Introduction to Semantic Web

- AIR
- N3
- RDF
- SPARQL (all 59 pages of its glorious documentation)
- Very similar to XML
### Cyclic Timeline of a beginner programmer

<table>
<thead>
<tr>
<th>Event</th>
<th>Next Event</th>
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<tbody>
<tr>
<td>Learning Windows cmd</td>
<td>Learning windows cmd</td>
</tr>
<tr>
<td>Giving up on windows cmd</td>
<td>Giving up on windows cmd</td>
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<tr>
<td>Installing cygwin</td>
<td>Installing Ubuntu with bash</td>
</tr>
<tr>
<td>Getting help installing cygwin (Jose)</td>
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<tr>
<td>Getting help installing cygwin</td>
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<tr>
<td>Environment variables!</td>
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<tr>
<td>Cygwin installed</td>
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SPARQL Endpoints

- BBC
- Openlink
- Revyu (only one that worked)
- Installed SPARQLWRAPPER successfully!
- CONSTRUCT, SELECT, ASK, DESCRIBE
- SPARQL -> Federation
The SPARQL endpoints usually did not implement "DESCRIBE"

Also, there was no way of getting meta-data about the data in the rdf store

Need standardization of some type of schema or capabilities across the different SPARQL endpoints

Tried Querying with html via browser and with python via SPARQLWRAPPER
Performance

initNs=dict(foaf=Namespace("http://xmlns.com/foaf/0.1"),
rev=Namespace("http://purl.org/stuff/rev"),
rdfs=Namespace("http://www.w3.org/2000/01/rdf-schema")

WHERE {
},

- http://revyu.com/sparql
- HTML: < 1 sec
- SPARQLWRAPPER: 44.947 seconds
- Definitely needs performance optimization
- MySQL could do a similar query in < .1 sec
VMWare (ubuntu) ->
Voodoo pointer somersaulting across the screen at every twitch of mouse ->
Installed CWM (never used it again)
Darq-installing -> error messages in German!
Ubuntu crashes my computer while cursing at me with ear-splitting beeps.
Beginning of conversion to Linux (Ubuntu)

Staring at the boot menu for a week

Jose magic!

!Installed!

*bash* (cd, ls, kill, man, nano, gedit, apt-get install!...)

DARQ-installation failed, suggested that I try it in windows cmd

Installation "successful", but none of the test cases or examples worked...

Give up, and install our own local SPARQL endpoint (ARC2) and hooked up a URL mask, everything go go go.
Pimpin' out the SPARQL Endpoint

BEFORE

AFTER

URL: http://dig-sparql.vze.com/
RDFlib -> ARC2

- RDFlib (installs easily in bash on Ubuntu)
- Works perfectly, but its MySQL database does not port to ARC2
- ARC2 – PHP, and MySQL
  - Accepts only proprietary MySQL data, but parses RDF and N3
  - Parses the N3 from CWM but will not do RDF translations
- Current SPARQL endpoint also supports/simulates multiple database querying.
- ARC2 also has a pretty good support community and a mailing list, if you have any questions/inquiries.
Federation Engine!

- Research papers on SPARQL Federation
- Unknown math symbols
- Yotam magic!
- Read lots more papers
- Plan out Federation logic:

Security
- User Identity
- Query history
- Query time frame

Optimization
- Transparency
- Physical
- Content-filtering

Protocols
- Endpoints Capabilities
- Public Policies
- Private Policies
My expectations coming into the project

- Work/speak with the people at W3C
  - IE error: "object expected! at line <#randomly generated number>"
  - Other various aggravating CSS browser bugs.
- Database architecture and planning
- A new perspective of the web from a researcher's point of view
What I learned

- How to troubleshoot OS installation on a 7yr-old dell machine (floppy disks!), Ubuntu.
- <very important> How to install poorly documented, and essentially uninstallable packages </very important>
- A much better grasp of database management and optimization: mysql architecture and a little SPARQL
- New ways of looking at information on the web (via networked RDF graphs - very interesting and powerful)
- A whole lot about solid state-hard drives, various computer hardware/OS architecture, and really expensive but nevertheless fascinating Cycling accessories from Jose
- That I'm not the only one who wants to give the head of the IE development team a piece of his mind.
Other things I’ve learned

- Innovative ways to solve seemingly impossible problems.
I would like to thank all the faculty, resourceful grad students, fellow UROPs, and of course my supervisor: Lalana for all the guidance, help, and humor you've all imparted to me. I found this summer to be very productive, and I really enjoyed working as part of the team.