

# COMP 7003

## Assignment 2

### Testing

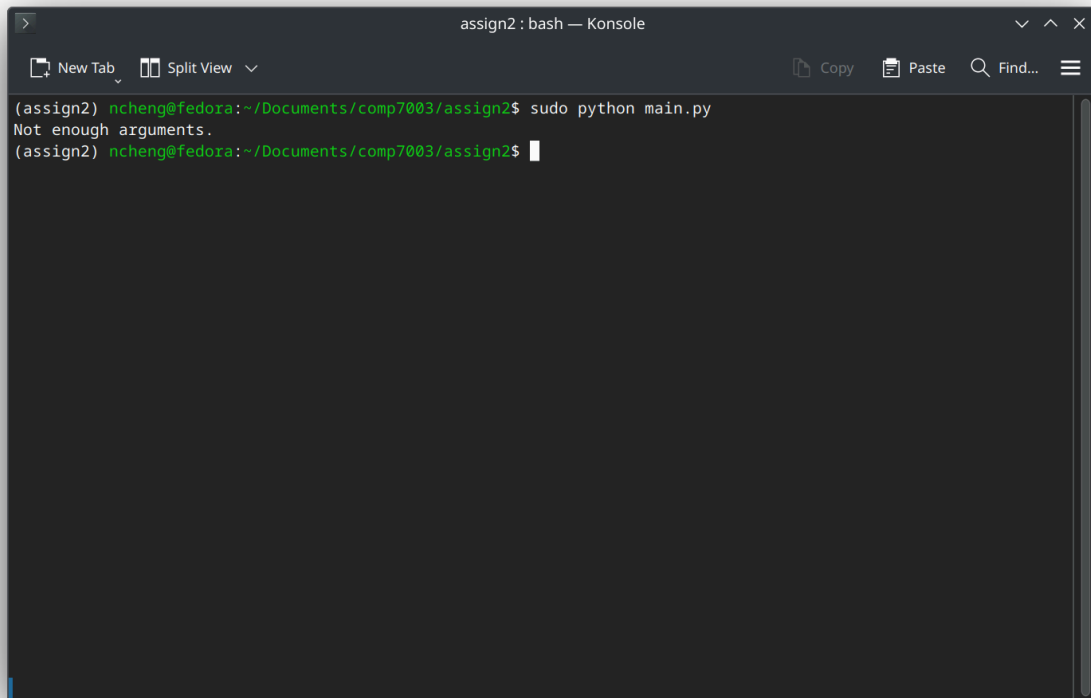
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Oct 6th, 2024

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Test	Expected	Actual	Screenshot
No arguments	fail	fail	<a href="#">Test 1</a>
Only interface	fail	fail	<a href="#">Test 2</a>
No count	fail	fail	<a href="#">Test 3</a>
Empty interface	pass	pass	<a href="#">Test 4</a>
Empty count	fail	fail	<a href="#">Test 5</a>
Non-integer count	fail	fail	<a href="#">Test 6</a>
Negative count	fail	fail	<a href="#">Test 7</a>
Count of 0	fail	fail	<a href="#">Test 8</a>
Too many arguments	fail	fail	<a href="#">Test 9</a>
Empty filter	fail	fail	<a href="#">Test 10</a>
Wrong filter	fail	fail	<a href="#">Test 11</a>
ARP filter, 1 packet	pass	pass	<a href="#">Test 12</a>
IPv4 filter, 1 packet	pass	pass	<a href="#">Test 13</a>
UDP filter, 1 packet	pass	pass	<a href="#">Test 14</a>
TCP filter, 1 packet	pass	pass	<a href="#">Test 15</a>
TCP filter, 2 packets	pass	pass	<a href="#">Test 16</a>
TCP filter, 10 packets	pass	pass	<a href="#">Test 17</a>

# Tests

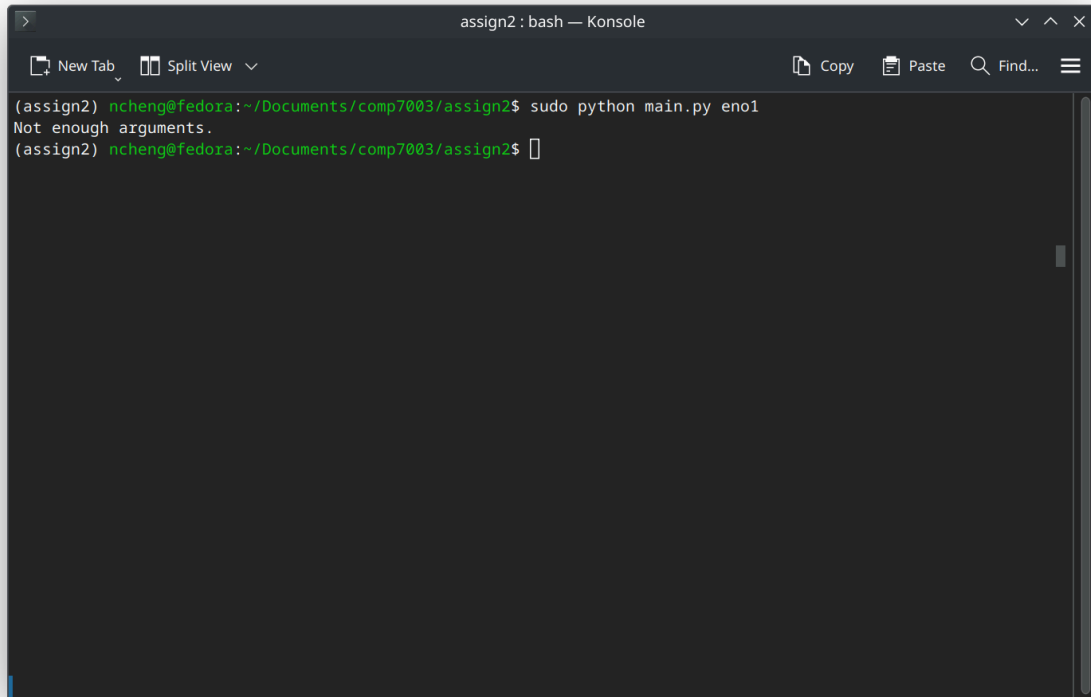
## Test 1



```
assign2 : bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py
Not enough arguments.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

The image shows a terminal window titled "assign2 : bash — Konsole". The window has a dark background and a light-colored text. The terminal shows a command prompt where the user has entered "sudo python main.py". The output of the command is "Not enough arguments.". The prompt then changes to "ncheng@fedora:~/Documents/comp7003/assign2\$". The window also has a menu bar with options like "New Tab", "Split View", "Copy", "Paste", and "Find...".

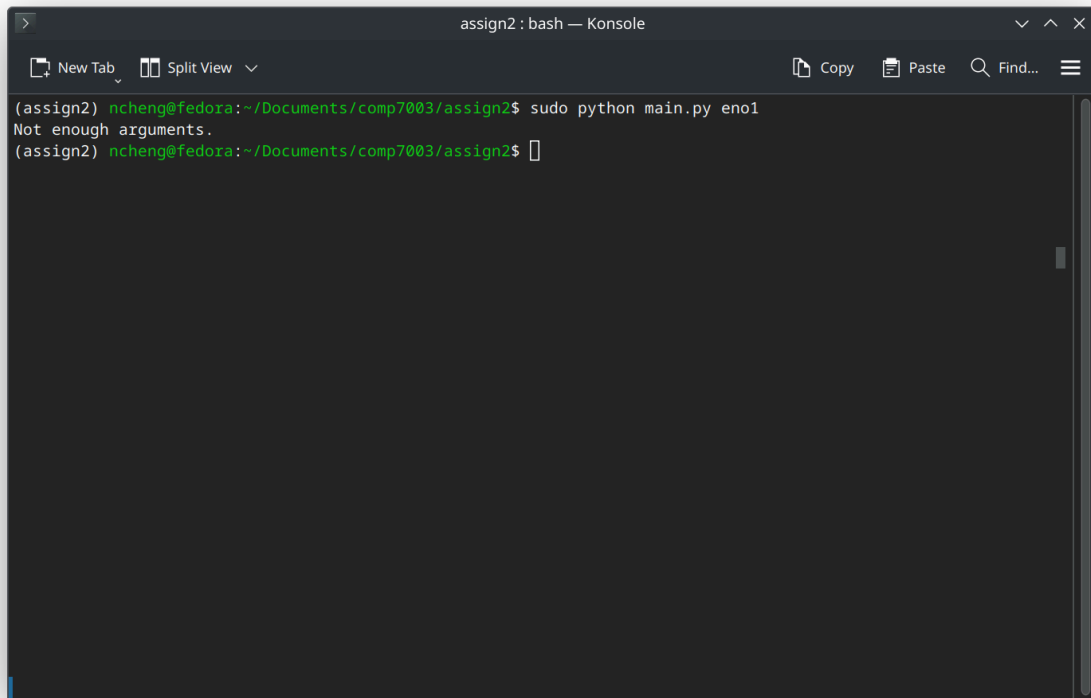
## Test 2



The image shows a terminal window titled "assign2 : bash — Konsole". The window has a dark background and a light-colored text. The prompt is "(assign2) ncheng@fedora:~/Documents/comp7003/assign2\$". The command "sudo python main.py eno1" has been entered. The output is "Not enough arguments." followed by a new prompt line "(assign2) ncheng@fedora:~/Documents/comp7003/assign2\$". The terminal window includes a menu bar with "New Tab", "Split View", "Copy", "Paste", "Find...", and a hamburger menu icon. A scrollbar is visible on the right side of the terminal area.

```
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1
Not enough arguments.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

## Test 3

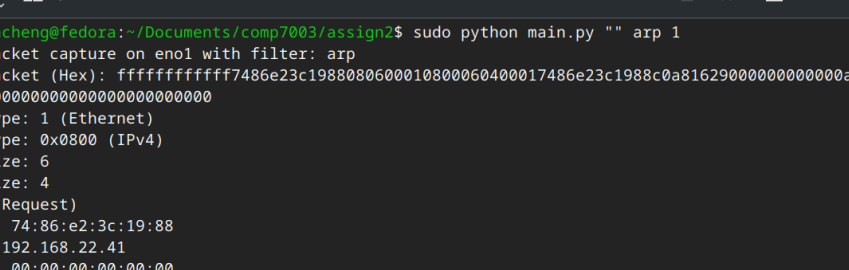


A terminal window titled "assign2: bash — Konsole" with a dark background. The window has a menu bar with "New Tab", "Split View", "Copy", "Paste", "Find...", and a hamburger menu icon. The terminal shows the following text:

```
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1
Not enough arguments.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

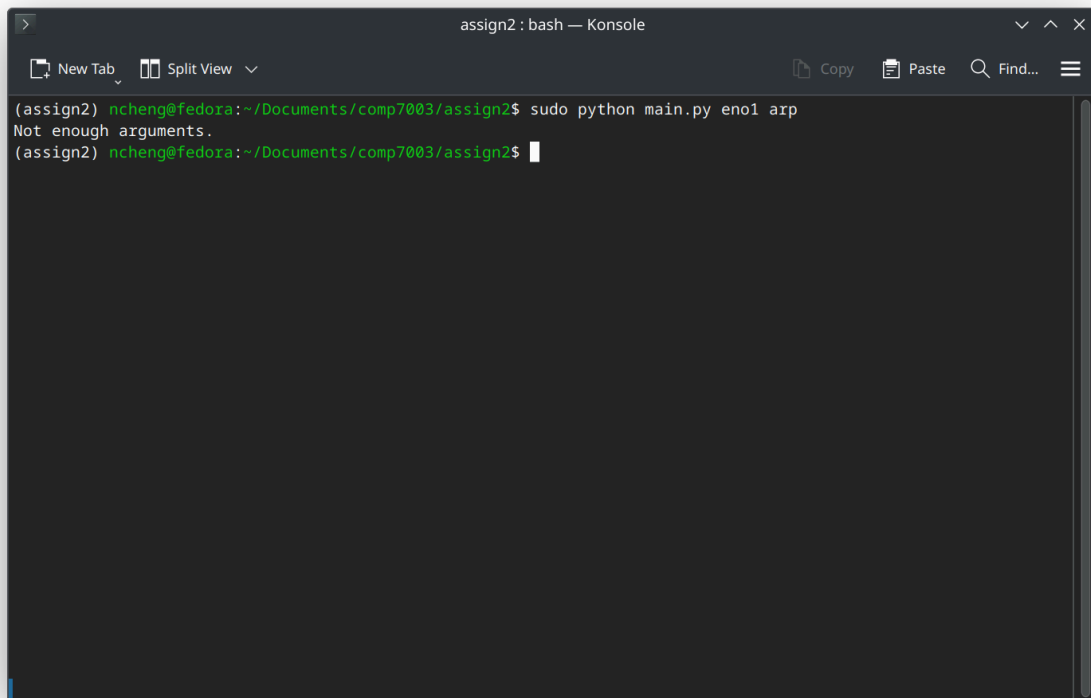
The prompt is green, and the error message is white. A vertical scrollbar is visible on the right side of the terminal area.

## Test 4



```
assign2: bash — Konsole
New Tab Split View
Copy Paste Find...
(assign2) ncheng@fedora: ~/Documents/comp7003/assign2$ sudo python main.py "" arp 1
Starting packet capture on eno1 with filter: arp
Captured Packet (Hex): ffffffff7486e23c1988080600010800060400017486e23c1988c0a81629000000000000a9fea9fe000
00000000000000000000000000000000
Hardware type: 1 (Ethernet)
Protocol type: 0x0800 (IPv4)
Hardware size: 6
Protocol size: 4
Opcode: 1 (Request)
Sender MAC: 74:86:e2:3c:19:88
Sender IP: 192.168.22.41
Target MAC: 00:00:00:00:00:00
Target IP: 169.254.169.254
(assign2) ncheng@fedora: ~/Documents/comp7003/assign2$
```

## Test 5



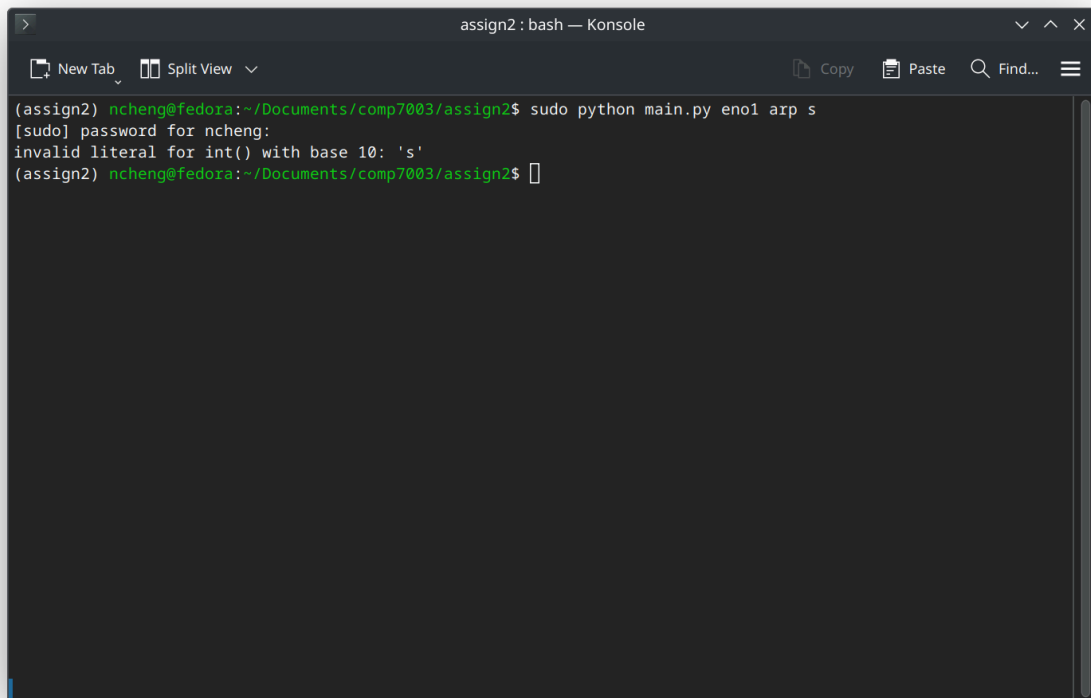
The image shows a terminal window titled "assign2 : bash — Konsole". The window has a dark background and a light-colored text. The terminal shows the following text:

```
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 arp
Not enough arguments.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

The terminal window includes a menu bar with options like "New Tab", "Split View", "Copy", "Paste", "Find...", and a search icon. A vertical scrollbar is visible on the right side of the terminal area.



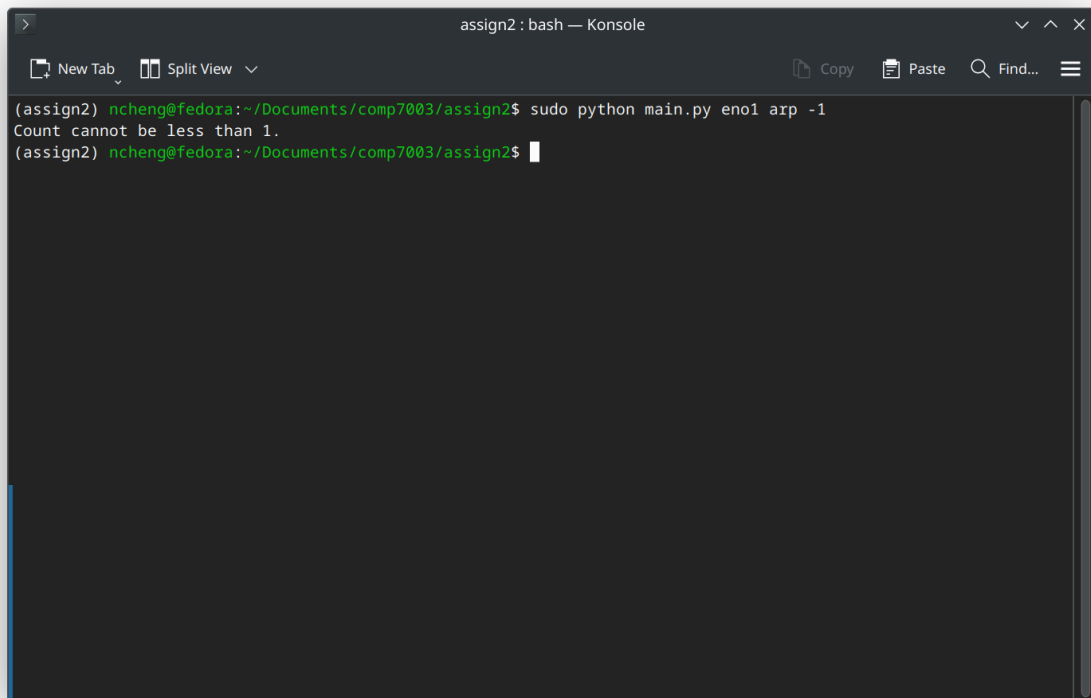
## Test 6



```
assign2 : bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 arp s
[sudo] password for ncheng:
invalid literal for int() with base 10: 's'
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

The image shows a terminal window titled "assign2 : bash — Konsole". The window has a dark background and a light-colored text. The terminal content shows a user named "ncheng" at a prompt in the directory "~/Documents/comp7003/assign2". They run the command "sudo python main.py eno1 arp s". The terminal prompts for a password, which is entered. Then, an error message "invalid literal for int() with base 10: 's'" is displayed. The prompt returns to the user. The window has a menu bar with "New Tab", "Split View", "Copy", "Paste", "Find...", and a hamburger menu icon.

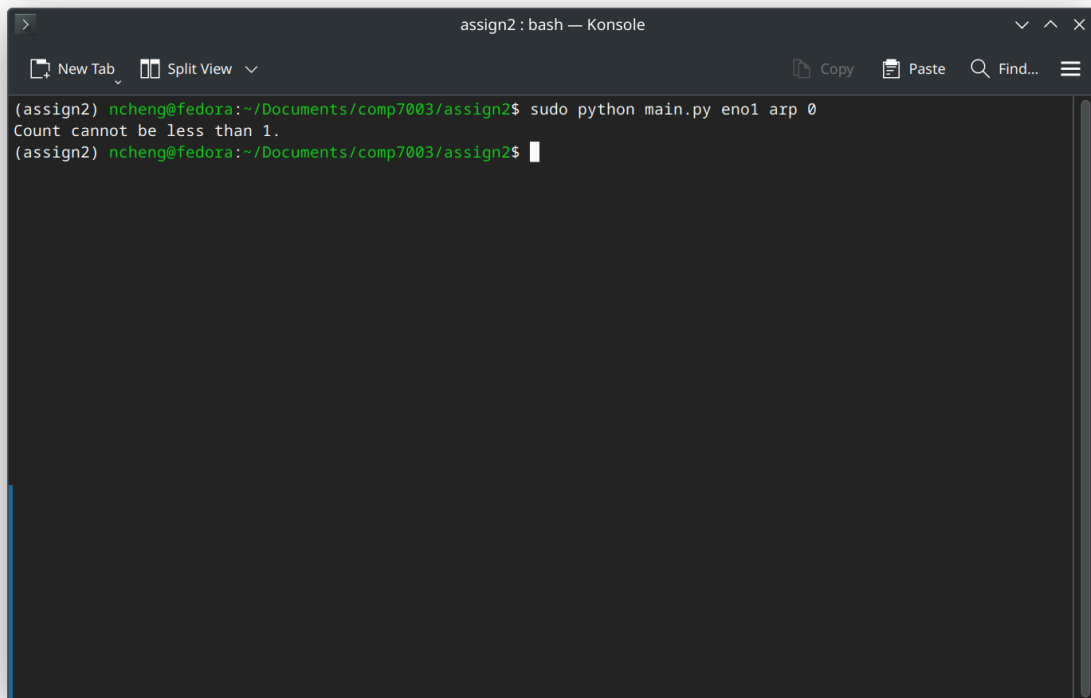
## Test 7



```
assign2 : bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 arp -1
Count cannot be less than 1.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

The image shows a terminal window titled "assign2 : bash — Konsole". The window has a dark background and a light-colored border. At the top, there is a menu bar with options: "New Tab", "Split View", "Copy", "Paste", "Find...", and a hamburger menu icon. The terminal content shows a user prompt "(assign2) ncheng@fedora:~/Documents/comp7003/assign2\$" followed by the command "sudo python main.py eno1 arp -1". The output of the command is "Count cannot be less than 1.", followed by another prompt "(assign2) ncheng@fedora:~/Documents/comp7003/assign2\$" with a cursor. A vertical scrollbar is visible on the right side of the terminal window.

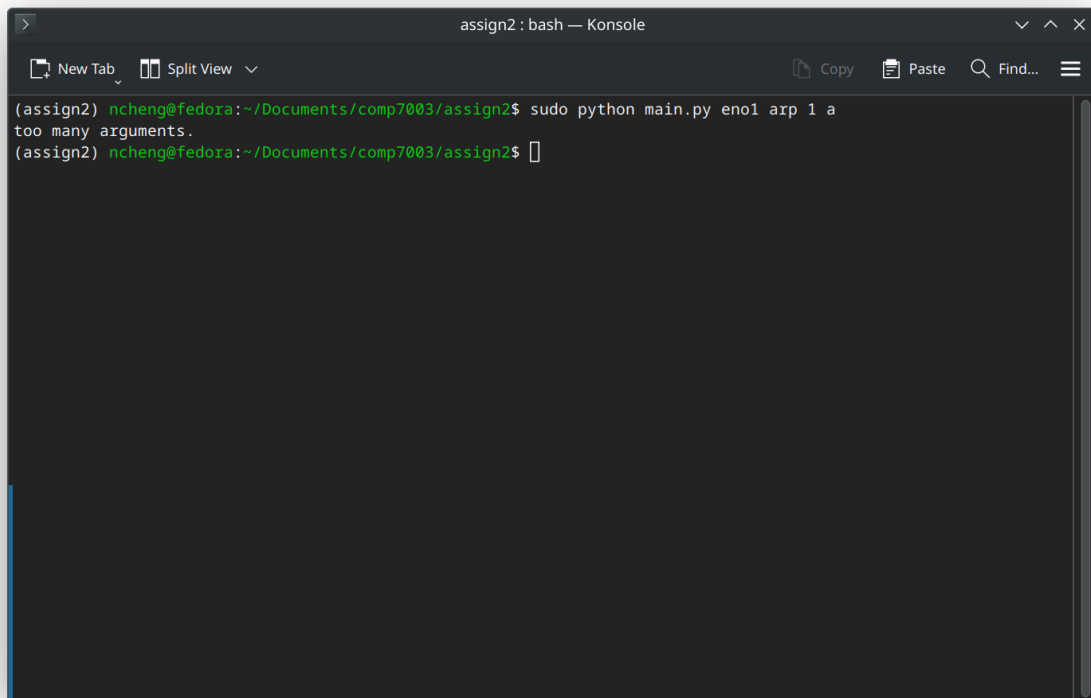
## Test 8



The image shows a terminal window titled "assign2 : bash — Konsole". The window has a dark background and a light-colored text. The prompt is "(assign2) ncheng@fedora:~/Documents/comp7003/assign2\$". The command "sudo python main.py eno1 arp 0" has been entered. The output is "Count cannot be less than 1." followed by a new prompt "(assign2) ncheng@fedora:~/Documents/comp7003/assign2\$".

```
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 arp 0
Count cannot be less than 1.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

## Test 9

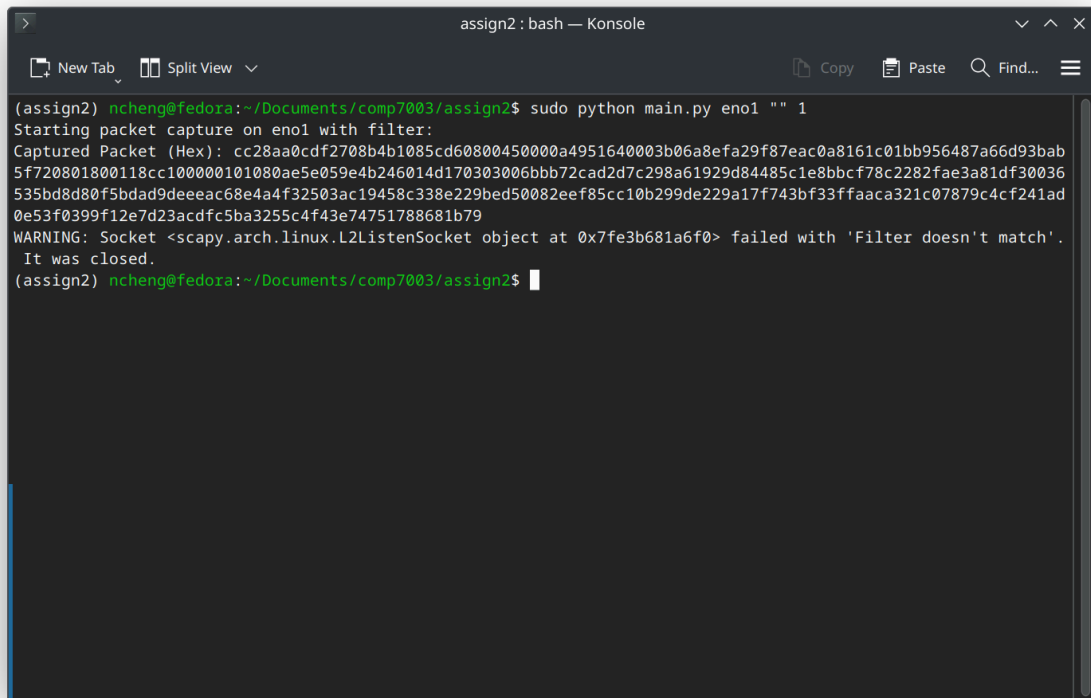


A terminal window titled "assign2 : bash — Konsole" with a dark background. The window has a menu bar with "New Tab", "Split View", "Copy", "Paste", "Find...", and a hamburger menu icon. The terminal shows the following interaction:

```
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 arp 1 a
too many arguments.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

The prompt is green, and the error message is white. A vertical scrollbar is visible on the right side of the terminal area.

## Test 10



```
assign2 : bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 "" 1
Starting packet capture on eno1 with filter:
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd60800450000a4951640003b06a8efa29f87eac0a8161c01bb956487a66d93bab
5f720801800118cc100000101080ae5e059e4b246014d170303006bbb72cad2d7c298a61929d84485c1e8bbcf78c2282fae3a81df30036
535bd8d80f5bdad9deeeac68e4a4f32503ac19458c338e229bed50082eef85cc10b299de229a17f743bf33ffaaca321c07879c4cf241ad
0e53f0399f12e7d23acdfc5ba3255c4f43e74751788681b79
WARNING: Socket <scapy.arch.linux.L2ListenSocket object at 0x7fe3b681a6f0> failed with 'Filter doesn't match'.
It was closed.
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

## Test 11

```
assign2: bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 a 1
Starting packet capture on eno1 with filter: a
Cannot set filter: Failed to compile filter expression a (-1)
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

## Test 12

```
assign2: bash — Konsole
```

New Tab Split View

Copy Paste Find...

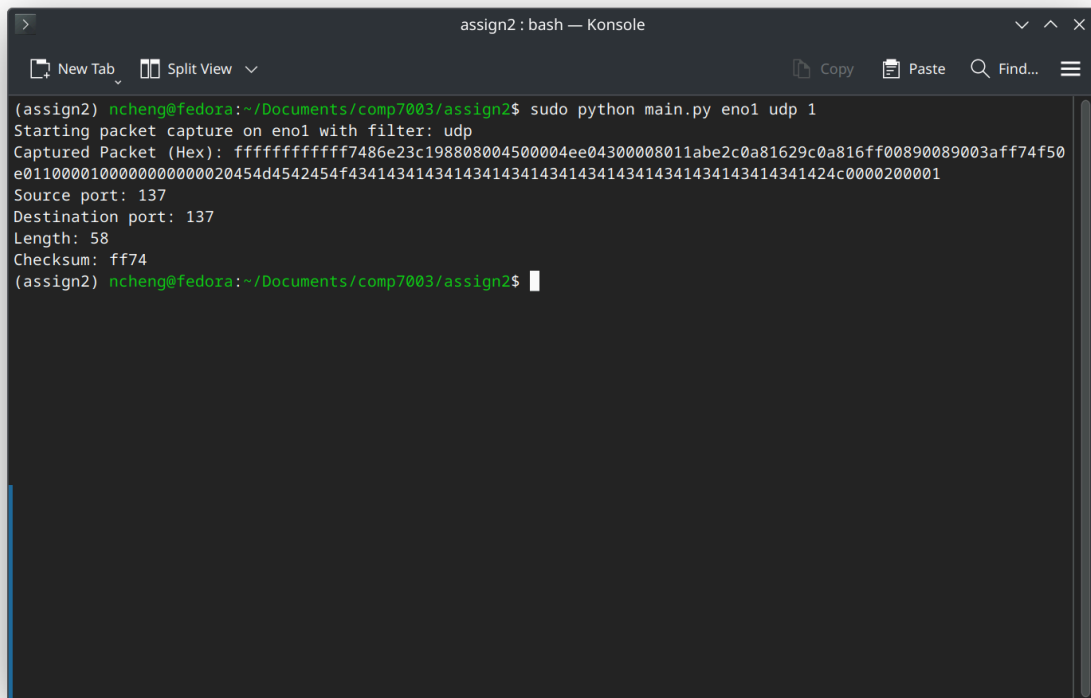
```
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 arp 1
Starting packet capture on eno1 with filter: arp
Captured Packet (Hex): 48d224162f4e08b4b1085cd608060010800060400108b4b1085cd6c0a8160148d224162f4ec0a81626000
00000000000000000000000000000000
Hardware type: 1 (Ethernet)
Protocol type: 0x0800 (IPv4)
Hardware size: 6
Protocol size: 4
Opcode: 1 (Request)
Sender MAC: 08:b4:b1:08:5c:d6
Sender IP: 192.168.22.1
Target MAC: 48:d2:24:16:2f:4e
Target IP: 192.168.22.38
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

## Test 13

```
assign2 : bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 ip 1
Starting packet capture on eno1 with filter: ip
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd60800450001759a9140003b06a2a3a29f87eac0a8161c01bb956487aa6ad5bab
601708018001190c200000101080ae5e9b6fab24f5950170303013c3d0531a8e1f23a390f9ab97022c29c3e67da54813566b8fe0361986
4e052eafc5a33dc55f89f2bdd5f5513cd3a7c0ca47f3725acd42c7018363f8a0f8dfbb791a53685fb8f31fb57f35724ac99fca25b97596
64dbd5b7259643be1e49eca067844725c7d05a3f5f53277c3b06d06f790cfee43edd71b97db2bf6eaf1720ac3add5dfa87956dcaebbab2
dc68cc50ab6150a66f462a873780d438d4d727f80ddf74fb297509320d4f195077468102971d3576f5cfdffa23cacb2a4fe00901dff6b1
0e4eaab87fc0eb3c551c0379389db12fef92286bbd4fb699a463e986d0cee81345a1402b1155ea69701af2665acfc66ba8abbe1abab8b3
39275be1fb3e492b747e1f847906007ce1810abb86ab525fc6fd3d75a8563cf918b20c0ec87d95bb5e0f3e8af904f70aa6907ffe6268a7
8c658736dc40acdaaa0671ae075
Version: 4
Internet Header Length: 5
Type of Service: 00
Total Length: 373
Identification: 9a91
Don't Fragment: 1
More fragments: 0
Fragment offsets: 000000000000
Time to live: 59
Protocol: 6
Checksum: 2a3
Source address: 162.159.135.234
Destination address: 192.168.22.28
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

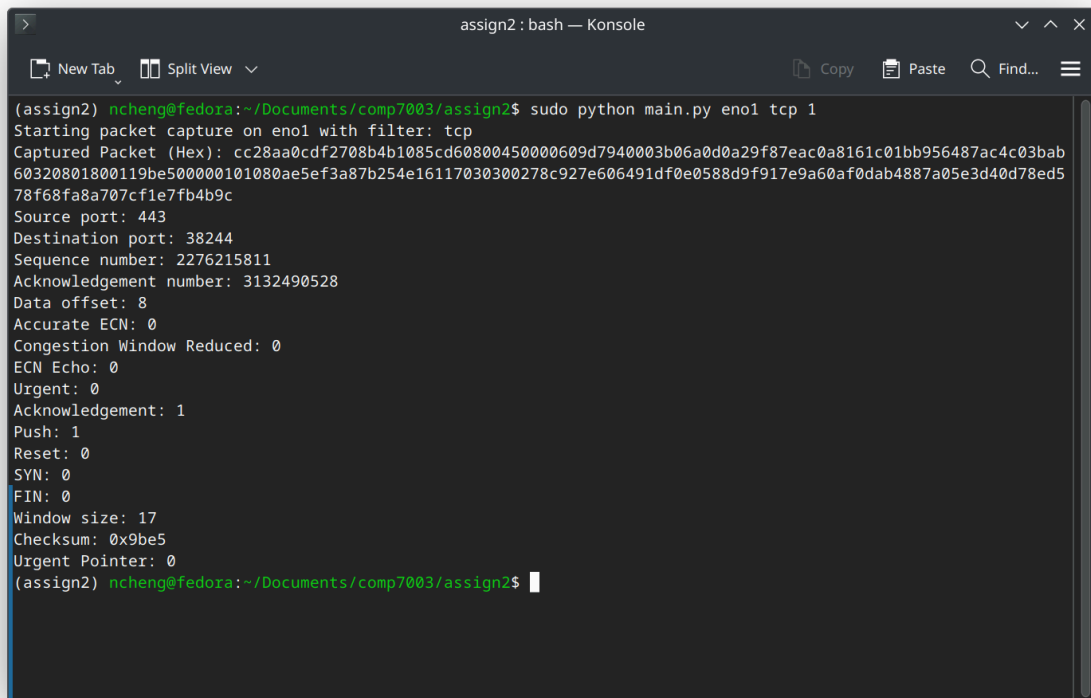


## Test 14

A terminal window titled "assign2 : bash — Konsole" with a dark background. The window has a menu bar with "New Tab", "Split View", "Copy", "Paste", "Find...", and a hamburger menu icon. The terminal shows the execution of a Python script that captures a UDP packet on the eno1 interface. The output displays the captured packet in hexadecimal, its source and destination ports, length, and checksum. The prompt returns to the user after the capture is complete.

```
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 udp 1
Starting packet capture on eno1 with filter: udp
Captured Packet (Hex): ffffffff7486e23c198808004500004ee04300008011abe2c0a81629c0a816ff00890089003aff74f50
e0110000100000000000020454d4542454f434143414341434143414341434143414341434143414341424c0000200001
Source port: 137
Destination port: 137
Length: 58
Checksum: ff74
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

## Test 15



```
assign2 : bash — Konsole
New Tab Split View
Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 tcp 1
Starting packet capture on eno1 with filter: tcp
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd60800450000609d7940003b06a0d0a29f87eac0a8161c01bb956487ac4c03bab
60320801800119be500000101080ae5ef3a87b254e16117030300278c927e606491df0e0588d9f917e9a60af0dab4887a05e3d40d78ed5
78f68fa8a707cf1e7fb4b9c
Source port: 443
Destination port: 38244
Sequence number: 2276215811
Acknowledgement number: 3132490528
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
Window size: 17
Checksum: 0x9be5
Urgent Pointer: 0
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$
```

## Test 16

```
assign2 : bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 tcp 2
Starting packet capture on eno1 with filter: tcp
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd60800450000e09d9d40003b06a02ca29f87eac0a8161c01bb95648
7ac6289bab603568018001162de00000101080ae5ef9915b2553e8817030300a7bcd6a2705d9c547678f7f5a3894cac837e6
92d139ca9e54acdc91607d6044ee6a1ea60d0d3abb49e616618d36226065410f3c298a73c8b7ef49df531655e081d298496b
7f35261e230f68df97affb9cc7c266bfe2fcaadd8931607395bc866d1e373813bdbb5fa6a978c7d23e16b4e3fd3342e72fd7
5b02cfeff1a87397045ef24855b9ab721009814bc7c02419abaaff109769ae7e6acd499e2dfc0eabc7f4d207dec7a4d734de
Source port: 443
Destination port: 38244
Sequence number: 2276221577
Acknowledgement number: 3132490582
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
Window size: 17
Checksum: 0x62de
Urgent Pointer: 0
Captured Packet (Hex): 08b4b1085cd6cc28aa0cdf27080045000034685a40004006d11bc0a8161ca29f87ea956401bbb
ab6035687ac633580103218017500000101080ab2554325e5ef9915
Source port: 38244
Destination port: 443
Sequence number: 3132490582
Acknowledgement number: 2276221749
```

```
assign2 : bash — Konsole
New Tab Split View
Copy Paste Find...
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
Window size: 17
Checksum: 0x62de
Urgent Pointer: 0
Captured Packet (Hex): 08b4b1085cd6cc28aa0cdf27080045000034685a40004006d11bc0a8161ca29f87ea956401bbb
ab6035687ac633580103218017500000101080ab2554325ef9915
Source port: 38244
Destination port: 443
Sequence number: 3132490582
Acknowledgement number: 2276221749
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 0
Reset: 0
SYN: 0
FIN: 0
Window size: 12824
Checksum: 0x0175
Urgent Pointer: 0
(assign2) ncheng@fedora: ~/Documents/comp7003/assign2$
```

## Test 17

```
assign2 : bash — Konsole
New Tab Split View Copy Paste Find...
(assign2) ncheng@fedora:~/Documents/comp7003/assign2$ sudo python main.py eno1 tcp 10
Starting packet capture on eno1 with filter: tcp
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd60800450000619e9640003b069fb2a29f87eac0a8161c01bb95648
7ad0bb3bab603c28018001142ed00000101080ae5f0e710b2568a2f1703030028aca23fca4929e949284c41d980496f6282e
8d4e988770997f2dafc7e933349c67f1a3ca88d344020
Source port: 443
Destination port: 38244
Sequence number: 2276264883
Acknowledgement number: 3132490690
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
Window size: 17
Checksum: 0x42ed
Urgent Pointer: 0
Captured Packet (Hex): 08b4b1085cd6cc28aa0cdf27080045000034695340004006d022c0a8161ca29f87ea956401bbb
ab603c287ad0be080103218017500000101080ab2569120e5f0e710
Source port: 38244
Destination port: 443
Sequence number: 3132490690
Acknowledgement number: 2276264928
Data offset: 8
Accurate ECN: 0
```

```
assign2 : bash — Konsole
New Tab Split View
Copy Paste Find...

Acknowledgement number: 2276264928
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 0
Reset: 0
SYN: 0
FIN: 0
Window size: 12824
Checksum: 0x0175
Urgent Pointer: 0
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd60800450001369e9740003b069edca29f87eac0a8161c01bb95648
7ad0be0bab603c280180011132400000101080ae5f0e789b256912017030300fdd757199b4474b5db9ac75766189c3d32d18
7a9cb476f6e472697fea95153179ff6321d38e59faa0ea25482a83d0e5dda4181d70f7eaf2ec6a909e7edf6f0631e14b5549
c80f3a5bc6aca1be4c5fa55f18e0842a682935e0d2738fd67bee4103a9ee181d3d37814ad3c56bb0de0c3aab31d77142e30f
ccd94a51851b29529c80d5733a59ab293e0151ceaca1148134522db38fa2448c926957f2203cadcc43269210ccb1458cdf63
48746c01d23821bcd66b0c8078e7f13690bc783f94f93668c69d0b581ebbe54c1a69db35b0e9b1e0fe29474af04eabd0d99
db7d6f8b917a5a36238c0e4551dc605c281687946a4c90a54171b79c5139ee402a04f20
Source port: 443
Destination port: 38244
Sequence number: 2276264928
Acknowledgement number: 3132490690
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
```



```
assign2 : bash — Konsole
New Tab Split View
Copy Paste Find...

Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
Window size: 17
Checksum: 0x1324
Urgent Pointer: 0
Captured Packet (Hex): 08b4b1085cd6cc28aa0cdf27080045000034695440004006d021c0a8161ca29f87ea956401bbb
ab603c287ad0ce280103216017500000101080ab2569199e5f0e789
Source port: 38244
Destination port: 443
Sequence number: 3132490690
Acknowledgement number: 2276265186
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 0
Reset: 0
SYN: 0
FIN: 0
Window size: 12822
Checksum: 0x0175
Urgent Pointer: 0
```

```
assign2 : bash — Konsole
New Tab Split View
Copy Paste Find...

Urgent Pointer: 0
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd608004500006b9e9940003b069fa5a29f87eac0a8161c01bb956487ad0d4fbab603c2801800114fd300000101080ae5f0ea6cb25691d31703030032907745f3e6c9bf4d39b41d24b7d67cb9c5c953c06c3a0ee0f2bbf6ce8c35ead2f0de3aaf776f32d21cb1e5784af84cd0bef4
Source port: 443
Destination port: 38244
Sequence number: 2276265295
Acknowledgement number: 3132490690
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
Window size: 17
Checksum: 0x4fd3
Urgent Pointer: 0
Captured Packet (Hex): 08b4b1085cd6cc28aa0cdf27080045000034695640004006d01fc0a8161ca29f87ea956401bbbab603c287ad0d8680103218017500000101080ab256947ce5f0ea6c
Source port: 38244
Destination port: 443
Sequence number: 3132490690
Acknowledgement number: 2276265350
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
```

```
assign2 : bash — Konsole
New Tab Split View
Copy Paste Find...

Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 0
Reset: 0
SYN: 0
FIN: 0
Window size: 12824
Checksum: 0x0175
Urgent Pointer: 0
Captured Packet (Hex): cc28aa0cdf2708b4b1085cd608004500006b9e9a40003b069fa4a29f87eac0a8161c01bb95648
7ad0d86bab603c28018001147e100000101080ae5f0f0bfb256947c170303003270a81ea199234639e1093300285613ee083
1bbd5fb8a082cb9f0d07c9f22fef5137a7454fc7e2757c9ce41728f90ce87a48
Source port: 443
Destination port: 38244
Sequence number: 2276265350
Acknowledgement number: 3132490690
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
```

```
assign2 : bash — Konsole
New Tab Split View
Copy Paste Find...
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 1
Reset: 0
SYN: 0
FIN: 0
Window size: 17
Checksum: 0x47e1
Urgent Pointer: 0
Captured Packet (Hex): 08b4b1085cd6cc28aa0cdf27080045000034695740004006d01ec0a8161ca29f87ea956401bbb
ab603c287ad0dbd80103218017500000101080ab2569acfe5f0f0bf
Source port: 38244
Destination port: 443
Sequence number: 3132490690
Acknowledgement number: 2276265405
Data offset: 8
Accurate ECN: 0
Congestion Window Reduced: 0
ECN Echo: 0
Urgent: 0
Acknowledgement: 1
Push: 0
Reset: 0
SYN: 0
FIN: 0
Window size: 12824
Checksum: 0x0175
Urgent Pointer: 0
(assign2) ncheng@fedora: ~/Documents/comp7003/assign2$
```