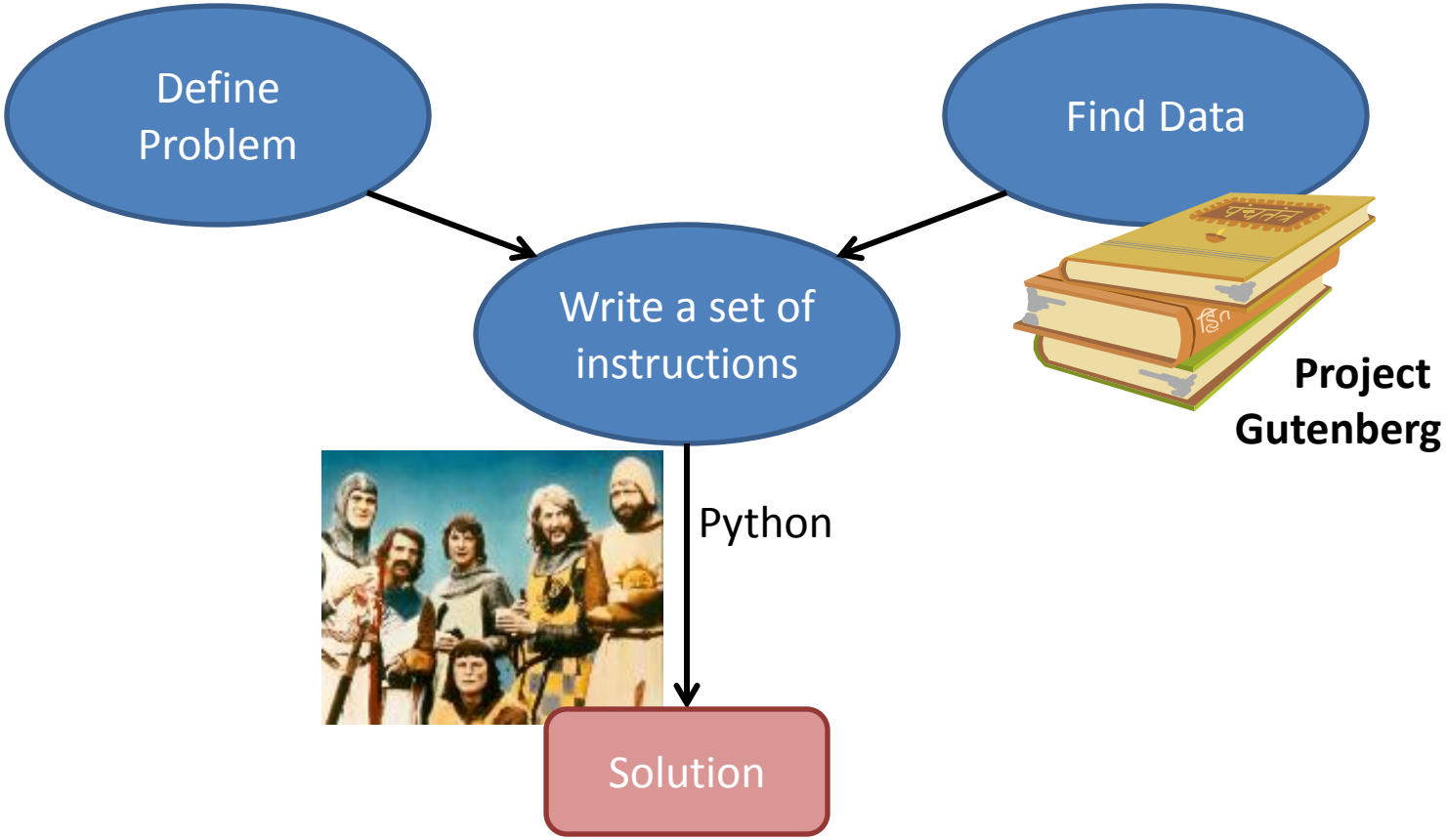
Determining Authorship

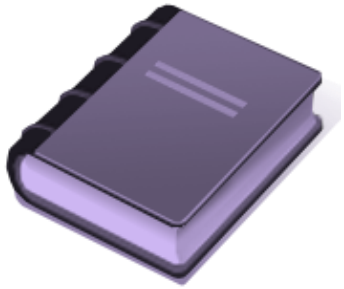
April 2, 2012

Determining Authorship



Determining Authorship: Data

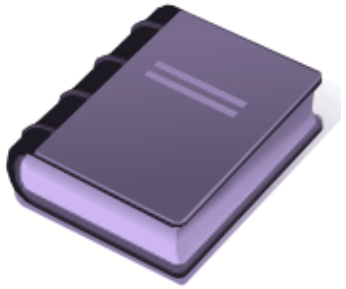
Five Books from a Famous Children's Series



One Book from a Famous Children's Series

Determining Authorship: Data

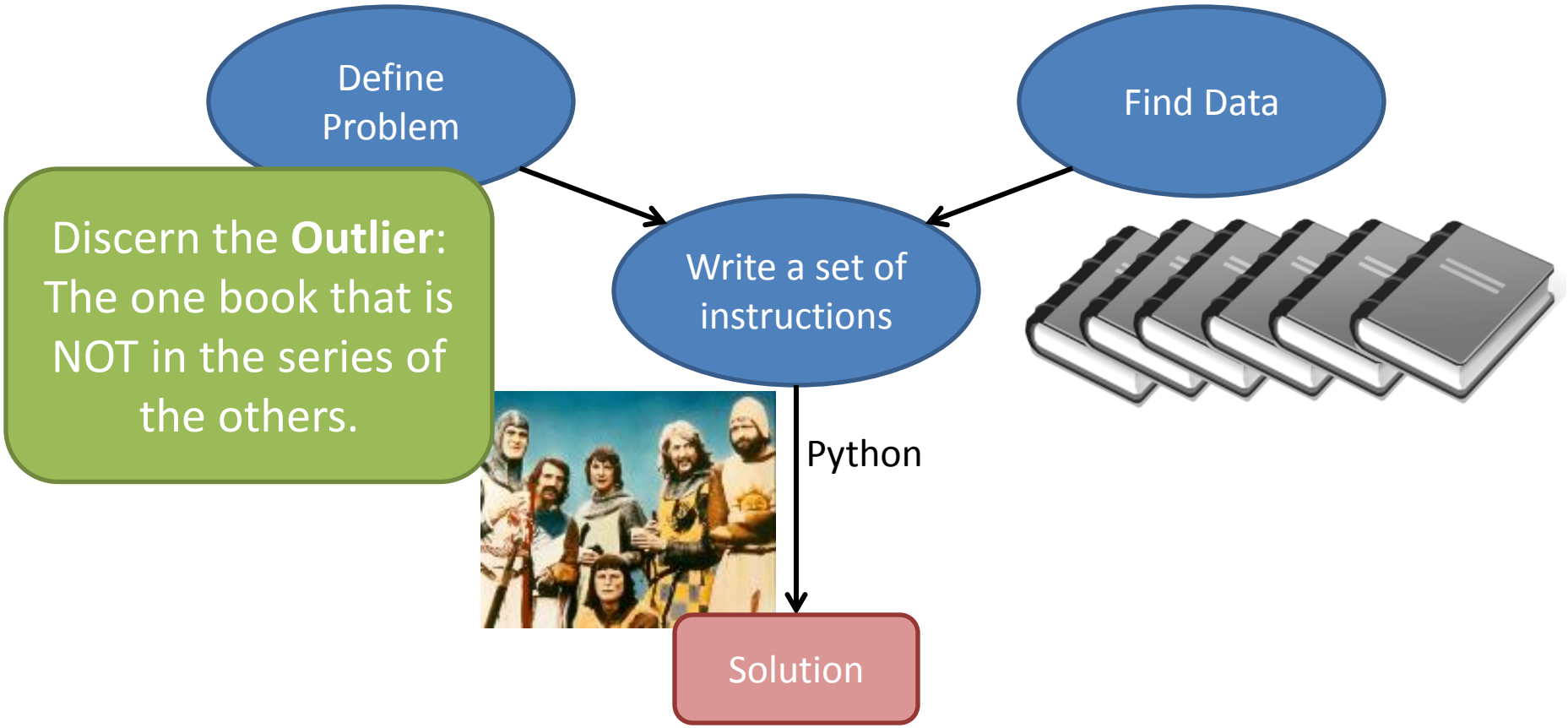
Five Books from a Famous Children's Series



One Book from a Famous Children's Series

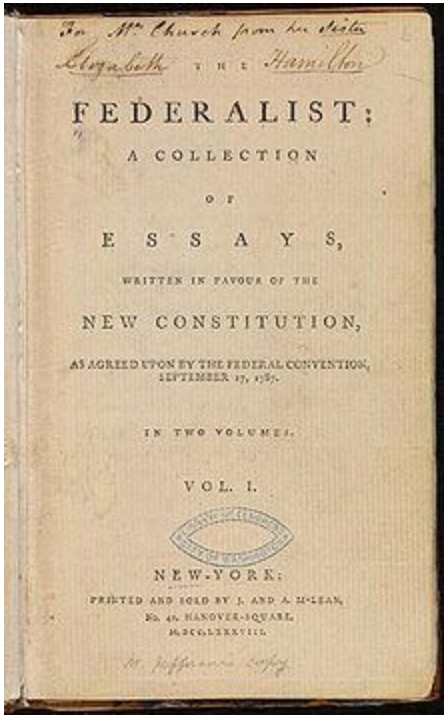
Six Books from Two Famous Children's Series

Determining Authorship



Remember the Federalist Papers

- 85 articles written in 1787 to promote the ratification of the US Constitution
- In 1944, Douglass Adair guessed authorship
  - Alexander Hamilton (51)
  - James Madison (26)
  - John Jay (5)
  - 3 were a collaboration
- Corroborated in 1964 by a computer analysis

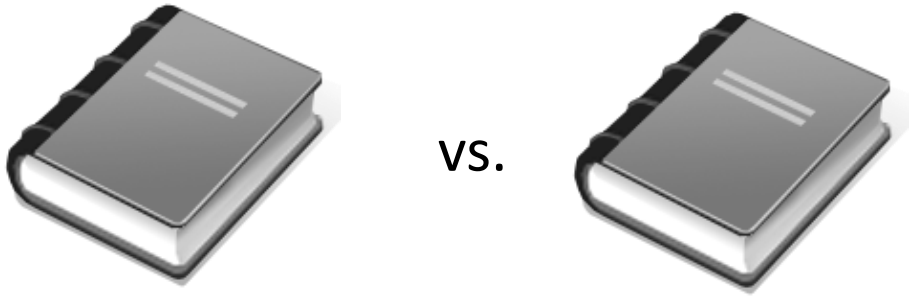


Wikipedia

http://pages.cs.wisc.edu/~gfung/federalist.pdf

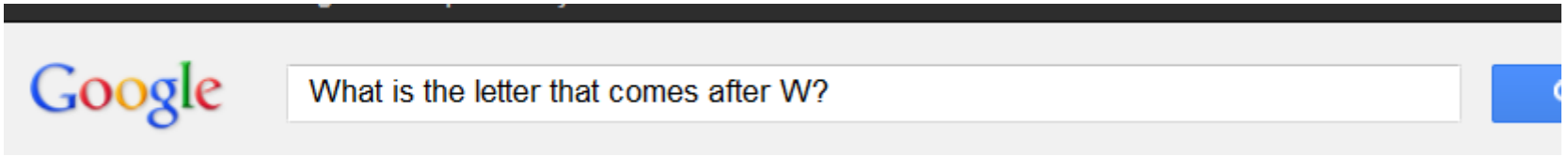
Determining Authorship

Discern the **Outlier**: The one book that is NOT in the series of the others.



Stop Words

Stop Words are words that are filtered out in natural language processing



Stop Words

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a, able, about, across, after, all, almost, also, am, among, an, and, any, are, as, at, be, because, been, but, by, can, cannot, could, dear, did, do, does, either, else, ever, every, for, from, get, got, had, has, have, he, her, hers, him, his, how, however, i, if, in, into, is, it, its, just, least, let, like, likely, may, me, might, most, must, my, neither, no, nor, not, of, off, often, on, only, or, other, our, own, rather, said, say, says, she, should, since, so, some, than, that, the, their, them, then, there, these, they, this, tis, to, too, twas, us, wants, was, we, were, what, when, where, which, while, who, whom, why, will, with, would, yet, you, your

http://www.textfixer.com/resources/common-english-words.txt

Stop Words

Stop Words are words that are filtered out in natural language processing

a, able, about, across, after, all, almost, also, am, among, an, and, any, are, as, at, be, because, been, but, by, can, cannot, could, dear, did, do, does, either, else, ever, e ve, he, her, hers, him, his, how, however, ike, likely, may, me, might, most, must n, on, only, or, other, our, own, rather, s ome, than, that, the, their, them, then, t as, us, wants, was, we, were, what, when, where, which, while, who, whom, why, will, with, would, yet, you, your

Why should we look at the frequencies of stop words?

http://www.textfixer.com/resources/common-english-words.txt

Determining Authorship

Discern the **Outlier**: The one book that is NOT in the series of the others.

1

vs.

2

1. Calculate the word frequencies of the stop words in the two books

	a	able	about	across	after	...
File 1	1000	238	483	12	3	...
File 2	102	93	10	0	15	...

Determining Authorship

Discern the **Outlier**: The one book that is NOT in the series of the others.

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vs.

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File 2	0.238	0.0932	0.0034	0.0021	0.05	...

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3. Design a **metric** to compare the two files
   - A metric is a function that defines a **distance** between two things

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   - A metric is a function that defines a **distance** between two things

Write a
`compareTwo(list1,list2)`
function that returns a `float`.

Determining Authorship

Download and extract `authorship.zip`

Compile and run `testFiles('output.csv')`

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Compile and run `testFiles('output.csv')`

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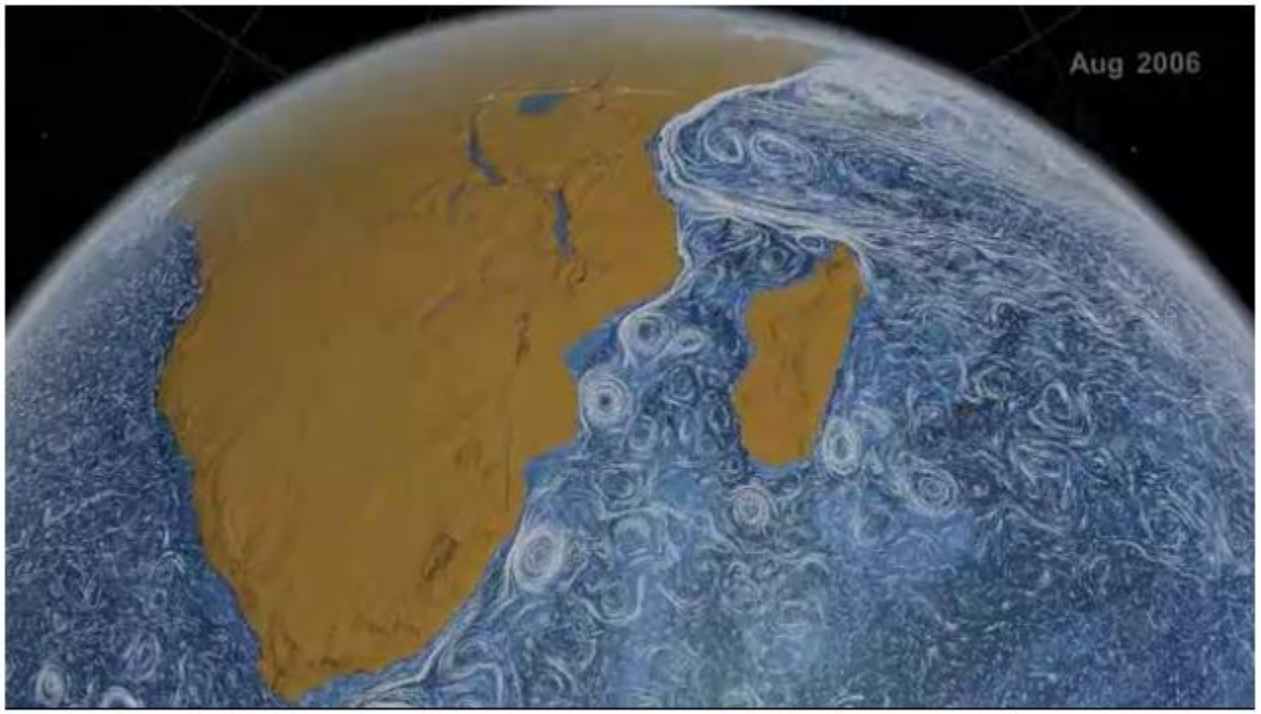
First, what does the current program do?

Break

Perpetual Ocean

March 27, 2012 to **Mapping** · **Add Comment** · **Share on Twitter**

PerpetualOcean



Using a computational model called Estimating the Circulation and Climate of the Ocean, Phase II (ECCO2), the NASA Goddard Space Flight Center Scientific Visualization Studio (I think NASA has a thing for long names.) visualizes surface currents around the world. This is beautiful science here. Make sure you turn on high-def and go full screen.

Distance Matrix

This matrix looks kind of familiar...

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Instead of printing to the screen, write it to a file in CSV (comma-separated value) format.

```
myNum = 1
myFile = open('output.csv',`w')
myFile.write('this is an output file\n')
myFile.write(str(myNum))
myFile.write(`\n')
myFile.close()
```

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```

```
this is an output file
1
```

Distance Matrix

This matrix looks kind of familiar...

Instead of printing to the screen, write it to a file in CSV (comma-separated value) format.

Open the CSV file in Excel. Use conditional formatting to look for patterns.

What's Your Answer?

Discern the **Outlier**:
The one book that is NOT in the series of the others.

File	Title	Series	Author
file1.txt			
file2.txt			
file3.txt			
file4.txt			
file5.txt			
file6.txt			

What's Your Answer?

Discern the **Outlier**:
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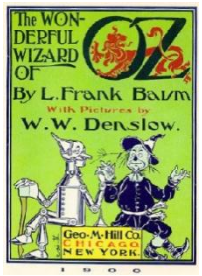
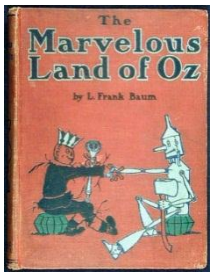
File	Title	Series	Author
file1.txt	Wonder Wizard of Oz	Oz	
file2.txt	Alice's Adventures in Wonderland	Alice in Wonderland	
file3.txt	Dorothy and the Wizard in Oz	Oz	
file4.txt	Emerald City of Oz	Oz	
file5.txt	Royal Book of Oz	Oz	
file6.txt	Glinda of Oz	Oz	

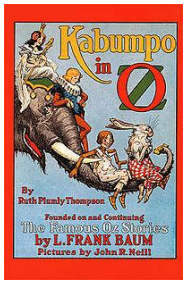
The Wizard of OZ

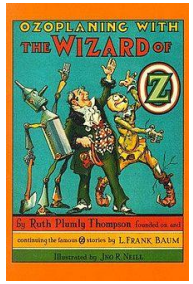
- About 40 Books, written by 7 different authors

#1 ... #14 #15 #16 ... #33









Lyman Frank Baum
(1856-1919)

Ruth Plumly Thompson

Published in 1921

http://www.ssc.wisc.edu/~zzeng/soc357/OZ.pdf

What's Your Answer?

Discern the **Outlier**:
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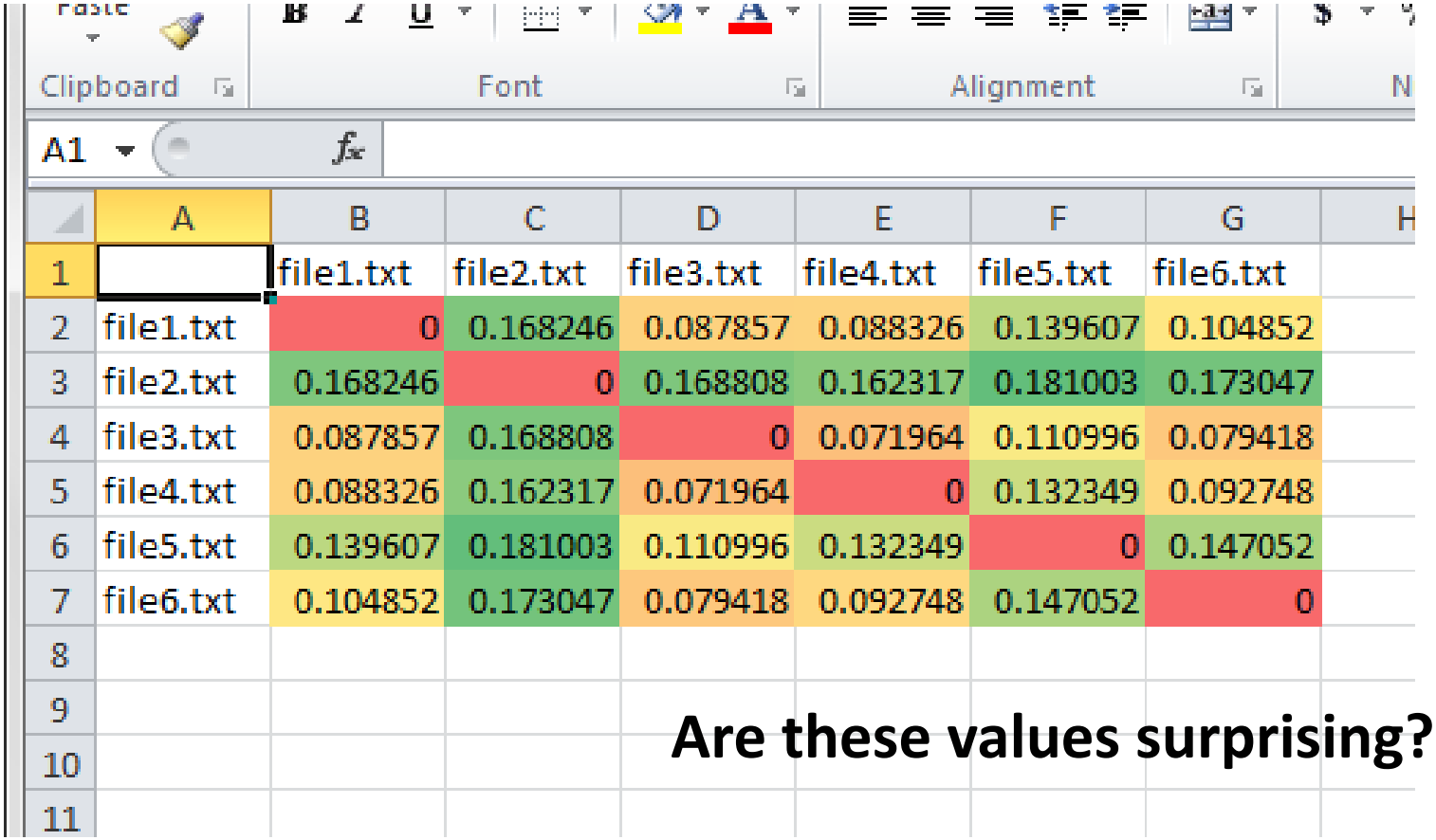
File	Title	Series	Author
file1.txt	Wonder Wizard of Oz	Oz	Lyman Frank Baum
file2.txt	Alice's Adventures in Wonderland	Alice in Wonderland	Lewis Carroll
file3.txt	Dorothy and the Wizard in Oz	Oz	Lyman Frank Baum
file4.txt	Emerald City of Oz	Oz	Lyman Frank Baum
file5.txt	Royal Book of Oz	Oz	Ruth Plumly Thompson
file6.txt	Glinda of Oz	Oz	Lyman Frank Baum

Next Class



Clipboard | Font | Alignment

A1

	A	B	C	D	E	F	G
1		file1.txt	file2.txt	file3.txt	file4.txt	file5.txt	file6.txt
2	file1.txt	0	0.168246	0.087857	0.088326	0.139607	0.104852
3	file2.txt	0.168246	0	0.168808	0.162317	0.181003	0.173047
4	file3.txt	0.087857	0.168808	0	0.071964	0.110996	0.079418
5	file4.txt	0.088326	0.162317	0.071964	0	0.132349	0.092748
6	file5.txt	0.139607	0.181003	0.110996	0.132349	0	0.147052
7	file6.txt	0.104852	0.173047	0.079418	0.092748	0.147052	0
8							
9							
10							
11							

Are these values surprising?