

## Bash Command Tutorial 3

We're really cooking now. Let's practice some more advanced file commands. But first, we need something to work with.

Make a new folder with `mkdir` and move into it with `cd`. Call it whatever you want, I'll just call mine "practice".

One thing to remember moving forward: Linux is case-sensitive, so "**practice**" and "**Practice**" would be considered different folders. This is *not* the case on Windows, so it may take some getting used to.

We're going to download a real text file using the "wget" command. This grabs a file from the internet and saves it to your current directory. Run this:

```
wget https://www.gutenberg.org/cache/epub/1661/pg1661.txt
```

This file contains the full text of *The Adventures of Sherlock Holmes*. Once it finishes downloading, run `ls` and you should see `pg1661.txt`.

We grabbed this longer file so we can practice some new commands. For example, "head" shows the first 10 lines of a text file:

```
head pg1661.txt
```

And "tail" shows the last 10 lines:

```
tail pg1661.txt
```

The file is so long that "cat" won't show us the entire thing; it will flood the terminal. But we can scroll through the file one line at a time with "less".

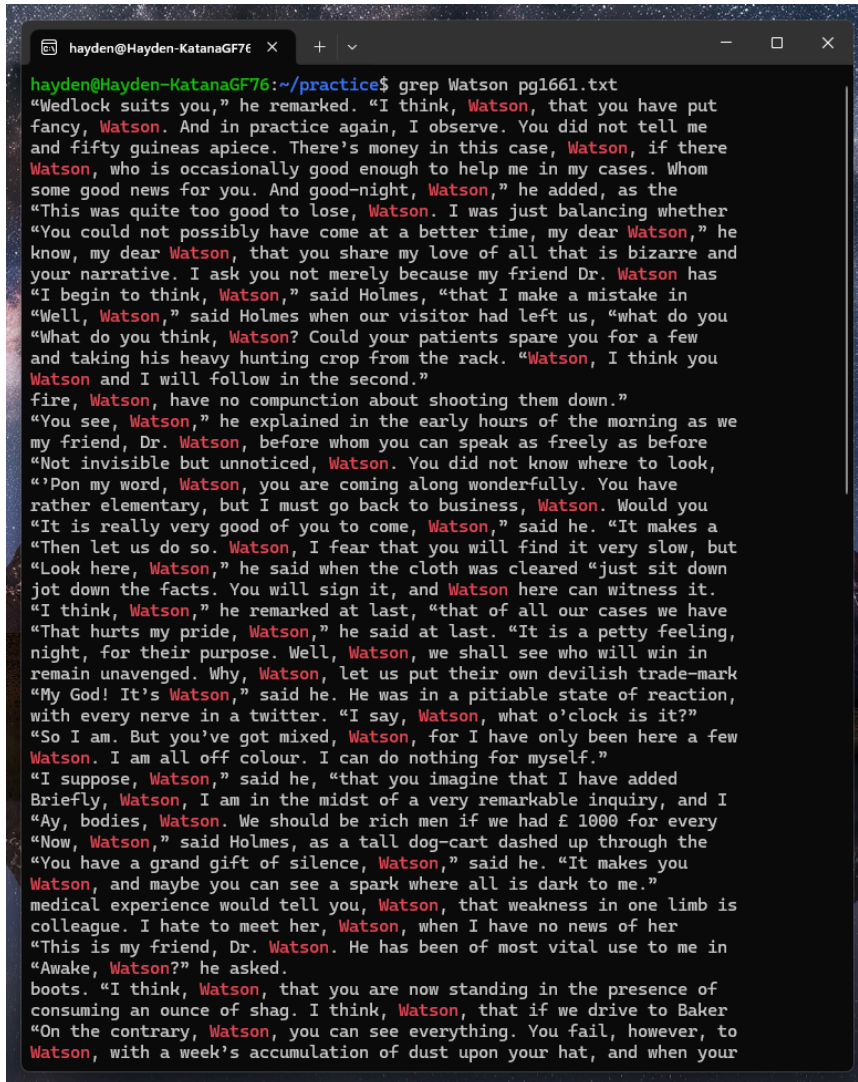
```
less pg1661.txt
```

Use the arrow keys to move up and down. Press "q" to quit when you're done.

Now let's search the file using "grep". For example, if you want to find every line that mentions Watson:

```
grep Watson pg1661.txt
```

You should see this:

A terminal window with a dark background and light blue text. The window title is 'hayden@Hayden-KatanaGF76'. The prompt is 'hayden@Hayden-KatanaGF76:~/practice\$'. The command entered is 'grep Watson pgl661.txt'. The output is a large block of text from a file, where every occurrence of the word 'Watson' is highlighted in red. The text is a dialogue between Sherlock Holmes and Dr. Watson, starting with 'Wedlock suits you,' and ending with 'On the contrary, Watson, you can see everything. You fail, however, to Watson, with a week's accumulation of dust upon your hat, and when your'.

```
hayden@Hayden-KatanaGF76:~/practice$ grep Watson pgl661.txt
"Wedlock suits you," he remarked. "I think, Watson, that you have put
fancy, Watson. And in practice again, I observe. You did not tell me
and fifty guineas apiece. There's money in this case, Watson, if there
Watson, who is occasionally good enough to help me in my cases. Whom
some good news for you. And good-night, Watson," he added, as the
"This was quite too good to lose, Watson. I was just balancing whether
"You could not possibly have come at a better time, my dear Watson," he
know, my dear Watson, that you share my love of all that is bizarre and
your narrative. I ask you not merely because my friend Dr. Watson has
"I begin to think, Watson," said Holmes, "that I make a mistake in
"Well, Watson," said Holmes when our visitor had left us, "what do you
"What do you think, Watson? Could your patients spare you for a few
and taking his heavy hunting crop from the rack. "Watson, I think you
Watson and I will follow in the second."
fire, Watson, have no compunction about shooting them down."
"You see, Watson," he explained in the early hours of the morning as we
my friend, Dr. Watson, before whom you can speak as freely as before
"Not invisible but unnoticed, Watson. You did not know where to look,
"Pon my word, Watson, you are coming along wonderfully. You have
rather elementary, but I must go back to business, Watson. Would you
"It is really very good of you to come, Watson," said he. "It makes a
"Then let us do so. Watson, I fear that you will find it very slow, but
"Look here, Watson," he said when the cloth was cleared "just sit down
jot down the facts. You will sign it, and Watson here can witness it.
"I think, Watson," he remarked at last, "that of all our cases we have
"That hurts my pride, Watson," he said at last. "It is a petty feeling,
night, for their purpose. Well, Watson, we shall see who will win in
remain unavenged. Why, Watson, let us put their own devilish trade-mark
"My God! It's Watson," said he. He was in a pitiable state of reaction,
with every nerve in a twitter. "I say, Watson, what o'clock is it?"
"So I am. But you've got mixed, Watson, for I have only been here a few
Watson. I am all off colour. I can do nothing for myself."
"I suppose, Watson," said he, "that you imagine that I have added
Briefly, Watson, I am in the midst of a very remarkable inquiry, and I
"Ay, bodies, Watson. We should be rich men if we had £1000 for every
"Now, Watson," said Holmes, as a tall dog-cart dashed up through the
"You have a grand gift of silence, Watson," said he. "It makes you
Watson, and maybe you can see a spark where all is dark to me."
medical experience would tell you, Watson, that weakness in one limb is
colleague. I hate to meet her, Watson, when I have no news of her
"This is my friend, Dr. Watson. He has been of most vital use to me in
"Awake, Watson?" he asked.
boots. "I think, Watson, that you are now standing in the presence of
consuming an ounce of shag. I think, Watson, that if we drive to Baker
"On the contrary, Watson, you can see everything. You fail, however, to
Watson, with a week's accumulation of dust upon your hat, and when your
```

That's a lot of Watsons. If we use the "-c" flag we can count exactly how many Watsons there are.

```
grep -c Watson pgl661.txt
```

Looks like there are 81. Pretty cool!

Let's make a backup of the file by copying it with "cp".

```
cp pgl661.txt sherlock.txt
```

This makes a copy of pgl661.txt called sherlock.txt. Run **ls** to check that it worked (this should be a habit by now).

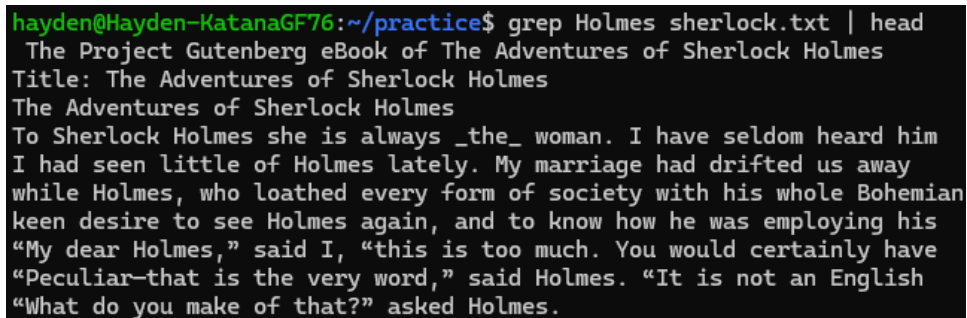
Now onto the really cool stuff.

This vertical bar **|** is called the “pipe” symbol. (It looks like a capital “i” or lowercase “l” but it’s actually the symbol above the Enter key.) It takes the output of one command and sends it as input to another command.

Let’s try it out. We’ll use “grep” on sherlock.txt to find lines with “Holmes”, then pipe that output into the “head” command.

```
grep Holmes sherlock.txt | head
```

This takes the output of “grep Holmes sherlock.txt” and feeds it to the “head” command. You should see something like this:

A terminal window with a dark background and light green text. The prompt is 'hayden@Hayden-KatanaGF76:~/practice\$'. The command entered is 'grep Holmes sherlock.txt | head'. The output shows the first few lines of 'sherlock.txt' that contain the word 'Holmes'.

```
hayden@Hayden-KatanaGF76:~/practice$ grep Holmes sherlock.txt | head
The Project Gutenberg eBook of The Adventures of Sherlock Holmes
Title: The Adventures of Sherlock Holmes
The Adventures of Sherlock Holmes
To Sherlock Holmes she is always _the_ woman. I have seldom heard him
I had seen little of Holmes lately. My marriage had drifted us away
while Holmes, who loathed every form of society with his whole Bohemian
keen desire to see Holmes again, and to know how he was employing his
“My dear Holmes,” said I, “this is too much. You would certainly have
“Peculiar—that is the very word,” said Holmes. “It is not an English
“What do you make of that?” asked Holmes.
```

Similarly, the greater-than symbol **>** saves the output of a command to a file. A single “>” will *overwrite* an existing file (or create a new one), and a double “>>” will *append* to the end of an existing file.

```
grep Holmes sherlock.txt > holmes.txt
```

This creates a new file “holmes.txt” that only contains the lines with the word “Holmes”. Check it with `head holmes.txt` to see what that looks like.

```
grep the sherlock.txt > holmes.txt
```

This overwrites “holmes.txt”, so it now contains only lines with the word “the”. Check it again and you’ll see that it’s been overwritten.

```
echo "And they all lived happily ever after." >> holmes.txt
```

This adds that line to the end of holmes.txt. Run `tail holmes.txt` to see if it worked.

Hopefully you can see the potential in these tools, they're very powerful!

Chaining commands like this is one reason developers and IT people love the command line.