

CREATING AN ENHANCED WEB INTERFACE FOR THE NCNR DATA REPOSITORY

By: Eesha Kaul













































Mentored by Brian Maranville, PhD

The image shows a large, bold, black NIST logo centered in a white rectangular area. The logo is set against a background of blue geometric shapes: a light blue vertical bar on the right and a dark blue square on the bottom left.

UTILIZING PHP, JAVASCRIPT, HTML & CSS TO CREATE THE INTERFACE

As seen on the right, the original database is very complex and has millions of important files of data taken at the NIST Center for Neutron Research.

Index of /pub/ncnrdata

<u>Name</u>	<u>Last modified</u>	<u>Size</u>	<u>Description</u>
 Parent Directory		-	
 ancillary/	13-Jun-2019 11:37	-	
 bt1/	22-May-2019 09:22	-	
 bt2/	20-Oct-2008 16:35	-	
 bt4/	22-May-2019 09:26	-	
 bt5/	22-May-2019 09:16	-	
 bt7/	22-May-2019 09:20	-	
 bt8/	22-May-2019 10:44	-	
 bt9/	07-May-2012 17:41	-	
 candor/	23-May-2019 12:08	-	
 cg1/	07-May-2012 17:41	-	
 cgd/	27-Jun-2019 11:45	-	
 dcs/	27-Jun-2019 11:45	-	
 hfbs/	27-Jun-2019 11:45	-	
 macs/	22-May-2019 10:24	-	
 Parent Directory		-	
 AQIV00_16768.cgd	21-Jun-2019 15:10	740	
 AQIV00_16769.cgd	21-Jun-2019 15:12	1.8K	
 AQIV00_16770.cgd	21-Jun-2019 15:40	3.4K	
 AQIV00_16771.cgd	21-Jun-2019 16:35	5.8K	
 AQIV00_16772.cgd	21-Jun-2019 18:21	5.8K	
 AQIV00_16773.cgd	21-Jun-2019 21:51	11K	
 AQIV00_16774.cgd	22-Jun-2019 02:08	7.0K	
 AQIV00_16775.cgd	22-Jun-2019 06:35	5.1K	
 AQIV00_16776.cgd	22-Jun-2019 06:38	1.8K	
 AQIV00_16781.cgd	22-Jun-2019 06:43	1.8K	
 AQIV00_16782.cgd	22-Jun-2019 06:50	1.3K	
 AQIV00_16783.cgd	22-Jun-2019 06:56	1.3K	
 AQIV00_16784.cgd	22-Jun-2019 07:09	1.3K	
 AQIV00_16785.cgd	22-Jun-2019 07:22	1.3K	
 AQIV00_16786.cgd	22-Jun-2019 07:32	1.2K	
 AQIV00_16787.cgd	22-Jun-2019 07:43	1.2K	
 AQIV00_16788.cgd	22-Jun-2019 08:04	1.7K	
 AQIV00_16789.cgd	22-Jun-2019 08:25	1.7K	
 AQIV00_16790.cgd	22-Jun-2019 08:46	1.2K	
 AQIV00_16791.cgd	22-Jun-2019 09:06	1.2K	
 AQIV00_16792.cgd	22-Jun-2019 09:49	1.4K	
 AQIV00_16793.cgd	22-Jun-2019 10:32	1.4K	
 AQIV00_16794.cgd	22-Jun-2019 10:34	1.8K	
 AQIV00_16799.cgd	22-Jun-2019 10:40	1.8K	
 AQIV00_16800.cgd	22-Jun-2019 11:51	4.1K	
 AQIV00_16801.cgd	22-Jun-2019 11:53	1.8K	
 AQIV00_16806.cgd	22-Jun-2019 11:59	1.8K	
 AQIV00_16807.cgd	22-Jun-2019 12:17	1.6K	

WHAT DATA IS COLLECTED AT NCNR?

❖ Scientists at NCNR, as well as guest researchers, utilize the beam time of the nuclear reactor found at this facility. Their data is collected into the data repository and used to create publications and innovations. Some of these include:

- The Design and Research of YInMn, the first blue pigment in 200 years (Mas Subramanian, Oregon State)
- Megasupramolecules for safer, cleaner fuel by end association of long telechelic polymers. (Julia Kornfield, California Institute for Technology)
- Archaeological Neutron Activation with Mayan-area Ceramics & Trade Routes (Ron Bishop, Smithsonian Institution)

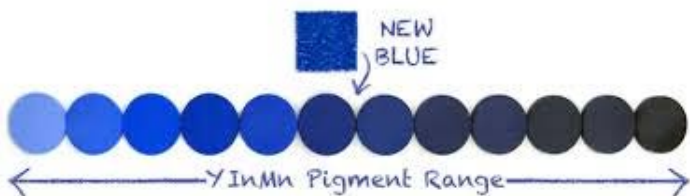
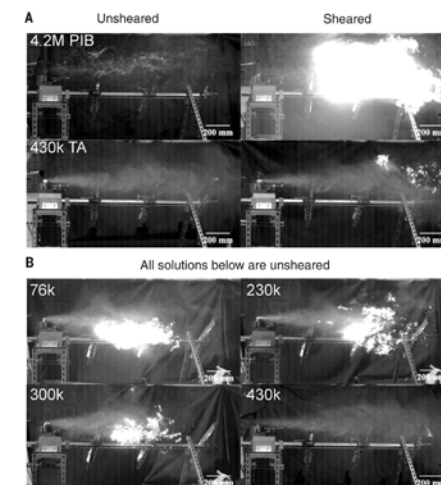


Photo credits: Ronald L. Bishop



GOALS

Create

- Create a working interface that can be applied to the current data repository

Develop

- Develop a functioning 'Download All' Button

Utilize

- Utilize CSS to create elements & style the interface

Allow

- Allow easier and more direct access to the data of the NIST Center for Neutron Research

STEP ONE: CREATING A DIRECTORY

- ❖ Utilized an index.php file to create the directory
- ❖ Using PHP allowed the path of each folder and file to be sorted and printed in the table.
- ❖ The main directory of several NCNR instrument leads into separate folders and into files of certain experiments.

Download All Files 12 files

File Name	File Type	File Size	Last Modified
README.md	file	17 B	June 26, 2019 - 10:44:23
htmltest.txt	file	518 B	June 27, 2019 - 13:42:36
index.php	file	3160 B	July 31, 2019 - 15:55:35
ncnrdata	dir	512 B	June 26, 2019 - 10:56:15
phpwork	dir	512 B	June 24, 2019 - 10:10:12
server.php	file	38 B	June 25, 2019 - 11:18:06
style.css	file	1160 B	July 30, 2019 - 09:33:34
viewers	dir	512 B	June 20, 2019 - 17:09:50

File Name	File Type	File Size	Last Modified
24614	dir	512 B	June 26, 2019 - 11:02:54
25085	dir	512 B	June 26, 2019 - 11:03:02
25099	dir	512 B	June 26, 2019 - 11:03:11

File Name	File Type	File Size	Last Modified
console	dir	512 B	June 26, 2019 - 11:02:52
data	dir	512 B	June 26, 2019 - 11:03:02

Download All Files 924 files

File Name	File Type	File Size	Last Modified
AQIV0016768.nxz.cgd	file	164750 B	June 26, 2019 - 11:02:54
AQIV0016769.nxz.cgd	file	165973 B	June 26, 2019 - 11:02:54
AQIV0016770.nxz.cgd	file	172384 B	June 26, 2019 - 11:02:54
AQIV0016771.nxz.cgd	file	175680 B	June 26, 2019 - 11:03:00
AQIV0016772.nxz.cgd	file	180992 B	June 26, 2019 - 11:02:54
AQIV0016773.nxz.cgd	file	196439 B	June 26, 2019 - 11:02:54
AQIV0016774.nxz.cgd	file	198626 B	June 26, 2019 - 11:03:02
AQIV0016775.nxz.cgd	file	196426 B	June 26, 2019 - 11:03:01
AQIV0016776.nxz.cgd	file	165992 B	June 26, 2019 - 11:02:54
AQIV0016781.nxz.cgd	file	166152 B	June 26, 2019 - 11:03:01
AQIV0016782.nxz.cgd	file	166800 B	June 26, 2019 - 11:02:54
AQIV0016783.nxz.cgd	file	166706 B	June 26, 2019 - 11:03:00
AQIV0016784.nxz.cgd	file	168049 B	June 26, 2019 - 11:03:02
AQIV0016785.nxz.cgd	file	168130 B	June 26, 2019 - 11:02:59
AQIV0016786.nxz.cgd	file	167569 B	June 26, 2019 - 11:03:00
AQIV0016787.nxz.cgd	file	167606 B	June 26, 2019 - 11:03:00
AQIV0016788.nxz.cgd	file	169973 B	June 26, 2019 - 11:03:00
AQIV0016789.nxz.cgd	file	170062 B	June 26, 2019 - 11:03:00
AQIV0016790.nxz.cgd	file	168549 B	June 26, 2019 - 11:03:02
AQIV0016791.nxz.cgd	file	168680 B	June 26, 2019 - 11:02:54
AQIV0016792.nxz.cgd	file	170740 B	June 26, 2019 - 11:02:54
AQIV0016793.nxz.cgd	file	170798 B	June 26, 2019 - 11:02:54
AQIV0016794.nxz.cgd	file	166327 B	June 26, 2019 - 11:03:00
AQIV0016799.nxz.cgd	file	166119 B	June 26, 2019 - 11:02:59

STEP TWO: ADDING FILE TYPE, SIZE & HOW MANY FILES

❖ In the directory, I included:

- File Type
- File Size (How many bytes is the file or folder?)
- Number of Total Files in a Folder

❖ These aspects decrease confusion & help the user determine what they need to download

File Name	File Type	File Size	Last Modified
AQIV0016768.nxz.cgd	file	164750 B	June 26, 2019 - 11:02:54
AQIV0016769.nxz.cgd	file	165973 B	June 26, 2019 - 11:02:54
AQIV0016770.nxz.cgd	file	172384 B	June 26, 2019 - 11:02:54
AQIV0016771.nxz.cgd	file	175680 B	June 26, 2019 - 11:03:00
AQIV0016772.nxz.cgd	file	180992 B	June 26, 2019 - 11:02:54
AQIV0016773.nxz.cgd	file	196439 B	June 26, 2019 - 11:02:54
AQIV0016774.nxz.cgd	file	198626 B	June 26, 2019 - 11:03:02
AQIV0016775.nxz.cgd	file	196426 B	June 26, 2019 - 11:03:01
AQIV0016776.nxz.cgd	file	165992 B	June 26, 2019 - 11:02:54
AQIV0016781.nxz.cgd	file	166152 B	June 26, 2019 - 11:03:01
AQIV0016782.nxz.cgd	file	166800 B	June 26, 2019 - 11:02:54
AQIV0016783.nxz.cgd	file	166706 B	June 26, 2019 - 11:03:00
AQIV0016784.nxz.cgd	file	168049 B	June 26, 2019 - 11:03:02
AQIV0016785.nxz.cgd	file	168130 B	June 26, 2019 - 11:02:59
AQIV0016786.nxz.cgd	file	167569 B	June 26, 2019 - 11:03:00
AQIV0016787.nxz.cgd	file	167606 B	June 26, 2019 - 11:03:00
AQIV0016788.nxz.cgd	file	169973 B	June 26, 2019 - 11:03:00
AQIV0016789.nxz.cgd	file	170062 B	June 26, 2019 - 11:03:00
AQIV0016790.nxz.cgd	file	168549 B	June 26, 2019 - 11:03:02
AQIV0016791.nxz.cgd	file	168680 B	June 26, 2019 - 11:02:54
AQIV0016792.nxz.cgd	file	170740 B	June 26, 2019 - 11:02:54
AQIV0016793.nxz.cgd	file	170798 B	June 26, 2019 - 11:02:54
AQIV0016794.nxz.cgd	file	166327 B	June 26, 2019 - 11:03:00
AQIV0016799.nxz.cgd	file	166119 B	June 26, 2019 - 11:02:59

STEP THREE: 'LAST MODIFIED' SECTION

- ❖ Utilized 'filemtime' to find the modification date and time of each file
- ❖ Allows user to see when each file was last modified and choose which files they want

File Name	File Type	File Size	Last Modified
README.md	file	17 B	June 26, 2019 - 10:44:23
htmltest.txt	file	518 B	June 27, 2019 - 13:42:36
index.php	file	3159 B	July 31, 2019 - 14:00:26
ncnrdata	dir	512 B	June 26, 2019 - 10:56:15
phpwork	dir	512 B	June 24, 2019 - 10:10:12
server.php	file	38 B	June 25, 2019 - 11:18:06
style.css	file	1160 B	July 30, 2019 - 09:33:34
viewers	dir	512 B	June 20, 2019 - 17:09:50

STEP FOUR: UTILIZING CSS

NIST Center for Neutron Research Data Directory

You will find the file and folder names below:

Download All Files 12 files

File Name	File Type	File Size	Last Modified
README.md	file	17 B	June 26, 2019 - 10:44:23
htmltest.txt	file	518 B	June 27, 2019 - 13:42:36
index.php	file	3160 B	July 31, 2019 - 15:55:35
ncnrdata	dir	512 B	June 26, 2019 - 10:56:15
phpwork	dir	512 B	June 24, 2019 - 10:10:12
server.php	file	38 B	June 25, 2019 - 11:18:06
style.css	file	1160 B	July 30, 2019 - 09:33:34
viewers	dir	512 B	June 20, 2019 - 17:09:50

NIST is an agency of the [U.S. Department of Commerce](#).

- ❖ With an External Style Sheet, I was able to alter the design of the website and include more design aspects such as different fonts, colors and a hover highlight.

BEFORE & AFTER

Index of /pub/ncnrdata

Name	Last modified	Size	Description
Parent Directory		-	
ancillary/	13-Jun-2019 11:37	-	
bt1/	18-Jul-2019 12:12	-	
bt2/	20-Oct-2008 16:35	-	
bt4/	18-Jul-2019 12:38	-	
bt5/	18-Jul-2019 01:10	-	
bt7/	18-Jul-2019 12:18	-	
bt8/	18-Jul-2019 17:50	-	
bt9/	07-May-2012 17:41	-	
candor/	18-Jul-2019 15:34	-	
cgl/	07-May-2012 17:41	-	
cgd/	08-Aug-2019 09:15	-	
dcs/	08-Aug-2019 09:15	-	
hfbs/	08-Aug-2019 09:15	-	
macs/	18-Jul-2019 12:00	-	
magik/	08-Aug-2019 09:15	-	
ng1/	24-Feb-2011 10:15	-	
ng3sans/	03-Dec-2018 14:59	-	
ng5/	18-Jul-2019 13:04	-	
ng7/	08-Aug-2019 09:15	-	
ng7sans/	08-Aug-2019 09:15	-	
ngb30sans/	08-Aug-2019 09:15	-	
ngbsans/	08-Aug-2019 09:15	-	
ngd/	08-Aug-2019 09:15	-	
nse/	08-Aug-2019 09:15	-	
pbr/	08-Aug-2019 09:15	-	
phades/	08-Aug-2019 09:15	-	
vsans/	08-Aug-2019 09:15	-	
xr0/	11-Oct-2008 14:28	-	

NIST Center for Neutron Research Data Directory

You will find the file and folder names below:

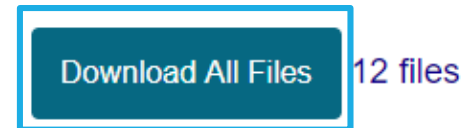
Download ALL Files: 3 files

File Name	File Type	File Size	Last Modified
ancillary	dir	86 B	June 13, 2019 15:35:03
bt1	dir	8192 B	July 18, 2019 16:10:03
bt2	dir	4096 B	August 18, 2005 18:48:43
bt4	dir	8192 B	July 18, 2019 16:34:04
bt5	dir	4096 B	July 18, 2019 05:08:26
bt7	dir	4096 B	July 18, 2019 16:16:09
bt8	dir	8192 B	July 18, 2019 21:48:06
bt9	dir	4096 B	February 24, 2011 15:12:07
candor	dir	46 B	July 18, 2019 19:28:29
cgl	dir	4096 B	February 24, 2011 15:12:46
cgd	dir	4096 B	July 18, 2019 16:42:12
dcs	dir	4096 B	July 18, 2019 16:28:23
fcs	dir	4096 B	July 06, 2007 19:27:05
hfbs	dir	4096 B	July 18, 2019 16:28:24
macs	dir	4096 B	July 18, 2019 15:58:09
magik	dir	4096 B	December 04, 2017 22:07:26
manifest	dir	61440 B	July 18, 2019 04:00:36
ng1	dir	4096 B	February 24, 2011 15:12:47
ng3sans	dir	4096 B	December 03, 2018 19:59:14
ng5	dir	8192 B	July 18, 2019 16:30:08
ng7	dir	8192 B	July 18, 2019 16:42:11
ng7sans	dir	4096 B	July 18, 2019 14:29:31
ngb30sans	dir	4096 B	July 18, 2019 16:50:24
ngbsans	dir	4096 B	July 18, 2019 15:34:18
ngd	dir	4096 B	July 18, 2019 16:36:14
nse	dir	4096 B	July 18, 2019 16:02:15
pbr	dir	4096 B	December 05, 2017 07:56:05
phades	dir	4096 B	July 19, 2019 18:22:25
vsans	dir	4096 B	July 18, 2019 14:01:44
xr0	dir	4096 B	October 10, 2002 20:12:13

STEP FIVE: DEVELOPING A 'DOWNLOAD ALL' BUTTON

- ❖ Download Button allows users to download all files in the selected folder
- ❖ Utilized JavaScript to create button
- ❖ Use of JQuery allows files to run a function that goes through the files and downloads a copy of each file on the user's computer

You will find the file and folder names below:



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viewers	dir	512 B	June 20, 2019 - 17:09:50



ACKNOWLEDGEMENTS

❖ This project was completed with the help and funding of many individuals and foundations:

- My mentor, Brian Maranville
- The SHIP directors of NCNR: Julie Borchers, Joe Dura & Yamali Hernandez
- The other SHIP mentors: Heather Chen-Mayer, Jacob Lamanna, Markus Bleuel, Ryan Need, Wei Zhou & William Ratcliff
- The National Science Foundation, the National Institute for Standards and Technology, the NIST Center for Neutron Research & the Center for High Resolution Neutron Scattering



NIST



QUESTIONS?

