Author Mystery

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Game Plan

Recap

Algorithm Description

Code!
Recap
Algorithms

The STL contains pre written algorithms that operate on iterators.

Doing so lets them work on many types of containers.

Uses determined by types of iterators.

Rely heavily on templates.
Sometimes we need to form “weird” iterators:

- Iterating over streams would be pretty cool
- Having an iterator that could “insert” into a collection would be pretty cool

This is where iterator adaptors come in.
Here's a cool application of this. This code prints the vector:

```cpp
std::vector<int> v{3, 1, 4, 1, 5};
std::copy(v.begin(), v.end(),
          std::ostream_iterator<int>(cout, "", "))
```
Insert Iterators

Now we can solve the coyote problem:

```cpp
vector<int> v {561, 1105, 1729, 2465};
vector<int> vCopy;

std::copy(v.begin(), v.end(), std::back_inserter(vCopy));
```
Today
THE FEDERALIST:
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This work will be printed on a fine Paper
and good Type, in one handsome Volume du-
doctee, and delivered to subscribers at the
moderate price of one dollar. A few copies
will be printed on superfine royal Writing pa-
er, price ten shillings.
No money required till delivery.
To render this work more complete, will be
added, without any additional expense,
PHILO-PUBLIUS,
AND THE
Articles of the Convention,
As agreed upon at Philadelphia, Septem-
ber 17th, 1787.

The FœDERALIST, No. 10.

To the People of the State of New-York.

Among the numerous advantages promised by
a well-contructed Union, none deserves to be
more accurately developed than its tendency to
break and control the violence of faction. The
friend of popular governments, never finds himself
so much alarmed for their character and fate, as
when he contemplates their propensity to this dan-
gerous vice. He will not fail therefore to let a due
value on any plan which, without violating the
principles to which he is attached, provides a pro-
cure for it. The infallibility, injustice and con-
fusion introduced into the public councils, have in
truth been the mortal diseases under which popular
governments have every where perished; as they
continue to be the favorite and fruitful topics from
which the adversaries to liberty derive their most
specious declamations. The valuable improvements
made by the American Constitutions on the popular
models, have arisen from being the

The influence of passionate leaders may kindle a
flame within their particular States, but will be un-
able to spread a general conflagration through the
other States: A religious zeal, may degenerate into
a political faction in a part of the Union; but
the variety of evils dispersed over the entire face of
it, must secure the national Councils against any
danger from that source: A rage for paper money,
for an abolition of debts, for an equal division of
property, or for any other improper or wicked proj-
jects, will be less apt to pervade the whole body of
the Union, than a particular member of it; in the
same proportion as such a madness is more likely to
taint a particular county or district, than an entire
State.

In the extent and proper structure of the Union,
therefore, we behold a republican remedy for the
diseases most incident to republican Government.
And according to the degree of pleasure and profit
we feel in being Republicans, ought to be our zeal in
cherishing the spirit and supporting the character of
Federalists.

PUBLIUS.
Can we discover an author’s identity from their writing?
The Idea

Authors have an underlying writing style.

Subconsciously writers tend to write in a consistent manner.

Could we use these tendencies as a literary fingerprint?
The Idea

We need a writer invariant.

Function words:

- Syntactic glue of a language
- E.g. *the, I, he, she, do, from, because*...
The Idea

Let’s imagine our language only has 3 function words:

[I, the, there]

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- Edgar Allan Poe

I first met Dean not long after my wife and I split up. I had just gotten over a serious illness that I won’t bother to talk about, except that it had something to do with the miserably weary split-up and my feeling that everything there was dead.

- Jack Kerouac
The Idea

We can create a fingerprint vector for the two texts.

[I, the, there]

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-I, the, there-[1, 0, 0]

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The Idea

$$[1, 0, 0]$$  $$[4, 1, 1]$$
The Idea

\[ [1, 0, 0] \quad [4, 1, 1] \]
The Idea

\[
\begin{bmatrix}
1 & 0 & 0
\end{bmatrix}
\quad
\begin{bmatrix}
4 & 1 & 1
\end{bmatrix}
\]
The Idea

\[ [1, 0, 0] \quad [4, 1, 1] \]

The closer this angle, the more similar the texts.
The Idea

\[ \cos \theta = \frac{\vec{u} \cdot \vec{v}}{||\vec{u}|| \cdot ||\vec{v}||} \]
Let’s start coding!
The code for getting the word count will be really useful for the first part of assignment 2.