# Introduction to the Course

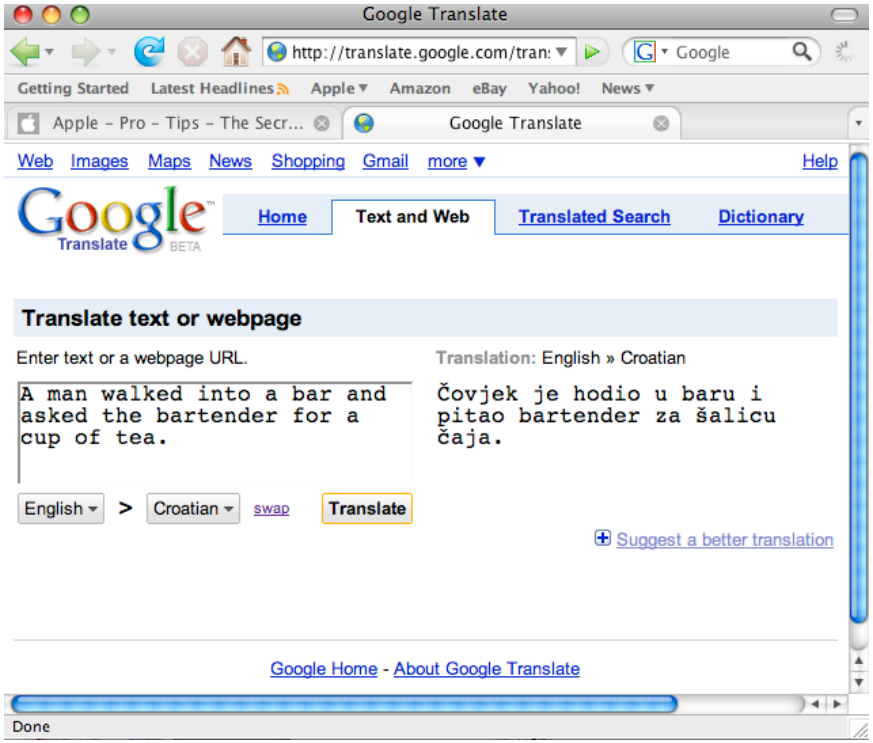
CS074-The Digital World

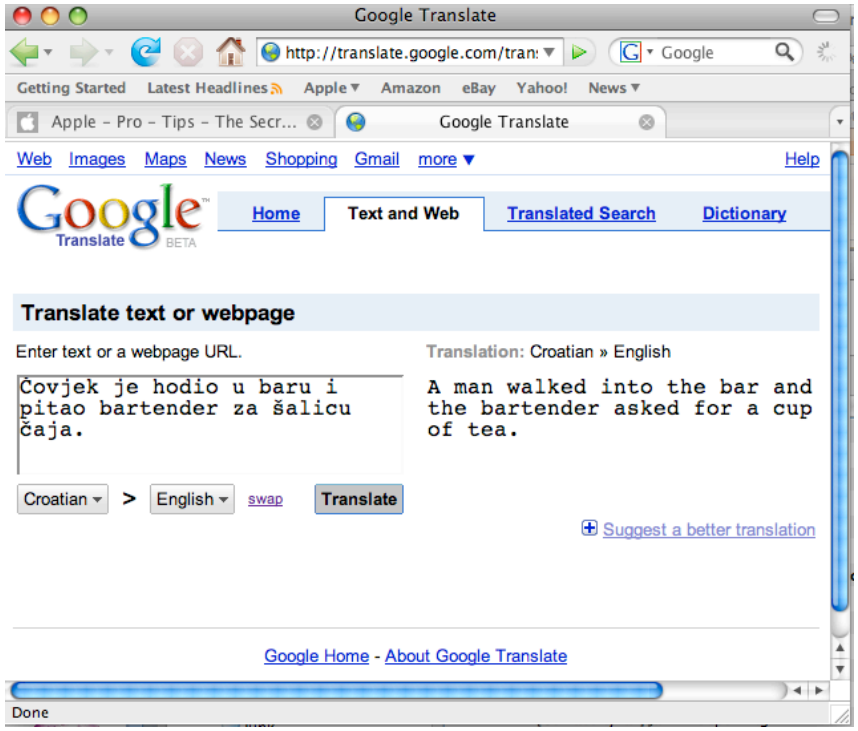
- How does MusicID extract a “fingerprint” from the few seconds of music it hears? What exactly is this fingerprint?
- How does it search for a match among fingerprints from millions of recordings? Where is that information stored?
- How is all this information sent to and from your telephone?

- How does 20Q “know” what it knows? What sort of information about the world is contained in this little box?

- How does it match the object to your answers to its questions? How does it decide what questions to ask?

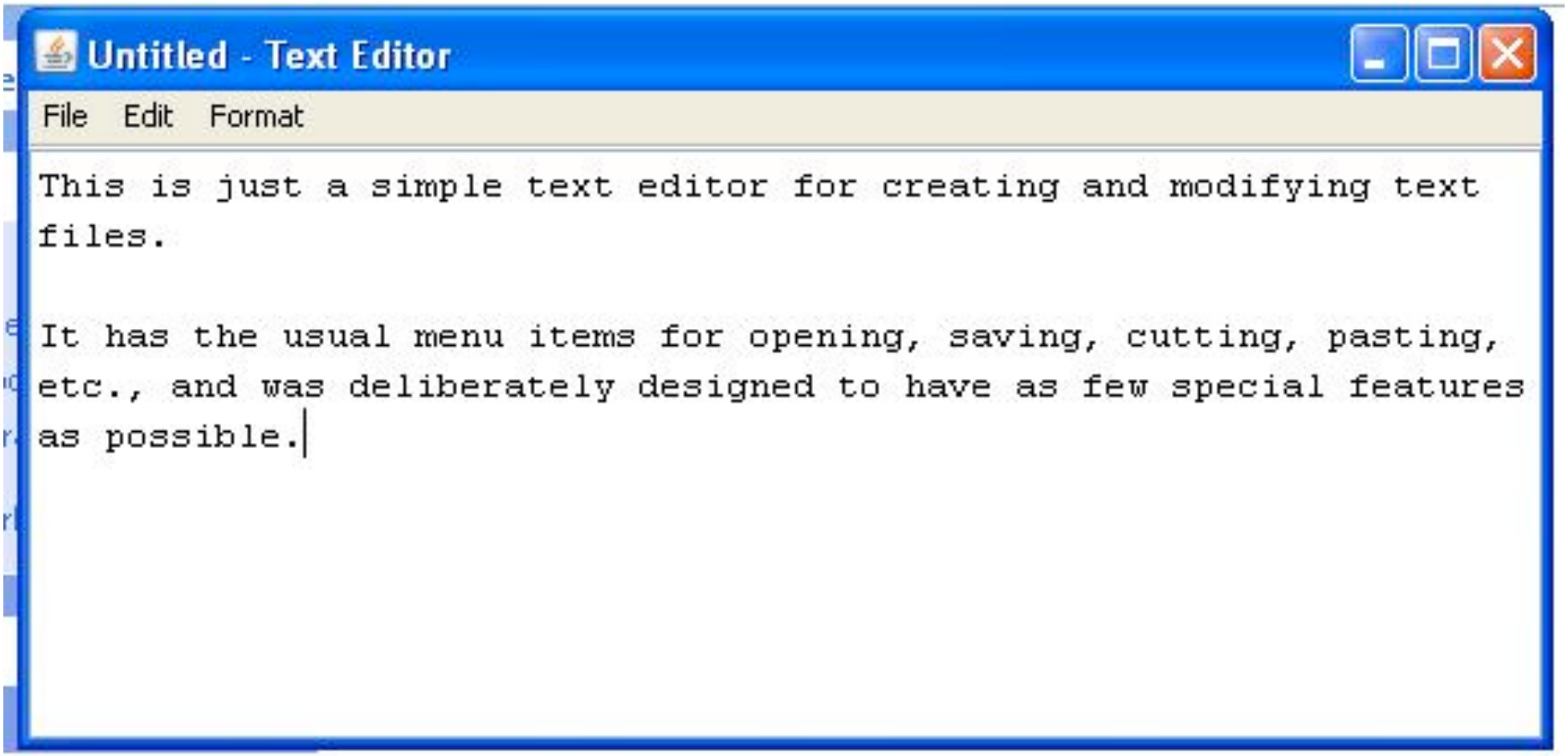
# If computers can do all that, why are they so bad at this?



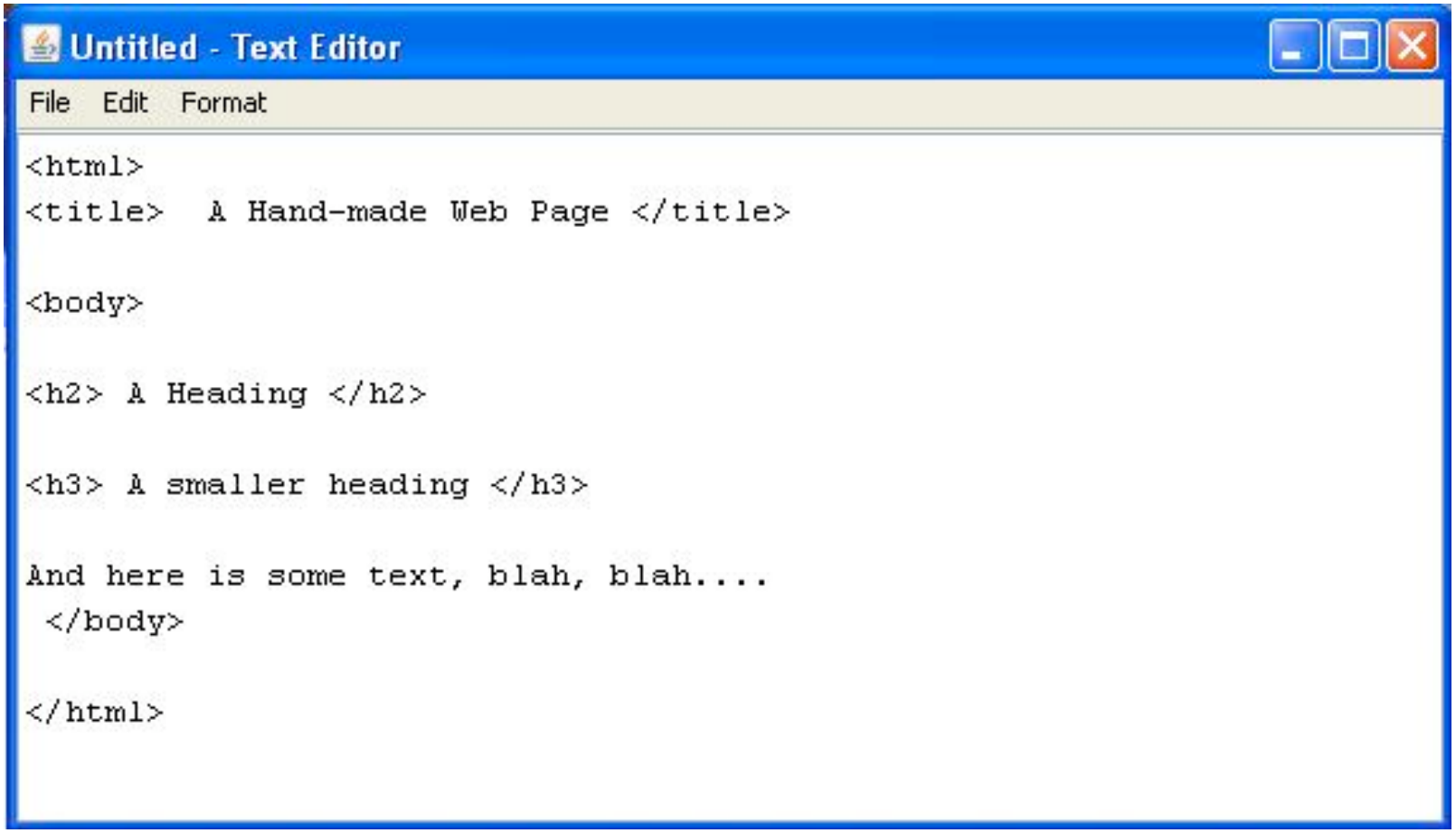



# Let's look at a *boring* program

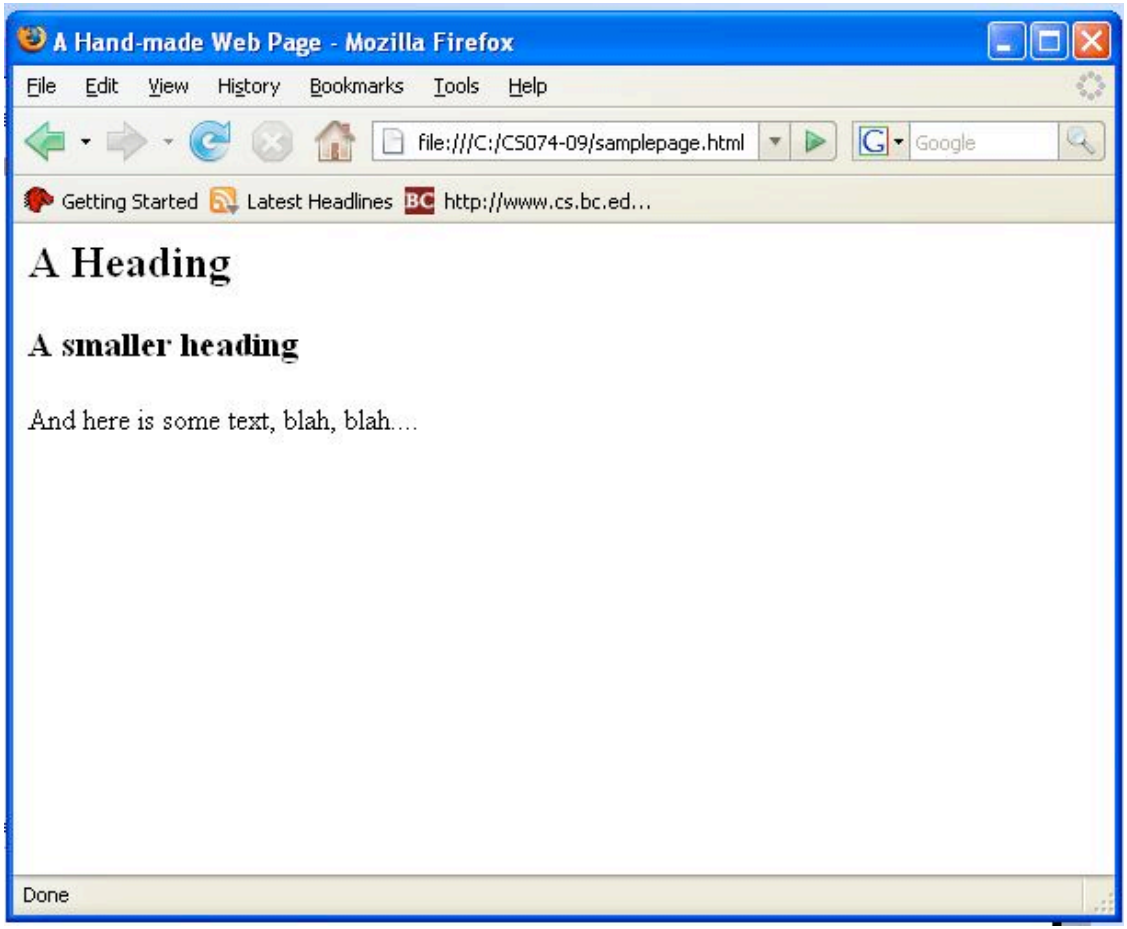
- Launch TextEditor by double-clicking the icon.
- The icon may look different on your system!


Untitled - Text Editor
File Edit Format
This is just a simple text editor for creating and modifying text files.
It has the usual menu items for opening, saving, cutting, pasting, etc., and was deliberately designed to have as few special features as possible.

# Let's do something interesting with it. We'll make a Web page.



- Save the file as “samplepage.html” and then open samplepage.html in a Web browser (like Firefox, or Internet Explorer, or Safari)



We can add more stuff to the page—new headings, images and links

samplepage.html - Text Editor

File Edit Format

```
<html>
<title>  A Hand-made Web Page </title>

<body>

<h2> A Heading </h2>

<h3> A smaller heading </h3>

And here is some text, blah, blah....

We can add pictures:
<br>
<img src = "mona_lisa.jpg" width="180"
height="290">
and links to
<a href="http://www.google.com" >other web
pages that we like.</a>

 </body>

</html>
```

A Hand-made Web Page - Mozilla Firefox

File Edit View History Bookmarks Tools Help

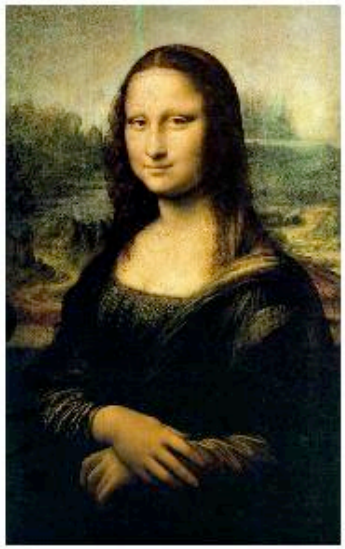
file:///C:/CS074-09/sa Google

Getting Started Latest Headlines BC http://www.cs.bc.ed...

# A Heading

### A smaller heading

And here is some text, blah, blah.... We can add pictures:



and links to other web pages that we like.

# Web pages are represented by ordinary text

- The information contained in a web page is encoded in a language called HTML (Hypertext Markup Language).
- The HTML contains both the text to be displayed, along with directives to the browser about how to display it, where to find the images displayed and other linked pages.
- This is an example of a “low-level” (text) representation of “higher-level” information (the content and layout of the web page).

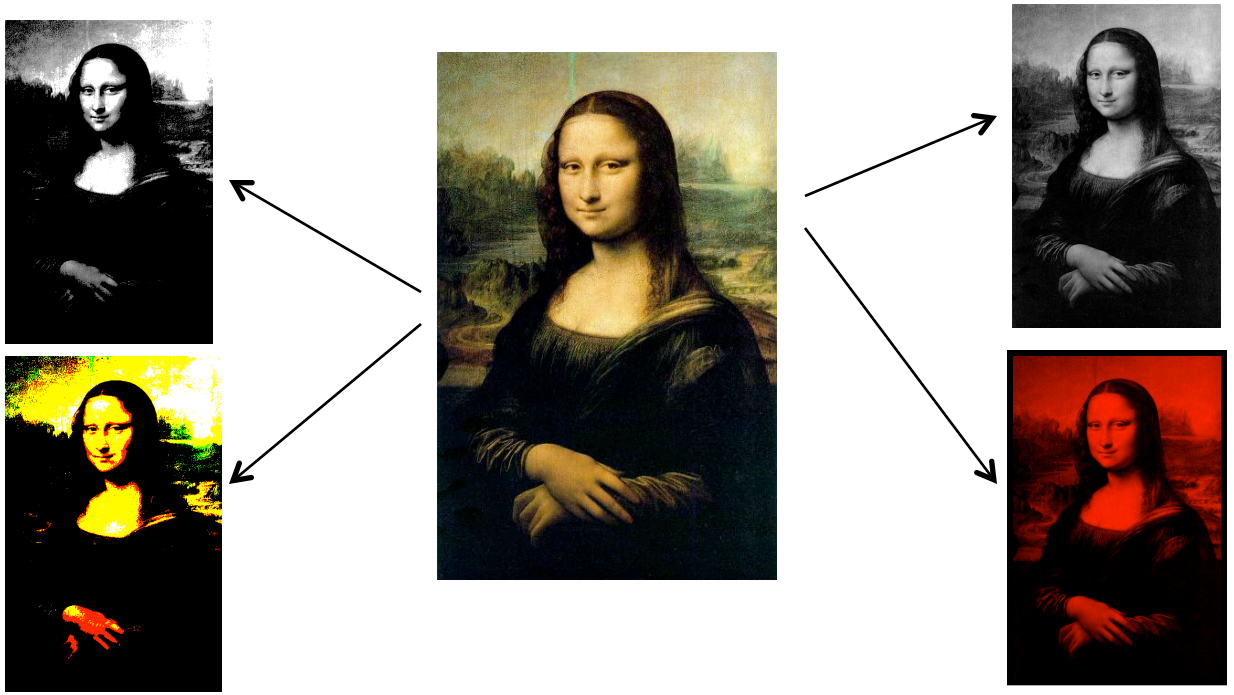
Computer Science studies the representation and manipulation of *information*

# What we do in the course

- Find out how text, images, sounds, video, *all information* manipulated by a computer is represented by a bunch of 0's and 1's (*bits*).

# What we do in the course

- Learn how to manipulate those bits to modify images, sounds and video.



# What we do in the course

- Learn the rudiments of writing computer programs (we will use a programming language called python).
- Write programs to draw pictures, play games, control robots, modify sounds and images, send e-mail, etc.
- Learn how computer programs compress, encrypt and communicate data.