COMP 7003
Assignment 2
Testing

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Test	Expected	Actual	Screenshot
No arguments	fail	fail	Test 1
Invalid interface name	fail	fail	Test 2
Missing --filter argument	fail	fail	Test 3
Missing --count argument	fail	fail	Test 4
Missing --interface argument	fail	fail	Test 5
Packet count of 0	fail	fail	Test 6
Count exceeding maximum limit (100)	fail	fail	Test 7
Unknown BPF filter	fail	fail	Test 8
Too many arguments	fail	fail	Test 9
Valid interface, filter, and count	pass	pass	Test 10
TCP filter	pass	pass	Test 11
UDP filter	pass	pass	Test 12
ARP filter	pass	pass	Test 13
IPv4 filter	pass	pass	Test 14
Unrecognized argument provided	fail	fail	Test 15
Negative packet count	fail	fail	Test 16
Empty aka whitespace interface	fail	fail	Test 17
Empty aka whitespace filler	fail	fail	Test 18
Packet count as non integer	fail	fail	Test 20
Non valid ethertype	fail	fail	Test 21
Non root command	fail	Fail	Test 22

Tests

Test 1

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2 ?1   sudo python scanner.py
usage: scanner.py [-h] --interface INTERFACE --filter FILTER --count COUNT
scanner.py: error: the following arguments are required: --interface, --filter, --count
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2 ?1
```

Test 2

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2   sudo python scanner.py --int
erface invalid0 --filter tcp --count 5
Error: The network interface 'invalid0' does not exist.
```

Test 3

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2   sudo python scanner.py --int
erface wlo1 --count 5
usage: scanner.py [-h] --interface INTERFACE --filter FILTER --count COUNT
scanner.py: error: the following arguments are required: --filter
```

Test 4

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2   sudo python scanner.py --int
erface wlo1 --filter tcp
usage: scanner.py [-h] --interface INTERFACE --filter FILTER --count COUNT
scanner.py: error: the following arguments are required: --count
```

Test 5

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2   sudo python scanner.py --fil
ter tcp --count 5
usage: scanner.py [-h] --interface INTERFACE --filter FILTER --count COUNT
scanner.py: error: the following arguments are required: --interface
```

Test 6

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2   sudo python scanner.py --int
erface wlo1 --filter tcp --count 0
Error: The packet count must be a positive, non-zero integer.
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2   sudo python scanner.py --int
```

Test 7

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2    sudo python scanner.py --int
erface wlo1 --filter tcp --count 1000
Error: The packet count exceeds the maximum allowed limit of 100.
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2    sudo python scanner.py --int
```

Test 8

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2    sudo python scanner.py --int
erface wlo1 --filter unknownfilter --count 1000
Error: Invalid BPF filter 'unknownfilter'. Supported filters: tcp, udp, arp, ip
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2    sudo python scanner.py --int
```

Test 9

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2    sudo python scanner.py --int
erface wlo1 --filter arp --count 1000 anotherarg
Error: Too many arguments.
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2    sudo python scanner.py --int
```

Test 10

```
 ▣    ~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src     master !2 ?1    sudo python scanner.py --interface wlo1 --filter ip --
count 2
Starting packet capture on wlo1 with filter: ip

-------------------------------------------------
Captured Packet (Hex): 608d26a3a0dc94e23c6bd2da080045000034ea46400040064d51c0a8014c23f11d47cc5c01bbdf89541f3a3c942c8010016b035300
000101080adf56ccb84b6af09b
Destination MAC (Hex): 60:8d:26:a3:a0:dc
Source MAC (Hex): 94:e2:3c:6b:d2:da
EtherType (Hex): 0800
Version: 4
IHL (Header Length): 20 bytes
Type of Service: 0
Total Length: 52 (Decimal), 0x34 (Hex)
Identification: 59974 (Decimal), 0xea46 (Hex)
Flags: 010 (Binary)
Fragment Offset: 0 (Decimal), 0x0 (Hex)
Time to Live (TTL): 64 (Decimal), 0x40 (Hex)
Protocol: 6 (Decimal), 0x6 (Hex), 00000110 (Binary)
Header Checksum: 0x4d51
Source IP (Hex): 192.168.1.76
Destination IP (Hex): 35.241.29.71
Source Port: 52316 (Decimal), 0xcc5c (Hex)
Destination Port: 443 (Decimal), 0x1bb (Hex)
Sequence Number: 3750319135 (Decimal), 0xdf89541f (Hex)
Acknowledgment Number: 977048620 (Decimal), 0x3a3c942c (Hex)
Flags: 10000000 (Binary)
-------------------------------------------------


-------------------------------------------------
Captured Packet (Hex): 94be46aa67bf94e23c6bd2da0800450000a23b64400040067b15c0a8014cc0a8014097f01f49df32f7feff633c66801801c0847100
000101080af5ab05120035f1d617030300699fbb37d485345495f489ecd6614fefcadbeee88fce4737126f24e4a6f0f76128ced672378d4fa6bb7936e0f6299d7
73ba60d6334aa30e2c859090877f442c81db4b72f89fd5486bb91204d953eb4b777539f4e5a4a2cf1f8038a5aa2d01d9124783f8e0acc2aec5432
Destination MAC (Hex): 94:be:46:aa:67:bf
Source MAC (Hex): 94:e2:3c:6b:d2:da
EtherType (Hex): 0800
Version: 4
IHL (Header Length): 20 bytes
Type of Service: 0
Total Length: 162 (Decimal), 0xa2 (Hex)
Identification: 15204 (Decimal), 0x3b64 (Hex)
Flags: 010 (Binary)
Fragment Offset: 0 (Decimal), 0x0 (Hex)
Time to Live (TTL): 64 (Decimal), 0x40 (Hex)
Protocol: 6 (Decimal), 0x6 (Hex), 00000110 (Binary)
Header Checksum: 0x7b15
Source IP (Hex): 192.168.1.76
Destination IP (Hex): 192.168.1.64
Source Port: 38896 (Decimal), 0x97f0 (Hex)
Destination Port: 8009 (Decimal), 0x1f49 (Hex)
Sequence Number: 3744659454 (Decimal), 0xdf32f7fe (Hex)
Acknowledgment Number: 4284693606 (Decimal), 0xff633c66 (Hex)
Flags: 10000000 (Binary)
-------------------------------------------------
```

Test 11

```
 ▣   ▭ ~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  ⬡ ⑂ master !2    sudo python scanner.py --int
erface wlo1 --filter tcp --count 10
Starting packet capture on wlo1 with filter: tcp

-------------------------------------------------
Captured Packet (Hex): 608d26a3a0dc94e23c6bd2da08004500003426c14000400653a3c0a8014c8c52721990d201bbd
c7db11918dbbe32801001d5c08600000101080ad0448d42ff84c478
Destination MAC (Hex): 60:8d:26:a3:a0:dc
Source MAC (Hex): 94:e2:3c:6b:d2:da
EtherType (Hex): 0800
Version: 4
IHL (Header Length): 20 bytes
Type of Service: 0
Total Length: 52 (Decimal), 0x34 (Hex)
Identification: 9921 (Decimal), 0x26c1 (Hex)
Flags: 010 (Binary)
Fragment Offset: 0 (Decimal), 0x0 (Hex)
Time to Live (TTL): 64 (Decimal), 0x40 (Hex)
Protocol: 6 (Decimal), 0x6 (Hex), 00000110 (Binary)
Header Checksum: 0x53a3
Source IP (Hex): 192.168.1.76
Destination IP (Hex): 140.82.114.25
Source Port: 37074 (Decimal), 0x90d2 (Hex)
Destination Port: 443 (Decimal), 0x1bb (Hex)
Sequence Number: 3699224857 (Decimal), 0xdc7db119 (Hex)
Acknowledgment Number: 417054258 (Decimal), 0x18dbbe32 (Hex)
Flags: 10000000 (Binary)
-------------------------------------------------
```

Test 12

```
 ▣   ▭ ~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  ⬡ ⑂ master !2 ?1    sudo python scanner.py --
interface wlo1 --filter udp --count 1
Starting packet capture on wlo1 with filter: udp

-------------------------------------------------
Captured Packet (Hex): 94e23c6bd2da608d26a3a0dc080045a000ead4d840003c117e4f4216e630c0a8014cc35899f40
0d6e525907888cc63cbbf5d0000e4b8bede00021be83f73c5122c3b8220920858be6f1004a640a8aa3fee93688b908bbb5f6
616ac9ea0118bd68ab3158017c472619539c5e5731369c12aa2644ba8a867f03373c192b1578307e8af8ef94b75c9d53894a
a6c9e6f48f1d3f40aaa0f4aa55b893ddc5d7f2b2dc19b6a3ad797e6cff9a6e734494e3eb1eb334d78661246c84724ab33dae
95f79d208ed6dce59aa1118d0803ae6070b80f3d38cc0ac981bd717a18a0a5a4658d06940ab07505f9e3d8ae05e9b4a5bc4b
a3a61a13eff217e0000
Destination MAC (Hex): 94:e2:3c:6b:d2:da
Source MAC (Hex): 60:8d:26:a3:a0:dc
EtherType (Hex): 0800
Version: 4
IHL (Header Length): 20 bytes
Type of Service: 160
Total Length: 234 (Decimal), 0xea (Hex)
Identification: 54488 (Decimal), 0xd4d8 (Hex)
Flags: 010 (Binary)
Fragment Offset: 0 (Decimal), 0x0 (Hex)
Time to Live (TTL): 60 (Decimal), 0x3c (Hex)
Protocol: 17 (Decimal), 0x11 (Hex), 00010001 (Binary)
Header Checksum: 0x7e4f
Source IP (Hex): 66.22.230.48
Destination IP (Hex): 192.168.1.76
Source Port: 50008 (Decimal), 0xc358 (Hex)
Destination Port: 39412 (Decimal), 0x99f4 (Hex)
Length: 214 (Decimal), 0xd6 (Hex)
Checksum: 58661 (Decimal), 0xe525 (Hex)
-------------------------------------------------
```

Test 13

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  master !2 ?1  sudo python scanner.py --
interface wlo1 --filter arp --count 1
Starting packet capture on wlo1 with filter: arp

-------------------------------------------------
Captured Packet (Hex): 94e23c6bd2da608d26a3a0dc080600010800060400001608d26a3a0dcc0a801fe000000000000c
0a8014c00000000000000000000000000000000000
Destination MAC (Hex): 94:e2:3c:6b:d2:da
Source MAC (Hex): 60:8d:26:a3:a0:dc
EtherType (Hex): 0806
Hardware Type: 1 (Decimal), 0x1 (Hex)
Protocol Type: 2048 (Decimal), 0x800 (Hex)
Hardware Size: 6 (Decimal), 0x6 (Hex)
Protocol Size: 4 (Decimal), 0x4 (Hex)
Opcode: 1 (Decimal), 0x1 (Hex)
Sender MAC: 60:8d:26:a3:a0:dc
Sender IP: 192.168.1.254
Target MAC: 00:00:00:00:00:00
Target IP: 192.168.1.76
-------------------------------------------------
```

Test 14

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  master !2 ?1  sudo python scanner.py --
interface wlo1 --filter ip --count 1
Starting packet capture on wlo1 with filter: ip

-------------------------------------------------
Captured Packet (Hex): 94e23c6bd2da608d26a3a0dc080045a000e2f25e40003c1160d14216e630c0a8014cc3589a960
0ce69cf90788b3963f00f9d0000e4b8bede000200cea85f6b52b84591ce34cb88f331965f5ea408458759dcf9fc057f5e0c9
c5179e306341d5bba4e5f8327143831cd091ff586b5672cfe338fb1ca8f8f917a5fd581c1840112c6e889ce62083648551a2
19df2158b654e6b85f9076e6fd81f03b0e07736d10043b19fdd6f65f0ba975d38695a35bf89094157a014938ba02dc9d974d
cd9b59f5984b1061c0d7c44832a51f3ba9572152534bf0095509c52f8a6f5f87eaf619212b6649bb0b9690b48a9746062840
000
Destination MAC (Hex): 94:e2:3c:6b:d2:da
Source MAC (Hex): 60:8d:26:a3:a0:dc
EtherType (Hex): 0800
Version: 4
IHL (Header Length): 20 bytes
Type of Service: 160
Total Length: 226 (Decimal), 0xe2 (Hex)
Identification: 62046 (Decimal), 0xf25e (Hex)
Flags: 010 (Binary)
Fragment Offset: 0 (Decimal), 0x0 (Hex)
Time to Live (TTL): 60 (Decimal), 0x3c (Hex)
Protocol: 17 (Decimal), 0x11 (Hex), 00010001 (Binary)
Header Checksum: 0x60d1
Source IP (Hex): 66.22.230.48
Destination IP (Hex): 192.168.1.76
Source Port: 50008 (Decimal), 0xc358 (Hex)
Destination Port: 39574 (Decimal), 0x9a96 (Hex)
Length: 206 (Decimal), 0xce (Hex)
Checksum: 27087 (Decimal), 0x69cf (Hex)
-------------------------------------------------
```

Test 15

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  master !2  sudo python scanner.py --int
erface wlo1 --filter tcp --count 5 --unknown
Error: Too many arguments.
```

Test 16

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  master !2  sudo python scanner.py --int
erface wlo1 --filter tcp --count -7
Error: The packet count must be a positive, non-zero integer.
```

Test 17

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  master !2  sudo python scanner.py --int
erface "" --filter tcp --count 1
Error: The network interface cannot be an empty string.
```

Test 18

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  master !2  sudo python scanner.py --int
erface wlo1 --filter "" --count 5
Error: Invalid BPF filter ''. Supported filters: tcp, udp, arp, ip
```

Test 20

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src  master !2  sudo python scanner.py --int
erface wlo1 --filter tcp --count abc
usage: scanner.py [-h] --interface INTERFACE --filter FILTER --count COUNT
scanner.py: error: argument --count: invalid int value: 'abc'
```

Test 21

```
-----------------------------------------------------
Captured Packet (Hex): 608d26a3a0dc94e23c6bd2da86dd600b82ed04d6114020010569529dab002313fecafd2a77d72
607f8b0400a0801000000000000200eb19a01bb04d645a1c6000000010876161152cb880729004046006260e82dc3a7a17af
80fcb454cabe8d17b0ada1e3f717cd48cae2d750741b2f8b9b41d3331eadee951d724719e23b8005973067fd97225d5c0e19
5732ba2f37d094b99a21e4475726171928baf2c442967818973cbbca4b1fa07f71f3c5b7ca7a96c27182d646364c855678cf
2c4842b9a3fcae2f8ddf697bbadc56bf8c8ec464dbeaf623158d930483e8067f4aa98035d84a73a1906ba1bfc6ba51b65752
114888a279045725e50216399b75d60abe977ad89b75b735afb0859a8de8ce4a7bc58acfeca8b373b442df2feea6f1ca93f1
889cf3a7474597b760c49f95c1197a9770f32a79ca1986696f35f9b8ba08aeb180197dec39f38d1075e3f2bbb9a30a39515e
491f87b8fb9a35e36db5b560ff3685c6ec9b892e5b71ae8f82c482a96e4bfdf6a2a812c9ea7247d431fc499b251fb79416f9
f0622063a8a0b507ee1b1be6e428bc409a8c793a924ee76b299628832bb3801907c789f997bf5d7dcc0707bb84f98536b73f
611d9b6cf9a80261f97db8ed3e019cfe380e4e44eaebbaf0809cec0d3fe15294e1481046896d5af2032f685c740c508a7588
91ac960732e511740627baf99c55d5d24bd524ba640f07dab87902859968fd29e63e4c4ad3e95c6c7edab6f5443c3a62cd7b
e08cfc1cd76e06b1bd46a9d7785b1f1887748a8b429b081db5c07f709f6509a8e3816a914c6b8fc88a6fa3f6c21d2ca1fc14
56d22f92e16b5e34472612484c9db5e2243c9d6a8556aa5e5bbefb724d9b3bf13271f127755e7622a5e833470f1467ae90c5
4b42ef7a3a01412afefbf039194a26db8cd81465a0ab3d8fed5da8f9e755b194a0a79b61544050d37c4d69c8551a129ce774
512b9a1debd547682fe5893724f017fa77b98e3c2b8aba5406ee60af26a74c1e31be56150cbda064afec29f4c3155d21d527
be4e4b93e2868fb6639667981e6cb68d27c38dea94e7093be6bf5aa139b43772a8442f5d4b2f32d148d2f7544869f0017b28
732d11178301322f66ca5803f62b13b49f0e357445d36afc9c3a5172f70c5629260d005591a1a14bd73a71e84900299c8b6f
bde1f897454a8bbe6b8a31d22b79938de8538f0fdfbf8a1c90d4ef8ca70d011918c05ed591c1de3d157d720db28d34474665
5649ce0cd90ee80929c4c210439b5ad1ccaa2ec6c5afc7316772ec44d8bbd697dabc375c047778f59cdc89006fc03415aa20
571b7ca1068f4f54d5eccf2106959d2d269bf0b6275519d1b61987cf167c96e6e9009f5541ccf3904c77229795610098997 4
f51a0ae95333375a6eeff30cac9f58f4e9b987905cacddf8f23433e2b207943c2abfe2a6b25c1770571ce38844504b819027
b92aab02e0f6e5749c0cb6878cd507374eee9f592109800f711c7f6ebce1e33ae2c641412258e3b4b3007f5f39cdd61a409e
b2362a4517b90296f521e3903b2483967e63162aa196158798f809780e8810aeb1054b4b0199bfe4b9a01c9e459b6b2971a1
a170903f220522c1493df54201a864d8863c19bcdf94f894dae63b5a2a241e341a5b575d8f0fe7bfacb9ca45f77e7adfbad4
dd0d9bca6f9acfe336415ee95825e695c098deff0f20fc5a5a1fe8bf416341224cc3c6976b09fbe054aa9ebb835c6d21fcca
2ecbd461f165e3b9c2dff00ef8a5297b628f55e305bb1d4fea4272f4ad1d02a76ed6245099296ab89ee5b53fdd157e9ffb81
883fceb
Destination MAC (Hex): 60:8d:26:a3:a0:dc
Source MAC (Hex): 94:e2:3c:6b:d2:da
EtherType (Hex): 86dd
Error: Unsupported EtherType 86dd (Hex). Valid EtherTypes: ipv4, UDP, TCP, ARP.
-----------------------------------------------------
```

Test 22

```
~/Doc/COMP7003/assign-2/COMP7003-Assign2/s/src    master !2   python scanner.py --interfac
e wlo1 --filter udp --count 10
Error: This program requires root privileges to capture packets. Please run with 'sudo'.
```