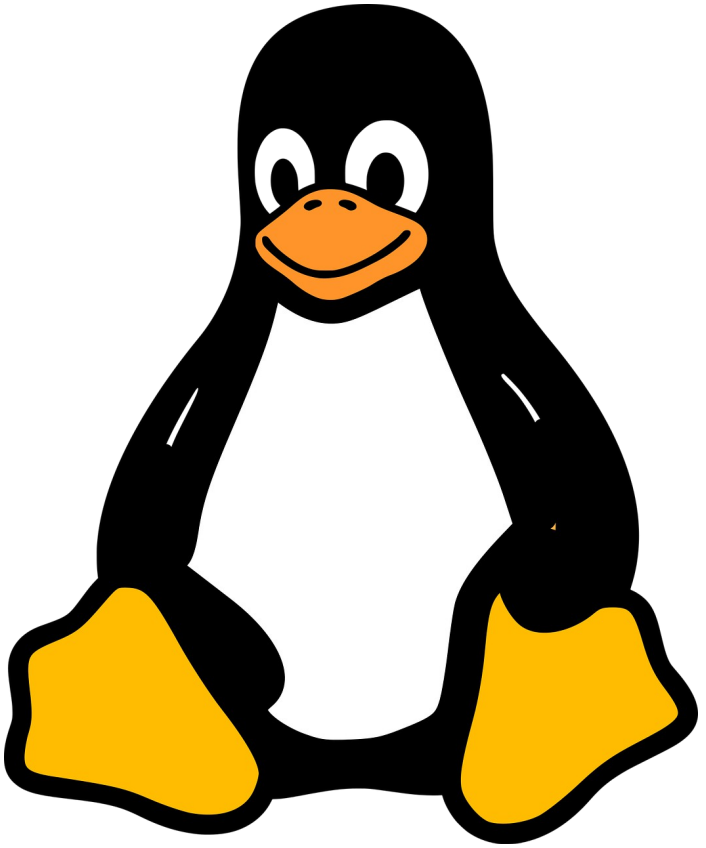
HackerFrogs Afterschool Linux Basics /w TryHackMe

Class:
Linux OS Operations

Workshop Number:
AS-LIN-03

Document Version:
1.2

Special Requirements:
None

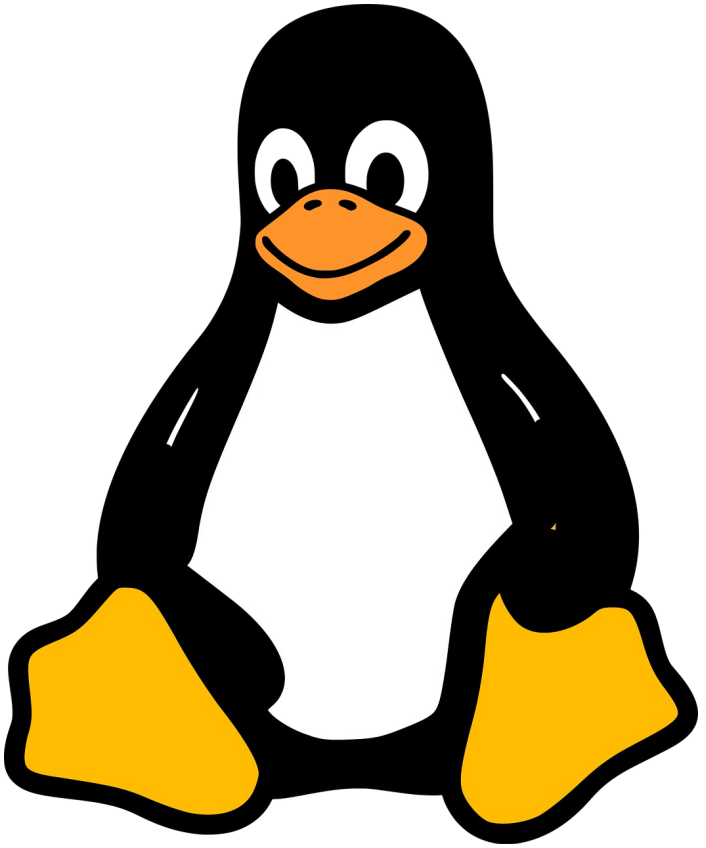


What We Learned In The Previous Workshop

Hey there HackerFrogs!

This is the third intro to Linux OS Operations workshop.

In the previous workshop we learned about the following Linux commands:

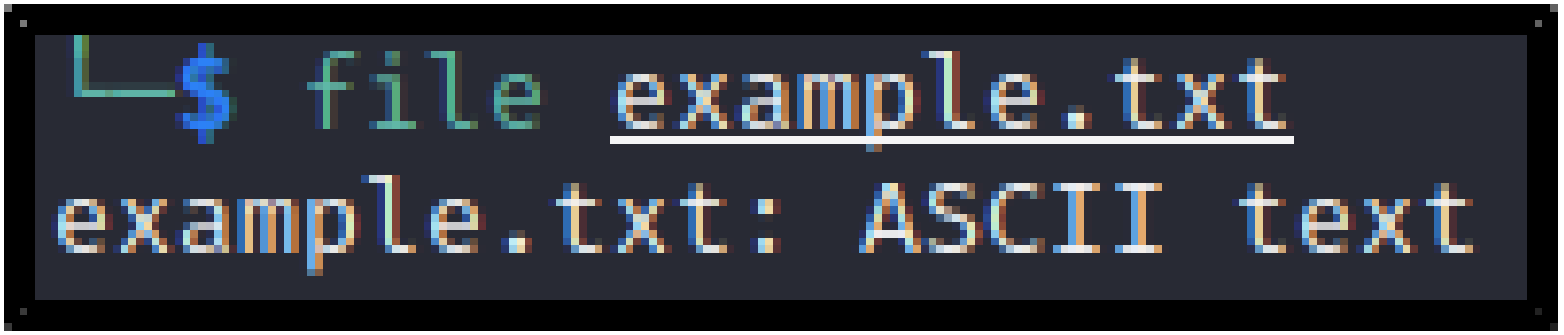


File Command

The File command identifies the type of contents for a specified file. The file name must be supplied as an argument to the File command.

E.g., `file picture.jpg`

File Command



Find Command

The Find command is used to search for files on the system. It can used with many different arguments and flags to refine the search parameters.

Grep Command

The Grep command searches within the contents of files for specified strings. It is very commonly used to pick out specific words or phrases.

Grep Command

The Grep command searches within the contents of files for specified strings. It is very commonly used to pick out specific words or phrases.

Let's Continue Where We Left Off!

Open your command line interface (CLI) terminal, then navigate to the following URL in a web browser:

https://overthewire.org/wargames/bandit/bandit9.html

Sort Command

The Sort command takes all of the lines contained within a given file and returns them in alphabetical / numerical order.

Sort Command

1 – The command itself

2 – The input to be sorted

Sort Command

1 – The command itself

2 – The input to be sorted

Sort Command

1 – The command itself

2 – The input to be sorted

Uniq Command

The Uniq command takes all of the lines in a file and removes any lines with identical contents to the one above it. This command is very useful for removing consecutive blank lines in a given file

Uniq Command

1 – The command itself

2 – The count flag

3 – The file to be processed

Uniq Command

1 – The command itself

2 – The count flag

3 – The file to be processed

Uniq Command

1 – The command itself

2 – The count flag

3 – The file to be processed

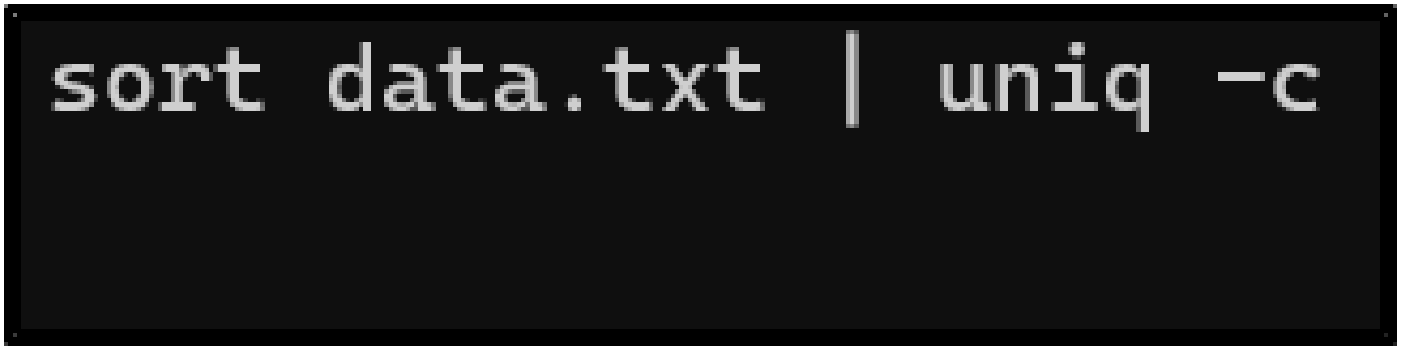
Uniq Command

1 – The command itself

2 – The count flag

3 – The file to be processed

Command Piping



In Linux, command piping is the process of passing the output of one command into the input of a second command.

Command Piping

```
sort data.txt | uniq -c
```

This is a very useful feature, because it allows commands to be chained together to achieve a lot of flexible output.

Command Piping

1 – The first command
2 – The first command's input
3 – The pipe
4 – The second command
5 – The second command's switch

Command Piping

1 – The first command
2 – The first command's input
3 – The pipe
4 – The second command
5 – The second command's switch

Command Piping

1 – The first command
2 – The first command's input
3 – The pipe
4 – The second command
5 – The second command's switch

Command Piping

1 – The first command
2 – The first command's input
3 – The pipe
4 – The second command
5 – The second command's switch

Command Piping

1 – The first command
2 – The first command's input
3 – The pipe
4 – The second command
5 – The second command's switch

Command Piping

1 – The first command
2 – The first command's input
3 – The pipe
4 – The second command
5 – The second command's switch

Binary Data and Text Strings

The contents of most computer files can be roughly divided into two types:

Binary Data – Which is intended to be read by software

Text Strings – Which is intended to be read by humans

Binary Data and Text Strings

The contents of most computer files can be roughly divided into two types:

Binary Data – Which is intended to be read by software

Text Strings – Which is intended to be read by humans

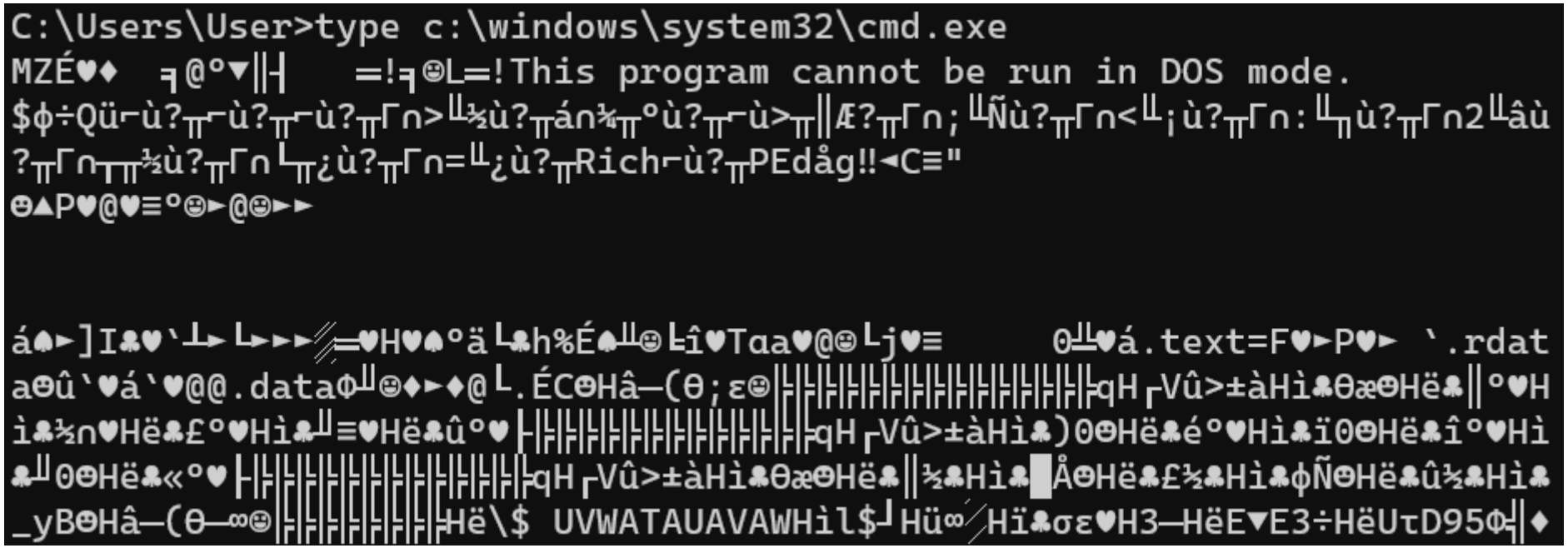
Binary Data and Text Strings

The contents of most computer files can be roughly divided into two types:

Binary Data – Which is intended to be read by software

Text Strings – Which is intended to be read by humans

Binary Data and Text Strings



Files containing binary data will output gibberish when read from the CLI console.

Strings Command

The Strings command is used to return human-readable text from files. It is often used to find text inside of files that also contain both text and binary data.

Strings Command

1 – The command itself

2 – The file to extract strings from

Strings Command

1 – The command itself

2 – The file to extract strings from

Strings Command

1 – The command itself

2 – The file to extract strings from

Base64 Command

The Base64 command encodes / decodes data according to the Base64 codec. It is often used to convert data for transmission across computer networks.

0	A	16	Q	32	g	48	w
1	B	17	R	33	h	49	x
2	C	18	S	34	I	50	y
3	D	19	T	35	j	51	z
4	E	20	U	36	k	52	0
5	F	21	V	37	l	53	1
6	G	22	W	38	m	54	2
7	H	23	X	39	n	55	3
8	I	24	Y	40	o	56	4
9	J	25	Z	41	p	57	5
10	K	26	a	42	q	58	6
11	L	27	b	43	r	59	7
12	M	28	c	44	s	60	8
13	N	29	d	45	t	61	9
14	O	30	e	46	u	62	+
15	P	31	f	47	v	63	/

Base64 Command

The characters used in Base 64 encoding are shown here. Note that all Base 64 encoded strings must consist of a number of characters that is divisible by 4.

0	A	16	Q	32	g	48	w
1	B	17	R	33	h	49	x
2	C	18	S	34	I	50	y
3	D	19	T	35	j	51	z
4	E	20	U	36	k	52	0
5	F	21	V	37	l	53	1
6	G	22	W	38	m	54	2
7	H	23	X	39	n	55	3
8	I	24	Y	40	o	56	4
9	J	25	Z	41	p	57	5
10	K	26	a	42	q	58	6
11	L	27	b	43	r	59	7
12	M	28	c	44	s	60	8
13	N	29	d	45	t	61	9
14	O	30	e	46	u	62	+
15	P	31	f	47	v	63	/

Base64 Command

```
└─$ echo -n password | base64
cGFzc3dvcmQ=
```

In cases where an encoded string is not divisible by 4, the encoding process will “pad out” the string with equal symbols until the string is divisible by 4.

Base64 Command

1 – The command itself

2 – The decode switch

3 – The file to be operated upon

Base64 Command

1 – The command itself

2 – The decode switch

3 – The file to be operated upon

Base64 Command

1 – The command itself

2 – The decode switch

3 – The file to be operated upon

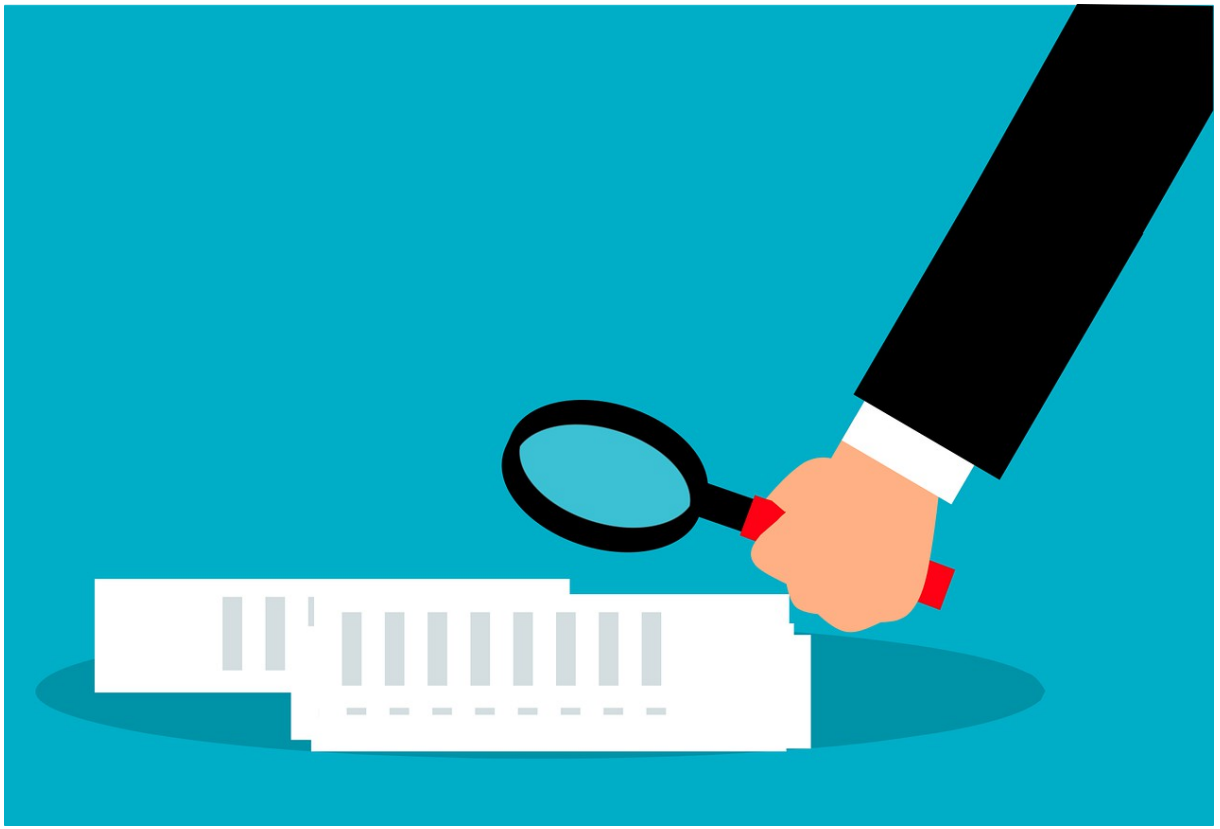
Base64 Command

1 – The command itself

2 – The decode switch

3 – The file to be operated upon

Summary



Let's review the Linux commands we learned in this workshop:

Sort Command

The Sort command takes all of the lines contained within a given file and returns them in alphabetical / numerical order.

Uniq Command

The Uniq command takes all of the lines in a file and removes any lines with identical contents to the one above it. This command is very useful for removing consecutive blank lines in a given file

Command Piping

Command piping is the process of passing the output of one command into the input of a second command (via use of the Linux pipe | character)

Strings Command

The Strings command is used to return human-readable text from files. It is often used to find text inside of files that also contain both text and binary data.

Base64 Command

The Base64 command encodes / decodes data according to the Base64 codec format. It is often used to convert data for transmission across computer networks.

0	A	16	Q	32	g	48	w
1	B	17	R	33	h	49	x
2	C	18	S	34	I	50	y
3	D	19	T	35	j	51	z
4	E	20	U	36	k	52	0
5	F	21	V	37	l	53	1
6	G	22	W	38	m	54	2
7	H	23	X	39	n	55	3
8	I	24	Y	40	o	56	4
9	J	25	Z	41	p	57	5
10	K	26	a	42	q	58	6
11	L	27	b	43	r	59	7
12	M	28	c	44	s	60	8
13	N	29	d	45	t	61	9
14	O	30	e	46	u	62	+
15	P	31	f	47	v	63	/

What's Next?

In the next Linux OS operations workshop, we'll Switch gears and learn with the Linux Fundamentals room at the TryHackMe education platform.

Try Hack Me

Extra Credit

Looking for more study material on this workshop's topics?

See this video's description for links to supplemental documents and exercises!

Until Next Time, HackerFrogs!