

LING/C SC/PSYC 438/538

Lecture 4
Sandiway Fong

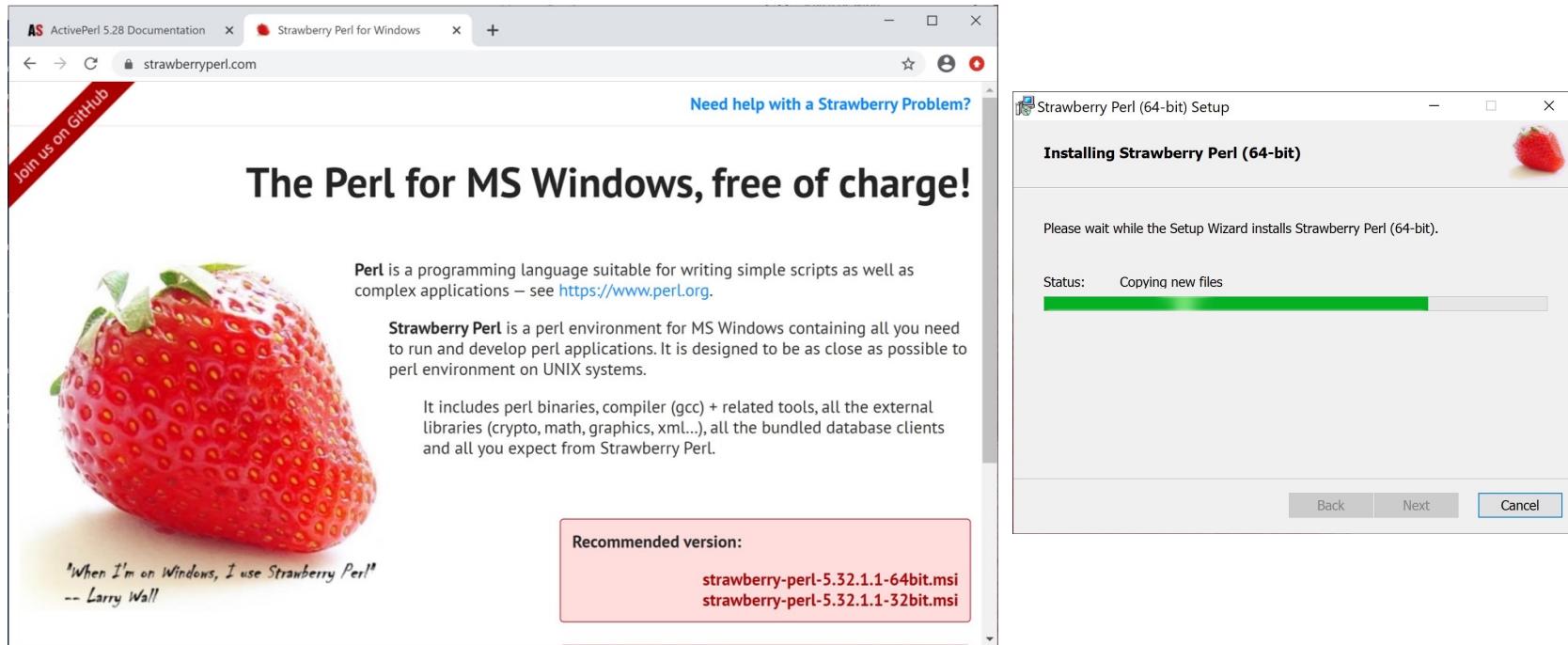
Today's Lecture

- Remark on Perl and cmudict
- Homework 4 review
- Text summarization
- Beginning programming with Perl
 - focusing on quoting (*very important!*)

Perl cmudict on Windows 10

ActiveState Perl on Windows 10 is kinda broken wrt. installing Perl modules.

- Recommend you install Strawberry Perl (also free) instead.



Perl cmudict on Windows 10

```
Perl (command line)
Microsoft Windows [Version 10.0.18362.356]
(c) 2019 Microsoft Corporation. All rights reserved.

C:\Users\sandiway\Documents>cd ..
C:\Users\sandiway>cd Desktop
C:\Users\sandiway\Desktop>perl -
This is perl 5, version 32, subversion 1 (v5.32.1) built for MSWin32-x64-multi-thread
Copyright 1987-2021, Larry Wall

Perl may be copied only under the terms of either the Artistic License or the
GNU General Public License, which may be found in the Perl 5 source kit.

Complete documentation for Perl, including FAQ lists, should be found on
this system using "man perl" or "perldoc perl". If you have access to the
Internet, point your browser at http://www.perl.org/, the Perl Home Page.

C:\Users\sandiway\Desktop>perl test.perl
Hello
C:\Users\sandiway\Desktop>
```

```
Windows PowerShell
PS C:\Users\sandiway\Desktop> cpan Lingua::EN::CMUDict
Loading internal logger. Log::Log4perl recommended for better logging
CPAN: CPAN::SQLite loaded ok (v0.219)
database was generated on Wed, 01 Sep 2021 17:39:06 GMT
Running install for module 'Lingua::EN::CMUDict'
CPAN: Digest::SHA loaded ok (v6.02)
CPAN: Compress::Zlib loaded ok (v2.1)
Checksum for C:/Strawberry/cpan/sources/authors/id/L/LM/LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz ok
CPAN: Archive::tar loaded ok (v0.38)
CPAN: YAML::XS loaded ok (v0.82)
CPAN: CPAN::Meta::Requirements loaded ok (v2.140)
CPAN: CPAN::Meta loaded ok (v2.150010)
Configuring L/LM/LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz with Makefile.PL
Checking if your kit is complete...
Looks good
Generating a gmake-style Makefile
Writing Makefile for Lingua::EN::CMUDict
Writing MYMETA.yml and MYMETA.json
LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz
C:/Strawberry/perl/bin/perl.exe Makefile.PL -- OK
Running make for L/LM/LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz
CPAN: Module::CoreList loaded ok (v5.20210123)
cp lib/Lingua/EN/CMUDict.pm blib/lib\lingua\en\cmudict.pm
LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz
C:/Strawberry/c/bin/gmake.exe -- OK
Running make test for LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz
"C:/Strawberry/perl/bin/perl.exe" "-MExtUtils::Command::MM" "-e" "undef *Test::Harness::Switches; test
'harness(0, 'inc', 'bliblib', 'blib')' .. ok
T/L/lingua-EN-CMUDict.t .. ok
All tests successful.
Files=1, Tests=1, 1 wallclock secs ( 0.03 usr +  0.00 sys =  0.03 CPU)
Result: PASS
LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz
C:/Strawberry/c/bin/gmake.exe test -- OK
Running make install for LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz
Installing C:/Strawberry/perl/site/lib/auto/share/dist/Lingua-EN-CMUDict/cmusydict.db
Installing C:/Strawberry/perl/site/lib\lingua\en\cmudict.pm
Appending installation info to C:/Strawberry/perl/lib/perllocal.pod
LMETCALF/Lingua-EN-CMUDict-0.06.tar.gz
C:/Strawberry/c/bin/gmake.exe install UNINST=1 -- OK
PS C:\Users\sandiway\Desktop>
```

cpan Lingua::EN::CMUDict

How about Python?

Documentation for pronouncing

Pronouncing is a simple interface for the [CMU Pronouncing Dictionary](#). The library is designed to be easy to use, and has no external dependencies. For example, here's all you need to do in order to find rhymes for a given word:

```
>>> import pronouncing  
>>> pronouncing.rhymes("climbing")  
['diming', 'liming', 'priming', 'rhyming', 'timing']
```

Read the documentation here: <https://pronouncing.readthedocs.org>.

I made this library because I wanted to be able to use the CMU Pronouncing Dictionary in my projects without having to install the grand behemoth that is NLTK. It's designed to be friendly to beginner programmers who want to get started with creative language generation and analysis, and for experts who want to make quick prototypes of projects that deal with English pronunciation.

Homework 4 Review

1. How much Chinese silk was exported to Western Europe **by** the end of the 18th century?
2. How much Chinese silk was exported to Western Europe **by** southern merchants?

by preposition

 Save Word

\ 'bī, before consonants also bə \

Definition of by (Entry 1 of 5)

1 : in proximity to : NEAR
// standing *by* the window

2 a : into the vicinity of and beyond : PAST
// went right *by* him

b : through or through the medium (see MEDIUM entry 1 sense 2) of : VIA
// enter *by* the door

c : in the direction of : TOWARD
// sailed north *by* east

3 a : during the course of
// studied *by* night

b : not later than
// be there *by* 2 p.m.

by_{3b}

- | | |
|---|-------------------------------|
| <p>4 a : through the agency (see <u>AGENCY</u> entry 3) or instrumentality of
// a poem written <i>by</i> Keats</p> | <p>by_{4a}</p> |
| <p>// death <i>by</i> firing squad</p> | |
| <p>// taken <i>by</i> force</p> | |
| <p>// happened <i>by</i> luck</p> | |
| <p>b : born or <u>begot</u> of
// had two sons <i>by</i> his first wife</p> | |
| <p>// one child <i>by</i> her second husband</p> | |
| <p>c : sired or borne by
// having foals <i>by</i> champion race horses</p> | |
| <p>5 : with the witness or sanction (see <u>SANCTION</u> entry 1 sense 4c) of
// swear <i>by</i> all that is holy</p> | |
| <p>6 a : in conformity with
// acted <i>by</i> the rules</p> | |
| <p>b : <u>ACCORDING TO</u>
// called her <i>by</i> name</p> | |
| <p>// sold <i>by</i> the pound</p> | |
| <p>7 —used as a function word in multiplication, in division, and in measurements
// divide a <i>by</i> b</p> | |
| <p>// multiply 10 <i>by</i> 4</p> | |
| <p>// a room 15 feet <i>by</i> 20 feet</p> | |

- 8 a : with respect to
// a lawyer *by* profession
- b : on behalf of
// did right *by* his children
- 9 : in or to the amount or extent of
// win *by* a nose
- b chiefly *Scotland* : in comparison with : BESIDE
- 10 —used as a function word to indicate successive units or increments
// little *by* little
- // walk two *by* two
- 11 : in the opinion of : from the point of view of
// OK *by* me
- by the by or by the bye**
: INCIDENTALLY entry 2

Homework 4 Review

<https://open.spotify.com> › track ::

By the sea - song by Thor's Hammer - Spotify – Web Player

Popular Albums by Thor's Hammer ; My life · 2:21 ; Better days · 2:39 ; I don't care · 2:43 ; The big beat country dance · 1:58 ; If you knew · 2:23.



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by the by or by the bye
: INCIDENTALLY sense 2

Made-up example

- By the way, by the rules of our little game, I managed to spot him by 7am by the sea by squinting through my binoculars.



App of the Day

- Text summarization service
 - available on Macs (*but buried deeply and turned off by default*)
 - Open Text Summarizer (ots) (on Linux), also web interface

AutoSummarize a document in Microsoft Office Word 2007

Learn how to AutoSummarize a document into key points or an outline using Microsoft Office Word 2007.



Video: AutoSummarize a document

The AutoSummary Tools in Office Word 2007 can highlight and assemble key points of a document. A student can use it to AutoSummarize a long list of science articles or even to quickly create an abstract for a finished history report.

[Watch the video](#)

Tips

Students are often asked to write expansive papers. It is a good way to measure their research, and writing skills. What is often left unmeasurable is the ability to summarize and simplify.

[Tweet](#) [Print](#) [Add to](#)

no longer available in MS Office

Open Text Summarizer (ots)

(code: *read about how it works*)

- <https://github.com/neopunisher/Open-Text-Summarizer/>
- Web interface
 - <http://www.splitbrain.org/services/ots>

OPEN TEXT SUMMARIZER

This is a webinterface to the Open Text Summarizer tool. The tool automatically analyzes texts in various languages and tries to identify the most important parts of the text.

Just paste your text or load it from an URL to get it summarized.

Input:

Output:

 Summary Keywords

Summarization Ratio

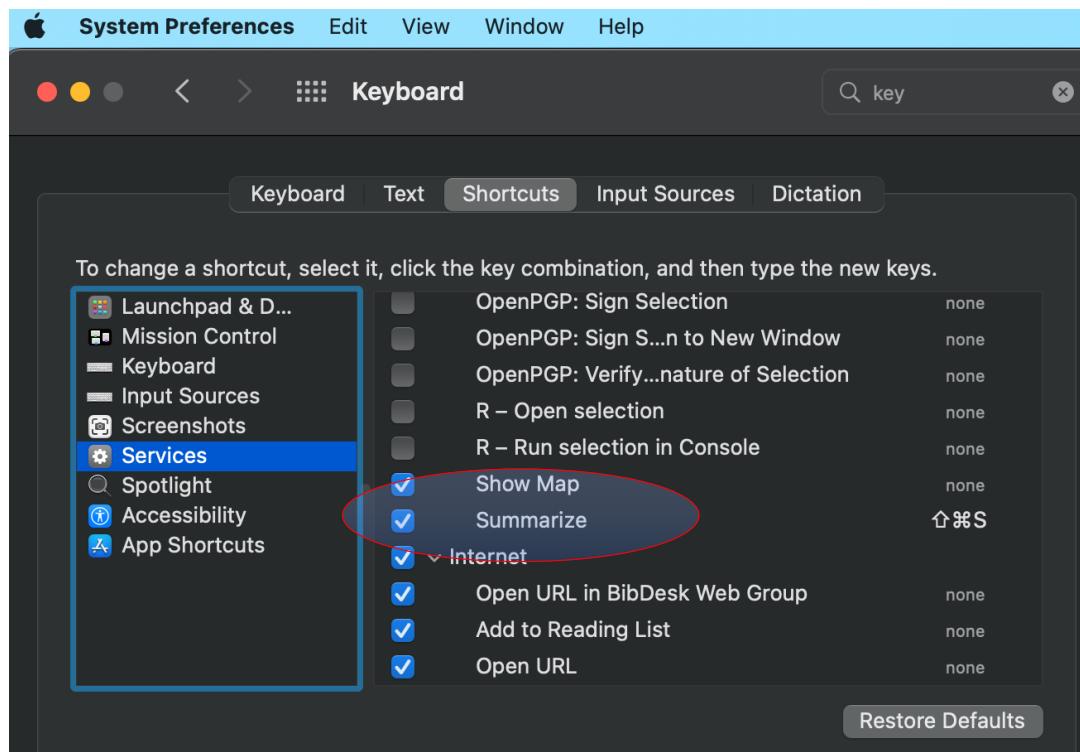
 5% 10% 20% 30% 40% 50% 60% 70%
 80%

Language

Submit

App of the Day

- System Preferences (MacOS) > Keyboard > Shortcuts > Services > Summarize



App of the Day

1. Show Reader View
2. Select all text
3. Control-Click for menu

• Let's try it on this BBC News article

- <https://www.bbc.com/news/uk-62732447>

The screenshot shows the BBC News homepage. At the top, there is a navigation bar with links for Home, News, Sport, Reel, Worklife, Travel, Future, and a search icon. Below the navigation is a red banner with the word 'NEWS'. Underneath the banner, there is a navigation bar with links for Home, War in Ukraine, Coronavirus, Climate, Video, World, US & Canada, UK, Business, Tech, Science, and More. The 'More' link is expanded to show additional categories: World, Africa, Asia, Australia, Europe (which is underlined), Latin America, and Middle East. Below this is a large advertisement for Blancpain titled 'Uncharted waters.' It features a blue background with illustrations of fish and a shark, and text encouraging users to discover key milestones in ocean exploration. A 'DISCOVER NOW' button is visible. To the right of the ad, there is a small 'ADVERTISEMENT' notice and the Blancpain logo. Below the ad, the main news headline is 'Mikhail Gorbachev: Last Soviet leader dies aged 91'. The byline reads 'By Matt Murphy & Robert Greenall BBC News'. A small photo of Mikhail Gorbachev is shown next to the headline.

The screenshot shows the same BBC News article from the previous step, but now in Reader View mode. A dark grey overlay covers the top of the page, featuring a 'Show Reader View' button on the left and three small icons on the right (refresh, copy, and more). The main content area has a dark grey background. The headline 'Mikhail Gorbachev: Last Soviet leader dies aged 91' is displayed prominently at the top. Below the headline, the author information 'By Matt Murphy & Robert Greenall BBC News' is visible. A large, high-resolution portrait of Mikhail Gorbachev is centered in the frame, showing him from the chest up, wearing a suit and tie. The overall layout is clean and focused on the news content.

App of the Day

Mikhail Gorbachev was widely acclaimed in the West, but reviled by many at home

Mikhail Gorbachev, the former Soviet leader who brought the Cold War to a peaceful end, has died aged 91.

Mr Gorbachev, who took power in 1985, opened up the Soviet Union to the world and introduced a set of reforms at home.

But he was unable to prevent the slow collapse of the Soviet Union, from which modern Russia emerged.

Tributes have been paid worldwide, with UN chief António Guterres saying he "changed the course of history".

"Mikhail Gorbachev was a one-of-a-kind statesman," UN Secretary General Mr Guterres wrote in a Twitter tribute. "The world has lost a towering global leader, committed multilateralist, and tireless advocate for peace."

The hospital in Moscow where he died said he had been suffering from a long and serious illness.

In recent years his health has been in decline and he had been in and out of hospital. In June, international media reported that he had been admitted after suffering from a kidney ailment, though his cause of death has not been

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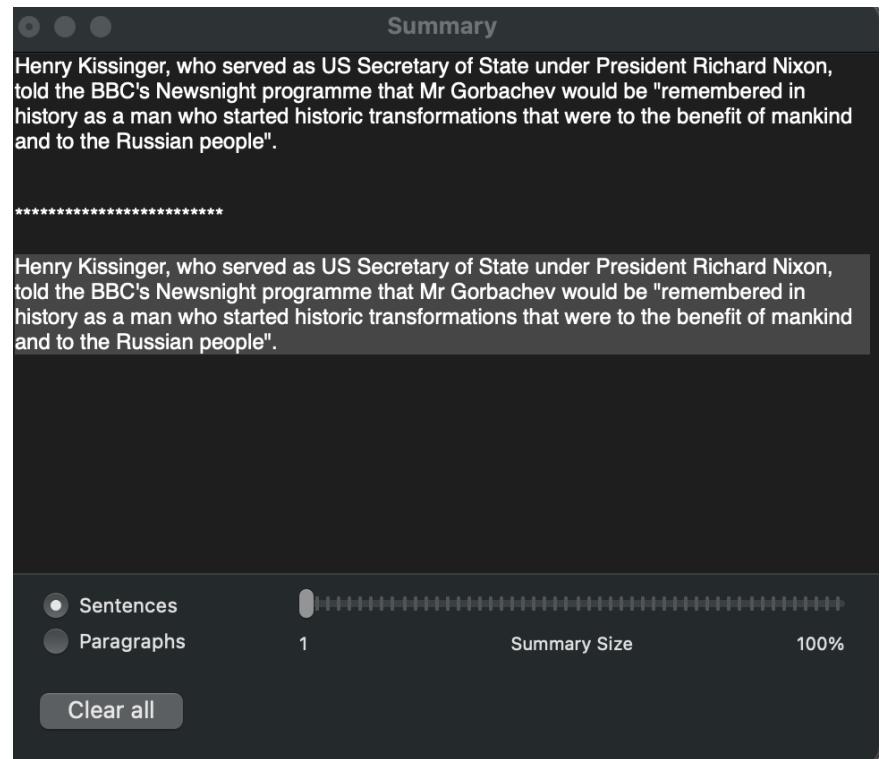
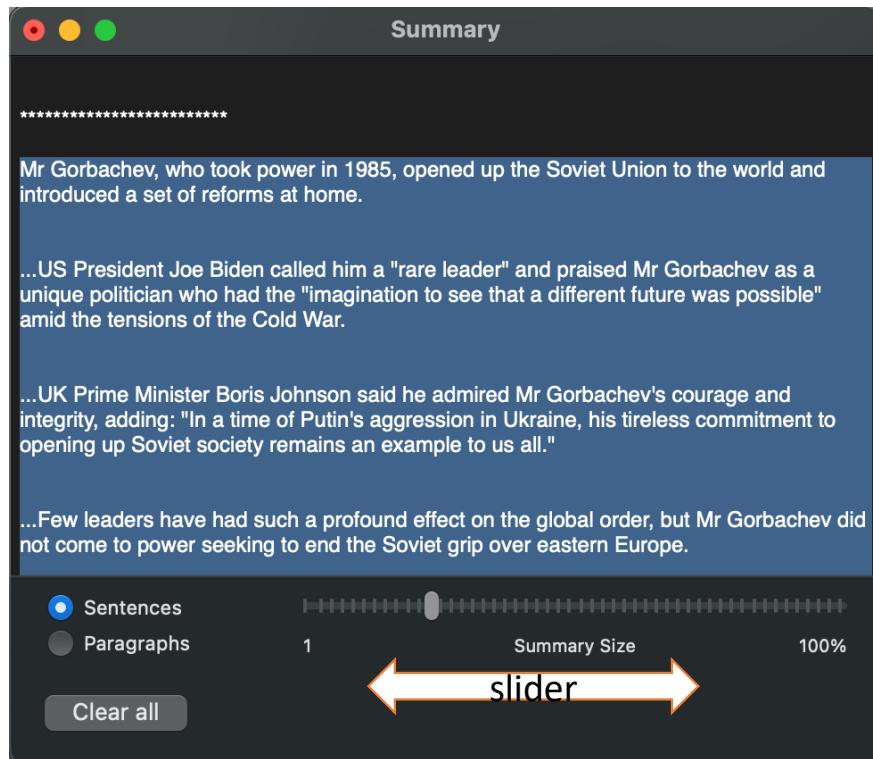
Look Up "Mikhail Gorbachev: Last ..."
Translate "Mikhail Gorbachev: Last ..." Search with Google

Copy Share Speech

Inspect Element Services

Add to Music as a Spoken Track
Add to Reading List
Open
Search With Google
Show in Finder
Show Info in Finder
Summarize

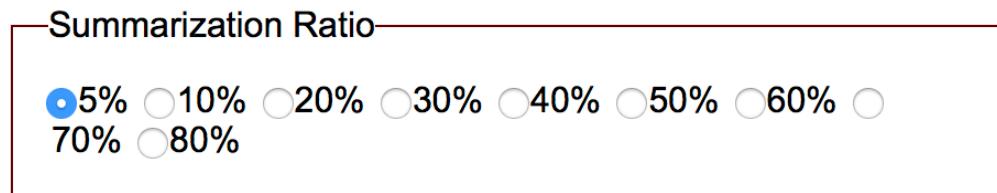
App of the Day



App of the Day

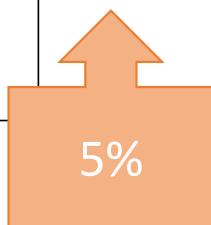
Open Text Summarizer: Web interface: (maybe others)

- <https://www.splitbrain.org/services/ots>



Mikhail Gorbachev: Last Soviet leader dies aged 91
1 hour ago
By Matt Murphy & Robert Greenall
BBC News

Mikhail GorbachevGetty Images
Mikhail Gorbachev was widely acclaimed in the West, but reviled by many at home
Mikhail Gorbachev, the former Soviet leader who brought the Cold War to a peaceful end, has died aged 91.



10%

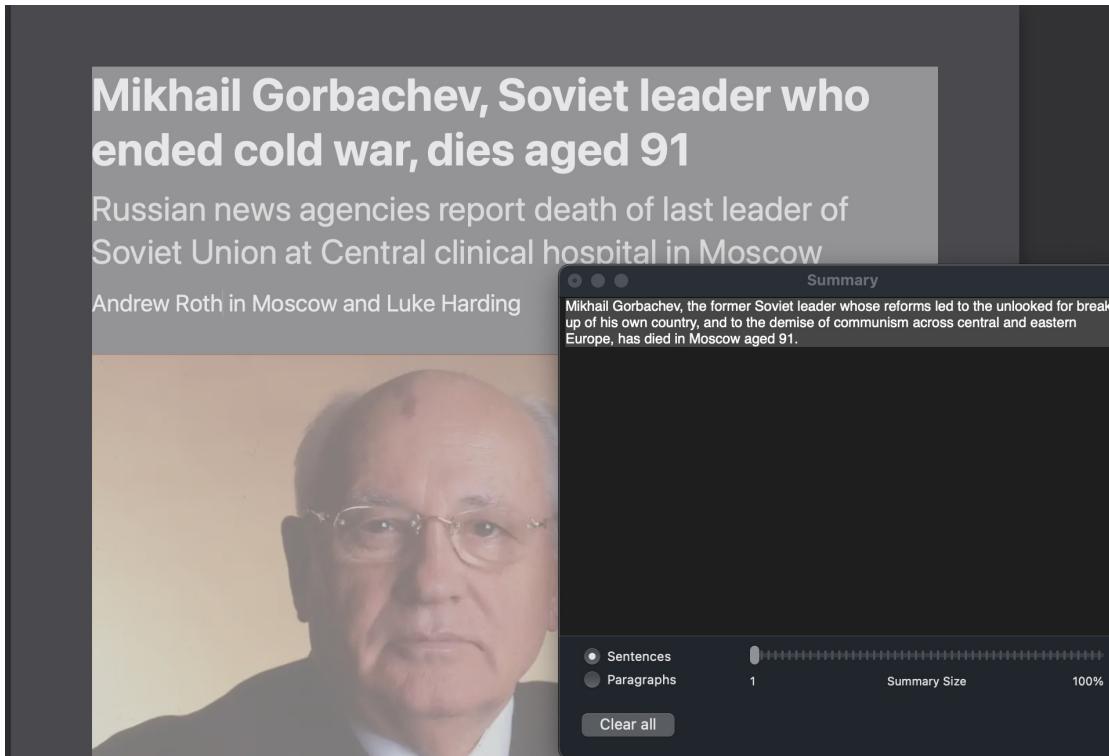
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Mikhail GorbachevGetty Images
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OBITUARY: Soviet leader who helped end Cold War
STEVE ROSENBERG: Remembering a warm-hearted man
IN PICTURES: The life of Mikhail Gorbachev
WATCH: Duetting with Gorbachev
Mr Gorbachev became general secretary of the Soviet Communist Party, and de facto leader of the country, in 1985.

App of the Day

<https://www.theguardian.com/world/2022/aug/30/mikhail-gorbachev-dies-soviet-leader-92>



App of the Day

The screenshot shows a news article from Pravda.ru. The title is "Скончался Михаил Горбачёв" (Mikhail Gorbachev has died). Below the title is the author's name, Anton Kulikov, and the date, 31.08.2022 00:04. The main text states: "В Москве после продолжительной болезни скончался Михаил Горбачёв." Below the text is a large portrait of Mikhail Gorbachev. At the bottom of the article, there is a quote: "Сегодня вечером после тяжелой и продолжительной болезни скончался Михаил Сергеевич Горбачёв", - сообщили в ЦКБ.

- Same result if you translate the webpage first

The screenshot shows a web-based summarization tool. It displays the Russian text of the news article and its English translation. A summary is generated at the bottom, which reads: "В октябре 1988 года Михаил Горбачёв возглавил Президиум Верховного Совета СССР, то есть совместил высшую партийную и государственную должности." The interface includes a "Summary" button, a "Copy Translation" button, and controls for "Sentences" and "Paragraphs" modes, with a summary size set to 100%.

From lecture 2

- Obama: "*At a certain point, I've just concluded that for me personally it is important for me to go ahead and affirm that I think same-sex couples should be able to get married.*"

Executive Summarization

May 9, 2012 2:57pm

Obama: 'I Think Same-Sex Couples Should Be Able to Get Married'



Perl

- Learn Perl
 - Books...
 - Online resources
 - <http://learn.perl.org/>, we begin with <http://perldoc.perl.org/perlintro.html>

Basic syntax overview

A Perl script or program consists of one or more statements. These statements are simply written in the script in a straightforward fashion. There is no need to have a `main()` function or anything of that kind.

Perl statements end in a semi-colon:

```
1.     print "Hello, world";
```

Perl

- <http://perldoc.perl.org/perlintro.html>
- One-liner:
 - perl -e 'PerlCode'
 - three different runs:

```
[~$ perl -e 'print "Hello class!"'
Hello class!~$ 
[~$ perl -e 'print "Hello class!\n"'
Hello class!
[~$ perl -e 'print "Hello class!\n"
[> '
Hello class!
~$ ]
```

```
[~$ python3 -c 'print("hello")'
hello
~$ ]
```

\n = newline character (if interpolated)
Quoting is tricky:

- Single quotes go to the Bash shell
- says don't touch anything inside, pass the contents to Perl
- double quotes says do escape characters +
Bash shell variable interpolation

Perl

- <http://perldoc.perl.org/perlintro.html>

- **One-liner:**

- perl -e "PerlCode"
- three different runs:

```
[~$ word='class'  
[~$ perl -e "print 'Hello\n'"  
[Hello\n~$  
[~$ perl -e "print \"Hello\n\""  
Hello  
[~$ perl -e "print \"Hello $word\n\""  
Hello class  
~$ ]
```

```
[~$ word="class\n"  
[~$ perl -e "print \"Hello $word\n\""  
Hello class  
~$ ]
```

Quoting is tricky:

- double quotes says do Bash shell variable interpolation
- single quotes to Perl says don't interpolate (\n is not newline)
- Backslash \" needed for the Bash shell to not end the string, send " to Perl
- \$word is a Bash shell variable, substitutes its value before sending it to Perl

Perl

- <http://perldoc.perl.org/perlintro.html>

- **One-liner:**

- perl -e 'PerlCode'

- **Notes from the tutorial:**

- 2. `use strict;`
 - 3. `use warnings;`

"Nanny mode": helps with debugging:
makes you declare variables with `my`

- whitespace not always necessary, e.g.
 - `print "Hello class!\\n";`
 - is fine, but good idea to consistently use spacing (not just for readability)
 - variable names must not begin with a number (use a letter), so
 - `$538students` is out
 - `$students538` is ok
 - error messages are frequently uninformative (and sometimes misleading), e.g.
Bareword found where operator expected at example.prl line 3, near "`$538students`"
(Missing operator before `students`?)
 - *error not associated with the variable starting with a number*

print as a statement vs. function

Perl

```
1print "Hello World";  
2print "Goodbye World\n";
```

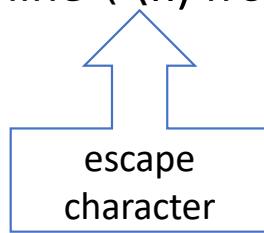
```
[dhcp-10-142-178-220:Desktop sandiway$ perl test.perl  
Hello WorldGoodbye World
```

Python3

```
1print("Hello World",end='');  
2print("Goodbye World")
```

```
[dhcp-10-142-178-220:Desktop sandiway$ python3 test.py  
Hello WorldGoodbye World
```

- Program in a plain text file, you don't have to worry about the Shell
- Same behavior, different assumptions about end of line (\n) from these two programming languages
- Note also the differences in syntax:
(..) in Python3, no parentheses (needed) in Perl
; need to separate the statements in Perl, none in Python (newline)



print as a statement vs. function

- Well, in Python, you might need ; sometimes.

```
[~$ python3 -c 'print("hello")'  
hello  
[~$ python3 -c 'print("hello") print("goodbye")'  
  File "<string>", line 1  
    print("hello") print("goodbye")  
          ^  
SyntaxError: invalid syntax  
[~$ python3 -c 'print("hello");print("goodbye")'  
hello  
goodbye  
~$ █
```

Perl vs. Python3

- **Scalars:** (basically things that take up one 32/64 bit word of memory)
 - variables begin with (\$) - no such type naming requirement in Python
- Numbers (integer, floating point)
 - Python includes complex numbers (cmath library)
 - user-definable precision floats (decimal library)
- Strings (double ".." or single quoted '..')
- References (pointers to (non-)scalars)

Perl vs. Python3

Variable interpolation

- Perl:
 - `print "My name is $name\n";`
 - `print "My name is \$name\n";`
 - `print 'My name is \$name\n';`
- Python3:
 - `print("My name is", name)`
- Python2.7:
 - `print("My name is", name)`

Note: white
spacing

Ungraded Exercises

- If you're new to programming, practice using Perl
 - **read** the intro and **run all** the examples!