LIS566

Lecture 7

Software Resources

Thomas Krichel

2000–11–18

Why bother?

Software resources seldomly used.

But software resources are the most sophisticated digital libary strucutures that are available on the internet.

Free software on the Internet

There is a lot of free software around.

Most free software uses the Internet

- directly
- indirectly
  - Internet is used by devolopers
  - Internet is used for distribution
- generically

Generic Internet software

The Internet is basically any device that understands a protocol suite called TCP/IP.

This protocol suite was first developed for the free Berkeley distribution of Unix (BSD UNIX). This was popular operating system in Universties.

It is unlikely that the TCP/IP protocol stack would have "taken off" as it did without free implementation software.

Software anatomy

Basically, software can be distributed in two ways.

- "binary" code
- "source" code

Binary code

looks like this, for example

```
^?ELF^A^A^A^@^@^@^@^@^@^@^@^B^@^C^@^A^@^@^@p<9A>^4^@^@^@X=
^G^@^@^@^@^@4^@ ^@^F^@(^@^_^@^\^@^F^@^@^@4^@^@^@4<80>^4<80>^
^@^@^@^@^@^@^E^@^@^@^D^@^@^@^C^@^@^@^@^@^@<80>^<80>^^S^
@^@^@^S^@^@^@^D^@^@^@^A^@^@^@^A^@^@^@^@^@^@^@^@<80>^^@<80>^
^B^@^B^@^E^@^@^@^@^P^@^@^A^@^@^@^B^@n^n^^K^@^@^@^@
^F^@^@^@^@^P^@^@^B^@^@^@$^B^@$x^$x^^@^@^@^@^@^@^F^@^@^@^D
```

It will run on a compute with one OS, may not run on a computer with another.

It can not be modified.

It is difficult to find out what it does.

Source code

```
/* For now, don't try to include termcap.h.  On some systems,
   configure finds a non-standard termcap.h that the main build
   won't find.  */

#if defined HAVE_TERMCAP_H && 0
#include <termcap.h>
#else
extern void tputs P_ ((const char *, int, int (*)(int)));
extern int tgetent P_ ((char *, const char *));
extern int tgetflag P_ ((char *id));
extern int tgetnum P_ ((char *id));
#endif
```

This is human (geek) readable code.
May be understood by humans.
Can be changed.
Needs a compiler software to translate it to translate it to

A jammed printer

Early 80s, MIT lab get a printer as a shared resource, but with faulty driver software that leads the printer to be jammed.

Richard Stallman tries to get the source code to change the driver software, but can not get it.

Resigns from MIT AI lab to work on a free replacement of UNIX. Decides to work for software freedom. Founds Free Software Foundation FSF

free speech and free beer, according to FSF.

Free software is a matter of the users' freedom to run, copy, distribute, study, change and improve the software.

- The freedom to run the program, for any purpose (freedom 0).
- The freedom to study how the program works, and adapt it to your needs (freedom 1).
- The freedom to redistribute copies so you can help your neighbor (freedom 2).
- The freedom to improve the program, and release your improvements to the public, so that the whole community benefits. (freedom 3).

Access to the source code is a precondition for freedom 1 and 3. For that reason, some people refer to free software as open source software.

free speech and free beer

- "Public domain software", not copyrighted, but modified copies may not be free.
- "Copy-lefted free software", comes with the permission to use and modify, but prohibits adding further restrictions to the distribution.
- "Non-copylefted free software", comes with the permission to use, modify and add restrictions of distribution.
- "Semi-free software" comes with permission for individuals to use, copy, distribute, and modify (including distribution of modified versions) for non-profit purposes.

- "Proprietary software", is not free or semi-free.
- "Shareware", comes with a permission to share but users have to pay a fee.
- "Freeware" has no agreed meaning.
- "Commercial software" is software written to make a profit from its use. There is such a thing as commercial free software.

Important free software projects

GNU

Linux and FreeBSD

compilers: gcc

scripting langages: perl, python

apache, mozilla, mySQL, putty etc

These pieces of software allow (almost) any kind of digital library be constructed without software cost.

Difference between commercial and free software

Free software is

- less GUI in orientation
- more configurable
- much more secure
- much more stable

than commercial software

Finding free software

Generally not easy. Most likely you will have to have a precise technical need that is already precise.

Most pieces of software have their own documentation web site.

Sourceforge.net is a special developer's site.

Library community vs free software movement

There is a geek culture of sharing structured information.

There is currently no direct equivalent in the library world. The library world is still dominated by organizations that sell data or costly intermediation.