

# COMP 7003

## Assignment 2

### Testing

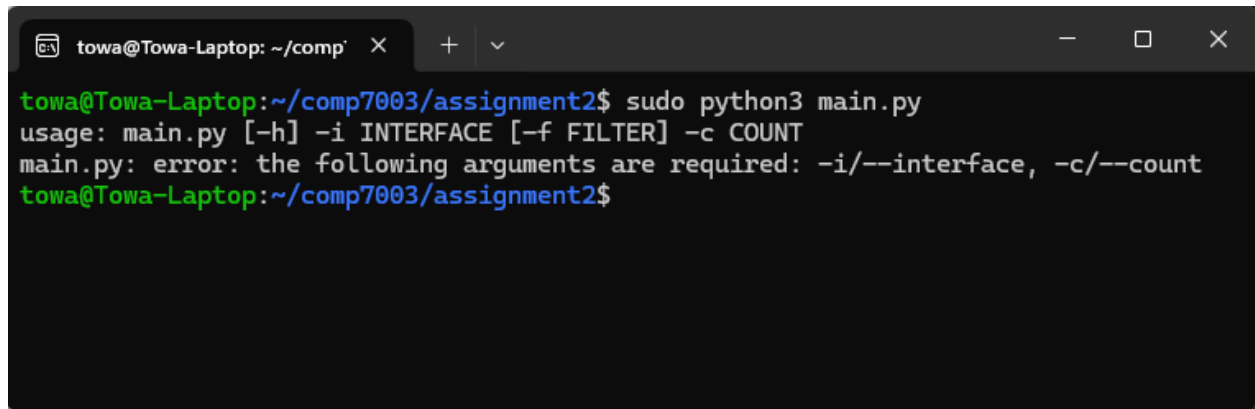
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Test 1	4
Test 2	5
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Test 10	9
Test 11	10
Test 12	11
Test 13	12

Test	Expected	Actual	Screenshot
No arguments	fail	fail	<a href="#">Test 1</a>
-h	pass	pass	<a href="#">Test 2</a>
-x	fail	fail	<a href="#">Test 3</a>
Interface with no global IP address	fail	fail	<a href="#">Test 4</a>
Non-positive count	fail	fail	<a href="#">Test 5</a>
Non-integer count	fail	fail	<a href="#">Test 6</a>
No BPF filter	pass	pass	<a href="#">Test 7</a>
Too many arguments	fail	fail	<a href="#">Test 8</a>
ARP filter on any interface with 1 packet	pass	pass	<a href="#">Test 9</a>
UDP filter on any interface with 1 packet	pass	pass	<a href="#">Test 10</a>
TCP filter on any interface with 1 packet	pass	pass	<a href="#">Test 11</a>
ICMP filter on any interface with 1 packet	pass	pass	<a href="#">Test 12</a>
DNS filter on any interface with 1 packet	pass	pass	<a href="#">Test 13</a>

# Tests

## Test 1



```
towa@Towa-Laptop: ~/comp' X + v - □ X
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py
usage: main.py [-h] -i INTERFACE [-f FILTER] -c COUNT
main.py: error: the following arguments are required: -i/--interface, -c/--count
towa@Towa-Laptop:~/comp7003/assignment2$
```

## Test 2

```
towa@Towa-Laptop: ~/comp' x + v - □ x
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -h
usage: main.py [-h] -i INTERFACE [-f FILTER] -c COUNT

Packet sniffer using Scapy with manual HEX parsing

options:
  -h, --help            show this help message and exit
  -i INTERFACE, --interface INTERFACE
                        The interface to capture packets on (e.g., eth0, wlan0,
                        any)
  -f FILTER, --filter FILTER
                        BPF filter to apply (e.g., 'tcp and port 80'). If not
                        provided, captures all packets.
  -c COUNT, --count COUNT
                        Number of packets to capture (default: 1)
towa@Towa-Laptop:~/comp7003/assignment2$ |
```

## Test 3

```
towa@Towa-Laptop: ~/comp' x + v - □ x
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -x
usage: main.py [-h] -i INTERFACE [-f FILTER] -c COUNT
main.py: error: the following arguments are required: -i/--interface, -c/--count
towa@Towa-Laptop:~/comp7003/assignment2$ |
```

## Test 4

```
towa@Towa-Laptop: ~/comp' x + v - □ x
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -i xxx -c 1 --filter arp
Error: The specified interface 'xxx' does not have an assigned global IP address.
towa@Towa-Laptop:~/comp7003/assignment2$
```

## Test 5

```
towa@Towa-Laptop: ~/comp' x + v - □ x
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -i any -c 0 --filter arp
Error: Packet count must be greater than 0.
towa@Towa-Laptop:~/comp7003/assignment2$
```

## Test 6

```
towa@Towa-Laptop: ~/comp' x + v - □ x
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -i any -c abc --filter arp
usage: main.py [-h] -i INTERFACE [-f FILTER] -c COUNT
main.py: error: argument -c/--count: invalid int value: 'abc'
towa@Towa-Laptop:~/comp7003/assignment2$
```

## Test 7

[illegible]

# Test 8

```
towa@Towa-Laptop: ~/comp  X + v
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -i any -c 1 -f arp abc xxx
123456 hello world
usage: main.py [-h] -i INTERFACE [-f FILTER] -c COUNT
main.py: error: unrecognized arguments: abc xxx 123456 hello world
towa@Towa-Laptop:~/comp7003/assignment2$ |
```

## Test 9

```
towa@Towa-Laptop: ~/comp × + ▾
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -i any -c 1 -f arp
Available interfaces: ['lo', 'eth0']
Starting packet capture on eth0
Starting packet capture on eth0 with filter: arp

Captured Packet 1:
Ethernet Header:
  Destination MAC:      00155d2fa253      | 00:15:5d:2f:a2:53
  Source MAC:           00155d0a08b4      | 00:15:5d:0a:08:b4
  EtherType:            0806              | 2054
ARP Header:
  Hardware Type:         0001              | 1
  Protocol Type:         0800              | 2048
  Hardware Size:         06                | 6
  Protocol Size:         04                | 4
  Operation:             0001              | 1
  Sender MAC:            00155d0a08b4      | 00:15:5d:0a:08:b4
  Sender IP:             ac1cdd30          | 172.28.221.48
  Target MAC:            000000000000      | 00:00:00:00:00:00
  Target IP:             ac1cd001          | 172.28.208.1
Packet capture completed on eth0.
towa@Towa-Laptop:~/comp7003/assignment2$
```



## Test 10

[illegible]

## Test 11

```
towa@Towa-Laptop: ~/comp' X + v
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -i any -c 1 -f tcp
Available interfaces: ['lo', 'eth0']
Starting packet capture on eth0
Starting packet capture on eth0 with filter: tcp

Captured Packet 1:
Ethernet Header:
  Destination MAC:      00155d2fa253      | 00:15:5d:2f:a2:53
  Source MAC:           00155d0a08b4      | 00:15:5d:0a:08:b4
  EtherType:            0800              | 2048
IPv4 Header:
  Version:              4                  | 4
  Header Length:         5                  | 20 bytes
  Total Length:          003c              | 60
  Flags & Frag Offset:   4000              | 0b1000000000000000
  Reserved:              0
  DF (Do Not Fragment): 1
  MF (More Fragments):  0
  Fragment Offset:       0x0 | 0
  Protocol:              06                | 6
  Source IP:             ac1cdd30          | 172.28.221.48
  Destination IP:        8efad907         | 142.250.217.7
TCP Header:
  Source Port:           eb38              | 60216
  Destination Port:      0050              | 80
  Sequence Number:        0973ec9a         | 158592154
  Acknowledgment Number: 00000000         | 0
  Data Offset:            a0                | 40 bytes
  Reserved:               0b0              | 0
  Flags:                  0b00000010       | 2
  NS:                     0
  CWR:                     0
  ECE:                     0
  URG:                     0
  ACK:                     0
  PSH:                     0
  RST:                     0
  SYN:                     1
  FIN:                     0
  Window Size:            faf0              | 64240
  Checksum:               f17d              | 61821
  Urgent Pointer:         0000              | 0
  Payload (hex):
Packet capture completed on eth0.
towa@Towa-Laptop:~/comp7003/assignment2$
```

## Test 12

```
towa@Towa-Laptop: ~/comp' X + v
towa@Towa-Laptop:~/comp7003/assignment2$ sudo python3 main.py -i any -c 1 -f icmp
Available interfaces: ['lo', 'eth0']
Starting packet capture on eth0
Starting packet capture on eth0 with filter: icmp

Captured Packet 1:
Ethernet Header:
  Destination MAC:      00155d2fa253      | 00:15:5d:2f:a2:53
  Source MAC:           00155d0a08b4      | 00:15:5d:0a:08:b4
  EtherType:            0800              | 2048
IPv4 Header:
  Version:              4                 | 4
  Header Length:         5                 | 20 bytes
  Total Length:          0054              | 84
  Flags & Frag Offset:   4000              | 0b1000000000000000
  Reserved:              0
  DF (Do Not Fragment): 1
  MF (More Fragments):  0
  Fragment Offset:       0x0 | 0
  Protocol:              01                 | 1
  Source IP:             ac1cdd30           | 172.28.221.48
  Destination IP:        8ee8e60a          | 142.232.230.10
ICMP Header:
  Type:                  08                 | 8
  Code:                  00                 | 0
  Checksum:              8754              | 34644
  Payload (hex):         181d00106893a06700000000089b0070000000000101112131415161718191
a1b1c1d1e1f202122232425262728292a2b2c2d2e2f3031323334353637
Packet capture completed on eth0.
towa@Towa-Laptop:~/comp7003/assignment2$ |
```

## Test 13

```
1 -f "src port 53"
[Password:
Available interfaces: ['lo0', 'gif0', 'stf0', 'anpi1', 'anpi0', 'en3', 'en4', 'en1', 'en2', 'bridge0', 'ap1', 'en0', 'awdl0', 'llw0', 'utun0', 'utun1', 'utun2', 'utun3', 'utun4', 'utun5', 'utun6', 'utun7']
Starting packet capture on en0
Starting packet capture on en0 with filter: src port 53

Captured Packet 1:
Ethernet Header:
  Destination MAC:      822b644d2756      | 82:2b:64:4d:27:56
  Source MAC:           d007ca53d6a0      | d0:07:ca:53:d6:a0
  EtherType:            0800              | 2048
IPv4 Header:
  Version:              4                  | 4
  Header Length:         5                  | 20 bytes
  Total Length:          0053              | 83
  Flags & Frag Offset:   0000              | 0b0
    Reserved:            0
    DF (Do Not Fragment): 0
    MF (More Fragments): 0
    Fragment Offset:     0x0 | 0
  Protocol:              11                  | 17
  Source IP:              8ee84cc8          | 142.232.76.200
  Destination IP:         0a4123c8         | 10.65.35.200
UDP Header:
  Source Port:           0035              | 53
  Destination Port:      d099              | 53401
  Length:                003f              | 63
  Checksum:              e0b1              | 57521
  Payload (hex):         0e8d81800001000100000000106676f6f676c6503636f6
d0000010001c00c000100010000000100048efb294e0000291000000000000000
Detected DNS traffic
DNS Header:
  Transaction ID:        0e8d
  Flags:                 0b1000000110000000 | 33152
  Questions:             1
  Answers:               1
  Authority RRs:         0
  Additional RRs:        1
  Payload (hex):         06676f6f676c6503636f6d0000010001c00c000100010
000000100048efb294e00002910000000000000000
Packet capture completed on en0.
```