CECS 174 – Lecture 29 – File Input/Output

File I/O – Information can be read and written to files using the Scanner class. To do this, two main classes need to be imported.

```
import java.io.*;
import java.util.Scanner;
```

Reading from a file – the file to be read should be inside of the project folder unless an exact location is given.

Specify the input file:

```
String inputFile = "input.txt";
```

If you are specifying a location with a backslash (\ ) in it (ie. C:\Documents \file1.txt), then you need to use a double backslash (\\ ) instead.

```
String inputFile = "C:\\Documents\\file1.txt";
```

Note: If the user specifies a file location then they do not need to put in the \\.

Declare a Reader – Java requires that a FileNotFoundException be handled, so a try/catch block is needed.

```
try{
     FileReader reader = new FileReader (inputFile);
```

Declare a Scanner to Read in the File:

```
     Scanner read = new Scanner(reader);
```

Read in the File – the scanner works just as it normally does, you can use nextLine(), next(), nextInt(), or nextDouble() to get data from the file.

```
     do{
          String line = read.nextLine();
```

Checking for the End of a File:

```
     }while(read.hasNext());
```

Close the File:

```
     read.close();

}catch(FileNotFoundException fnf){

     System.out.println("File was not found");
}
```

Breaking up a String – with any string and a set of delimiters, you can break up a string into an array of individual strings by using the string split method.

```
String line = "Mary,Smith,123 Fake St.,Phoenix,AZ";

String delimiter = "[,]";

String [] tokens = line.split(delimiter);
```

The split method breaks up the string line into the four smaller strings that are separated by commas.

The delimiter string allows you to specify several different delimiters, and to treat consecutive delimiters as a single one or as multiple delimiters.

```
String line = "Mary  Smith 123 Fake St. Phoenix AZ";

String delimiter = "[ ]+";

String [] tokens = line.split(delimiter);
```

This split uses spaces to break up the string into 7 separate strings. Notice the two spaces between Mary and Smith, using the + in the delimiter allows for consecutive delimiters to count as a single delimiter.

Writing to a file –

Specify the output file:

```
String outputFileName = "output.txt";
```

or

```
String outputFileName = "C:\\Documents\\output.txt";
```

Declare the Writer:

```
try{
    PrintWriter writer = new PrintWriter(outputFileName);
```

Write to the File:

```
    writer.println("This is some text");
```

Close the file:

```
    writer.close();

}catch(FileNotFoundException fnf){
    System.out.println("File was not found");
}
```