection

- They allow us to do things such as:
  - Filter out items that don't meet certain criteria
  - Do something to or with each item of a Collection

SOFTWARE GUILD

Pipelines and Streams

- A pipeline is a series of aggregate operations

- Pipelines allow processing of items in a Collection through a series of operations

- A pipeline consists of zero or more intermediate operations followed by a terminal operation

SOFTWARE GUILD

Aggregate Operations and Iterators

- Aggregate operations appear to be like iterators but they are fundamentally different:
  - Aggregate operations use internal iteration (there is no next() method)
  - They process items from a stream
  - They support passing lambda expressions as parameters

SOFTWARE-GUILD

Using Lambdas and Aggregate Operations

- Using lambdas and aggregate operations can allow us to build very powerful data structures and APIs

- For example, we can build an address book that allows us to find all of the people we know who have the last name Smith and are from Akron, Ohio

SOFTWARE GUILD