Iterator – Look at each element in ???

- Iterator is an interface
  - (This concept is similar to the idea of an abstract class)
- Something that is an Iterator must have the methods:
  - hasNext()
  - next()
- Look at the API
- Used in the following pattern:
  ```java
  while (???.hasNext()) {
    var = ???next();
    //do something with var
  }
  ```
- Don’t know the order of the elements
- Guaranteed to give you all the elements in the related set of information

How do we create an Iterator?

- For Collections such as ArrayLists one can get an iterator using the iterator method:
  ```java
  // You must create iterator for ArrayList
  // Assume an ArrayList<String> named words
  Iterator<String> iter = words.iterator();
  // Now use iterator to print elements in words
  while (iter.hasNext()) {
    System.out.println(iter.next());
  }
  ```

Some classes implement Iterator

- Look at the Scanner API
  - It includes the required methods:
    - hasNext()
    - next()
  - Also provides many in the same vein, for example:
    - hasNextInt()
    - nextInt()
    - hasNextLine()
    - nextLine()
    - etc.
For each in Java 5

- In many cases, can replace iterator with for-each loop
  ```java
  // Assume an ArrayList<String> named words
  // No need to get iterator
  // directly use loop
  for (String s: words) {
    System.out.println(s);
  }
  ```

- BONUS: it also works for Arrays
  ```java
  // Assume an array String[] named words
  // directly use loop
  for (String s: words) {
    System.out.println(s);
  }
  ```

When can I use for-each?

- Must be an array or a class that implement the `Iterable` interface
  - Loop up API for `Iterable`
  - What method must an `Iterable` class have?