# LIS901

## Building an Integrated Library System

## 2011–02–13

See http://openlib.org/home/krichel/courses/lis9012p11s for the latest online version of this file.

**Course Description**

An integrated library system (ILS) is the heart of the operation of any sizable library. All modern integrated library systems can manipulate MARC records. The better ones also implement MARC interchange protocols such as Z39.50, SRW/U and some do even OAI-PMH. MARC and its exchange standards are quite specific to the library world. However, to implement them, ILSes incorporate an array of important general information technologies. Among those are relational databases, scripting technologies, and templating languages. Studying an ILS there provides of an ideal technology training ground for librarians.

In this course, we set up an integrated library system from scratch. Each student will set it up on a separate machine. In the course of doing that, we cover important technical grounds such as basics of computer hardware, operating systems, client/server software and computer networking.

There are basically two open source ILS software system. One is Koha, the other one is Evergreen. It is generally agreed that Koha is easier to set up. Therefore the course uses Koha. It is available in open source from http://koha-community.org. Do NOT use the offerings from http://koha.org, and don't read any documentation you find there.

Koha can be installed on many different operating systems. The course uses the Debian operating system. Again, this is because Debian is Koha's favorite operating system. This is free software that runs on many hardware platforms. To see if Debian is available for your hardware look at the Debian ports page.

**Objectives**

After taking this course all students

- will be able to understand the basic concepts of computer hardware

- will have seen the most basic concepts on files, directories redirections and pipes

- will be able to manipulate a simple text file editor

- will have a hands-on start in the running Unix-based systems such as i.e. Mac OS 10, Linux or FreeBSD, issuing a basic set of commands

- will have seen application of client server protocols, including web, mail, and database

- will understand the compound structure of computer software systems

- will have basic concepts of networking including IP addresses, domain names, routers and ports

- will have seen basic concepts of databases administration

- will have been introduced to the components of an integrated library system.

- will have a grounding is Z39.50 and it's successor technologies SRW/U.

**Prerequisites**

There are no formal prerequisites for this course. People should be curious about the potential of information technology, and be ready to be surprised how easy it is to run a complete integrated library without professional IT support. Prior knowledge of the MARC format and of HTML is desirable but not required.

**What to bring**

If you have a laptop please bring it to class. This will be your client machine. You will need your myLIU id to connect to the network via the wireless. If you have a Ethernet network cable (RJ-45), bring it with you as this will give you the option to connect to a socket in the classroom.

Your server machine will be a separate machine. The server machine will be the one we install Koha ILS on. The way we do this in class is to install the Debian operating system, and then install Koha for that operating system. The latter step is very easy.

If you have a machine that you want to install Debian on, please bring it with you. This should not be your laptop, it should be an old desktop. The machine has to be one of the hardware infrastructures Debian supports. If this is an old Microsoft machine you will be fine. It's not clear that you can use old Apple computers. If you don't have a machine, I may be able to furnish you with one, but I need to know that in advance so I can try to have enough machines around.

You can download the operating system onto your own machine. Your own machine can be an spare old machine that you (or your neighbor friend, etc) thought of tossing out. Or it can be a machine that I can give you, but I need to be given advance notice. There are constraints on using your own machine within the context of the university network.

Therefore to save hassle, I strongly suggest you rent a server. Renting will cost about $30 or $40. You should get a Debian machine, preferably with XEN rather than VPS virtualization. Here are some deals I have seen, they should work

https://www.sevenl.net/cheap-dedicated-server choose "$40 deal"

http://www.ramhost.us/?page=virtual-dedicated-server choose "extra"

http://www.vpsfarm.com choose "IAD.1G"

https://manage.slicehost.com/customers/new choose "512 slice debian lenny"

http://vpslink.com/debian-vps/ choose "Link-4"

Students have previously worked with the last two companies. For the purposes of this course, Slicehost appears to be doing a bit better. Slicehost also have two pages on dealing with Debian Lenny, http://articles.slicehost.com/2009/3/31/debian-lenny-setup-page-1 and http://articles.slicehost.com/2009/3/31/debian-lenny-setup-page-2.

Once you have a machine, send me the IP address, as well as a name for the machine. The machine can be anything you like as long as it has just one word. Thus "snoopy" or "me" is fine but "Thomas Krichel" is not. Send me the IP address (a sequence of 4 numbers, each between 0 and 255, separated by dots) as well as the name you want to have. Don't send me the root password.

**Instructor**

Thomas Krichel

Palmer School of Library and Information Science
C.W. Post Campus of Long Island University
720 Northern Boulevard
Brookville, NY 11548–1300
krichel@openlib.org
work phone: +1–(516)299–2843
Private contact details may be obtained from the online CV at /home/krichel/cv.html.

**Class structure**

Classes will be held in the doctoral lab in the Palmer School between 10:00 and 15:00.
Class details:

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|---|---|---|
| 2011–01–22 | 10:00 to 15:00 | basic concepts of hardware, operating system installation |
| 2011–01–29 | 10:00 to 15:00 | open source software, command line computing, computer networks |
| 2011–02–05 | 10:00 to 15:00 | introduction to system administration |
| 2011–02–12 | 10:00 to 15:00 | setup of koha and zebra, email and web |
| 2011–02–26 | 10:00 to 15:00 | setup of other services and koha customizations |
| ) 2011–03–06 | 10:00 to 15:00 | setup of other services and koha customizations |
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**Mailing list**

There is a mailing list for the course at https://lists-1.liu.edu/mailman/listinfo/cwp-lis901-krichel. All students are encouraged to subscribe. As a rule, answers to email sent to the instructor are copied to the list. There are exceptions to this rule

- if the question writer requests the answer not to be posted;

- if the question is a purely private matter.

**Readings**

There is no textbook. Thomas Krichel makes slides and instructions available. There are presentations and the instructions on the `course resource page`[1]. All other resources are available on the web.

**Assessment**

There will be a quiz on the materials of the first and second lecture in the third lecture. This will count for 20%. There will be another quiz in the fourth lecture. That will count for 10%. The presentation of an additional piece of software will count for 40% and the presentation of the koha customization for 30%.

# References

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[1]/home/krichel/courses/lis9012