

Slide 1

Fred King, MSLS, AHIP

Medical Librarian
MedStar Washington Hospital Center
Washington, DC
and
Member-at-Large (Unsupported) 2016-2019
koha-US.org
E-mail: koha@avengingchicken.online

This presentation was originally given at the koha-US conference in Pueblo, Colorado, September, 2019. Released under Creative Commons: you are welcome to use and modify this presentation as you wish. Please give credit to Fred King if possible. All non-credited photos are by Fred King, also released under Creative Commons.

Slide 2

Got a hundred dollars?
Get an ILS!

Slide 3



How to use Koha, MarcEdit, a Raspberry Pi, and a Chicken (optional) to create an ILS for under \$100. Koha, MarcEdit, and Raspberry Pi photos from their respective web sites. If you're wondering about the Avenging Chicken, go to <http://www.avengingchicken.online>.

Slide 4

Obligatory Cat Photo



Every presentation by a librarian needs to have a picture of a cat.

Slide 5

THANK YOU!!

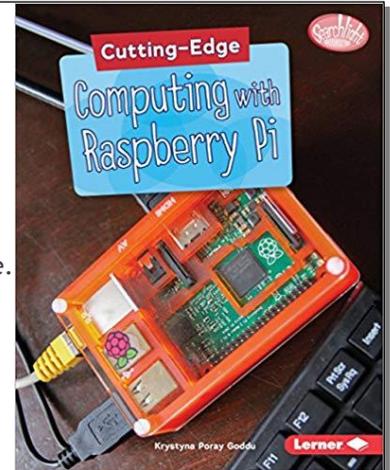
- ▶ Tomas Cohen Arazi
- ▶ Mason James
- ▶ Mark Tompsett

Thank you to the people who helped me get past an especially troublesome problem. My wife declined to be mentioned by name here, but I'd like to thank her for listening to me talk about Koha day after day. When I thanked her at the 2013 conference in Reno, pretty much every developer in the room nodded understandingly.

Slide 6

So why a Raspberry Pi?

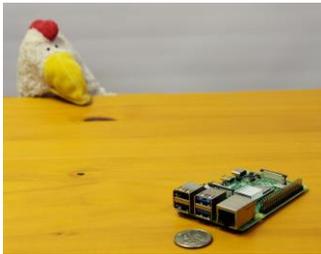
- ▶ Incredibly complex computing platform, needs extensive training to utilize.
- ▶ Latest version is approaching a desktop in computing power.
- ▶ Readily available.
- ▶ Basic model costs \$35.00.
- ▶ There are lots of Raspberry Pi projects around. Why not an ILS?
- ▶ I wanted to see if it was possible.



The most recent Raspberry Pi (as of September, 2019) can run up to 4GB RAM. Add a 250GB SD card and it rivals some desktop systems. One of the technical manuals is shown in the top right.

Slide 7

Starting out:



Raspberry Pi 4B
2GB RAM
Power Supply
\$55.00



Case
\$8.00



Micro SD Card
32GB, Class 10
\$10.00

The Pi I'm running has 2GB RAM. You can run it without a case, but I feel more secure with one. You can actually use a 4GB card, but I couldn't find a 4GB Class 10 card. That's a US quarter in the picture.

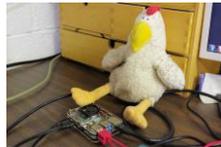
Wherein I admit to cheating a bit



Drawer of Things



Monitor



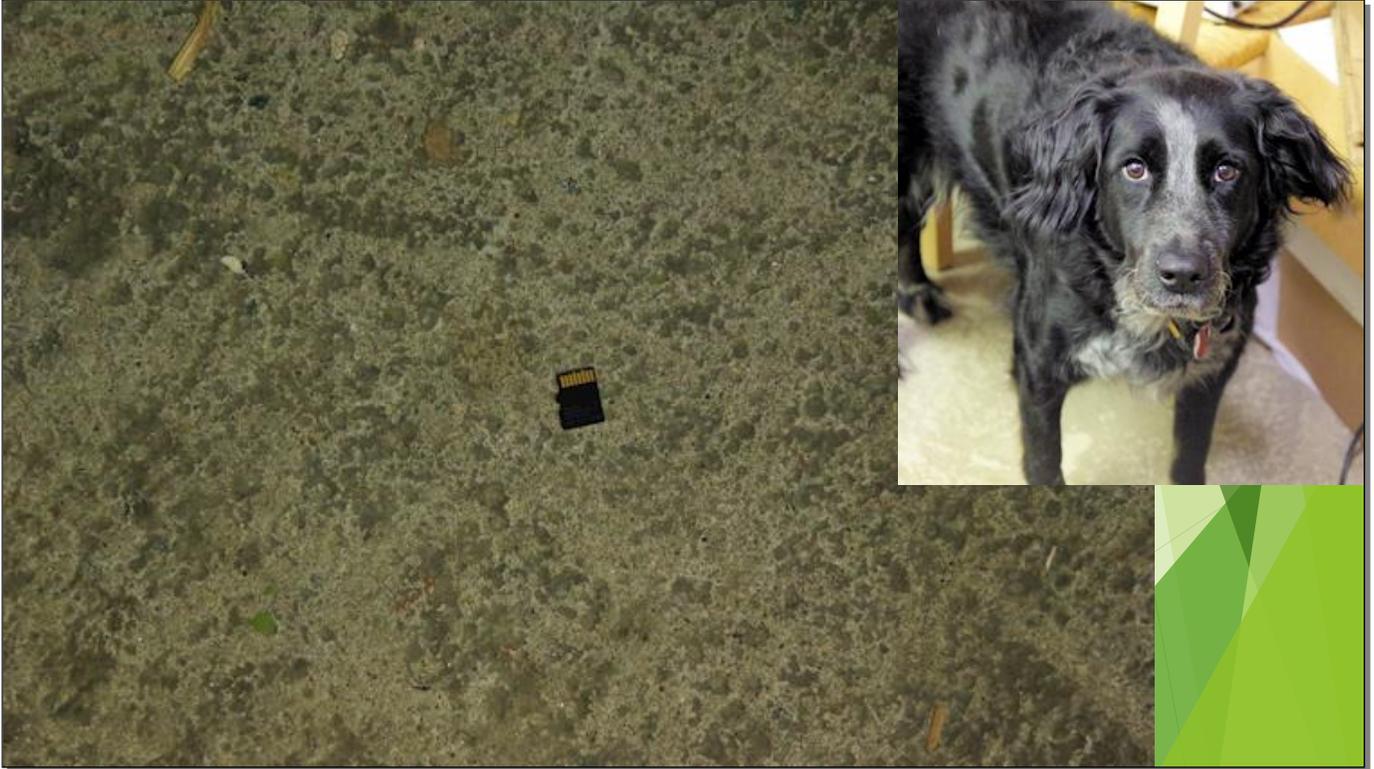
Network
Connection



Another Computer

I'm assuming that if you're going to take this on, you have a Drawer of Things with a keyboard, and you have an extra monitor hanging around. If you're going to use Z39.50 you'll need a network connection. The only thing you absolutely need another computer for is to flash the SD card, though I used it for other tasks as well.

Slide 9



If you drop the card on the floor, it can be kind of hard to find. If you have a dog that thinks everything that falls on the floor is hers... Well, SD cards are inexpensive enough that you won't have to try to find it. A replacement card is not included in the \$100 budget.

And we're off!



Now that the Pi is assembled and the card is installed, we're ready to go. Well, almost. It's pretty easy to miss the SD slot, and the card gets stuck between the Pi and the case. Shake it until it comes out again. Yes, that's a 64GB card whereas I'm using a 32GB card for the project. There's a lot of bad continuity in this presentation. Spot them all and win a prize! (Not really.)

Slide 11

Steps

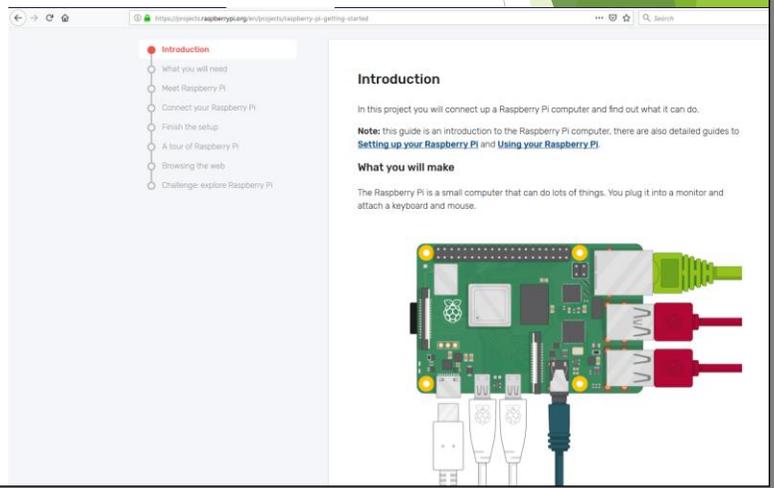
- ▶ Install Operating System
- ▶ Install and Configure Koha
- ▶ Obtain list of ISBNs
- ▶ Use MARCEdit and Z39.50 to harvest MARC records
- ▶ Edit the records, upload to Koha
- ▶ Add items (not shown)

Not much to add in the notes here.

Slide 12

Install Operating System

- ▶ Go to the main Raspberry Pi site: <http://www.raspberrypi.org>
- ▶ Lots of information on getting started



You can find a lot of information about the Raspberry Pi, including this image, at, not surprisingly, www.raspberrypi.org.

Slide 13

Download Raspbian Buster

- ▶ As of September 2019, Raspbian is the only operating system for the PI 4
- ▶ An unofficial version of Ubuntu is available, but I didn't have any luck with it

Raspbian

Raspbian is the Foundation's official supported operating system. You can install it with [YOCCO](#) or download the image below and follow our [installation guide](#).

Raspbian comes pre-installed with plenty of software for education, programming and general use. It has Python, Scratch, Inkscape, Java and more.

The Raspbian with Desktop image contained in the ZIP archive is over 4GB in size, which means that these archives use features which are not supported by older unzip tools on some platforms. If you find that the download appears to be corrupt or the file is not unzipping correctly please try using [7Zip](#) (Windows) or [7Zip](#) (Macintosh / Macintosh), both are free of charge and have been tested to unzip the image correctly.

Image name	Version	Release date	Kernel version	RAM	Size
Raspbian Buster with desktop and recommended software	July 2019	2019-07-16	4.19	1GB	1.9GB
Raspbian Buster with desktop	July 2019	2019-07-16	4.19	1GB	1.9GB
Raspbian Buster Lite	July 2019	2019-07-16	4.19	1GB	625MB

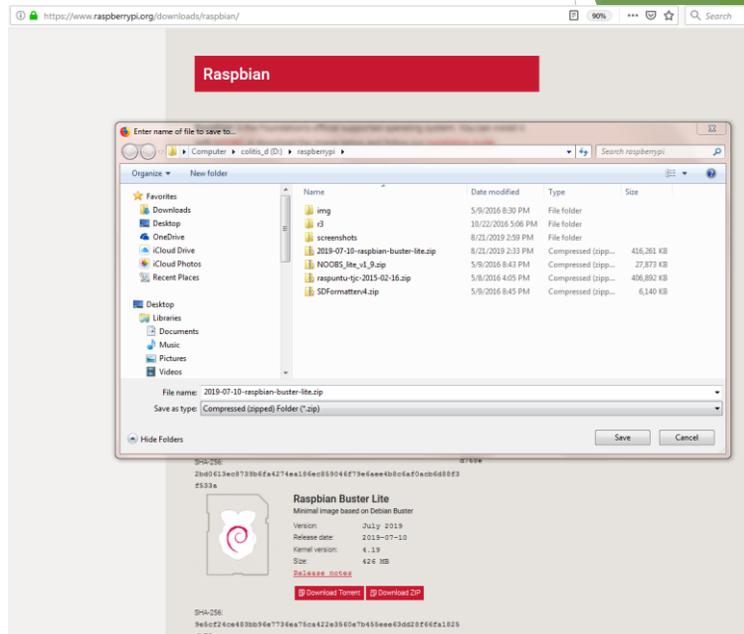
Download links: [Download](#) [Download ZIP](#)

There's a version of Ubuntu available for the Raspberry Pi 2 and 3, but not yet for the 4. There will be one available eventually. For now, I'm using Raspbian, yet another version of Debian.

Slide 14

Download Raspbian Buster

- I chose the bare-bones version

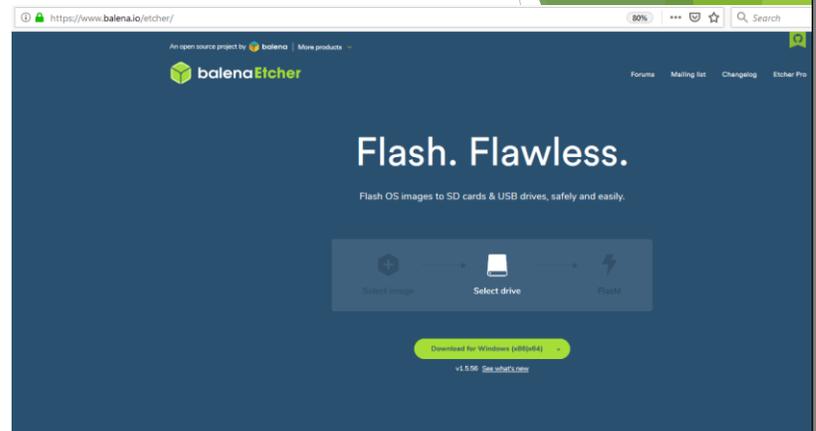


For this experiment, I'm using the bare-bones, command-line-only version. You can actually install a desktop, and it won't have a huge impact on performance.

Slide 15

Install the image on the SD card

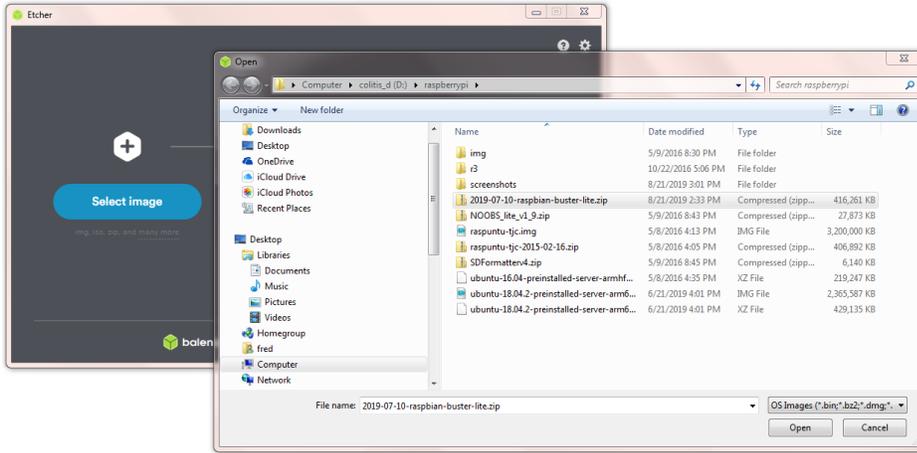
- ▶ I used BalenaEtcher
- ▶ <https://www.balena.io/etcher/>
- ▶ Free, open source



I used BalenaEtcher, but you can use other software to flash a card. BalenaEtcher can read a number of archive and image formats, which makes it especially convenient.

Slide 16

Select your file



Slide 17

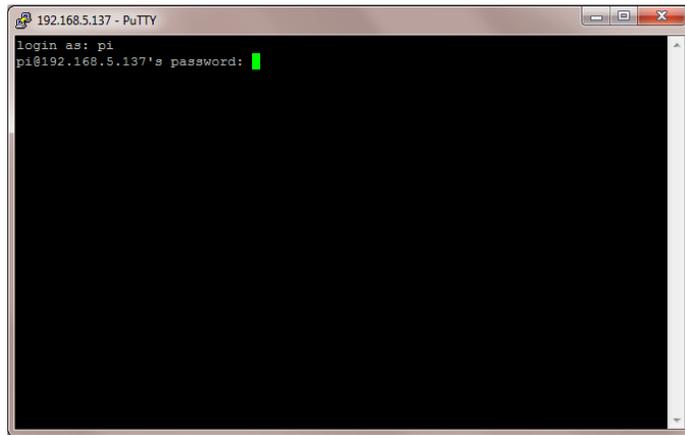
balenaEtcher images the card for you



It flashes and then verifies the image. This can take a long time.

Slide 18

Log in to your new computer



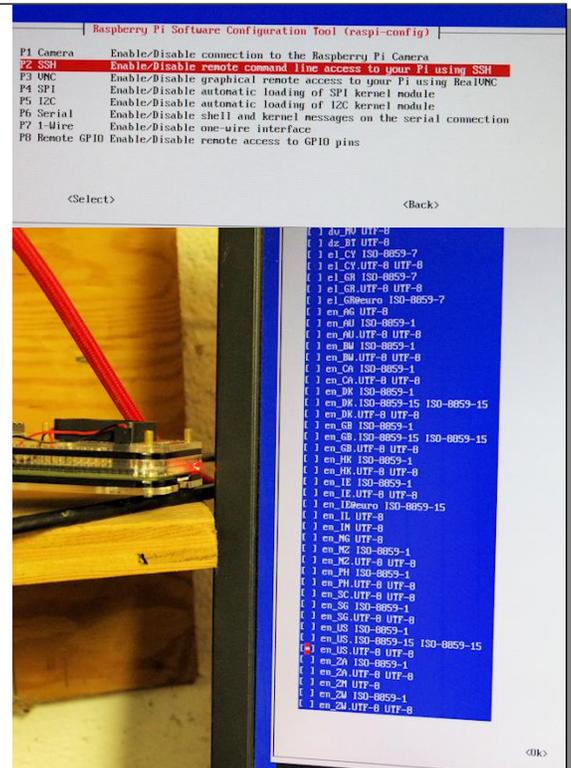
```
192.168.5.137 - PuTTY
login as: pi
pi@192.168.5.137's password: █
```

Connect the cables, attach a monitor and keyboard, and turn it on. It works! The default username is pi, the default password is raspberry. I'm connecting via SSH for this screen shot, but you can log in from a keyboard attached to the Raspberry Pi.

Slide 19

You're ready!
(well, ready for the first part)

- ▶ Plug in the cables
- ▶ Turn it on
- ▶ Run raspi-config to set locale, keyboard, etc



You need to run raspi-config to tell it which keyboard layout to use, etc. The default is Great Britain, which is slightly different from the US layout. In the top right I'm enabling SSH so I can connect from my other computer. This isn't absolutely necessary, but it does make screenshots a lot easier. These were taken of the actual monitor with a camera.

Now you're ready to install Koha

- ▶ These instructions are a combination of the Koha Wiki's Koha on a Raspberry Pi
 - ▶ https://wiki.koha-community.org/wiki/Koha_on_a_Raspberry_Pi_3_B%2B
- ▶ And the Koha Wiki's Koha on Debian
 - ▶ <https://wiki.koha-community.org/wiki/Debian>
- ▶ Tell your Pi where to find the software
 - ▶ `echo deb [arch=i386] http://debian.koha-community.org/koha stable main | sudo tee /etc/apt/sources.list.d/koha.list`
- ▶ Tell your Pi that the software is OK
 - ▶ `wget -O- http://debian.koha-community.org/koha/gpg.asc | sudo apt-key add -`

I used a combination of pages from the Koha Community Wiki to help me install Koha.

There are two important things to remember: when you're adding the Koha repository, include `[arch=i386]` in the command line. If you don't, you'll get an error message and nothing will work. Second, and this is true for all installations, the letter after `wget` is a capital letter O. Everybody else probably figured that out the first time.

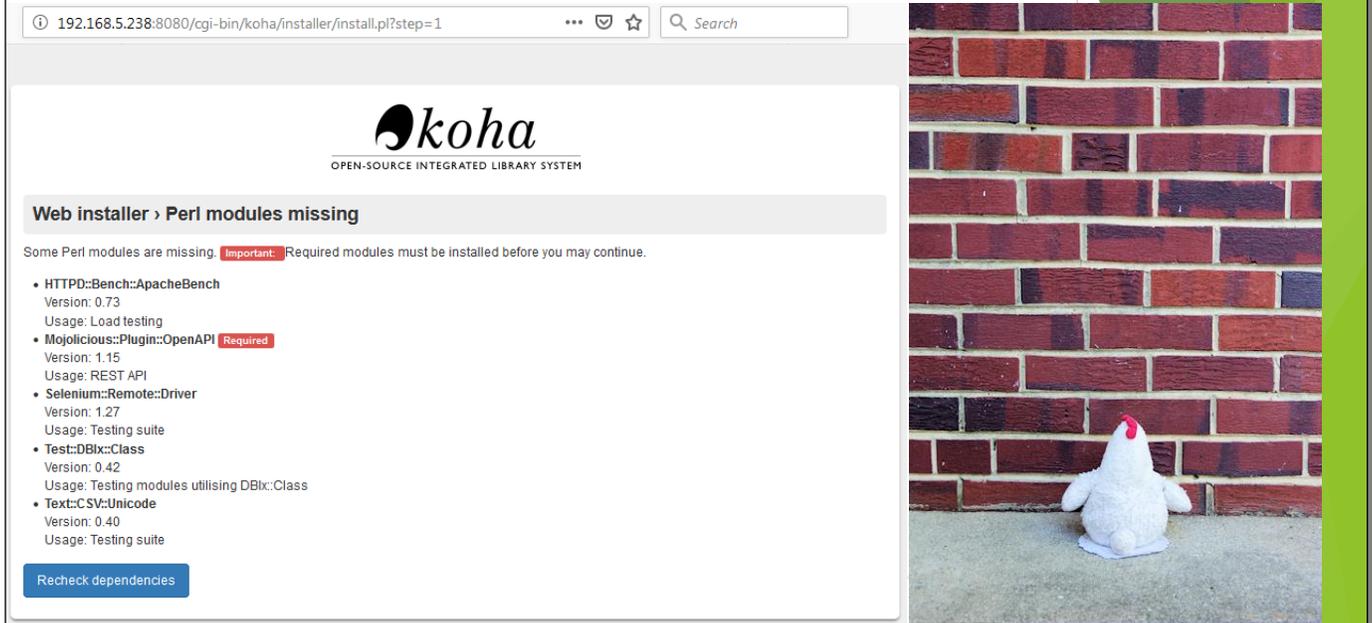
Prepare to install the software

- ▶ Update the software packages
 - ▶ `sudo apt-get update`
- ▶ Then upgrade the software
 - ▶ `sudo apt-get upgrade`

Then update the software packages and upgrade the software. This is very important; if you don't, it won't work. Don't ask me why I know this.

Slide 22

Getting a little ahead of myself here



The screenshot shows the Koha web installer interface. The browser address bar displays the URL `192.168.5.238:8080/cgi-bin/koha/installer/install.pl?step=1`. The Koha logo is centered at the top, with the tagline "OPEN-SOURCE INTEGRATED LIBRARY SYSTEM". Below the logo, a grey banner reads "Web installer > Perl modules missing". A message states: "Some Perl modules are missing. **Important:** Required modules must be installed before you may continue." A list of missing modules follows:

- **HTTPD::Bench::ApacheBench**
Version: 0.73
Usage: Load testing
- **Mojolicious::Plugin::OpenAPI** **Required**
Version: 1.15
Usage: REST API
- **Selenium::Remote::Driver**
Version: 1.27
Usage: Testing suite
- **Test::DBIx::Class**
Version: 0.42
Usage: Testing modules utilising DBIx::Class
- **Text::CSV::Unicode**
Version: 0.40
Usage: Testing suite

A blue button labeled "Recheck dependencies" is located at the bottom left of the installer page. To the right of the installer screenshot is a photograph of a small white stuffed chicken sitting on a concrete surface in front of a red brick wall.

This actually happens a little further down the road, but finding a solution (with the help of the people I thanked at the beginning), took a couple of days. I hit a brick wall and almost gave up.

If you're worried about the chicken sitting on dirty concrete, please note that it is sitting on a doily.

I'm not sure which command worked:

- ▶ `curl -L https://cpanmin.us | sudo perl - -M https://cpan.metacpan.org -n Mojolicious`
- ▶ `perl -MCPAN -e 'install Mojolicious'`
 - ▶ Let it automatically install and choose the default options
- ▶ `install cpanminus`
- ▶ `cpanm Mojolicious::Plugin::OpenAPI`
- ▶ Maybe all of them working together?

I ran all of these, and eventually worked. Someone with more knowledge can probably figure out which one. I'm more interested that it worked.

Keep slogging on

- ▶ Install koha-common
 - ▶ This is going to take a while
- ▶ Install mariadb

Now for the moment you've been waiting for!

- ▶ Create library (here called libcat)
 - ▶ `sudo koha-create --create-db libcat`

Next, install the main Koha software, koha-common. Then install mariadb (or mysql).

And next, create the library! I'm calling this one "libcat".

Make a few changes to the web configuration files

```
pi@raspberrypi:/etc/apache2/sites-enabled$ nano libcat.conf
# Koha instance libcat Apache config.
# OPAC
<VirtualHost *:80>
<IfVersion >= 2.4>
  Define instance "libcat"
</IfVersion>
  Include /etc/koha/apache-shared.conf
  Include /etc/koha/apache-shared-disable.conf
  Include /etc/koha/apache-shared-opac-plack.conf
  Include /etc/koha/apache-shared-opac.conf

  ServerName libcat.myDNSname.org
  SetEnv KOHA_CONF "/etc/koha/sites/libcat/koha-conf.xml"
  AssignUserID libcat-koha libcat-koha

  ErrorLog /var/log/koha/libcat/opac-error.log
  # TransferLog /var/log/koha/libcat/opac-access.log
  # RewriteLog /var/log/koha/libcat/opac-rewrite.log
</VirtualHost>

# Intranet
<VirtualHost *:8080>
```

```
pi@raspberrypi:/etc/apache2$ nano ports.conf
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 80
Listen 81
Listen 8080

<IfModule ssl_module>
  Listen 443
</IfModule>

<IfModule mod_gnutls.c>
  Listen 443
</IfModule>

# vim: syntax=apache ts=4 sw=4 sts=4 sr noet
```

Make sure the web server knows where the staff client page is.

And make sure it's listening there.

You have to tell Apache where the staff client page is (I'm using port 8080), and make sure that it's listening at that port. I also added port 81, which isn't necessary but I often use for other purposes.

The file on the left is `/etc/apache2/sites-enabled/libcat.conf`; the one on the right is `/etc/apache2/ports.conf`. You'll need to disable or rename `/etc/apache2/sites-enabled/000-default.conf`.

Now you can start to set it up

- ▶ You'll need to know your pi's IP address
 - ▶ ifconfig
 - ▶ This one is 192.168.5.137
 - ▶ (though it changes later)
- ▶ You'll need a password to get in
 - ▶ sudo koha-passwd libcat
 - ▶ gJeqtYxEqO8BIq0@

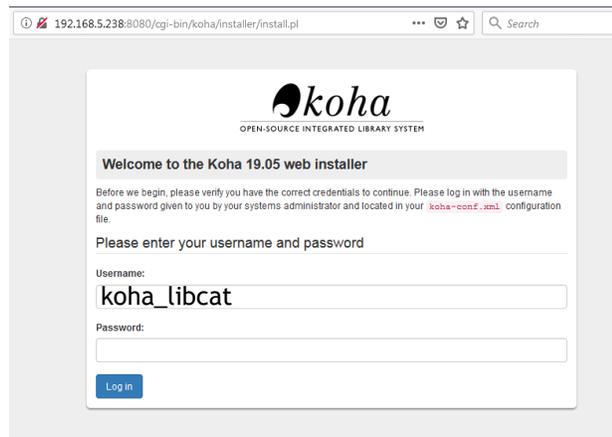
```
pi@raspberrypi:~$ ifconfig
eth0: flags=4163<UP,BROADCAST, RUNNING, MULTICAST> mtu 1500
    inet 192.168.5.137 netmask 255.255.255.0 broadcast 192.168.5.255
    inet6 fe80::55e:309e:e411:d16c prefixlen 64 scopeid 0x20<link>
    ether dc:a6:32:04:84:e7 txqueuelen 1000 (Ethernet)
    RX packets 210209 bytes 23878546 (22.7 MiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 4315 bytes 2954404 (2.8 MiB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
pi@raspberrypi:~$ sudo koha-passwd libcat
Password for libcat: gJeqtYxEqO8BIq0@
Press enter to clear the screen...
```

You'll need to run ifconfig to find out the Pi's IP address is before you can log into the web-based staff client. (There are many other ways to find the IP as well.) The command "sudo koha-password [library name]" will give you the password to log in. The IP changes on the next page. Bad continuity again...

Slide 27

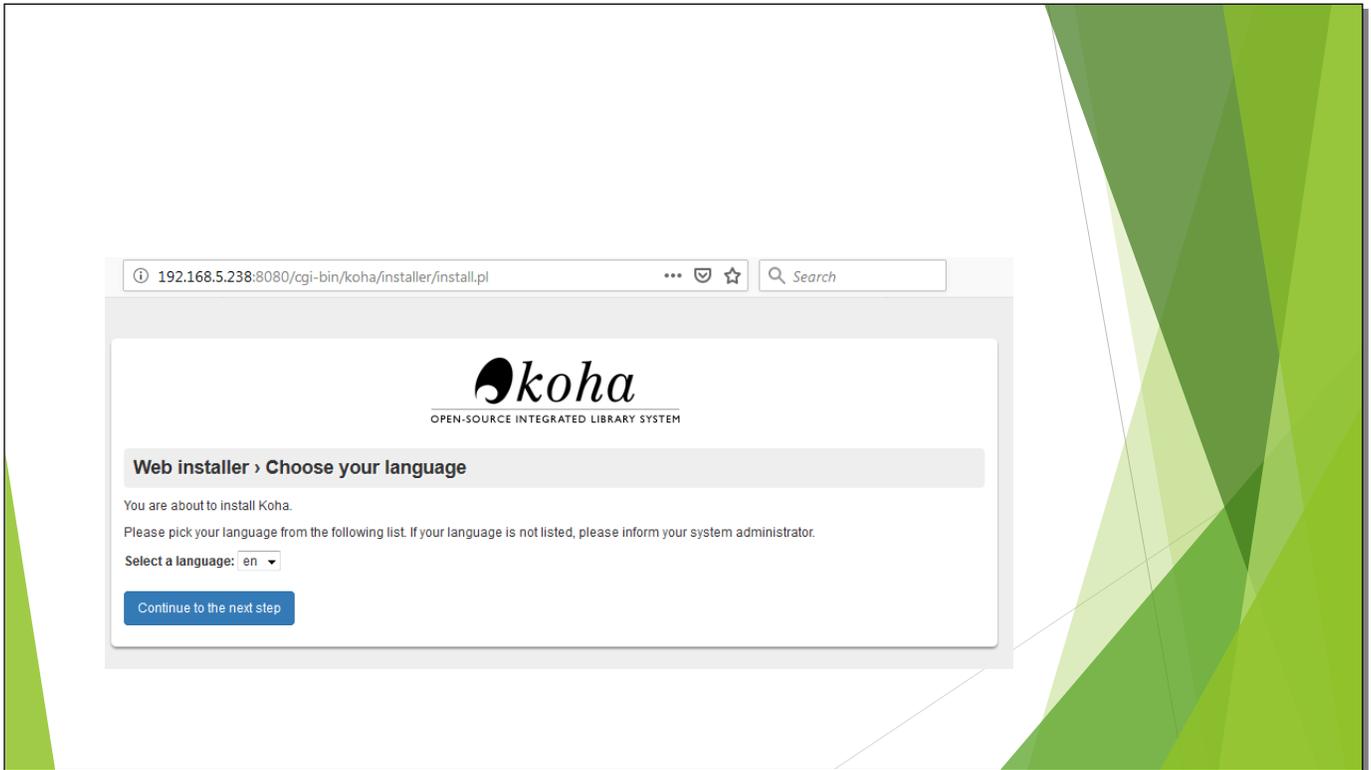
Now you can finally use your web browser!



The screenshot shows a web browser window with the address bar displaying `192.168.5.238:8080/cgi-bin/koha/installer/install.pl`. The page content includes the Koha logo and the text "OPEN-SOURCE INTEGRATED LIBRARY SYSTEM". Below the logo, there is a heading "Welcome to the Koha 19.05 web installer" and a paragraph of instructions: "Before we begin, please verify you have the correct credentials to continue. Please log in with the username and password given to you by your systems administrator and located in your `koha-conf.xml` configuration file." Underneath, there is a prompt "Please enter your username and password" followed by two input fields. The "Username:" field contains the text "koha_libcat". The "Password:" field is empty. A blue "Log in" button is positioned below the password field.

Point your web browser to the Pi's IP address, then log in with "koha_[library's name]" and that string of gibberish that's the password.

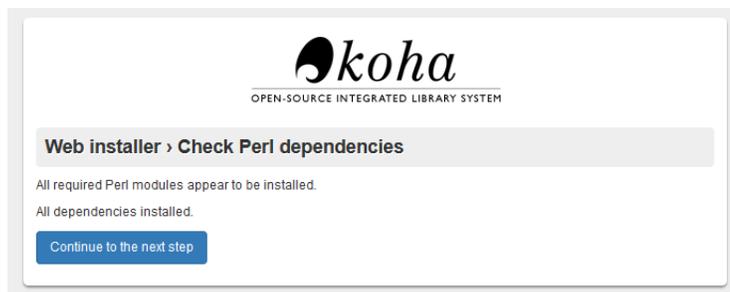
Slide 28



Now go through the Web installer. This will take several minutes and several screens. Don't worry, you'll get to the finish eventually.

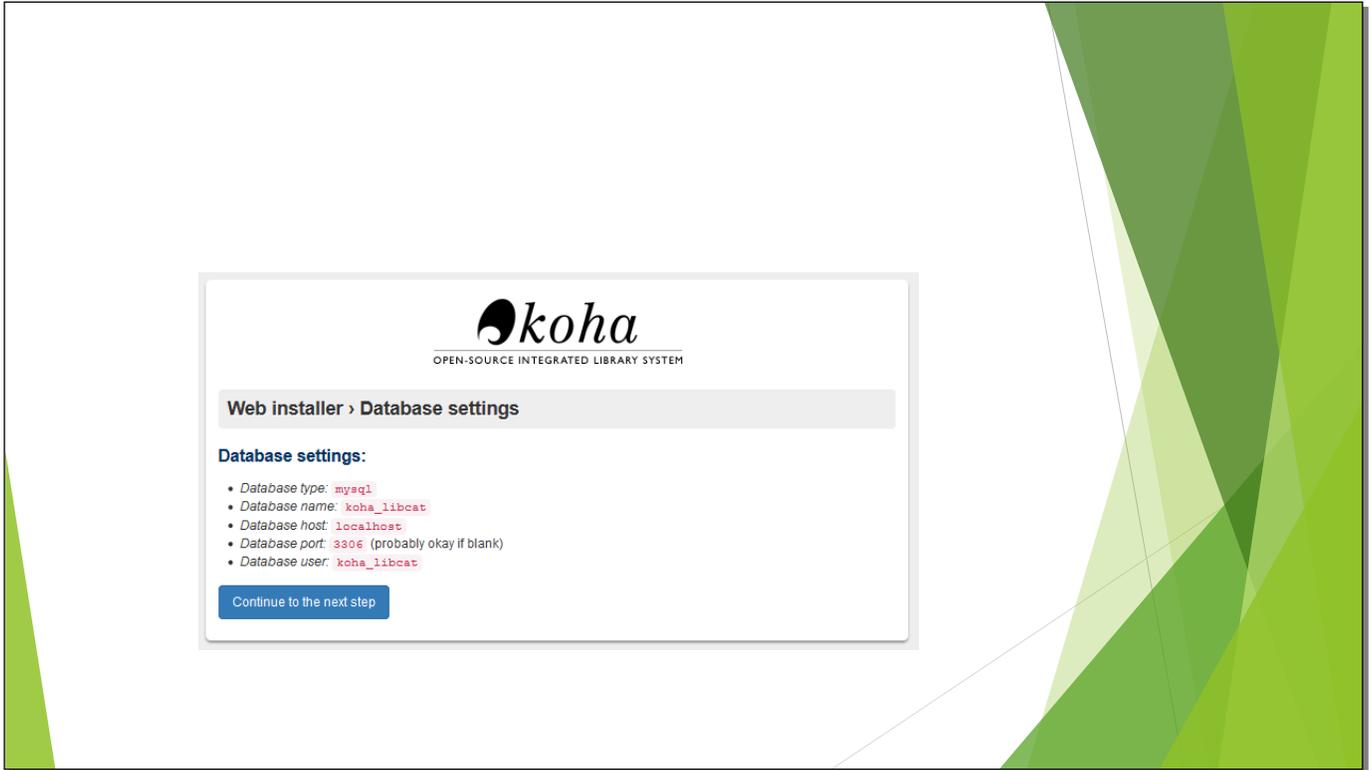
Slide 29

Whew!



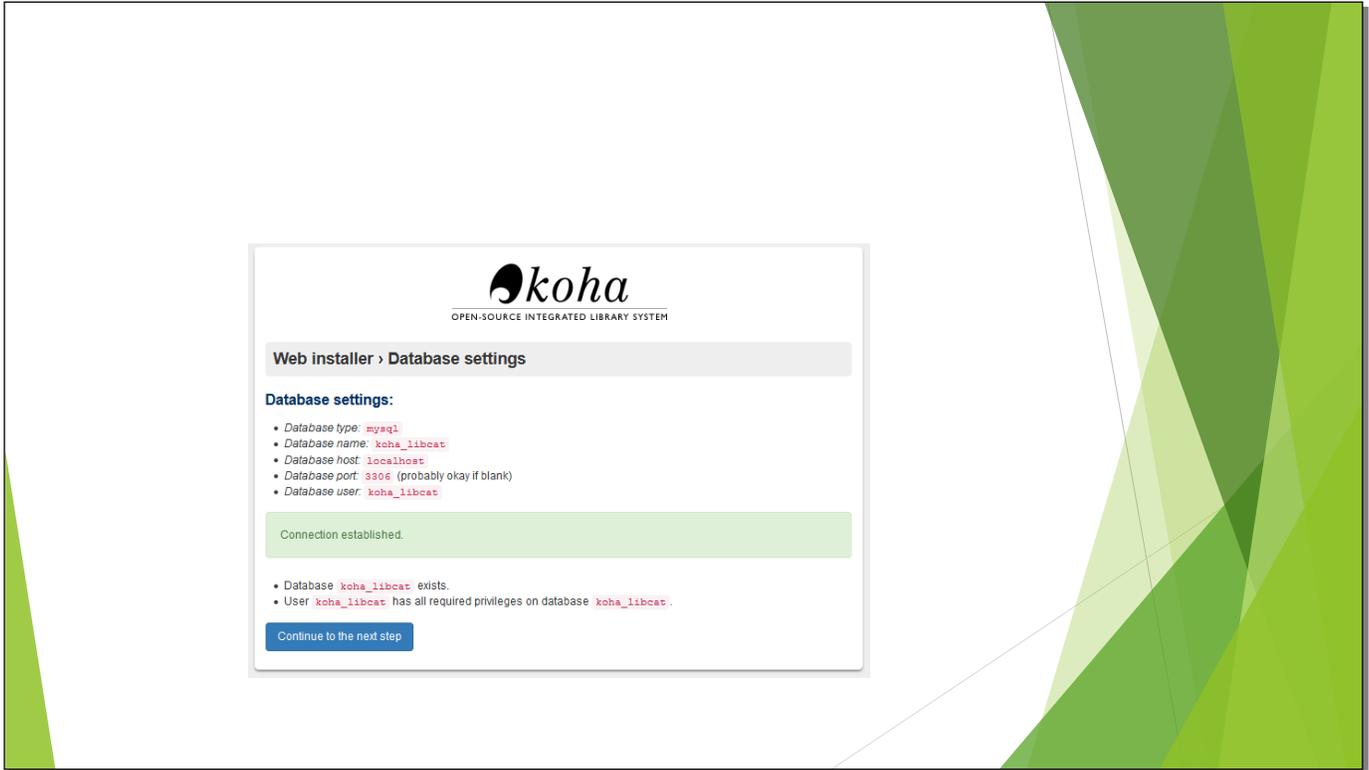
This is the screen that stopped me before. I was very happy when I no longer got the error message.

Slide 30



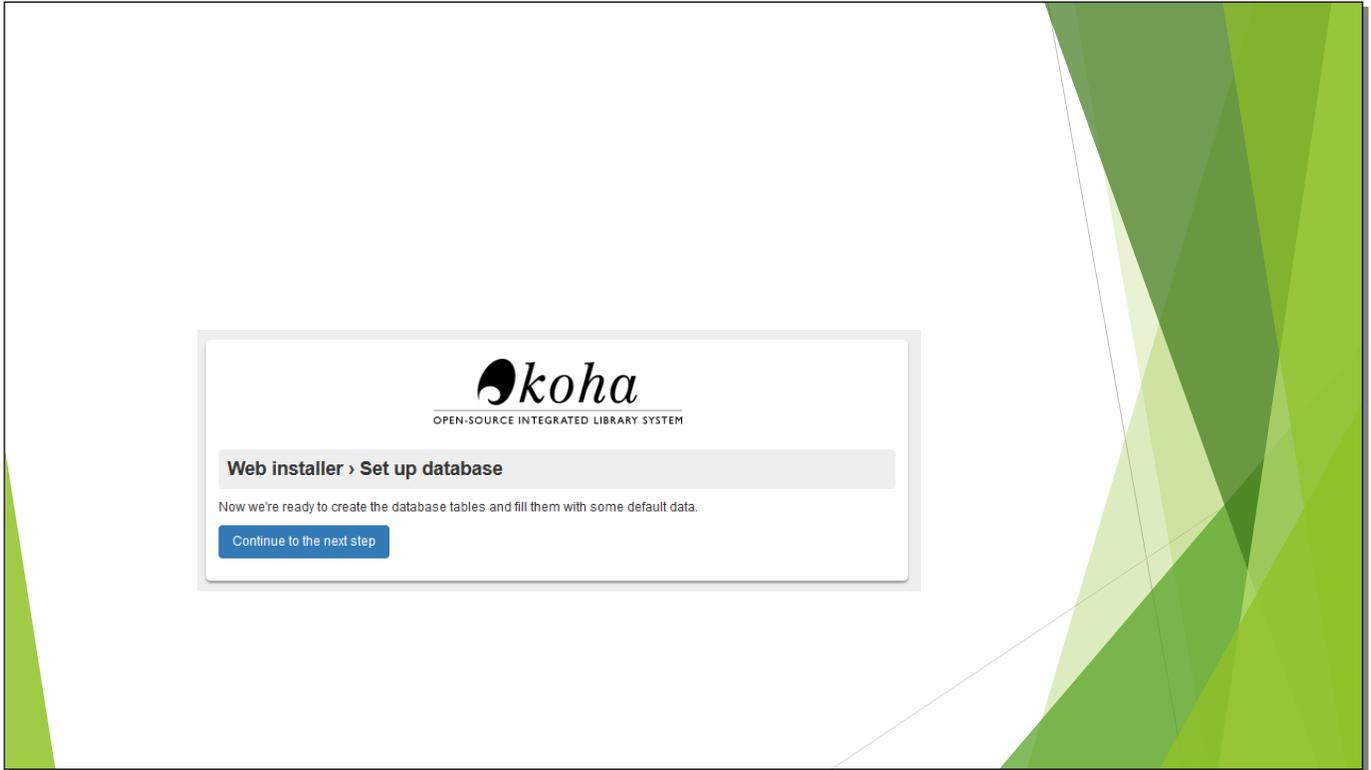
Koha will configure the database setting for you...

Slide 31



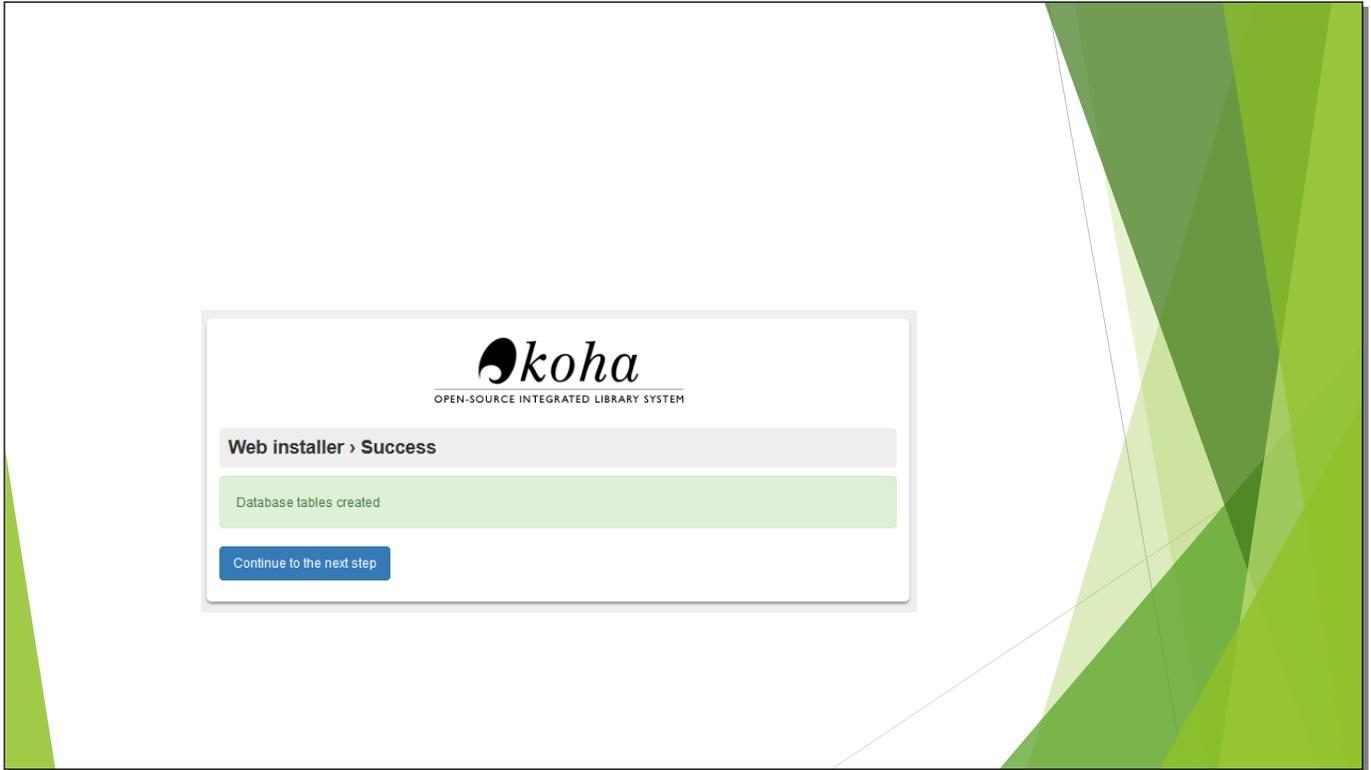
...

Slide 32



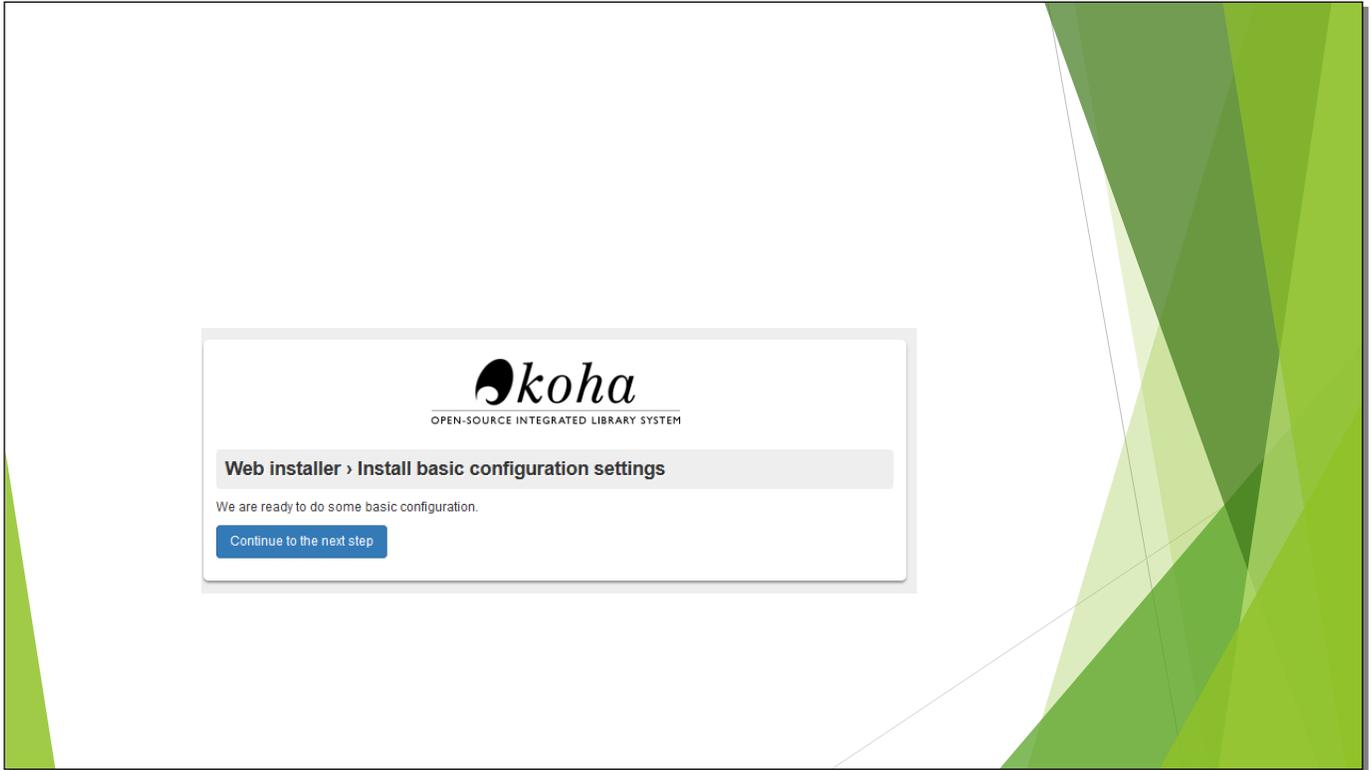
...then set up the database...

Slide 33



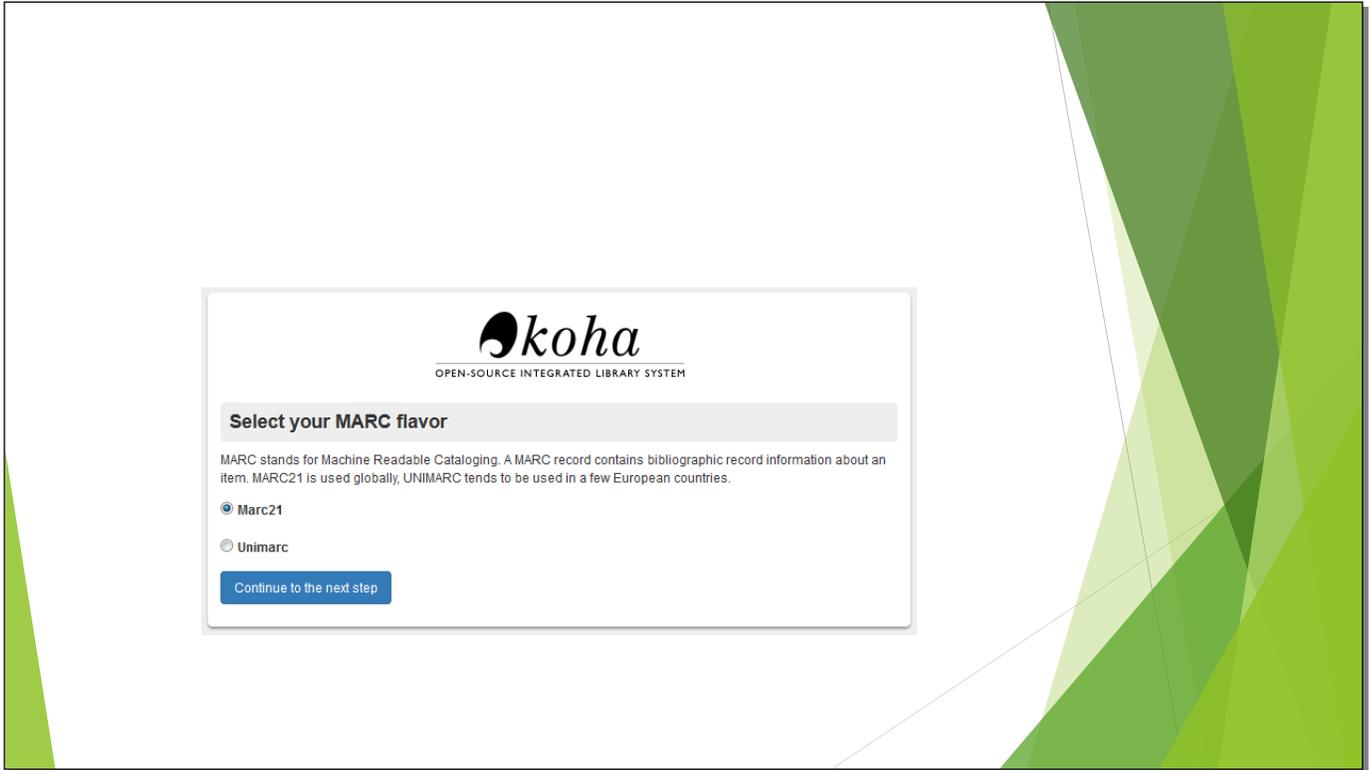
...and when it says Success, you've succeeded!

Slide 34



Now install the basic configuration settings.

Slide 35



The screenshot shows the Koha installation interface. At the top center is the Koha logo, which consists of a stylized 'k' icon followed by the word 'koha' in a lowercase serif font, with the tagline 'OPEN-SOURCE INTEGRATED LIBRARY SYSTEM' underneath. Below the logo is a grey header bar with the text 'Select your MARC flavor'. Underneath this bar is a paragraph of text: 'MARC stands for Machine Readable Cataloging. A MARC record contains bibliographic record information about an item. MARC21 is used globally, UNIMARC tends to be used in a few European countries.' There are two radio button options: 'Marc21' (which is selected) and 'Unimarc'. At the bottom of the form is a blue button with the text 'Continue to the next step'.

I'm using MARC 21 here.

Slide 36



You'll have to make some choices here. I generally install only the mandatory settings.

Can the Pi 4 handle the load?

```
pi@raspberrypi: ~  
top - 16:01:22 up 14 min, 2 users, load average: 1.00, 0.43, 0.20  
Tasks: 135 total, 1 running, 134 sleeping, 0 stopped, 0 zombie  
%Cpu(s): 4.8 us, 4.4 sy, 0.0 ni, 69.5 id, 21.3 wa, 0.0 hi, 0.0 si, 0.0 st  
MiB Mem : 1939.5 total, 1393.3 free, 326.8 used, 219.4 buff/cache  
MiB Swap: 100.0 total, 100.0 free, 0.0 used, 1525.5 avail Mem  


| PID  | USER    | PR | NI  | VIRT   | RES    | SHR   | S | %CPU | %MEM | TIME+   | COMMAND    |
|------|---------|----|-----|--------|--------|-------|---|------|------|---------|------------|
| 600  | mysql   | 20 | 0   | 725548 | 84112  | 15476 | S | 25.1 | 4.2  | 0:11.46 | mysqld     |
| 1228 | libcat+ | 20 | 0   | 154732 | 103616 | 12708 | S | 3.6  | 5.2  | 0:05.00 | install.pl |
| 77   | root    | 0  | -20 | 0      | 0      | 0     | I | 2.3  | 0.0  | 0:00.84 | kworker/0+ |
| 78   | root    | 20 | 0   | 0      | 0      | 0     | D | 1.3  | 0.0  | 0:00.46 | jbd2/mmcb+ |
| 85   | root    | 0  | -20 | 0      | 0      | 0     | I | 0.7  | 0.0  | 0:00.25 | kworker/3+ |
| 1193 | pi      | 20 | 0   | 9404   | 2836   | 2472  | R | 0.7  | 0.1  | 0:01.31 | top        |
| 1    | root    | 20 | 0   | 33704  | 7868   | 6288  | S | 0.0  | 0.4  | 0:03.52 | systemd    |
| 2    | root    | 20 | 0   | 0      | 0      | 0     | S | 0.0  | 0.0  | 0:00.00 | kthreadd   |
| 3    | root    | 0  | -20 | 0      | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_gp     |
| 4    | root    | 0  | -20 | 0      | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_par_gp |
| 7    | root    | 20 | 0   | 0      | 0      | 0     | I | 0.0  | 0.0  | 0:00.15 | kworker/ut |
| 8    | root    | 0  | -20 | 0      | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | mm_percpu+ |
| 9    | root    | 20 | 0   | 0      | 0      | 0     | S | 0.0  | 0.0  | 0:00.04 | ksoftirqd+ |
| 10   | root    | 20 | 0   | 0      | 0      | 0     | I | 0.0  | 0.0  | 0:00.26 | rcu_sched  |
| 11   | root    | 20 | 0   | 0      | 0      | 0     | I | 0.0  | 0.0  | 0:00.00 | rcu_bh     |
| 12   | root    | rt | 0   | 0      | 0      | 0     | S | 0.0  | 0.0  | 0:00.00 | migration+ |
| 13   | root    | 20 | 0   | 0      | 0      | 0     | S | 0.0  | 0.0  | 0:00.00 | cpuhp/0    |


```

Linux has a command called “top” that shows what is going on, similar to the Windows Task Manager. The third line down shows the percentage of the CPU’s capacity being used. For most of the installation, it was well below 50%. Right now, 69.5% of the CPU is idle. The fourth line shows how much RAM is being used, in this case, about one quarter. This was a lot less than I expected.



OPEN-SOURCE INTEGRATED LIBRARY SYSTEM

Web installer › Default data loaded

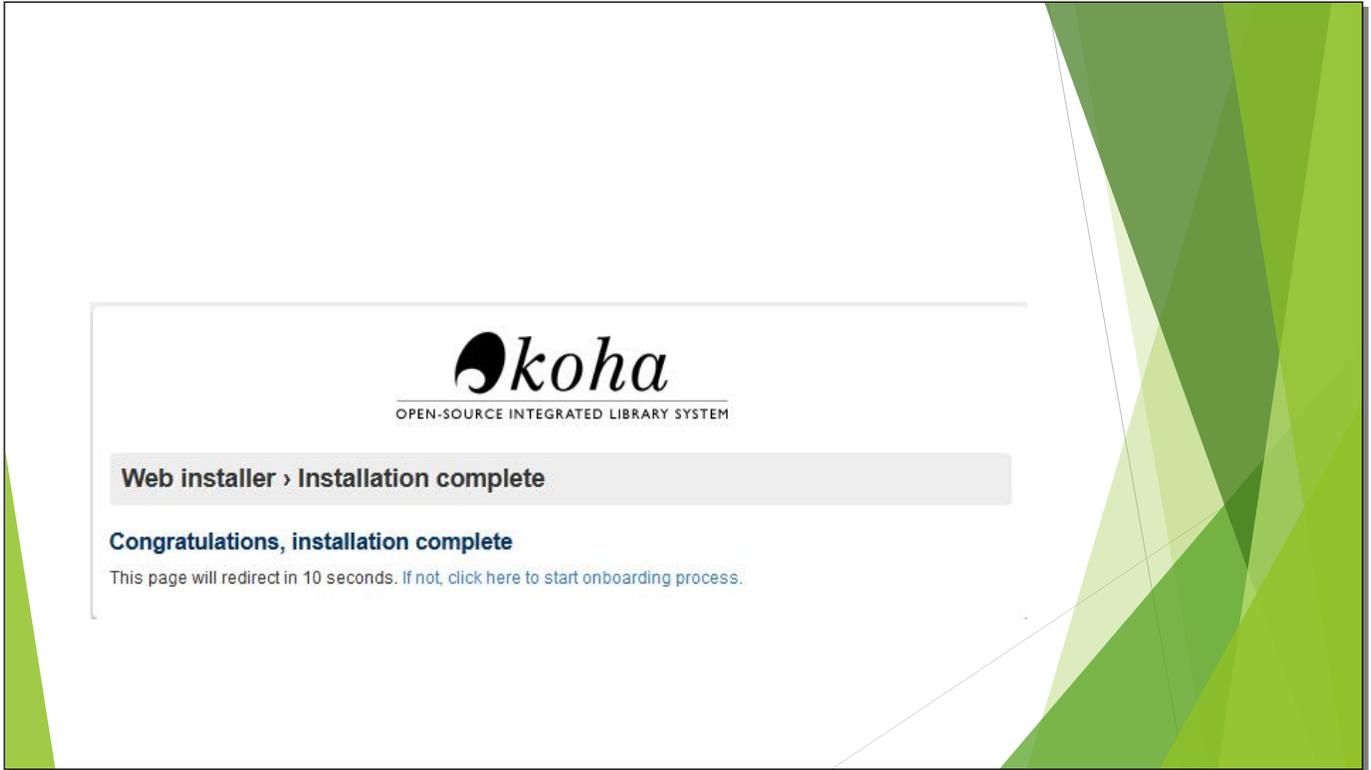
Mandatory data added

- subtag_registry.sql
- auth_val_cat.sql
- message_transport_types.sql
- sample_notices_message_attributes.sql
- sample_notices_message_transports.sql
- keyboard_shortcuts.sql
- auth_values.sql
- authorities_normal_marc21.sql
- class_sources.sql
- marc21_framework_DEFAULT.sql
- sample_frequencies.sql
- sample_notices.sql
- sample_numberpatterns.sql

MySQL data added

- sysprefs.sql
- userflags.sql
- userpermissions.sql
- audio_alerts.sql
- account_offset_types.sql

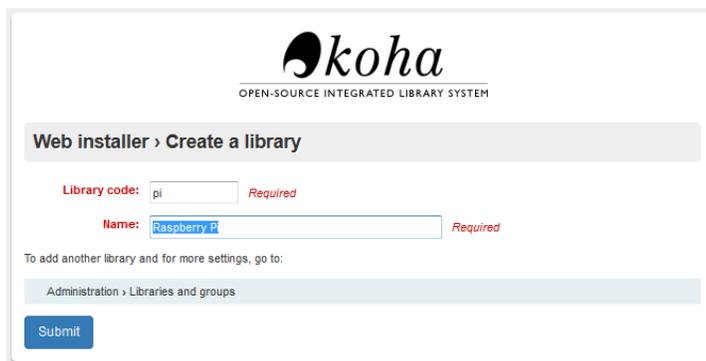
Slide 39



You're ready to start adding information!

Slide 40

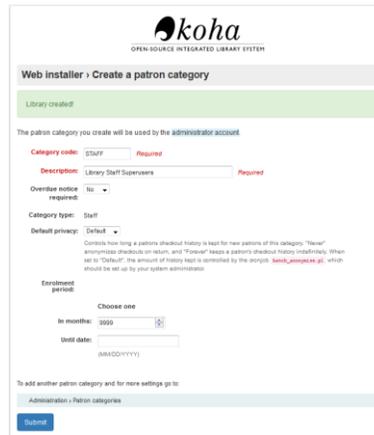
Create a Library



The screenshot shows the Koha web installer interface for creating a new library. At the top, the Koha logo and the text 'OPEN-SOURCE INTEGRATED LIBRARY SYSTEM' are displayed. Below this, a breadcrumb trail reads 'Web installer > Create a library'. The form contains two input fields: 'Library code:' with the value 'pi' and 'Name:' with the value 'Raspberry Pi'. Both fields are marked as 'Required'. Below the form, there is a link 'Administration > Libraries and groups' and a blue 'Submit' button.

Create a library code and name. This library is called Raspberry Pi and the code is pi.

Create a Patron Category

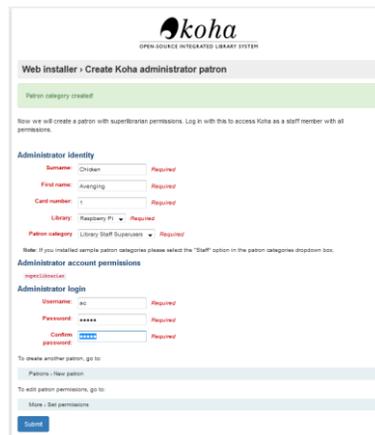


The screenshot shows the Koha web installer interface for creating a patron category. The page title is "Web installer > Create a patron category". Below the title, there is a "Library created:" field. A note states: "The patron category you create will be used by the administrator account". The form includes several fields: "Category code:" with a text input containing "STAFF" and a "Required" label; "Description:" with a text input containing "Library Staff Supervisors" and a "Required" label; "Override notice required:" with a dropdown menu set to "No"; "Category type:" with a dropdown menu set to "Staff"; "Default privacy:" with a dropdown menu set to "Default"; and "Enrollment period:" with a "Choose one" label, a "In months:" input set to "999", and an "Until date:" input with "(MM/DD/YYYY)" below it. A small note explains that "Controls how long a patron's checkout history is kept for new patrons of this category. 'None' eliminates checkout on return, and 'Forever' keeps a patron's checkout history indefinitely. When set to 'Default', the amount of history kept is controlled by the variable `max_checkout_history`, which should be set up by your system administrator." At the bottom, there is a link "Administration > Patron categories" and a "Submit" button.

You need to add a patron category.

Slide 42

Create an Administrator Patron



The screenshot shows the 'Web installer > Create Koha administrator patron' page. It features a success message 'Patron category created' and instructions to create a patron with super librarian permissions. The form is divided into two sections: 'Administrator identity' and 'Administrator account permissions'. The identity section includes fields for Surname (Chicken), First name (Avenging), Card number (1), Library (Raspberry Pi), and Patron category (Library Staff Supervisors). The account permissions section includes fields for Username (ac), Password (Koha1), and Confirm password (Koha1). Navigation links for 'Patrons / New patron' and 'More / Set permissions' are provided at the bottom.

Web installer > Create Koha administrator patron

Patron category created

Now we will create a patron with super librarian permissions. Log in with this to access Koha as a staff member with all permissions.

Administrator identity

Surname: Chicken Required

First name: Avenging Required

Card number: 1 Required

Library: Raspberry Pi Required

Patron category: Library Staff Supervisors Required

Note: If you installed sample patron categories please select the "Staff" option in the patron categories dropdown box.

Administrator account permissions

Administrator login

Username: ac Required

Password: Koha1 Required

Confirm password: Koha1 Required

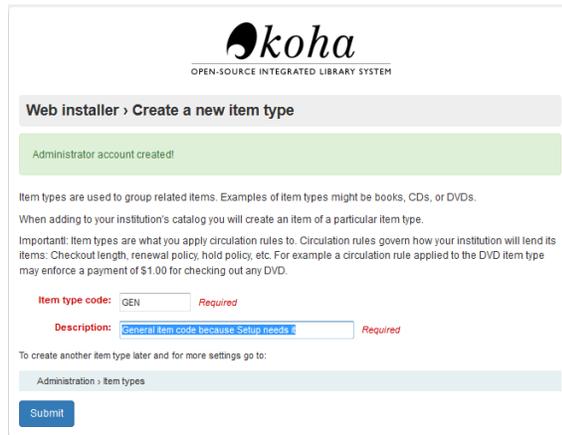
To create another patron, go to:
[Patrons / New patron](#)

To edit patron permissions, go to:
[More / Set permissions](#)

And an administrator so you can log in and run the system. For this library, the Avenging Chicken is the administrator, the username is ac, and the password is Koha1.

Slide 43

And an item type



The screenshot shows the Koha web installer interface for creating a new item type. At the top, the Koha logo and 'OPEN-SOURCE INTEGRATED LIBRARY SYSTEM' are displayed. Below the logo, the breadcrumb 'Web installer > Create a new item type' is shown. A green notification box states 'Administrator account created!'. The main content area contains explanatory text about item types and their use in circulation rules. Below the text, there are two required fields: 'Item type code' with the value 'GEN' and 'Description' with the value 'General item code because Setup needs it'. At the bottom, there is a link to 'Administration > Item types' and a blue 'Submit' button.

koha
OPEN-SOURCE INTEGRATED LIBRARY SYSTEM

Web installer > Create a new item type

Administrator account created!

Item types are used to group related items. Examples of item types might be books, CDs, or DVDs.
When adding to your institution's catalog you will create an item of a particular item type.
Important: Item types are what you apply circulation rules to. Circulation rules govern how your institution will lend its items: Checkout length, renewal policy, hold policy, etc. For example a circulation rule applied to the DVD item type may enforce a payment of \$1.00 for checking out any DVD.

Item type code: *Required*

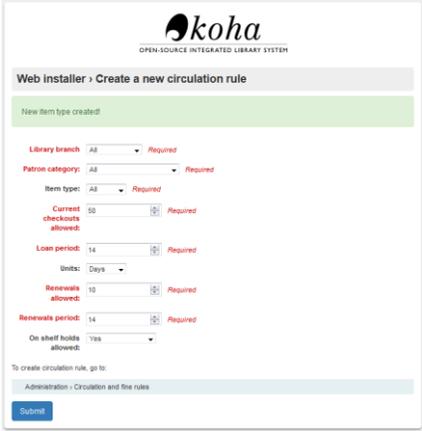
Description: *Required*

To create another item type later and for more settings go to:

[Administration > Item types](#)

And an item type. You can delete this one and add others later.

Slide 44



The screenshot shows the Koha web installer interface for creating a new circulation rule. The page title is "Web installer > Create a new circulation rule". A green message box at the top indicates "New item type created!". The form contains several fields, all marked as "Required":

- Library branch: All
- Patron category: All
- Item type: All
- Current checkouts allowed: 50
- Loan period: 14
- Units: Days
- Renewals allowed: 10
- Renewals period: 14
- On shelf holds allowed: Yes

At the bottom, there is a link "Administration > Circulation and fine rules" and a "Submit" button.

You can add more circulation rules, too.

Slide 45

Arewetherayet? Arewetherayet?
Arewetherayet?



Finished and ready to log in.

Slide 46

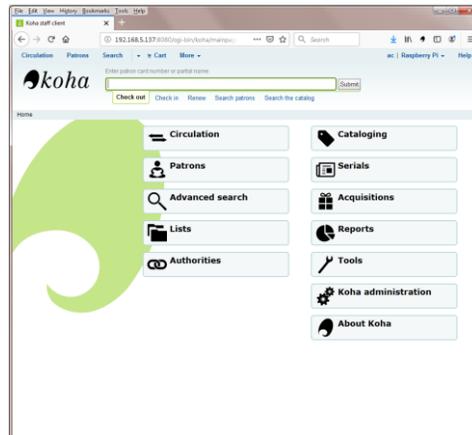
Yes we are



In this instance, log in with username ac and password Koha1.

Slide 47

Finally!



And this screen should look familiar.

Yes, but now what?

You have the ILS, but what about the bib records?

I'm cheating again

- ▶ But I'll get to that momentarily
- ▶ It's not just because I'm using bits of a presentation I gave at MLA in 2019

Slide 50

Meet MARCEdit!

- ▶ Who uses it?
 - ▶ Anybody who does anything with MARC records

```
=LDR 04440nas a2200529M 4500
=001 //422
=005 20130605151550.0
=008 750901d19541990njuuu\\0eng'd
=010 // $a 53002151
=035 // $aocm01588948
=035 // $a0523546$bMULS
=040 // $aMUL $cMUL $dm. c. $dRCS $dNSD $doCL $dwhc
=049 // $awhca $bwhc
=060 0 // $aQZ 17 N474c
=069 1 // $aC21530000
=097 // $aQZ 17 N474c
=100 1 // $aNetter, Frank H. $g(Frank Henry), $d1906-$w1n$915278
=245 00 // $aCiba collection of medical illustrations.
=260 // $aSummit, N. J., $bciba Pharmaceutical Products.
=500 // $aIncludes bibliographical references.
=500 // $avarious editions.
=500 // $aCiba collection of medical illustrations.
=510 2 // $aBiological abstracts $x0006-3169 $b-1979
=650 2 // $aMedical Illustration.
=650 2 // $aAnatomy $xatlases. $9944
=650 2 // $aCIBA-GEIGY Corporation. $94069
=999 // $c81 $d81
=952 // $00510$40$6QZ_00017_N474C_V_1_PT_1$70$8CIRC$9108$aWhc$bWhc$cGEN$d2013-05-29$11$0QZ 17 N474C v. 1 pt. 1$P329;
=952 // $00510$40$6QZ_00017_N474C_V_1_PT_2$70$8CIRC$9109$aWhc$bWhc$cGEN$d2013-05-29$11$0QZ 17 N474C v. 1 pt. 2$P329;
=952 // $00510$40$6QZ_00017_N474C_V_2$70$8CIRC$9110$aWhc$bWhc$cGEN$d2013-05-29$11$0QZ 17 N474C v. 2$P3297500088075;
=952 // $00510$40$6QZ_00017_N474C_V_3_PT_1$70$8CIRC$9111$aWhc$bWhc$cGEN$d2013-05-29$11$0QZ 17 N474C v. 3 pt. 1$P329;
=952 // $00510$40$6QZ_00017_N474C_V_3_PT_2$70$8CIRC$9112$aWhc$bWhc$cGEN$d2013-05-29$11$0QZ 17 N474C v. 3 pt. 2$P329;
```

Slide 51

Free! (not open source)

Terry Reese!



He never sleeps!*

ALA member news

Terry Reese Jr. selected for Margaret Mann Citation

For Immediate Release
Fri, 02/22/2019

Contact:

Julie Reese
Deputy Executive Director
Association for Library Collections & Technical Services
jreese@ala.org

CHICAGO—The Association for Library Collections & Technical Services (ALCTS) and Margaret Mann Citation presented by the [ALCTS Cataloging and Metadata Management](#) June 22 at the ALCTS Awards Ceremony during the 2019 American Library Association

The Mann Citation, recognizing outstanding professional achievement in cataloging or to the library school of the winner's choice. Reese has chosen the [University of Maryland](#) award.

Reese's outstanding professional achievements in cataloging have had a lasting and far-reaching impact and well-known achievement leading the creation, development and on-going work of and librarians, ranging from small public libraries to large academic research libraries. future cataloging practices such as MARC, XML, crosswalks and linked data.

*Not confirmed. Photo from MarcEdit web site, press release from ALA's web site.

Available for Windows, MacOS, and Linux. Yes, you can run it on a Raspberry Pi, though I didn't for this presentation. See <https://marcedit.reeset.net>.

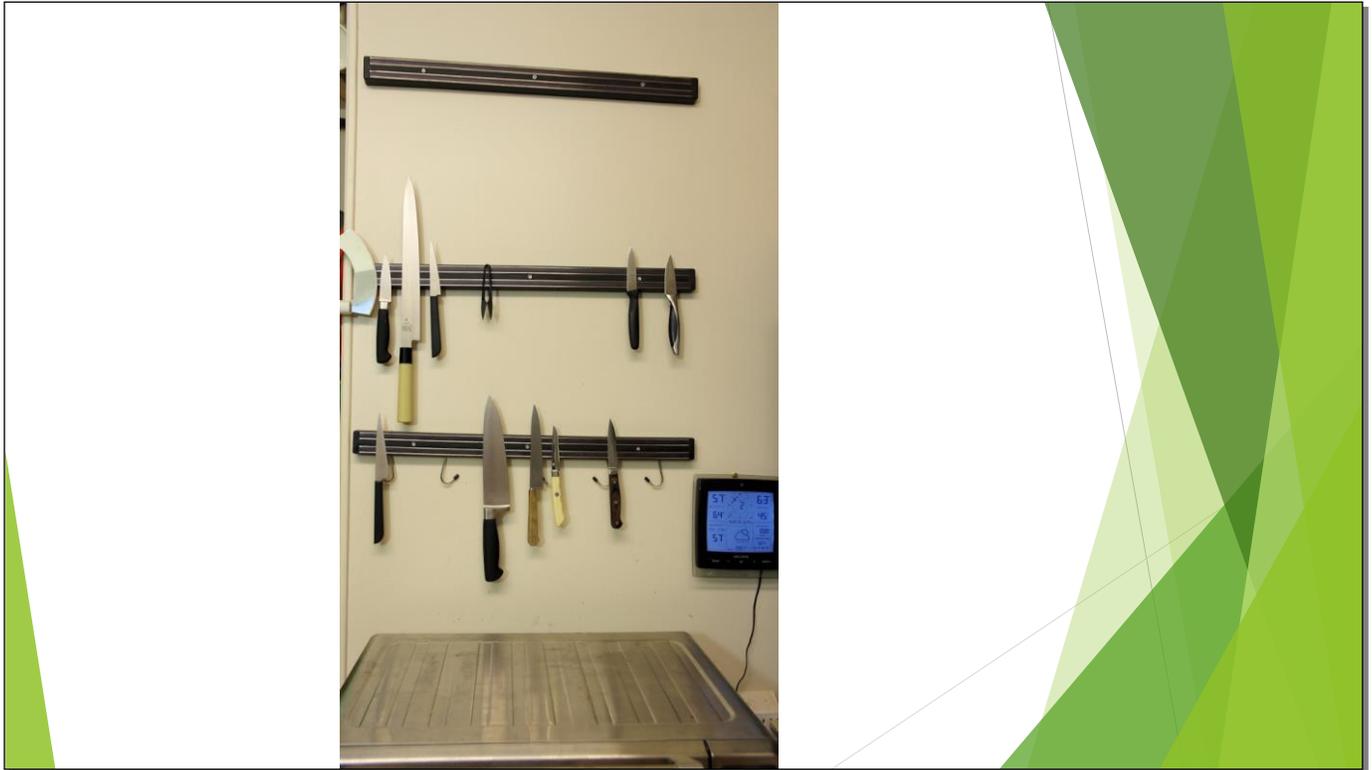
What does it do?

Slide 53



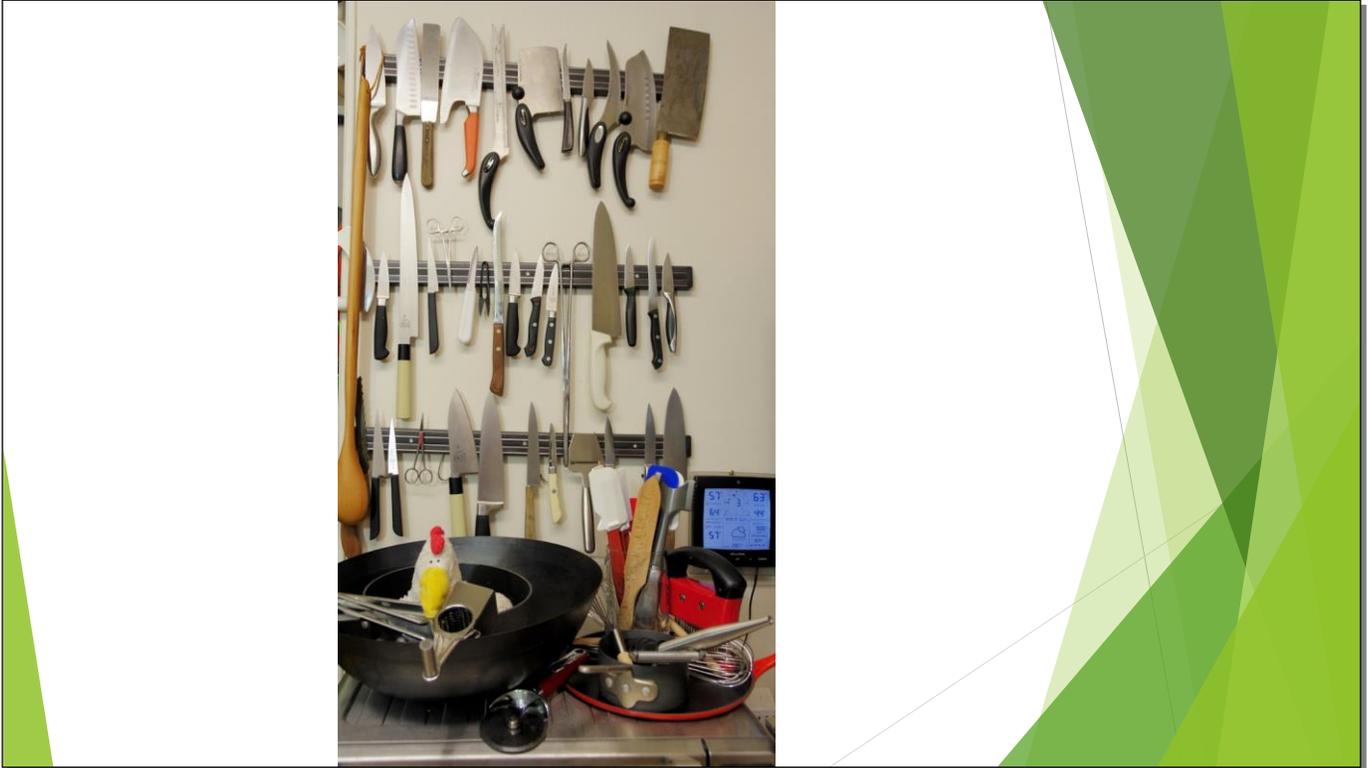
It's kind of like a Swiss Army Knife. When I first used it, I only used the knife and corkscrew. (Yes, there's no corkscrew here. Deal with it.)

Slide 54



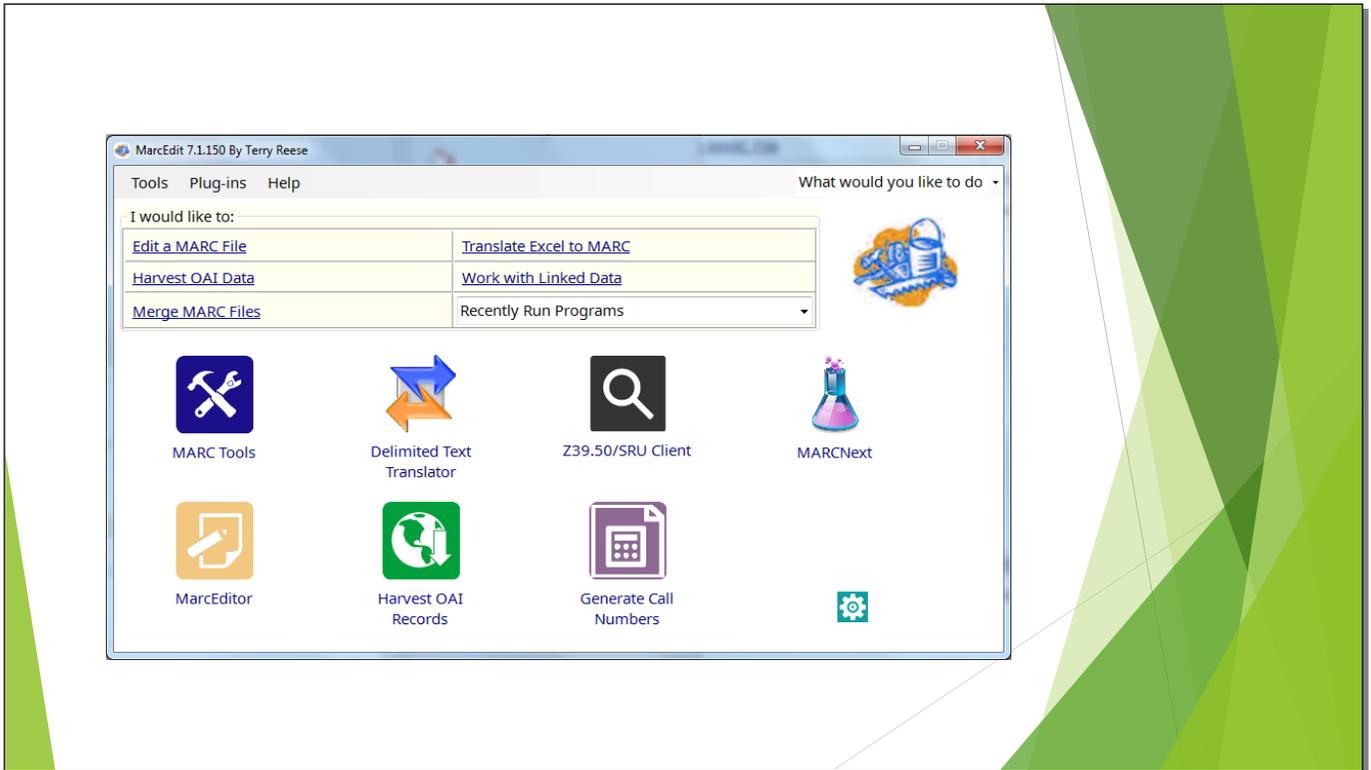
Then I found out that it did a few more things.

Slide 55



Make that a whole lot of other things. I still don't know how to use all its functions.

Slide 56



This is the main screen. Even from here you can see that it does interesting things. MarcEdit will work directly with Koha, but I haven't figured that bit out yet.

Z39.50

- ▶ Allows users to harvest MARC records by
 - ▶ ISBN (020)
 - ▶ ISSN (022)
 - ▶ LC Card/Control Number (010)
- ▶ I'm going to be using ISBNs

This is where you need the network connection.

Assemble your collection of ISBNs



I was given my first book during the Eisenhower administration, when I was a few weeks old. My collection grew from there. Then when I was in my 50s I got married to another librarian. She, too, has a large book collection. We have more books than a lot of small library branches.

Assemble your collection of ISBNs



And fortunately, a lot of books have their ISBNs in barcodes on their covers. Scan the codes and you have a list of ISBNs. I didn't include a barcode scanner in my budget because you can also type them into a text file, but if you have an extra \$35 for a low-end scanner, it's well worth it. I think this wireless scanner was around \$50.

Slide 60

Ran out of time, and LC Z39.50 server
wasn't working very well

- ▶ So this is where I'm cheating

So instead of using my own collection...

Slide 61

Five collections from MWHC Medical Library

- ▶ Circulating Books
- ▶ Reference
- ▶ Reserve
- ▶ Popular Health Reading (medical history, biographies, etc.)
- ▶ Lynch Collection (ethics, end-of-life care)

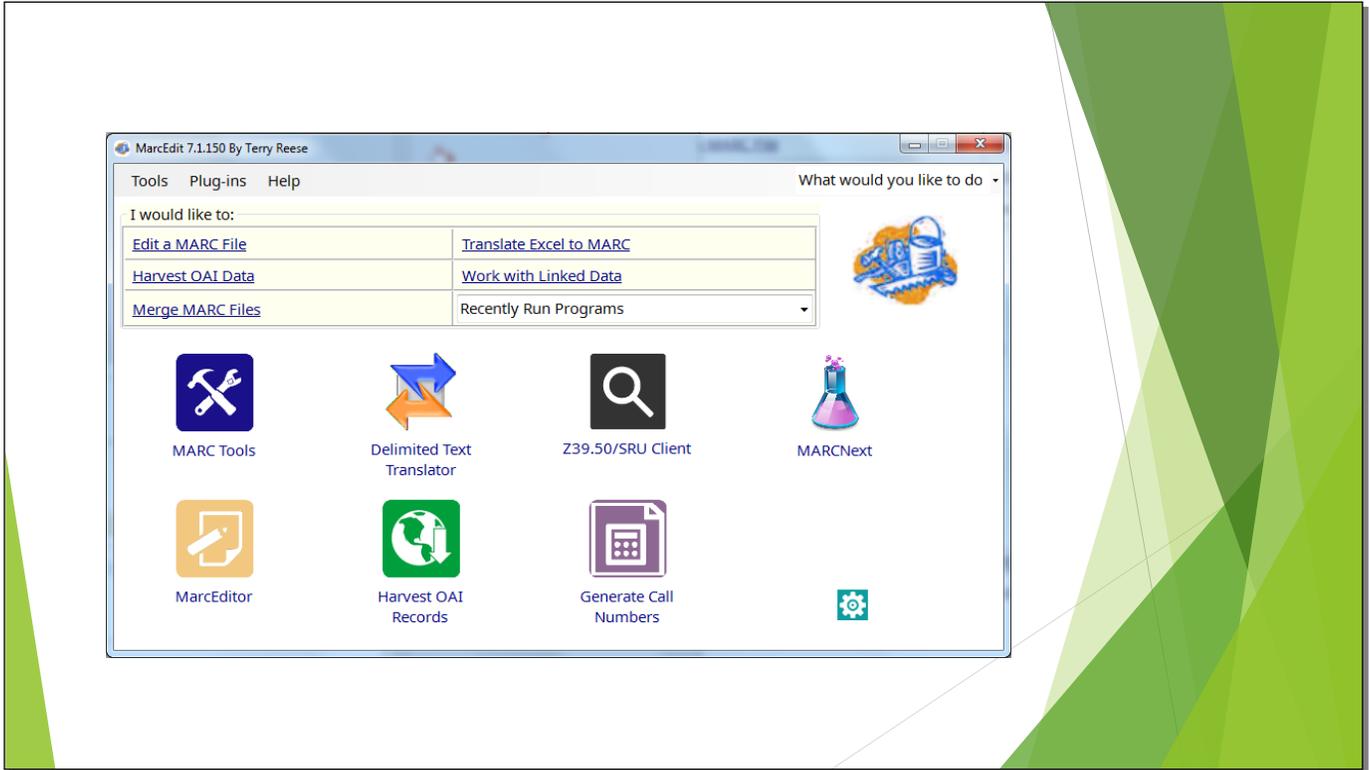
I used the library where I worked. I exported the five different itypes shown above. Popular Health Reading is our “what did you read as a child that made you want to become a nurse/doctor?” collection.

Extracted ISBNs from those collections

000047715X	007182684X	0323083404	0721604242	080892334X	1118674952	1451194587
000047715X	0071831428	0323083897	072160479X	0808923382	1259252892	1451195303
000047715X	0071834583	0323087868	0721605095	0808923749	125958707X	1455703109
000047715X	0071840060	0323172202	0721697577	0808923757	1259587142	1455710652
000047715X	0071843132	032326199X	0723432589	0815340761	1259642887	1455723746
000047715X	0071843620	032329054X	0727914464	0815340788	1259835030	1455753734
0000769029	0071844570	0323311962	0738610062	0826119638	125986359X	1455775657
0017631041	0071849130	0323321828	075067492X	0826122825	1260031373	1466565373
0017688345	0124339018	0323329047	0763738255	0826129544	1260116735	146658534X
0030260299	0124339026	0323339662	0763740802	0826131948	1260116751	1467534560
0071378294	0128499052	032335324X	0763756016	0826134181	1284053008	1469887762
0071413650	0130407763	0323353762	0781714877	082613436X	1284066347	1469890682
007143979X	0131089900	0323353770	0781718325	0826135587	1284093956	1496310241
0071439803	0131708147	0323354238	0781719283	0826158269	1284111180	1496331478
0071439811	0132243555	0323356176	0781731984	0826172016	1284121240	1496349792
007143982X	0132377292	0323356427	0781732654	0826194060	1284141853	1496377230
0071439838	013314772X	032339129X	0781735114	0835960641	1284144925	1496379942
0071439862	013314772X	0323399401	0781736390	0838503446	1284169715	1496387333
0071439870	0134380991	0323399843	0781740630	0838562744	1285174151	1506208517

I probably could have written a report to do this, but I just dumped the text into a word processor, sorted it, and deleted everything but the 020 fields. Not fancy, but it worked.

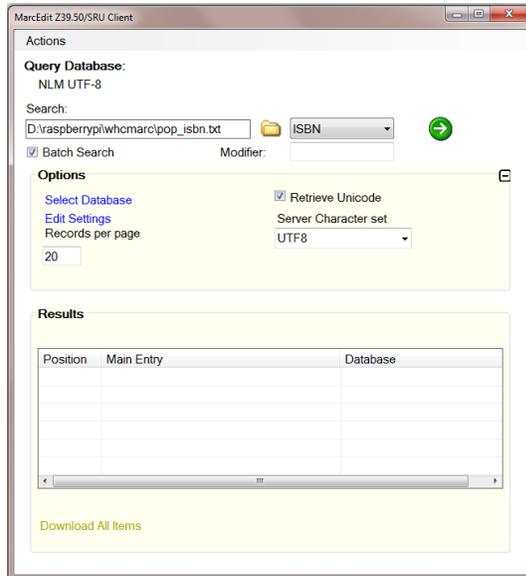
Slide 63



Now we're ready to use the Z39.50 client.

Slide 64

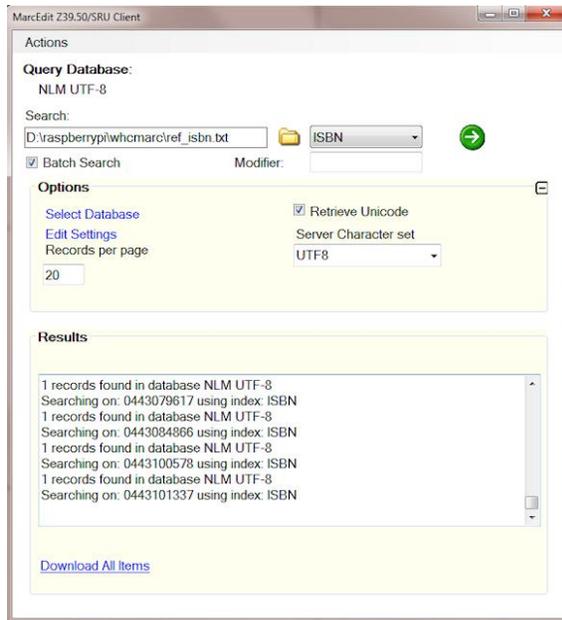
Z39.50 ready to start



I'm using our Popular Health Reading collection for this example.

Slide 65

Searching NLM



Wait a minute—now I'm using the reference collection. I told you the continuity wasn't great.

Slide 66

And you have MARC records!

- ▶ Circulating books
 - ▶ 3721 books
 - ▶ Found: 2037
 - ▶ Not Found: 516
- ▶ Reference
 - ▶ 840 Books
 - ▶ Found 458
 - ▶ Not found: 175
- ▶ Reserve
 - ▶ 446 Books
 - ▶ Found 424
 - ▶ Not found: 356
- ▶ Lynch
 - ▶ 165 Books
 - ▶ Found 165
 - ▶ Not found 92
- ▶ Popular Health Reading
 - ▶ 165 Books
 - ▶ Found 99
 - ▶ Not found 194

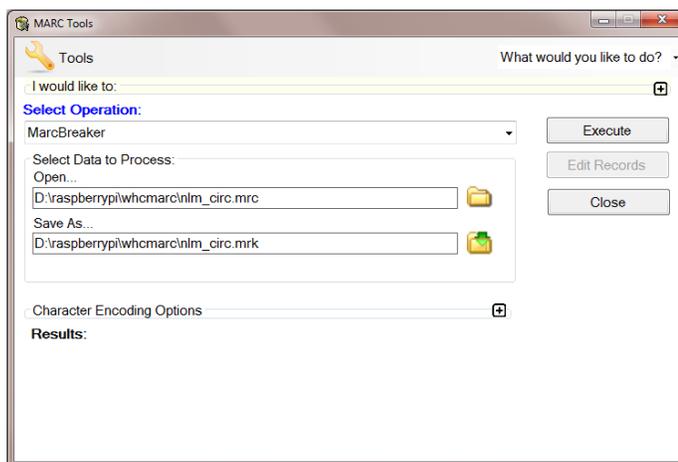
This was just from the ISBNs. MarcEdit gives you a list of numbers not found, so you can run those in another Z39.50 server, use their LCCNs, etc.

Three large, bold, green question marks are centered on a white background. The slide is framed by a thin black border, and the right side features a decorative background of overlapping, semi-transparent green geometric shapes.

These numbers don't add up. Partly it's because some books have ISBN-10s and ISBN-13s, and partly for reasons I don't know.

MARC Breaker

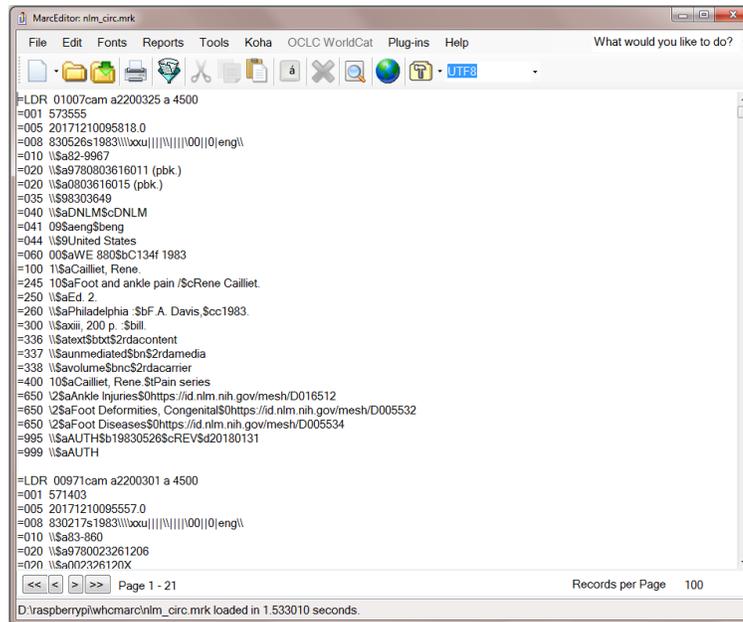
- Changes machine-readable .mrc file to text .mrk file



Another great feature of MarcEdit is Marc Breaker.

Slide 69

MARC Edit



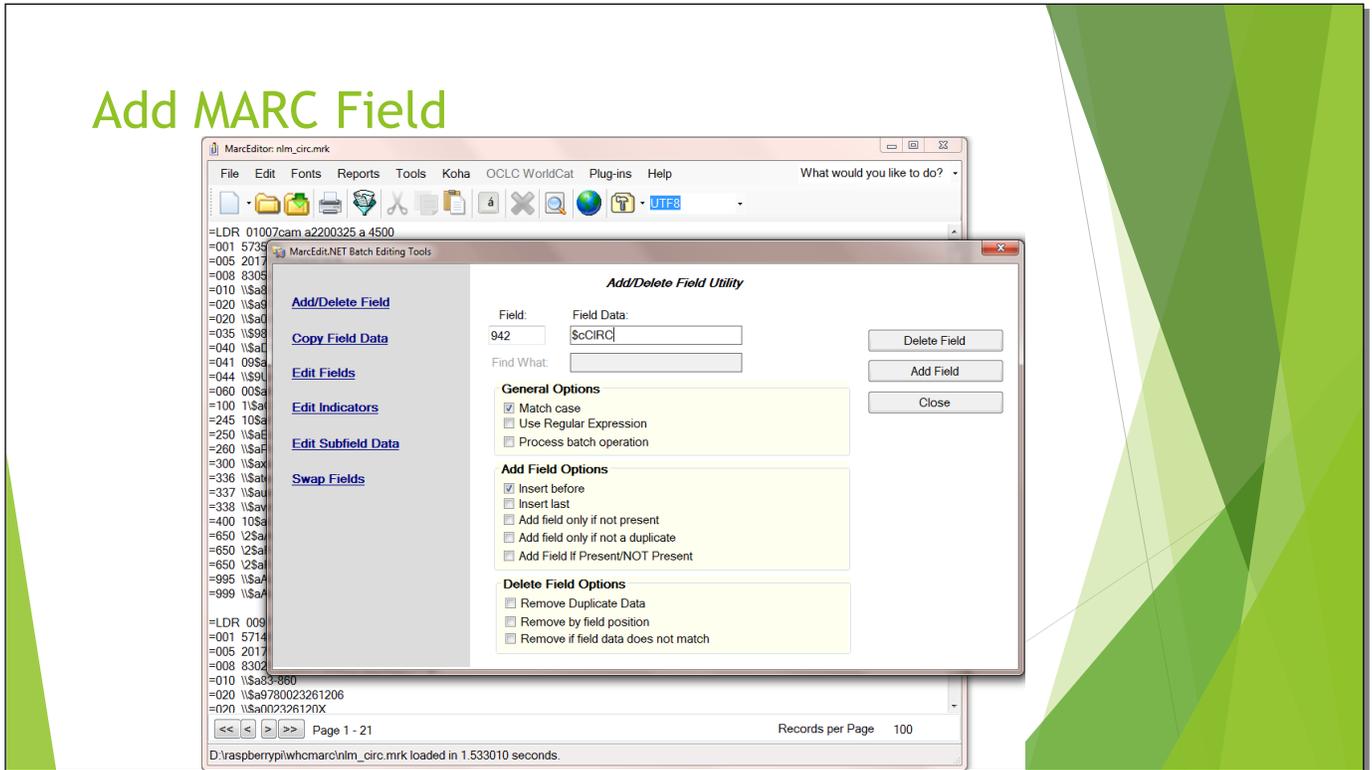
```
MarcEditor: nlm_circ.mrk
File Edit Fonts Reports Tools Koha OCLC WorldCat Plug-ins Help
What would you like to do?
-UTF8
=LDR 01007cam a2200325 a 4500
=001 573555
=005 20171210095818.0
=008 830526s1983\wxuj|||||00|0|eng\
=010 \Sa82-9967
=020 \Sa9780803616011 (pbk.)
=020 \Sa0803616015 (pbk.)
=035 \S98303649
=040 \SaDNLMScDNLML
=041 09Saeng$eng
=044 \SUnited States
=060 00SaWE 880$bC134f 1983
=100 1SaCailliet, Rene.
=245 10SaFoot and ankle pain /ScRene Cailliet.
=250 \SaEd. 2.
=260 \SaPhiladelphia :$Bf. A. Davis,$cc1983.
=300 \Saxiii, 200 p. $Bill.
=336 \S$text$btxt$2rdacontent
=337 \S$unmediated$bson$2rdamedia
=338 \S$volume$bson$2rdacarrier
=400 10SaCailliet, Rene.$fPain series
=650 12SaAnkle Injuries$0https://id.nlm.nih.gov/mesh/D016512
=650 12SaFoot Deformities, Congenital$0https://id.nlm.nih.gov/mesh/D005532
=650 12SaFoot Diseases$0https://id.nlm.nih.gov/mesh/D005534
=995 \SaAUTH$b19830526ScREV$d20180131
=999 \SaAUTH

=LDR 00971cam a2200301 a 4500
=001 571403
=005 20171210095557.0
=008 830217s1983\wxuj|||||00|0|eng\
=010 \Sa83-860
=020 \Sa9780023261206
=020 \Sa002326120X
Page 1 - 21
Records per Page 100
D:\raspberrypi\whmarc\nlm_circ.mrk loaded in 1.533010 seconds.
```

Yep, that's a MARC record. Since this is a medical library, we're using 060 call numbers from the NLM system.

Slide 70

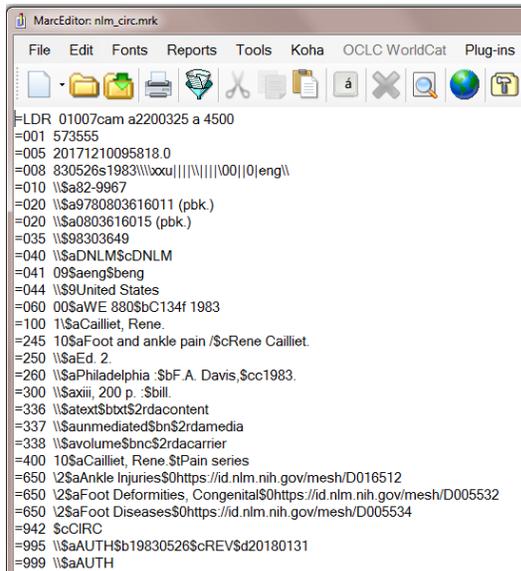
Add MARC Field



Koha really wants a 942\$c field, the default item type. If you go to Add/Delete Field, you can add it. I could also have added the 942\$2, default classification system, at the same time. Oh well.

Slide 71

Once you have the field added,
recompile to MRC format



```

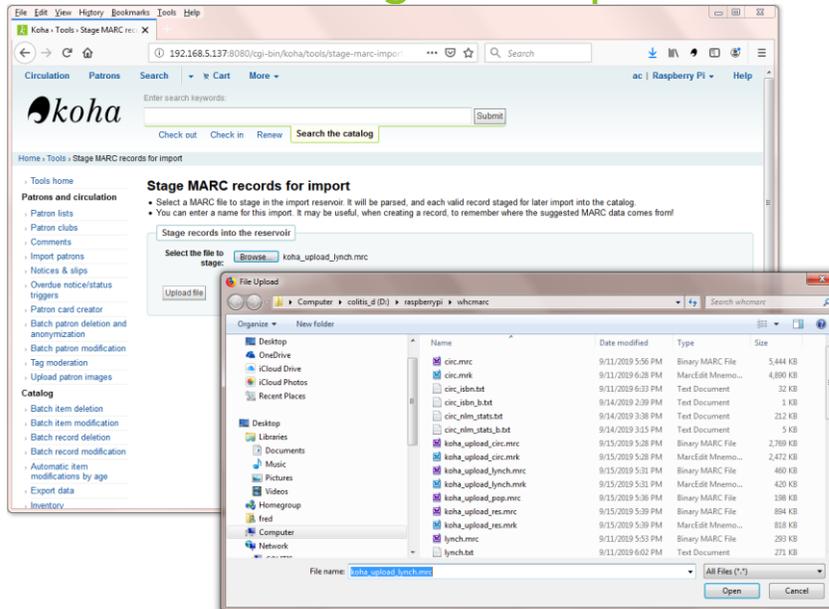
MarcEditor: nlm_circ.mrk
File Edit Fonts Reports Tools Koha OCLC WorldCat Plug-ins
=LDR 01007cam a2200325 a 4500
=001 573555
=005 20171210095818.0
=008 830526s1983\||\|00||0|eng\
=010 \\\$a2-9967
=020 \\\$a9780803616011 (pbk.)
=020 \\\$a0803616015 (pbk.)
=035 \\\$98303649
=040 \\\$aDNL.M$cDNL.M
=041 09$aeng$beng
=044 \\\$9United States
=060 00$aWE 880$bC134f 1983
=100 1\\$aCailliet, Rene.
=245 10$aFoot and ankle pain /$cRene Cailliet.
=250 \\\$aEd. 2.
=260 \\\$aPhiladelphia :$bF. A. Davis,$cc1983.
=300 \\\$axiii, 200 p. :$bill.
=336 \\\$atext$btxt$2rdacontent
=337 \\\$aunmediated$bnc$2rdamedia
=338 \\\$avolume$bnc$2rdacarrier
=400 10$aCailliet, Rene.$tPain series
=650 12$aAnkle Injuries$0https://id.nlm.nih.gov/mesh/D016512
=650 12$aFoot Deformities, Congenital$0https://id.nlm.nih.gov/mesh/D005532
=650 12$aFoot Diseases$0https://id.nlm.nih.gov/mesh/D005534
=942 $cCIRC
=995 \\\$aAUTH$b19830526$cREV$d20180131
=999 \\\$aAUTH

```

There it is!

Slide 72

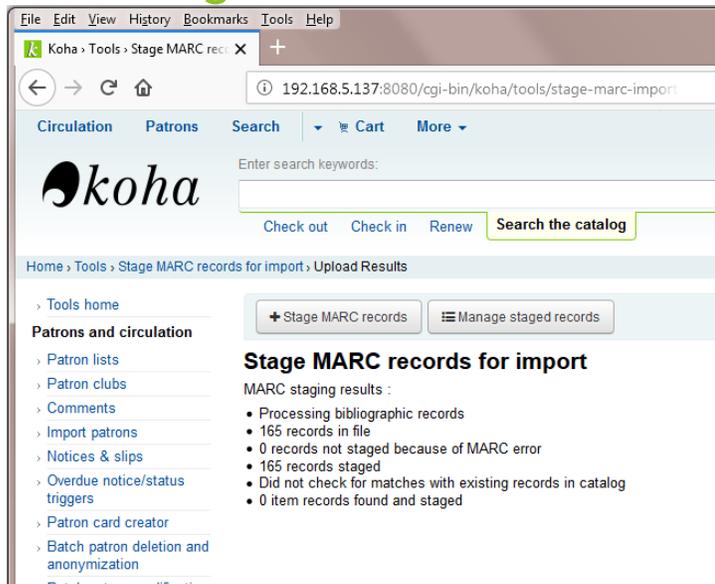
Back to Koha: Stage for Import



Now I'm uploading the Lynch collection.

Slide 73

Records Staged



The screenshot shows the Koha web interface. The browser address bar displays the URL: 192.168.5.137:8080/cgi-bin/koha/tools/stage-marc-import. The page title is "Stage MARC records for import". The main content area shows the following information:

Stage MARC records for import

MARC staging results :

- Processing bibliographic records
- 165 records in file
- 0 records not staged because of MARC error
- 165 records staged
- Did not check for matches with existing records in catalog
- 0 item records found and staged

The interface also includes a navigation menu on the left with categories like "Patrons and circulation" and "Tools home". At the top, there are buttons for "Stage MARC records" and "Manage staged records".

Everything uploaded correctly.

Slide 74

And they're imported!

Manage staged MARC records › Batch 1

File name: koha_upload_ynoh.mrc
Comments: (none)
Type: Bibliographic records
Staged: 2019-09-15 17:45:03
Status: Imported
Matching rule applied: No matching rule in effect
Action if matching record found: Add incoming record
Action if no match found: Add incoming record
Item processing: Always add items

[Undo import into catalog](#)

Completed import of records

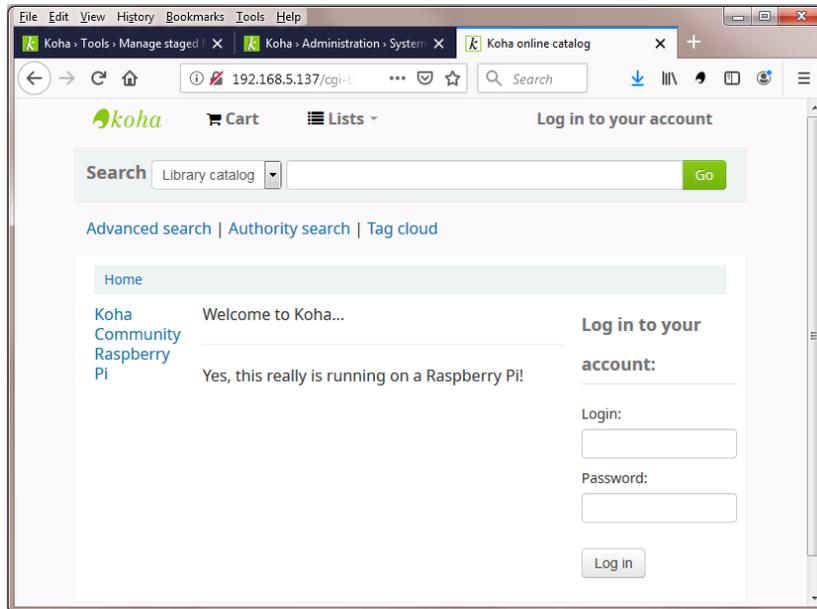
Number of records added	105
Number of records updated	0
Number of records ignored	0
Number of items added	0
Number of items replaced	0
Number of items ignored because of duplicate barcode	0

Showing 1 to 20 of 105 Show 20 entries First Previous 1 2 3 4 5 ... 9 Next Last

#	Citation	Status	Match type	Match details	Diff	Record
1	Clinical ethics: a practical approach to ethical decisions in clinical medicine / Jonsen, Albert R. (0022612602)	Imported	No match			1
2	Clinical ethics : Jonsen, Albert R. (0071441999)	Imported	No match			2
3	Clinical ethics : Jonsen, Albert R. (0071441999)	Imported	No match			3
4	Care at the close of life : (0071637958)	Imported	No match			4
5	Classic cases in medical ethics : Penoe, Gregory E. (0079536737)	Imported	No match			5
6	Death: the final stage of growth (0131970127)	Imported	No match			6
7	Breast cancer : Kuhnel, Rose. (0151225059)	Imported	No match			7
8	For the patient's good : Pellegrino, Edmund D., (0195043197)	Imported	No match			8

Slide 75

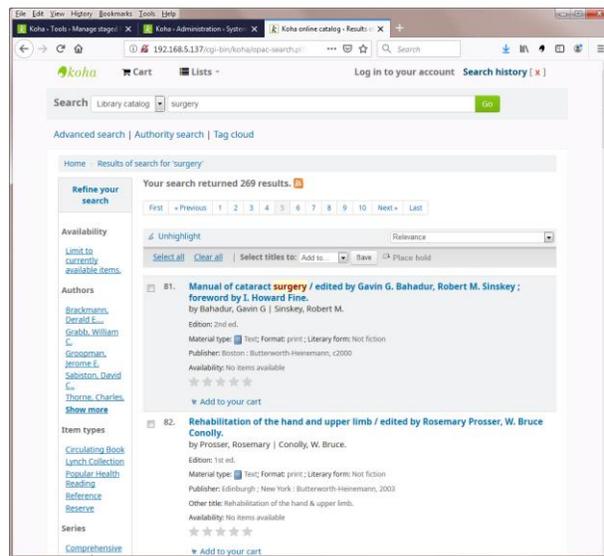
But can you search it?



That's a fairly bare home OPAC screen, but you can change it. At this point, I had loaded all the MARC records into the system.

Slide 76

Yes you can!



Not surprisingly for a medical library, the keyword “surgery” brings up a lot of titles.

Slide 77

That's all for now...

