

Components of a Java Program

Understanding an Iterable

Understanding Java Programs

- What is a Java program; how do you understand the components?

```
import edu.duke.*;

public class HelloWorld
{
    /**
     * Read file of ways to say hello and print each line of the file
     */
    public void sayHello(){
        FileResource resource = new FileResource("hello_unicode.txt");
        for(String line : resource.lines() ){
            System.out.println(line);
        }
    }
}
```

Understanding Java Programs

- What is a Java program; how do you understand the components?
- After this lesson you will be able to ...
 - Use a library of iterables to process data
 - Modify a Java program and run it
 - Access data anywhere: your computer, the web
 - Apply the seven step process in using Java

What Is an Iterable?

- Processing data from many sources: text files, web pages, images, folders



What Is an Iterable?

- Processing data from many sources: text files, web pages, images, folders

- Hello World!

Mirëdita - Albanian

مرحبا / أهلا وسهلا (ahlan) - Arabic

Բարև (parev) - Armenian

G'day - Australian

Здравей (zdravej) - Bulgarian

你好 (néih-hóu) - Cantonese Chinese

Bog - Croatia

Ahoj - Czech

Hej - Danish

Hallo - Dutch

Hello - English

What Is an Iterable?

- Processing data from many sources: text files, web pages, images, folders
 - Hello World!
 - Building programs by re-using familiar ideas in new contexts
- Iterable: Java construct for accessing elements of a collection
 - lines, words, pixels, files
 - FileResource, URLResource

A Java Program Deconstructed

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    }
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```

A Java Program Deconstructed

```
import edu.duke.*;
```

```
public class HelloWorld  
{
```

```
/**
```

```
 * Read file of ways to say hello and print each line of the file
```

```
 */
```

```
public void sayHello(){
```

```
    FileResource resource = new FileResource("hello_unicode.txt");
```

```
    for(String line : resource.lines() ){
```

```
        System.out.println(line);
```

```
    }
```

```
}
```

```
}
```

- import libraries

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- import libraries
- public class
 - public method

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- import libraries
- public class
 - public method
 - variables

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- import libraries
- public class
 - public method
 - variables
 - control

Java Iterable and Variables

- Using FileResource from edu.duke library
 - Iterable is a standard Java Interface, can be used in a *for each* loop as shown
- Create variable: name, type, value
 - fr, FileResource, specific file on computer
 - line, String, each of the lines, in turn, from fr

```
FileResource fr = new FileResource("hello_unicode.txt");  
for(String line : fr.lines()){  
    System.out.println(line);  
}
```


Modifying Iterables and Variables

- Changing the name of the variable line
 - Change in two places, or in each place
 - Think about changing `fr` to `resource`
- If you change the type `FileResource`
 - Change to `URLResource`
 - Don't change variable name, still works!

```
URLResource fr = new URLResource("http://cnn.com");  
for(String line : fr.lines()){  
    System.out.println(line);  
}
```

Summary of Beginning Java

- Java programs are created using classes
 - Code is in a method: written and called
 - Methods and classes interact together
- Iterables help with problems and programs
 - Access data using familiar syntax and patterns
 - Iterate over a source, one “element” at a time
- Variables have names, types, and values
 - Types: FileResource, URLResource, String