Reliability on the Web

“You may have heard that ‘knowledge is power,’ or that information, the raw material of knowledge, is power. But the truth is that only some information is power: reliable information.”

Robert Harris, Ph.D.

Another Hoax Site

Help Save the Enangered Pacific Northwest Tree Octopus

From Extinction!

A Debugging Example

After building a web page, we find it is wrong

Houston, we have a problem

Debugging Demo

Debugging HTML

Net Truth?

Frequency of Web Site Completeness and Accuracy

<table>
<thead>
<tr>
<th>Health Issue</th>
<th>Frequency of Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress Causes</td>
<td>42%</td>
</tr>
<tr>
<td>Depression</td>
<td>18%</td>
</tr>
<tr>
<td>Drugs</td>
<td>7%</td>
</tr>
<tr>
<td>Alcohol Abuse</td>
<td>15%</td>
</tr>
</tbody>
</table>

Source: “e-Data E-Health: Click with Care: New Study Spotlights Problems and Potholes in Health Information on the Internet.” ITAA, June 2001.

A Debugging Example

Intended page

There is a tag that isn’t closed properly.

Animations

Debugging HTML
Announcements

Beginning Monday, we’ll start grading reflection papers. Each is worth ten points.
The three projects are each worth 150 points and 15% of your grade. Part A is worth 50 points and Part B is worth 100 points. That is true for each project.

Digital Representation

Everyone knows computers use bits and bytes ... but what are they?

Human/Computer Divide

Information must be in a form that
* Humans can understand and
* Computers can manipulate

Digitizing bridges the gap

Info Representation

Digitization: representing information by any fixed set of symbols

What number is: ?? ? ?? ??

Creating Symbols

Often, there are many things to digitize, but too few symbols available
* The solution is to create more symbols by composing patterns ...
* Three patterns make three symbols: ■□□
* Pairing them makes 9 symbols; when they are triples, 27 symbols, and ...

Patterns as Symbols

A particular pattern of digits represents your
* school ID
The numeric properties don’t matter, only the sequence.
Digits are familiar, easy to remember, and short unlike some other symbols:
* “one, one, five” vs. “exclamation, exclamation, semicolon.”
An Encoding

Encode the Latin alphabet

3

Info in the Physical World

Physical world:

* The most fundamental representation of information is presence/absence of a phenomenon
  * matter, light, magnetism, flow, charge, ...
* digital representation
  * detect: "is the phenomenon present?"
  * set: make phenomenon present or absent

Any controllable phenomenon works: define it right

Info in the Logical World

Logical World:

* Information, reasoning, computation are formulated by true/false and logic
  * All men are mortal
  * Aristotle is a man
  * Aristotle is mortal

True and false can be the patterns for encoding information

Connect Physical/Logical

The miracle of IT is that physical and logical worlds can be connected

<table>
<thead>
<tr>
<th>Present</th>
<th>Absent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnetized</td>
<td>Non-Magnetized</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>True</td>
<td>False</td>
</tr>
<tr>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Black</td>
<td>White</td>
</tr>
<tr>
<td>For</td>
<td>Against</td>
</tr>
<tr>
<td>Yin</td>
<td>Yang</td>
</tr>
</tbody>
</table>

Bits

Panda is a binary representation because it uses 2 patterns (0s, 1s)

Bit -- it’s a contraction for “binary digit”

-- a position in space/time capable of being set and detected in 2 patterns

Sherlock Holmes’s Mystery of Silver Blaze -- a popular example where “absent” gives information... the dog didn’t bark... that is, the phenomenon wasn’t detected

Bytes

A byte is eight bits treated as a unit

* Adopted by IBM in 1960s
* A standard measure ever since
* Bytes encode the Latin alphabet using ASCII -- the American Standard Code for Information Interchange

1010 0110
1010 1001
1010 1000

10/12/2007
Schematic Diagram of Magnetic Spots, as on a Disk

Converting Magnetic Spots to Numbers

Demonstration

Course Web site:
* http://www.cs.washington.edu/education/courses/100/07au/

Address munging:
http://www.addressmunger.com

Encoding Information

Bits and bytes encode the information, but that’s not all
- Tags encode format and some structure in word processors
- Tags encode format and some structure in HTML
- In the Oxford English Dictionary tags encode structure and some formatting

Reflection

Write for five minutes on the following topic:
- List the indicators that a Web site is truthful and authoritative. Pick the one that you think is the most important and explain why.
Summary

IT joins physical & logical domains so physical devices do our logical work
- Symbols represent things 1-to-1
- Create symbols by grouping patterns
- PandA representation is fundamental
- Bit, a place where 2 patterns set/detect
- ASCII is a byte encoding of Latin alphabet
- In addition to content, encode structure

Next Monday

- Beginning Monday, we’ll start grading your reflection papers. Each one is worth 10 points.
- Turn in Project 1A before 10pm on Monday to Collect It (see link on Project 1 description)
- Read Chapter 11 for Monday
- Keep following the calendar to stay caught up