**Generics:**

* Open Demos>Java>generics in IntelliJ and navigate to src>main>java>Main.java
* Create a new method called getSum that takes a List and returns an int
  + The method should declare a local variable called sum and initialize it to 0
  + Create an enhanced for loop to loop through all Objects in the List, cast them to ints and add them to sum
  + Return the sum
* Create a new method called getLongestWord that takes a List and returns a String
  + The method should declare a local variable called longestWord and initialize it to null
  + Create an enhanced for loop to loop through all Objects in the List
  + Cast the current word to a String
  + Check if the longestWord is null or shorter than the word and set longestWord to the word if true
  + Return the longestWord
* Create two lists, add random numbers to one and random words to the other
* Print the results of getSum and getLongestWord with each list passed in – run the program
* Comment out the calls that fail until the program runs smoothly
* Comment out the list of words and add Strings to the list of numbers
* Make sure that the results of both methods with this mixed list are being printed – run the program
* This will cause an Exception b/c a String cannot be cast to an int and an int cannot be cast to a String
* Undo the changes to the 2 Lists so you once again have a List of numbers and a List of words
* Update getSum to require a List of ints, and getLongestWord to require a List of Strings
* Update the methods to not require casting
* Update the 2 Lists to specify that they are a List of Integers and a List of Strings
* Print the results of both methods being called with each list
* Your IDE will give you an error that getSum cannot accept a List of Strings, and that getLongestWord cannot accept a List of Integers
* Comment out the incorrect calls
* Run the program

**ArrayLists:**

* Open Demos>Java>arraylists in IntelliJ and navigate to src>main>java>Main.java
* Create an ArrayList for names
* Use the .size() method to print the size of the ArrayList – Run the program
* Add names to the list (staff member names for example) and print the size of the list again – Run the program
* Use the .get() method to print a name from the list – Run the program
* Use the .remove() method to remove a name from the list, then print the size again – Run the program
* Use the .clear() method to remove all names from the list, then print the size again – Run the program
* Comment out or delete all lines except those creating and adding to the list
* Create a for loop that loops through the array and prints all the names – Run the program
* Create use the .foreach() method to loop through the array and print all the names – Run the program

**HashMaps:**

* Open Demos>Java>hashmap in IntelliJ and navigate to src>main>java>Main.java
* Create a HashMap called students where your keys are Integers, and your values are Strings
* Add students to the hashmap with student IDs as the key and names as the value
* Loop though the students and print the values – Run the program
* Remove a student using the .remove() method
* Print the size of the hashmap – Run the program
* Use the .put() method to add another student to the hashmap but use a previously used key
  + Place this line with the other .put() calls before the loop – Run the program
* Show that the student was replaced rather than another student added