The Learning House

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Java Object-Oriented Concepts

Lesson 3 - Collections and Maps

SOFTWARE GUILD

What are some of the limitations of arrays?

- What do you wish you could do with arrays?

Objectives

- Understand the purpose of the Java Collections framework
- Understand the purpose of the Map interface
- Identify collection types and hierarchy
- Identify the methods of the Collection and Map interfaces
- Use an ArrayList and a HashMap

Java Collections

- A collection is simply a group of objects
- The collections framework is not part of the language
- These data structures offer more flexibility
  - E.g. add and delete dynamically

Look at the Javadoc

- Collection Interface
- add, remove, and friends
- size
- toArray

Iterators

- Allows a caller to iterate over (i.e. visit each element one by one) a collection of objects
- Useful methods:
  - hasNext
  - next
  - remove (optional)

Map Interface

- Maps are made up of key/value pairs
- Useful methods:
  - o get
  - o put
  - o remove
  - o size
  - o values
  - o keySet
  - o isEmpty
  - o containsKey

Generics

- Language mechanism that allows us to specify the types that are allowed in a collection or map
- Collections and maps were previously untyped
- Example:
  - Map<String, Student> = new HashMap<String,Student>();

Other Data Types

- Stacks — FILO
- Queues — FIFO