CMPSC 100

Computational Expression

A little while longer...

- Because while loops allow us to create *iterations* (loops), there exist special objects known as *iterators*.

- For now, take "iterator" to mean "a special class of objects that allows programs to 'loop through' items collected in them."

- These can take the form of:
  - Collections created "programmatically" or,
  - Items that create "arrays" such as an ArrayList

Iteration creation

- As part of a program's flow-of-control, we can create collections.

- One way: using the Scanner class as an iterator:
  - Scanner's "iterator" methods include:
    - .hasNext()
    - .hasNextDouble()
    - .hasNextInt()   What do we expect each to do?
    - …
    - .hasNextBoolean()

- As pertains to Scanner, we can control how the flow of information works using delimiters.

Detour: File this away

```java
// Declare file and scanner objects.
File testResults = null;
Scanner input = null;
// Connect file contents to Scanner object.
try {
  testResults = new File("inputs/results.list");
  input = new Scanner(testResults);
} catch (FileNotFoundException noFile) {
  System.exit(0);
}
```

Requires java.io.File

Requires java.io.FileNotFoundException

Iteration creation

- Our lab's data structure:

  ```
  true

  false

  true

  false

  …
  ```

- Data is not always structured so simply, and occasionally we might want to control how it displays.

Exercise #1

In your class-activities repository, if you did not commit your work from Monday, do so now.

If you have, perform a git pull download master

Navigate to the 23-october/Iterator folder

Take a moment to look at the mm.csv file in the inputs folder

Exercise #1

The guidelines:

- Read file
- Separate each value separated by comma into:
  - A separate column
  - Spaced out by tab characters

```
Bag,Brown,Yellow,Red,Green,Orange,Blue,Total
A,3,3,1,5,5,4,21
A,1,2,2,5,6,5,21
A,0,4,2,4,7,3,20
A,4,2,3,2,6,3,20
A,5,2,1,6,5,2,21
A,2,3,2,2,6,4,19
A,5,0,3,6,7,1,22
A,3,4,3,2,6,3,21
A,1,4,4,0,10,2,21
```

```java
File bagCounts = null;
Scanner input = null;
Scanner line = null;
try {
  bagCounts = new File("inputs/mm.csv");
  input = new Scanner(bagCounts);
 } catch (FileNotFoundException noFile) {
   System.exit(0);
}
String bag = new String();
while (input.hasNext()) {
  bag = input.nextLine();
  line = new Scanner(bag);
  line.useDelimiter(",");
  while (line.hasNext()){
    System.out.print(line.next() + "\t");
  }
  System.out.println();
}
```

Exercise #1

Test using `gradle run`