Hi Olatunde,

Thank you for your comments. From your remarks, it appears that digital divide is much more pronounced in developing countries. I briefly skimmed your reference and it looks like both Intel and Microsoft have committed to seeing Nigeria bridge the digital divide. However, I hope that Nigeria, and other developing countries do not fall into the same trap that we have in the United States. It seems like many parents are just happy seeing their children preoccupied with gadgets, and believe that substitute for actual “parenting” time.

This unproductive use of the Internet, and of computing resources in general is not limited to children. “Cyberloafing” which is described as “voluntary acts of employees using their companies’ Internet access for nonwork-related purposes during working hours” has been a cause for concern for many companies (Vitak, Crouse, and LaRose, 2011). Since we are all students here, I think that this could also be applied to school, not just at the office. Some employers block the access of email, social media, and entertainment websites. Perhaps parents could do something similar on their children’s devices.

Regards,

Emanuel

Reference:

Vitak, J., Crouse, J., & LaRose, R. (2011) 'Personal Internet use at work: Understanding cyberslacking', *Computers In Human Behavior*, 27, 5, pp. 1751-1759, Social Sciences Citation Index, EBSCOhost, (Accessed: 30 June 2014)

“As mentioned above, we conduct penetration testing for new Web applications or any major changes to existing ones as part of central bank mandate and other mandates like PCI-DSS (Payment Card Industry Data Security Standard).”

Hi Ala,

Great post. I am largely ignorant of penetration testing, so I decided to briefly research it myself. From my readings, it can simply be defined as conducting attacks on a computer system (with permission of course). I still have a few questions though. How does one train in penetration testing? Is it taught in courses? I would think that one could build their own system at home, and practice attacking it. However, I can see how “real” penetration testing should be done by an independent party to be really effective. A good analogy to this would be that I was taught in a previous module that software quality assurance should not be performed by the developer of the software. Maybe penetration testing should be contracted out to a completely different company?

Regards,

Emanuel

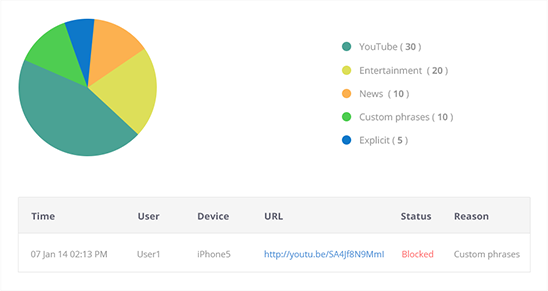
Hi Frank and Olatunde,

At home, I think that keeping the computer in a common area (e.g., living room) could solve the problem of both children and adults using the Internet for unproductive uses. Both children and adults when then have added eyes making sure that they are not viewing pornography. Parents could also see if their children were mainly using the Internet for entertainment and social media (e.g., YouTube, Facebook, Twitter, Instagram). Parents would then be pressured to be a good example by also limiting their use of the Internet for entertainment purposes.

For mobile devices, I saw a few packages online, but this one from a company named Mobicip looked good:

<http://www.mobicip.com/>

It works on iOS, Android, and Windows devices. It has custom filtering, and alert features. The parent could then be notified if even an attempt was made to access a restricted site on a device. I especially like that it gives a browsing history report:



(Mobicip, 2014)

The price looks reasonable: $39.99 a year for 5 devices. I say this though as someone that lives in the United States. I do not know if this price is reasonable for the average person living in a developing country.

Regards,

Emanuel

Reference:

Mobicip (2014) *Browsing History Reports* [Online]. Available from: <http://www.mobicip.com/features#browsing_history_reports_logo> (Accessed: 1 July 2014)

“HTML5 will make it easier for software to be developed targeting multiple devices whilst maintaining a single code base. Maintaining multiple versions of the same application could be expensive as resources could be required to duplicate effort on each available option. HTML5 will provide more affordable set of standards that can be optimised for user experience across multiple devices.”

Hi Remigius,

Thank you for your response. You made a good point regarding software being run through the web, thus the developer only has to maintain one version of it. I remember similar things were being said about the Java programming language in its early days. The main reason there is an interest for running programs through the web in my particular team at work is because we have so many legacy programs that can only be run from the UNIX command line. Since so much of bioinformatics data is text-based, this is the preferred method. However, the personnel that we support are usually not comfortable using the command-line. A while back, there was mention for management to give these legacy programs a web interface, but this interest died out when it was discovered that it would not be an easy task. Upper management believed that tools existed that one could simply generate a web page using drag and drop methods, and create the buttons to execute UNIX command lines on the server. However, searches online yielded nothing but academic papers proposing methods. The few web developers I have communicated with in past modules said there was no way around having to manually write code for these types of projects. Therefore, this was the reason that I chose to enroll in this module. In addition to fulfilling my elective requirement, I also would like to develop web interfaces for the command-line programs.

Regards,

Emanuel

“The concept of digital divide and the difference between the ones who have and the ones that don’t have is not confined to the quality connection factor, but also to disability, or censorship of the internet. Surely the initiative of WAI-ARIA to develop

guidelines for developers to ensure accessibility is a step forward on bridging

the gap, but something has to be done for countries such as Cuba or North Korea

where only 4% of the population has access to internet not because of economic

difficulties as it happens in Mozambique, but because of the censorship and

control of the internet by the Government”

Hi Turay,

Thank you for bringing up the topic of censorship. In the countries with oppressive governments such as Cuba and North Korea, centralized control of the dissemination of information is in my opinion, the main method to maintain their power. If the masses had the ability to freely exchange information with each other and the outside world, the supposed “utopia” that the government has created would quickly crumble; perception is reality. Perhaps the best example that I can remember is how President Hosni Mubarak was forced from power in Egypt largely due to social networking sites like Facebook and Twitter (Gaudin, 2011). The government attempted to quell the unrest by disabling access to these sites (Gaudin, 2011), but in the end, they could not control all Internet service providers.

Consequently, it should come as no surprise when attempts made by even supposed “modern” governments like the United States to control the Internet via a “kill switch” has been a cause of concern for many (Raedle, 2013). It was discovered through Freedom of Information Act (FOIA) that “President Barack Obama signed the Assignment of National Security and Emergency Preparedness Communications Functions Executive Order, authorizing the DHS to take control of the country’s wired and wireless communications - including the internet - in emergency situations.” (Raedle, 2013). Fortunately, the United States District Court rejected the DHS’s (Department of Homeland Security) claim that this capability is justified in times of crises and “exempt from public disclosure” (Raedle, 2013).

Thus, I see the Internet as being somewhat of a double-edged sword. On one hand, the increased availability of information can only help keep the populace informed in order to maintain a free society. However, the increased access of information that the Internet provides also makes entertainment, which in my opinion lulls people “asleep”, to the point that they are not concerned about events that may have a real impact on their lives.

Regards,

Emanuel

References:

Gaudin, S. (2011) ‘Social networks credited with role in toppling Egypt's Mubarak’, *Computerworld* [Online]. Available from: <http://www.computerworld.com/s/article/9209159/Social_networks_credited_with_role_in_toppling_Egypt_s_Mubarak?taxonomyId=169&pageNumber=2> (Accessed: 2 July 2014)

Raedle, J. (2013) ‘Court rules Dept. of Homeland Security must reveal ‘internet kill switch’ protocol’, *Russia Today* [Onlline]. Available from: <http://rt.com/usa/homeland-security-internet-kill-switch-742/> (Accessed: 2 July 2014)

Hi Remigius and Frank,

I have no experience with XML, but I have heard many people in my field mention using it, so it probably would benefit me if I learned something about it. Since this is my last module, I cannot enroll in the WebXML module. Nevertheless, I decided to research it a bit. From my brief research, here’s what I have:

* Unlike HTML, whose purpose is to display data, XML’s purpose is to “transport and store data”.
* The user makes their own tags. They are not predefined like in HTML.

(W3Schools, n.d.)

This explains much to me why XML is valuable in bioinformatics. Since much of bioinformatics involves the exchange of data, I can see how a bioinformatician can use it. For example, the mRNA encoding for gene for early onset breast cancer, also known as “BRCA1”, (which the actress Angelina Jolie discovered she had, and lead to her decision to have a mastectomy), can be viewed at the National Center for Biotechnology Information (NCBI, 2014a). On this page, one can see the numerous annotations of this mRNA (e.g., organism, chromosome, protein). This page also has a drop down menu for downloading the XML file. Looking at this file, I see the following tags:

<Org-ref\_taxname>Homo sapiens</Org-ref\_taxname>

<BinomialOrgName\_genus>Homo</BinomialOrgName\_genus> <BinomialOrgName\_species>sapiens</BinomialOrgName\_species>

<Seqdesc\_title>Homo sapiens breast cancer 1, early onset (BRCA1), transcript variant 1, mRNA</Seqdesc\_title>

<Prot-ref\_name\_E>breast cancer type 1 susceptibility protein isoform 1</Prot-ref\_name\_E>

I also see that it is organized in a hierarchy, much like HTML. For example, for publication:

<Pub>

<Pub\_article>

<Cit-art>

<Cit-art\_title>

<Title>

<Title\_E>

<Title\_E\_name>Mutations and alternative splicing of the BRCA1 gene in UK breast/ovarian cancer families.</Title\_E\_name>

</Title\_E>

</Title>

</Cit-art\_title>

</Cit-art>

</Pub\_article>

</Pub>

I’m assuming that the application of XML for other purposes follow similar patterns of hierarchy.

All in all, I see that the XML file for just this mRNA has 6,245 lines. Since there are ~30,000 genes in the human genome, each of which may have multiple mRNAs, the storage of such files can easily reach terabytes. This does not even include the other organisms being studied (e.g., mouse, rat, rhesus monkey, etc.). I have heard talk of the XML standard in favor of JSON. However, the already existing XML genomic and proteomic data tells me that it is not going away anytime soon in the bioinformatics field.

Regards,

Emanuel

References:

Achard, F., Vaysseix, G., & Barillot, E. (2001) 'XML, Bioinformatics And Data Integration', *Bioinformatics*, 17, 2, pp. 115-125, Science Citation Index, EBSCOhost, viewed 2 July 2014.

NCBI (2014a) Homo sapiens breast cancer 1, early onset (BRCA1), transcript variant 1, mRNA [Online]. Available from: <http://www.ncbi.nlm.nih.gov/nuccore/NM_007294.3> (Accessed: 2 July 2014)

W3Schools (n.d.) *Introduction to XML* [Online]. Available from: <http://www.w3schools.com/xml/xml_whatis.asp> (Accessed: 2 July 2014)