Stanley George
ECE 460: Computer Operating Systems
Jeff Hakner
PS4: Fixing your cat

Hardware: (using lscpu command)

Architecture: i686
CPU op-mode(s):   32-bit, 64-bit
Byte Order: Little Endian
CPU(s):   2
On-line CPU(s) list: 0,1
Thread(s) per core: 1
Core(s) per socket: 2
Socket(s):   1
Vendor ID: GenuineIntel
CPU family: 6
Model: 15
Stepping: 13
CPU MHz: 1601.000
BogoMIPS: 3191.19
L1d cache: 32K
L1i cache: 32K
L2 cache: 2048K

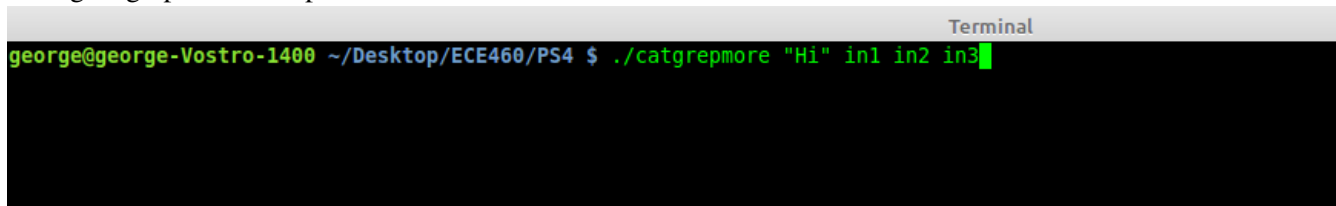**Operating System: (using uname -mrs)**

Linux 3.13.0-37-generic i686

Makefile:
```
catgrepmore:
   gcc -std=c99 -g catgrepmore.c -o catgrepmore
```

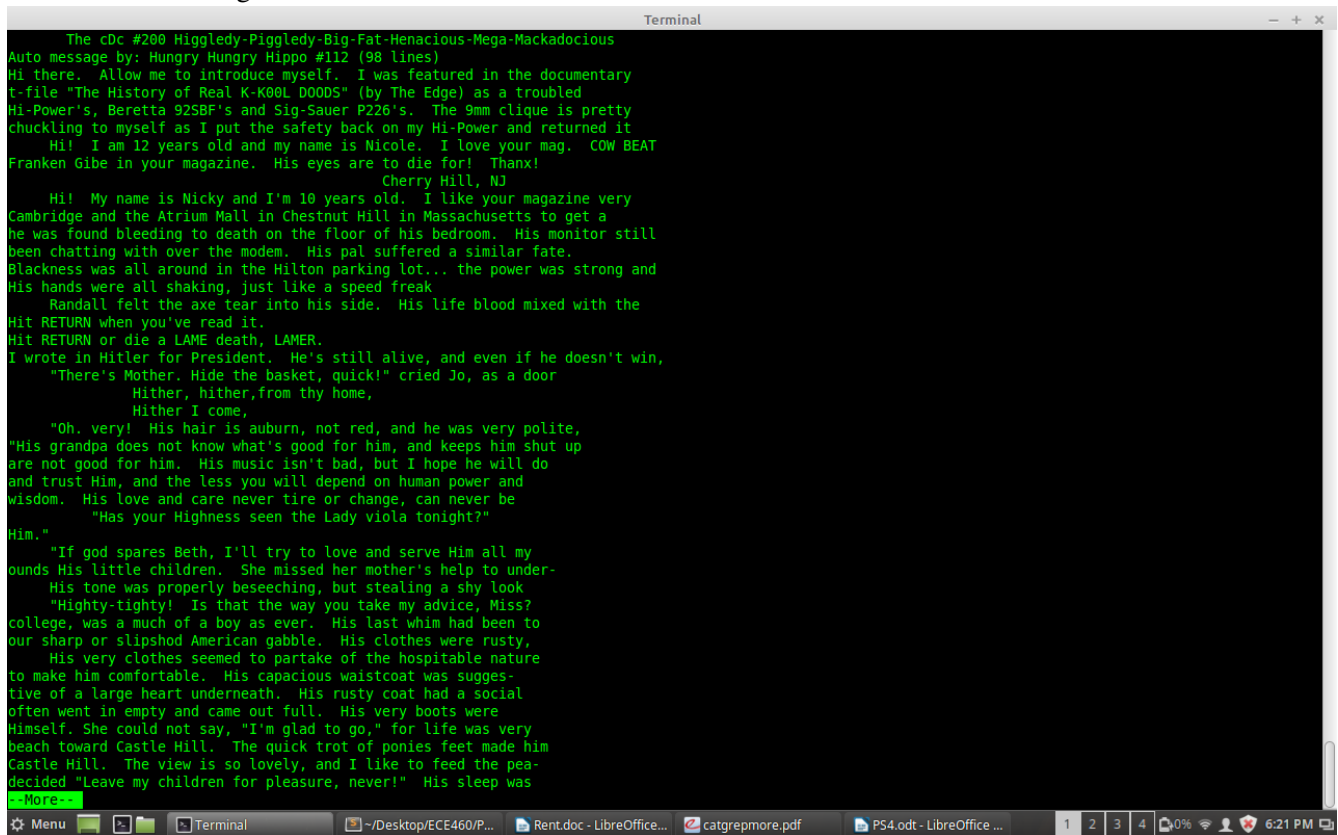**Notes:** The input files were a minimum of 2.5 MB and a maxiumum of 20 MB

Screenshots:

0) Running catgrepmore with pattern = "Hi":
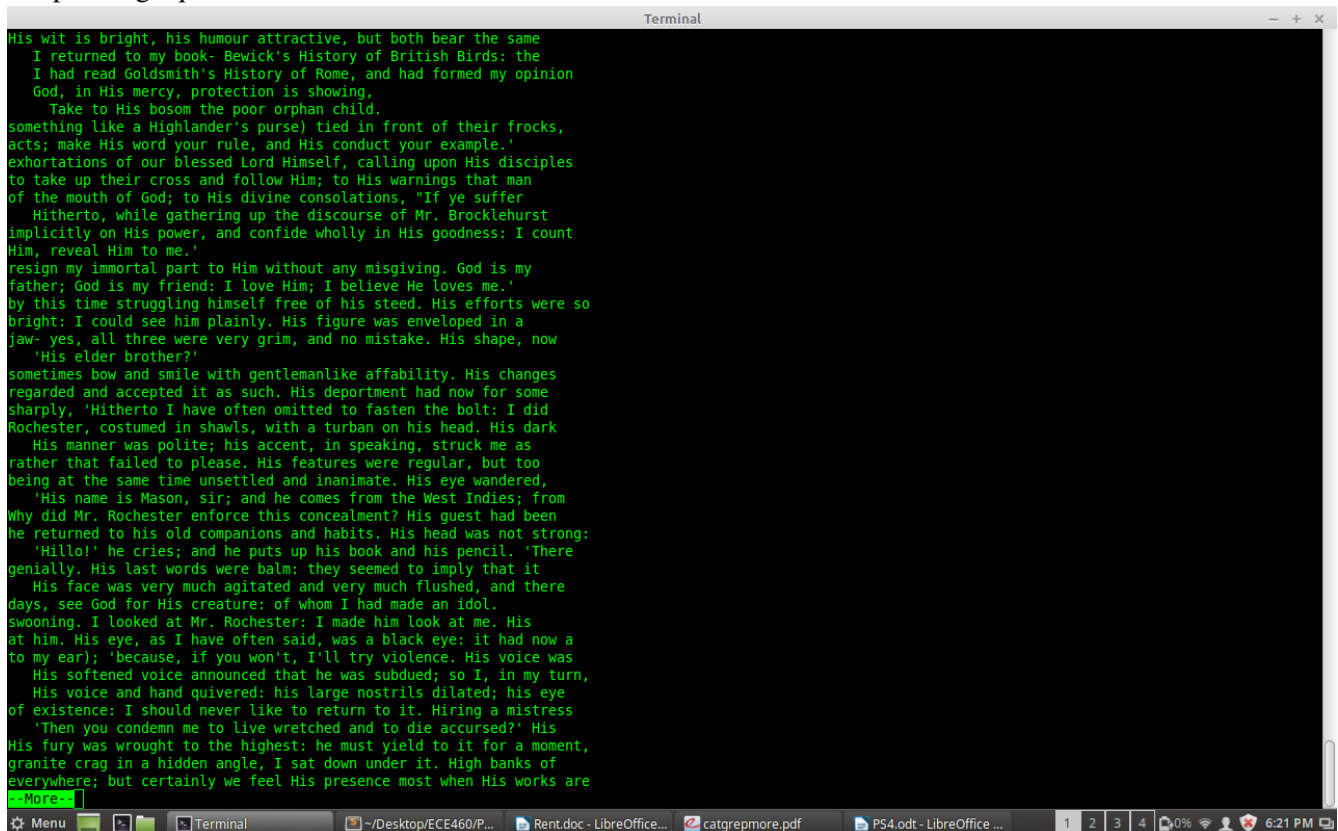
1) 1ˢᵗ screen after running above command:

```
                              Terminal                        - + x
        The cDc #200 Higgledy-Piggledy-Big-Fat-Henacious-Mega-Mackadocious
Auto message by: Hungry Hungry Hippo #112 (98 lines)
Hi there.  Allow me to introduce myself.  I was featured in the documentary
t-file "The History of Real K-K00L D00DS" (by The Edge) as a troubled
Hi-Power's, Beretta 92SBF's and Sig-Sauer P226's.  The 9mm clique is pretty
chuckling to myself as I put the safety back on my Hi-Power and returned it
    Hi!  I am 12 years old and my name is Nicole.  I love your mag.  COW BEAT
Franken Gibe in your magazine.  His eyes are to die for!  Thanx!
                        Cherry Hill, NJ
     Hi!  My name is Nicky and I'm 10 years old.  I like your magazine very
Cambridge and the Atrium Mall in Chestnut Hill in Massachusetts to get a
he was found bleeding to death on the floor of his bedroom.  His monitor still
been chatting with over the modem.  His pal suffered a similar fate.
Blackness was all around in the Hilton parking lot... the power was strong and
His hands were all shaking, just like a speed freak
    Randall felt the axe tear into his side.  His life blood mixed with the
Hit RETURN when you've read it.
Hit RETURN or die a LAME death, LAMER.
I wrote in Hitler for President.  He's still alive, and even if he doesn't win,
    "There's Mother. Hide the basket, quick!" cried Jo, as a door
            Hither, hither,from thy home,
            Hither I come,
    "Oh. very!  His hair is auburn, not red, and he was very polite,
"His grandpa does not know what's good for him, and keeps him shut up
are not good for him.  His music isn't bad, but I hope he will do
and trust Him, and the less you will depend on human power and
wisdom.  His love and care never tire or change, can never be
    "Has your Highness seen the Lady viola tonight?"
Him."
    "If god spares Beth, I'll try to love and serve Him all my
ounds His little children.  She missed her mother's help to under-
    His tone was properly beseeching, but stealing a shy look
    "Highty-tighty!  Is that the way you take my advice, Miss?
college, was a much of a boy as ever.  His last whim had been to
our sharp or slipshod American gabble.  His clothes were rusty,
    His very clothes seemed to partake of the hospitable nature
to make him comfortable.  His capacious waistcoat was sugges-
tive of a large heart underneath.  His rusty coat had a social
often went in empty and came out full.  His very boots were
Himself. She could not say, "I'm glad to go," for life was very
beach toward Castle Hill.  The quick trot of ponies feet made him
Castle Hill.  The view is so lovely, and I like to feed the pea-
decided "Leave my children for pleasure, never!"  His sleep was
--More--
 ⚙ Menu  🖳 🖵 📁  🖳Terminal    📄~/Desktop/ECE460/P...  📄Rent.doc - LibreOffice...  📄catgrepmore.pdf    📄PS4.odt - LibreOffice...   1  2  3  4  🔋0% 📶 👤 🛡 6:21 PM 🖳
```

2) After pressing "q" once, move to next infile

```
                              Terminal                        - + x
His wit is bright, his humour attractive, but both bear the same
    I returned to my book- Bewick's History of British Birds: the
    I had read Goldsmith's History of Rome, and had formed my opinion
    God, in His mercy, protection is showing,
    Take to His bosom the poor orphan child.
something like a Highlander's purse) tied in front of their frocks,
acts; make His word your rule, and His conduct your example.'
exhortations of our blessed Lord Himself, calling upon His disciples
to take up their cross and follow Him; to His warnings that man
of the mouth of God; to His divine consolations, "If ye suffer
    Hitherto, while gathering up the discourse of Mr. Brocklehurst
implicitly on His power, and confide wholly in His goodness: I count
Him, reveal Him to me.'
resign my immortal part to Him without any misgiving. God is my
father; God is my friend: I love Him; I believe He loves me.'
by this time struggling himself free of his steed. His efforts were so
bright: I could see him plainly. His figure was enveloped in a
jaw- yes, all three were very grim, and no mistake. His shape, now
    'His elder brother?'
sometimes bow and smile with gentlemanlike affability. His changes
regarded and accepted it as such. His deportment had now for some
sharply, 'Hitherto I have often omitted to fasten the bolt: I did
Rochester, costumed in shawls, with a turban on his head. His dark
    His manner was polite; his accent, in speaking, struck me as
rather that failed to please. His features were regular, but too
being at the same time unsettled and inanimate. His eye wandered,
    'His name is Mason, sir; and he comes from the West Indies; from
Why did Mr. Rochester enforce this concealment? His guest had been
he returned to his old companions and habits. His head was not strong:
    'Hillo!' he cries; and he puts up his book and his pencil. 'There
genially. His last words were balm: they seemed to imply that it
    His face was very much agitated and very much flushed, and there
days, see God for His creature: of whom I had made an idol.
swooning. I looked at Mr. Rochester: I made him look at me. His
at him. His eye, as I have often said, was a black eye: it had now a
to my ear); 'because, if you won't, I'll try violence. His voice was
    His softened voice announced that he was subdued; so I, in my turn,
    His voice and hand quivered: his large nostrils dilated; his eye
of existence: I should never like to return to it. Hiring a mistress
    'Then you condemn me to live wretched and to die accursed?' His
His fury was wrought to the highest: he must yield to it for a moment,
granite crag in a hidden angle, I sat down under it. High banks of
everywhere; but certainly we feel His presence most when His works are
--More--
 ⚙ Menu  🖳 🖵 📁  🖳Terminal    📄~/Desktop/ECE460/P...  📄Rent.doc - LibreOffice...  📄catgrepmore.pdf    📄PS4.odt - LibreOffice...   1  2  3  4  🔋0% 📶 👤 🛡 6:21 PM 🖳
```

status of grep and more after having left first infile (this is not shown in the screen shot bc of length of output):

```
catgrepmore: grep: child process with pid=7632 exited normally
catgrepmore: more: child process with pid=7633 exited normally
```

3) After pressing "q" second time, move to next and last infile:

```
One night--it was on the twentieth of March, 1888--I was returning from a journey to a patient (for I had now returned to civil practice), when my way led me
through Baker Street. As I passed the well-remembered door, which must always be associated in my mind with my wooing, and with the dark incidents of the Stud
y in Scarlet, I was seized with a keen desire to see Holmes again, and to know how he was employing his extraordinary powers. His rooms were brilliantly lit,
and, even as I looked up, I saw his tall, spare figure pass twice in a dark silhouette against the blind. He was pacing the room swiftly, eagerly, with his he
ad sunk upon his chest and his hands clasped behind him. To me, who knew his every mood and habit, his attitude and manner told their own story. He was at wor
k again. He had risen out of his drug-created dreams and was hot upon the scent of some new problem. I rang the bell and was shown up to the chamber which had
 formerly been in part my own.
His manner was not effusive. It seldom was; but he was glad, I think, to see me. With hardly a word spoken, but with a kindly eye, he waved me to an armchair,
 threw across his case of cigars, and indicated a spirit case and a gasogene in the corner. Then he stood before the fire and looked me over in his singular i
ntrospective fashion.
"Not at all. The 'G' with the small 't' stands for 'Gesellschaft,' which is the German for 'Company.' It is a customary contraction like our 'Co.' 'P,' of cou
rse, stands for 'Papier.' Now for the 'Eg.' Let us glance at our Continental Gazetteer." He took down a heavy brown volume from his shelves. "Eglow, Eglonitz-
-here we are, Egria. It is in a German-speaking country--in Bohemia, not far from Carlsbad. 'Remarkable as being the scene of the death of Wallenstein, and fo
r its numerous glass-factories and paper-mills.' Ha, ha, my boy, what do you make of that?" His eyes sparkled, and he sent up a great blue triumphant cloud fr
om his cigarette.
A man entered who could hardly have been less than six feet six inches in height, with the chest and limbs of a Hercules. His dress was rich with a richness w
hich would, in England, be looked upon as akin to bad taste. Heavy bands of astrakhan were slashed across the sleeves and fronts of his double-breasted coat,
while the deep blue cloak which was thrown over his shoulders was lined with flame-coloured silk and secured at the neck with a brooch which consisted of a si
ngle flaming beryl. Boots which extended halfway up his calves, and which were trimmed at the tops with rich brown fur, completed the impression of barbaric o
pulence which was suggested by his whole appearance. He carried a broad-brimmed hat in his hand, while he wore across the upper part of his face, extending do
wn past the cheekbones, a black vizard mask, which he had apparently adjusted that very moment, for his hand was still raised to it as he entered. From the lo
wer part of the face he appeared to be a man of strong character, with a thick, hanging lip, and a long, straight chin suggestive of resolution pushed to the
length of obstinacy.
He disappeared into his bedroom and returned in a few minutes in the character of an amiable and simple-minded Nonconformist clergyman. His broad black hat, h
is baggy trousers, his white tie, his sympathetic smile, and general look of peering and benevolent curiosity were such as Mr. John Hare alone could have equa
lled. It was not merely that Holmes changed his costume. His expression, his manner, his very soul seemed to vary with every fresh part that he assumed. The s
tage lost a fine actor, even as science lost an acute reasoner, when he became a specialist in crime.
"His name is Vincent Spaulding, and he's not such a youth, either. It's hard to say his age. I should not wish a smarter assistant, Mr. Holmes; and I know ver
y well that he could better himself and earn twice what I am able to give him. But, after all, if he is satisfied, why should I put ideas in his head?"
"His face fell immediately.
"John Clay, the murderer, thief, smasher, and forger. He's a young man, Mr. Merryweather, but he is at the head of his profession, and I would rather have my
bracelets on him than on any criminal in London. He's a remarkable man, is young John Clay. His grandfather was a royal duke, and he himself has been to Eton
and Oxford. His brain is as cunning as his fingers, and though we meet signs of him at every turn, we never know where to find the man himself. He'll crack a
crib in Scotland one week, and be raising money to build an orphanage in Cornwall the next. I've been on his track for years and have never set eyes on him ye
t."
"All right," said Jones with a stare and a snigger. "Well, would you please, sir, march upstairs, where we can get a cab to carry your Highness to the police-
station?"
"So far I had got when we went to visit the scene of action. I surprised you by beating upon the pavement with my stick. I was ascertaining whether the cellar
 stretched out in front or behind. It was not in front. Then I rang the bell, and, as I hoped, the assistant answered it. We have had some skirmishes, but we
had never set eyes upon each other before. I hardly looked at his face. His knees were what I wished to see. You must yourself have remarked how worn, wrinkle
d, and stained they were. They spoke of those hours of burrowing. The only remaining point was what they were burrowing for. I walked round the corner, saw th
e City and Suburban Bank abutted on our friend's premises, and felt that I had solved my problem. When you drove home after the concert I called upon Scotland
 Yard and upon the chairman of the bank directors, with the result that you have seen."
--More--
```

status of grep and more after having left 2nd infile (this is not shown in the screen shot bc of length of output):

```
catgrepmore: grep: child process with pid=7642 exited normally
catgrepmore: more: child process with pid=7643 exited normally
```

4) After pressing "q" third time, and exiting entire program

```
y in Scarlet, I was seized with a keen desire to see Holmes again, and to know how he was employing his extraordinary powers. His rooms were brilliantly lit,
and, even as I looked up, I saw his tall, spare figure pass twice in a dark silhouette against the blind. He was pacing the room swiftly, eagerly, with his he
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e City and Suburban Bank abutted on our friend's premises, and felt that I had solved my problem. When you drove home after the concert I called upon Scotland
 Yard and upon the chairman of the bank directors, with the result that you have seen."
catgrepmore: grep: child process with pid=7650 exited normally
catgrepmore: more: child process with pid=7651 exited normally
george@george-Vostro-1400 ~/Desktop/ECE460/PS4 $
```
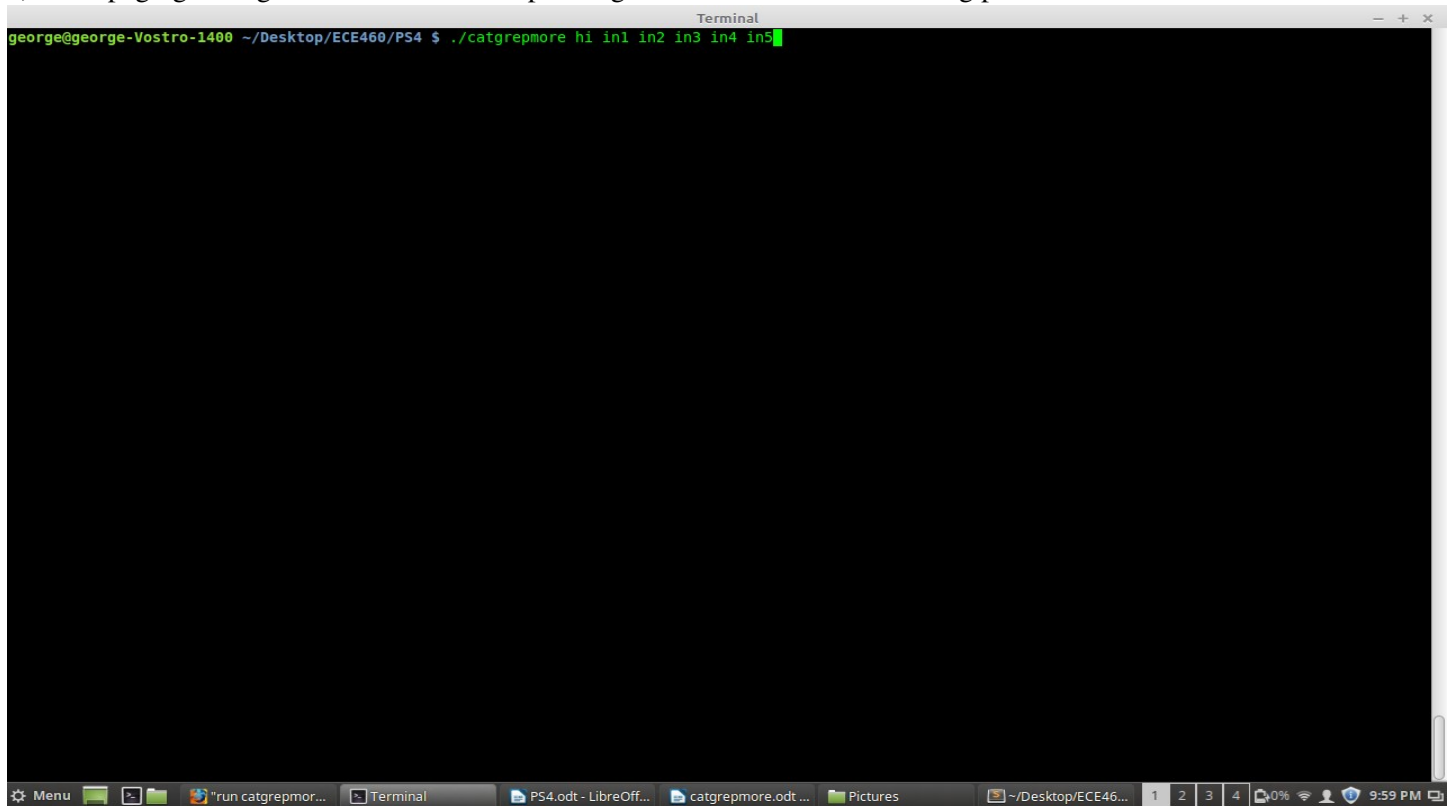
status of grep and more after having left 3ʳᵈ infile and exited the program (this is not shown in the screen shot bc of length of output):
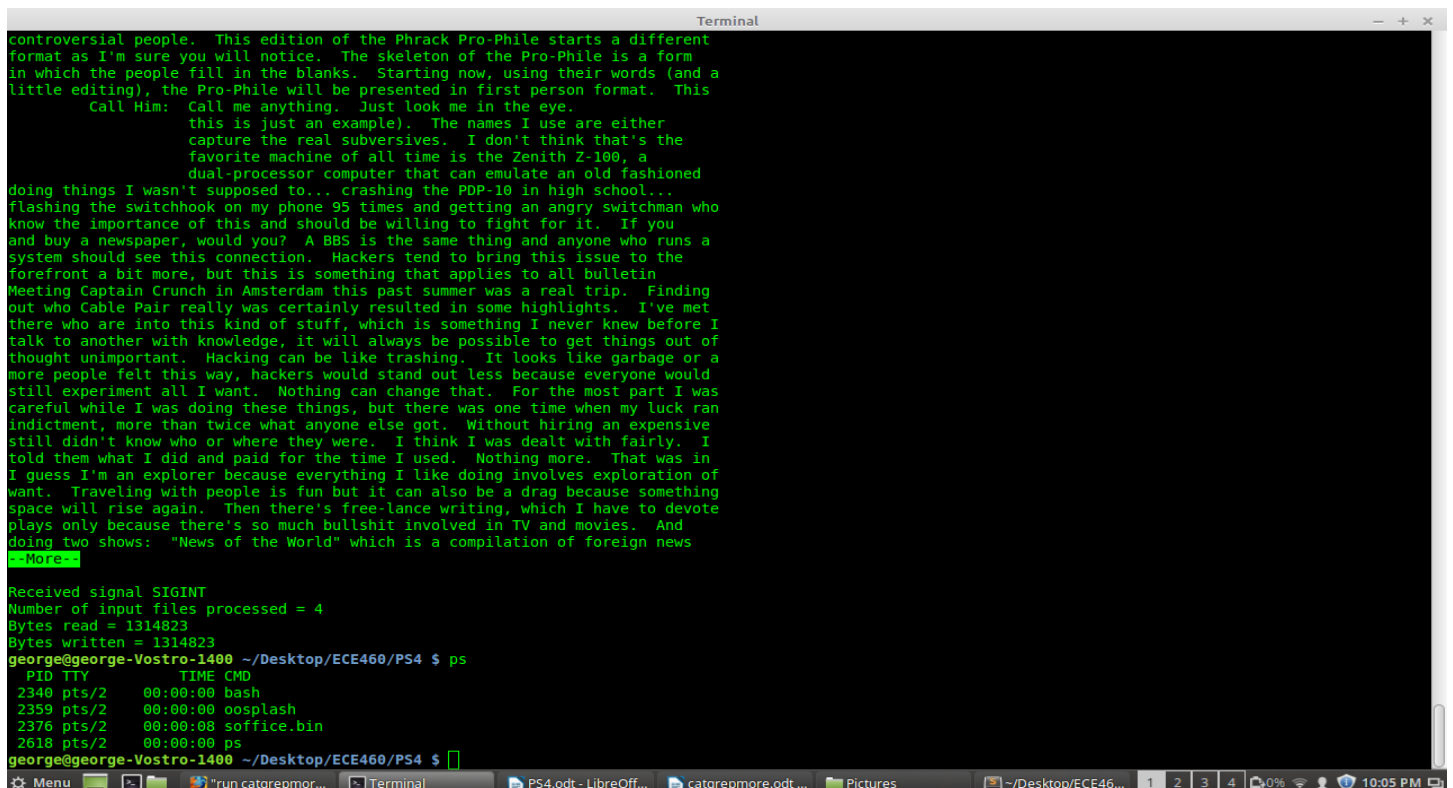
```
catgrepmore: grep: child process with pid=7650 exited normally
catgrepmore: more: child process with pid=7651 exited normally
```

5) After paging through some files and then pressing "CTRL C" and then running ps: