COMP 7003
Assignment 2
Testing

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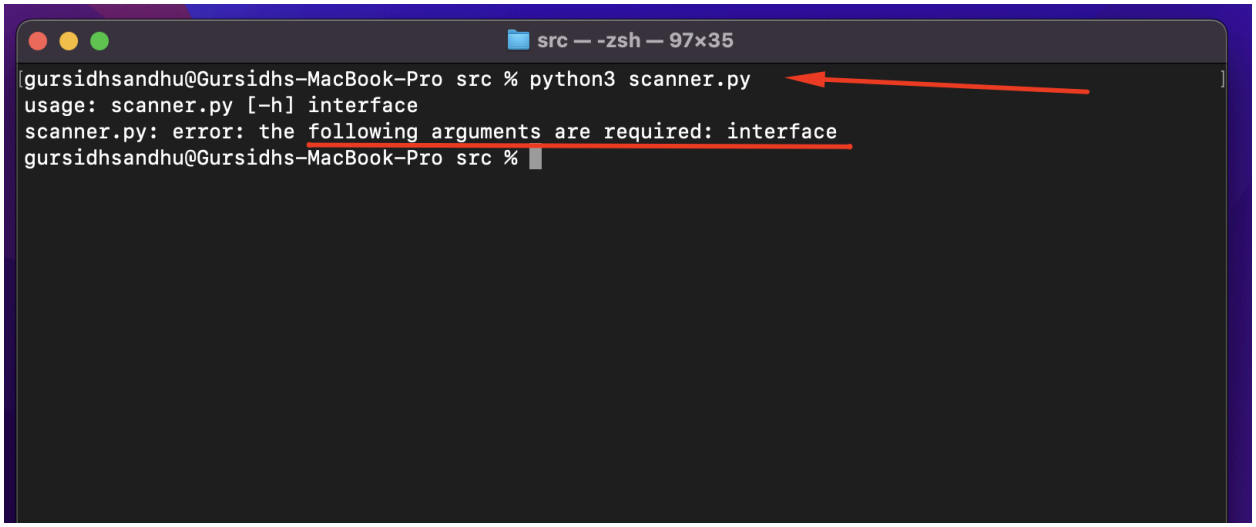
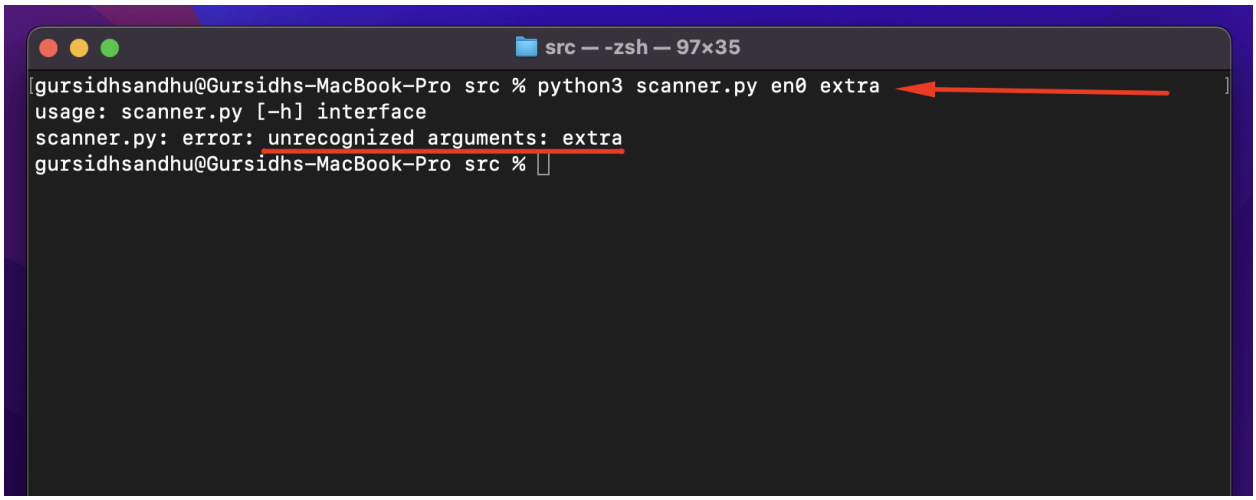
Test	Expected	Actual	Screenshot
No arguments	fail	fail	Test 1
More than one argument	fail	fail	Test 2
Invalid interface string provided	fail	fail	Test 3
Interface argument provided, but not a string	fail	fail	Test 4
Interface argument provided, but empty string	pass	pass	Test 5
Interface argument provided, but contains special characters	fail	fail	Test 6
Run multiple instances of program in different terminals using same interface	pass	pass	Test 7
Run multiple instances of program in different terminals using different network interface	pass	pass	Test 8
Command+C to skip current packet capture and move on to next packet capture	pass	pass	Test 9
Command+C to exit program	pass	pass	Test 10
Run one instance of program, start a new instance and shut down the first instance while second is running	pass	pass	Test 11
Run program on a network interface that currently has no traffic	pass	pass	Test 12
Run program on valid interface, but shut down connection to network after connecting	fail	fail	Test 13
Run program on valid interface without being connected to a network	fail	fail	Test 14
Run program while not being connected to network, then connect to network while it's being run	pass	pass	Test 15

Tests

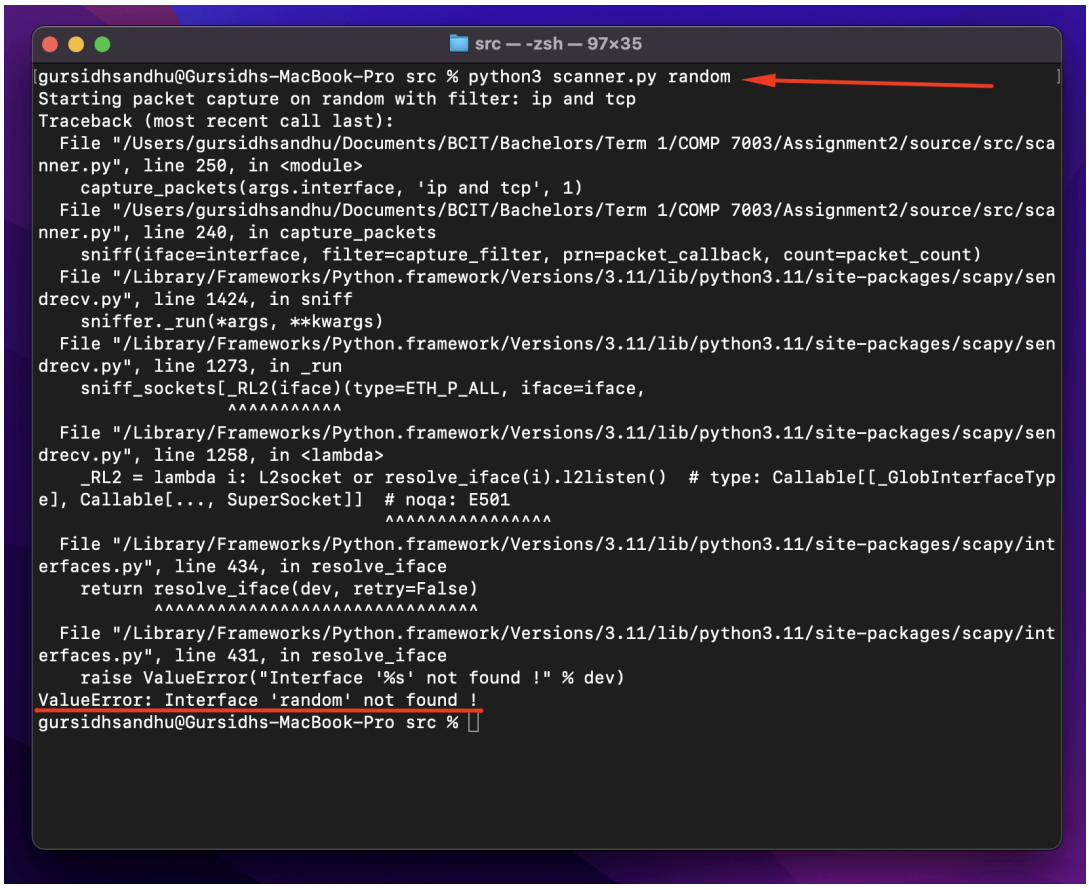
Test 1


src — -zsh — 97×35
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py
usage: scanner.py [-h] interface
scanner.py: error: the following arguments are required: interface
gursidhsandhu@Gursidhs-MacBook-Pro src %

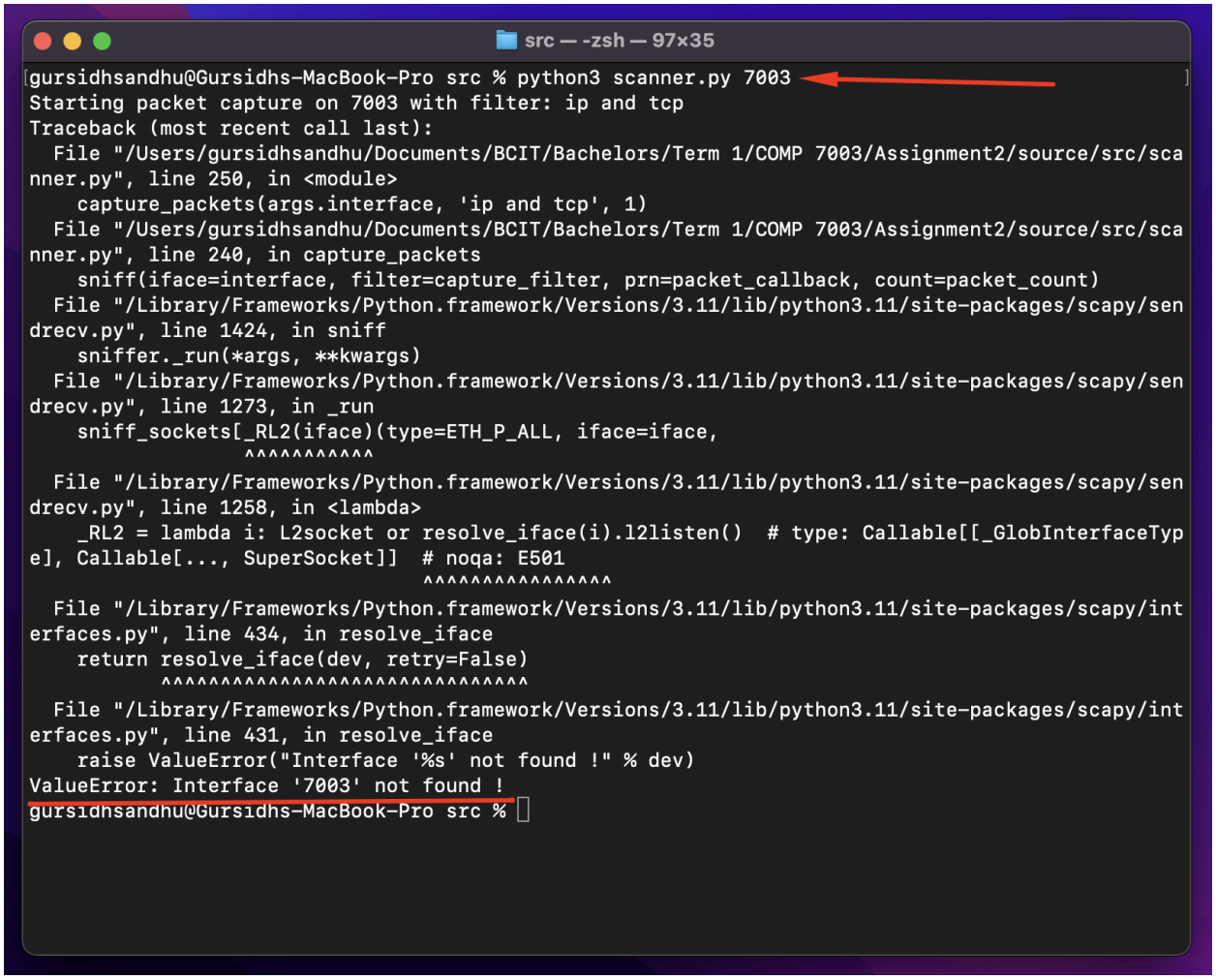
Test 2


src — -zsh — 97×35
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en0 extra
usage: scanner.py [-h] interface
scanner.py: error: unrecognized arguments: extra
gursidhsandhu@Gursidhs-MacBook-Pro src %

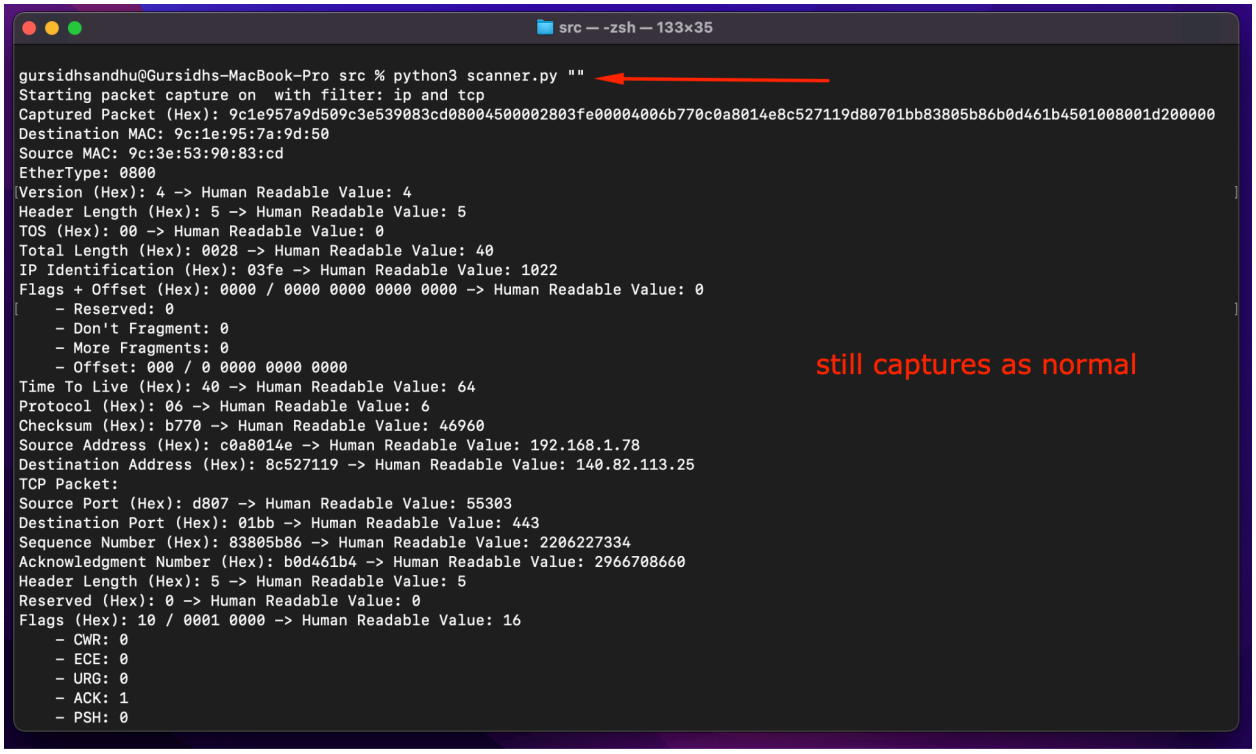
Test 3


src — -zsh — 97×35
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py random
Starting packet capture on random with filter: ip and tcp
Traceback (most recent call last):
File "/Users/gursidhsandhu/Documents/BCIT/Bachelors/Term 1/COMP 7003/Assignment2/source/src/scanner.py", line 250, in <module>
capture_packets(args.interface, 'ip and tcp', 1)
File "/Users/gursidhsandhu/Documents/BCIT/Bachelors/Term 1/COMP 7003/Assignment2/source/src/scanner.py", line 240, in capture_packets
sniff(iface=interface, filter=capture_filter, prn=packet_callback, count=packet_count)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1424, in sniff
sniffer._run(*args, **kwargs)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1273, in _run
sniff_sockets[_RL2(iface)(type=ETH_P_ALL, iface=iface,
^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1258, in <lambda>
_RL2 = lambda i: L2socket or resolve_iface(i).l2listen() # type: Callable[[_GlobInterfaceType], Callable[..., SuperSocket]] # noqa: E501
^^^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/interfaces.py", line 434, in resolve_iface
return resolve_iface(dev, retry=False)
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/interfaces.py", line 431, in resolve_iface
raise ValueError("Interface '%s' not found !" % dev)
ValueError: Interface 'random' not found !
gursidhsandhu@Gursidhs-MacBook-Pro src %

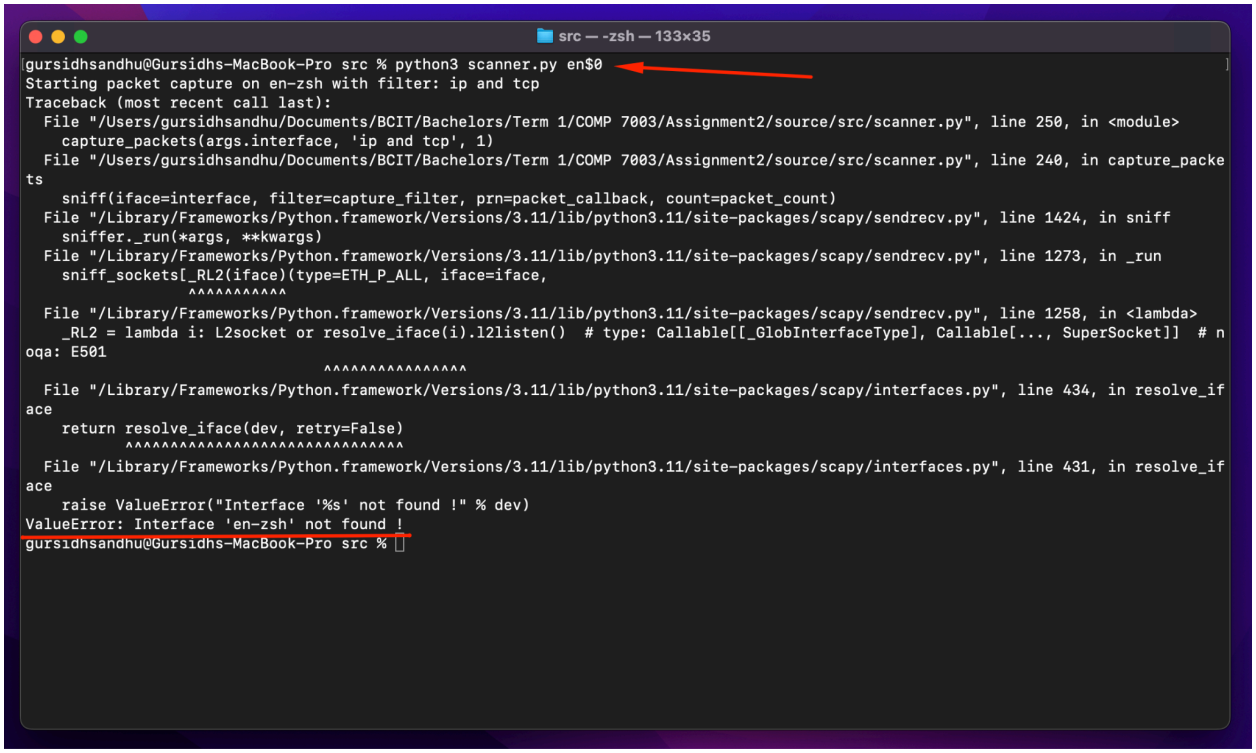
Test 4


src — -zsh — 97×35
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py 7003
Starting packet capture on 7003 with filter: ip and tcp
Traceback (most recent call last):
File "/Users/gursidhsandhu/Documents/BCIT/Bachelors/Term 1/COMP 7003/Assignment2/source/src/scanner.py", line 250, in <module>
capture_packets(args.interface, 'ip and tcp', 1)
File "/Users/gursidhsandhu/Documents/BCIT/Bachelors/Term 1/COMP 7003/Assignment2/source/src/scanner.py", line 240, in capture_packets
sniff(iface=interface, filter=capture_filter, prn=packet_callback, count=packet_count)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1424, in sniff
sniffer._run(*args, **kwargs)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1273, in _run
sniff_sockets[_RL2(iface)(type=ETH_P_ALL, iface=iface,
^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1258, in <lambda>
_RL2 = lambda i: L2socket or resolve_iface(i).l2listen() # type: Callable[[_GlobInterfaceType], Callable[..., SuperSocket]] # noqa: E501
^^^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/interfaces.py", line 434, in resolve_iface
return resolve_iface(dev, retry=False)
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/interfaces.py", line 431, in resolve_iface
raise ValueError("Interface '%s' not found !" % dev)
ValueError: Interface '7003' not found !
gursidhsandhu@Gursidhs-MacBook-Pro src %

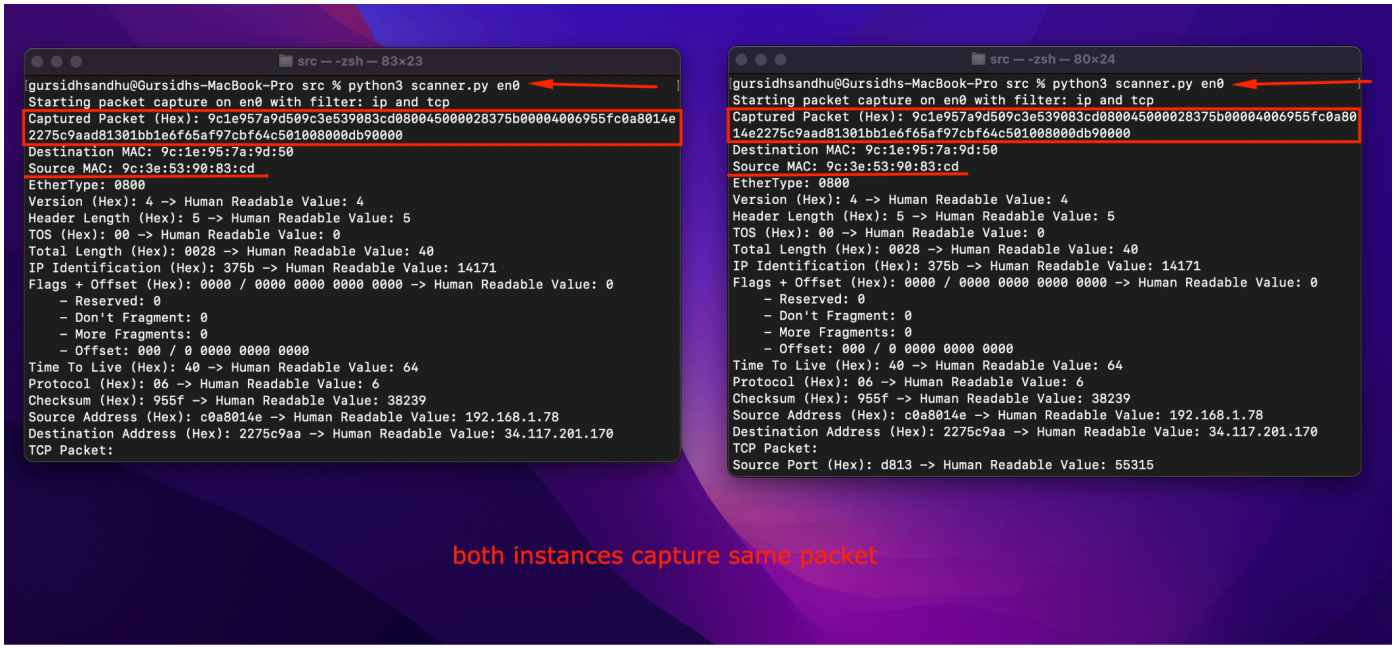
Test 5


src — -zsh — 133×35
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py ""
Starting packet capture on with filter: ip and tcp
Captured Packet (Hex): 9c1e957a9d509c3e539083cd08004500002803fe00004006b770c0a8014e8c527119d80701bb83805b86b0d461b4501008001d200000
Destination MAC: 9c:1e:95:7a:9d:50
Source MAC: 9c:3e:53:90:83:cd
EtherType: 0800
Version (Hex): 4 -> Human Readable Value: 4
Header Length (Hex): 5 -> Human Readable Value: 5
TOS (Hex): 00 -> Human Readable Value: 0
Total Length (Hex): 0028 -> Human Readable Value: 40
IP Identification (Hex): 03fe -> Human Readable Value: 1022
Flags + Offset (Hex): 0000 / 0000 0000 0000 0000 -> Human Readable Value: 0
- Reserved: 0
- Don't Fragment: 0
- More Fragments: 0
- Offset: 000 / 0 0000 0000 0000
Time To Live (Hex): 40 -> Human Readable Value: 64
Protocol (Hex): 06 -> Human Readable Value: 6
Checksum (Hex): b770 -> Human Readable Value: 46960
Source Address (Hex): c0a8014e -> Human Readable Value: 192.168.1.78
Destination Address (Hex): 8c527119 -> Human Readable Value: 140.82.113.25
TCP Packet:
Source Port (Hex): d807 -> Human Readable Value: 55303
Destination Port (Hex): 01bb -> Human Readable Value: 443
Sequence Number (Hex): 83805b86 -> Human Readable Value: 2206227334
Acknowledgment Number (Hex): b0d461b4 -> Human Readable Value: 2966708660
Header Length (Hex): 5 -> Human Readable Value: 5
Reserved (Hex): 0 -> Human Readable Value: 0
Flags (Hex): 10 / 0001 0000 -> Human Readable Value: 16
- CWR: 0
- ECE: 0
- URG: 0
- ACK: 1
- PSH: 0
still captures as normal

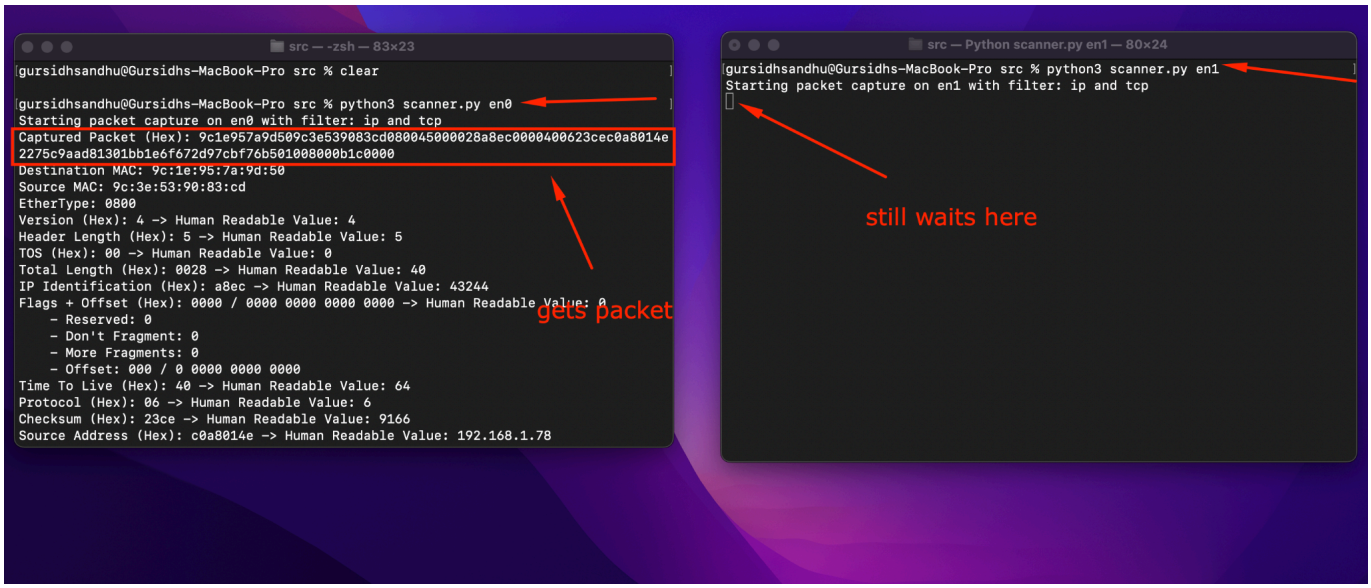
Test 6


src — -zsh — 133×35
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en$0
Starting packet capture on en-zsh with filter: ip and tcp
Traceback (most recent call last):
File "/Users/gursidhsandhu/Documents/BCIT/Bachelors/Term 1/COMP 7003/Assignment2/source/src/scanner.py", line 250, in <module>
capture_packets(args.interface, 'ip and tcp', 1)
File "/Users/gursidhsandhu/Documents/BCIT/Bachelors/Term 1/COMP 7003/Assignment2/source/src/scanner.py", line 240, in capture_packets
sniff(iface=interface, filter=capture_filter, prn=packet_callback, count=packet_count)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1424, in sniff
sniffer._run(*args, **kwargs)
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1273, in _run
sniff_sockets[_RL2(iface)(type=ETH_P_ALL, iface=iface,
^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/sendrecv.py", line 1258, in <lambda>
_RL2 = lambda i: L2socket or resolve_iface(i).l2listen() # type: Callable[[_GlobInterfaceType], Callable[..., SuperSocket]] # noqa: E501
^^^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/interfaces.py", line 434, in resolve_iface
return resolve_iface(dev, retry=False)
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/scapy/interfaces.py", line 431, in resolve_iface
raise ValueError("Interface '%s' not found !" % dev)
ValueError: Interface 'en-zsh' not found !
gursidhsandhu@Gursidhs-MacBook-Pro src %

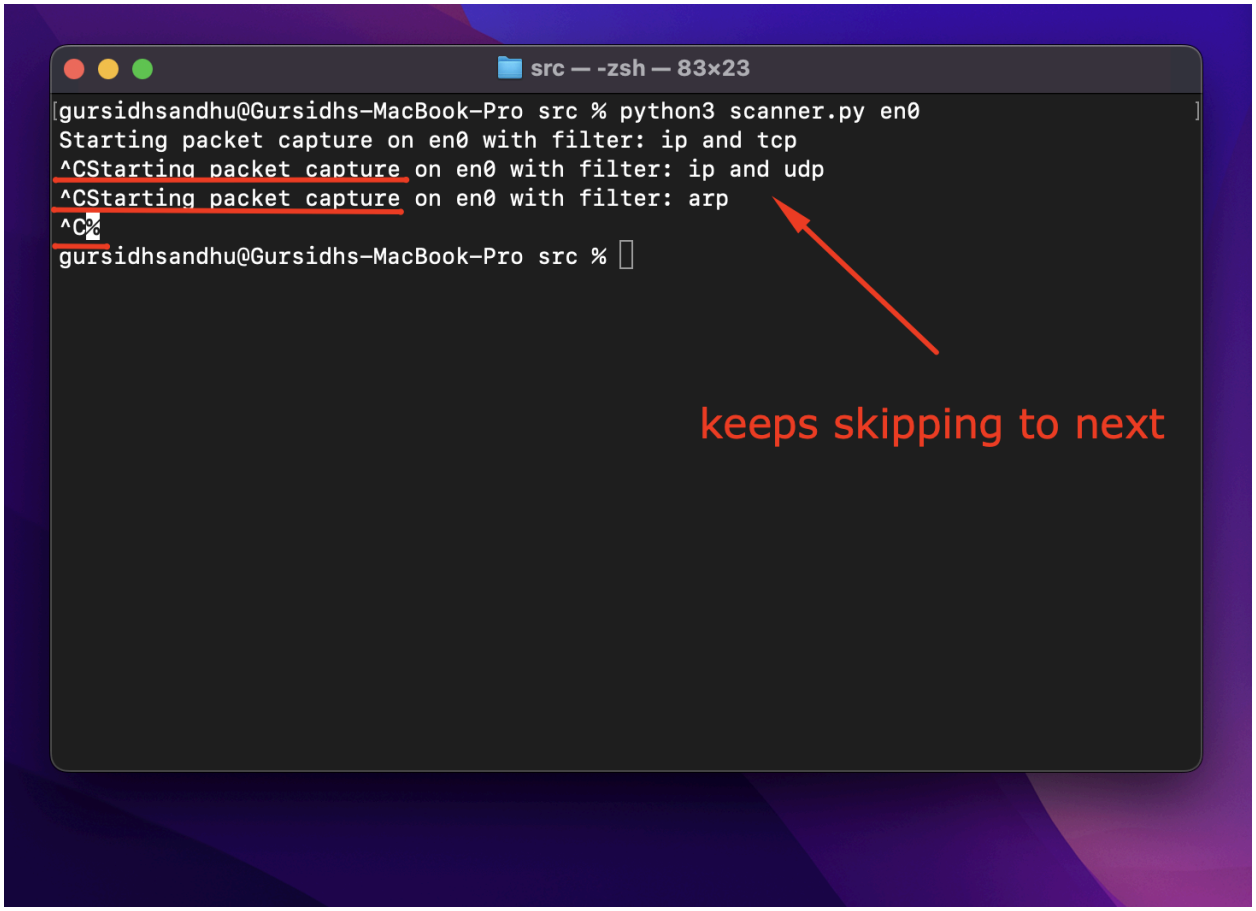
Test 7


src — -zsh — 83×23
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en0
Starting packet capture on en0 with filter: ip and tcp
Captured Packet (Hex): 9c1e957a9d509c3e539083cd080045000028375b00004006955fc0a8014e
2275c9aad81301bb1e6f65af97cbf64c501008000db90000
Destination MAC: 9c:1e:95:7a:9d:50
Source MAC: 9c:3e:53:90:83:cd
EtherType: 0800
Version (Hex): 4 -> Human Readable Value: 4
Header Length (Hex): 5 -> Human Readable Value: 5
TOS (Hex): 00 -> Human Readable Value: 0
Total Length (Hex): 0028 -> Human Readable Value: 40
IP Identification (Hex): 375b -> Human Readable Value: 14171
Flags + Offset (Hex): 0000 / 0000 0000 0000 0000 -> Human Readable Value: 0
- Reserved: 0
- Don't Fragment: 0
- More Fragments: 0
- Offset: 000 / 0 0000 0000 0000
Time To Live (Hex): 40 -> Human Readable Value: 64
Protocol (Hex): 06 -> Human Readable Value: 6
Checksum (Hex): 955f -> Human Readable Value: 38239
Source Address (Hex): c0a8014e -> Human Readable Value: 192.168.1.78
Destination Address (Hex): 2275c9aa -> Human Readable Value: 34.117.201.170
TCP Packet:
src — -zsh — 80×24
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en0
Starting packet capture on en0 with filter: ip and tcp
Captured Packet (Hex): 9c1e957a9d509c3e539083cd080045000028375b00004006955fc0a80
14e2275c9aad81301bb1e6f65af97cbf64c501008000db90000
Destination MAC: 9c:1e:95:7a:9d:50
Source MAC: 9c:3e:53:90:83:cd
EtherType: 0800
Version (Hex): 4 -> Human Readable Value: 4
Header Length (Hex): 5 -> Human Readable Value: 5
TOS (Hex): 00 -> Human Readable Value: 0
Total Length (Hex): 0028 -> Human Readable Value: 40
IP Identification (Hex): 375b -> Human Readable Value: 14171
Flags + Offset (Hex): 0000 / 0000 0000 0000 0000 -> Human Readable Value: 0
- Reserved: 0
- Don't Fragment: 0
- More Fragments: 0
- Offset: 000 / 0 0000 0000 0000
Time To Live (Hex): 40 -> Human Readable Value: 64
Protocol (Hex): 06 -> Human Readable Value: 6
Checksum (Hex): 955f -> Human Readable Value: 38239
Source Address (Hex): c0a8014e -> Human Readable Value: 192.168.1.78
Destination Address (Hex): 2275c9aa -> Human Readable Value: 34.117.201.170
TCP Packet:
Source Port (Hex): d813 -> Human Readable Value: 55315
both instances capture same packet

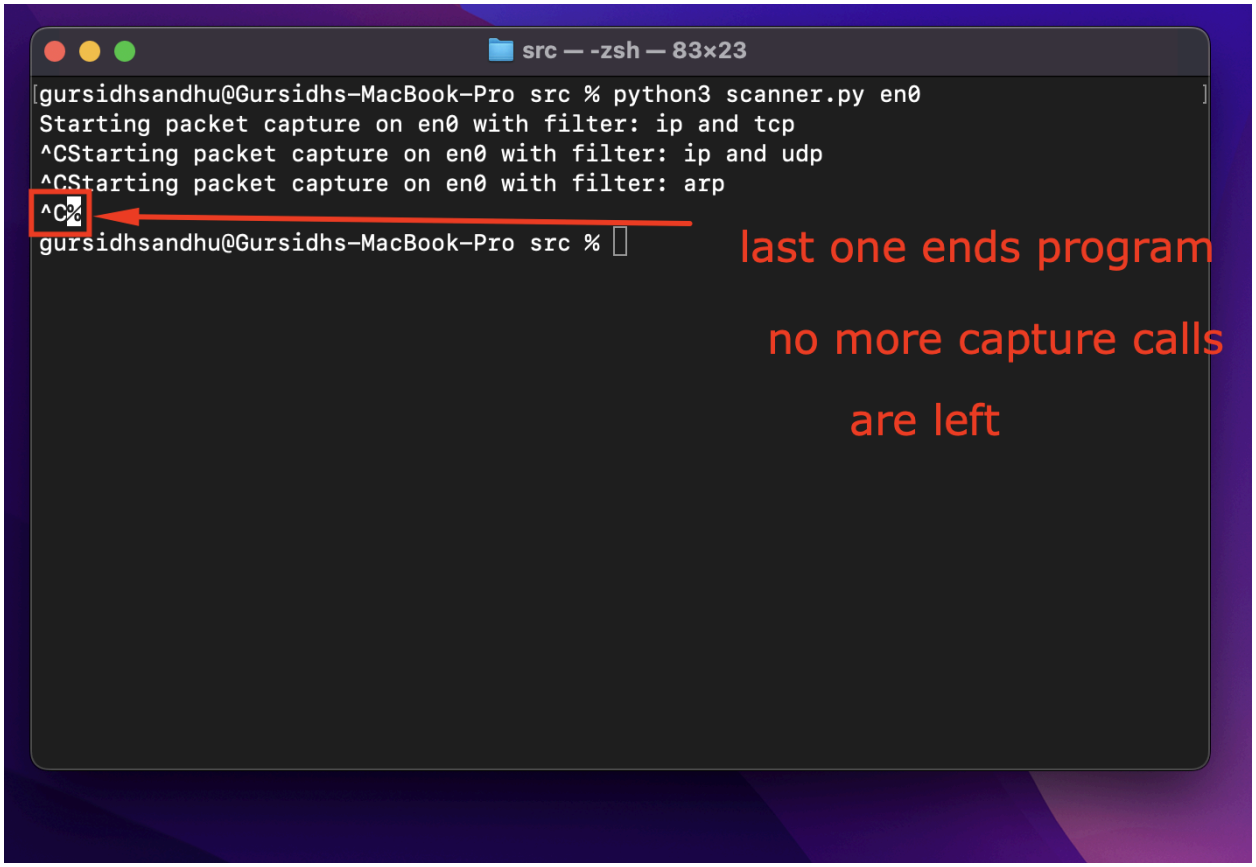
Test 8


src — -zsh — 83×23
gursidhsandhu@Gursidhs-MacBook-Pro src % clear
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en0
Starting packet capture on en0 with filter: ip and tcp
Captured Packet (Hex): 9c1e957a9d509c3e539083cd080045000028a8ec0000400623cec0a8014e
2275c9aad81301bb1e6f672d97cbf76b501008000b1c0000
Destination MAC: 9c:1e:95:7a:9d:50
Source MAC: 9c:3e:53:90:83:cd
EtherType: 0800
Version (Hex): 4 -> Human Readable Value: 4
Header Length (Hex): 5 -> Human Readable Value: 5
TOS (Hex): 00 -> Human Readable Value: 0
Total Length (Hex): 0028 -> Human Readable Value: 40
IP Identification (Hex): a8ec -> Human Readable Value: 43244
Flags + Offset (Hex): 0000 / 0000 0000 0000 0000 -> Human Readable Value: 0
- Reserved: 0
- Don't Fragment: 0
- More Fragments: 0
- Offset: 000 / 0 0000 0000 0000
Time To Live (Hex): 40 -> Human Readable Value: 64
Protocol (Hex): 06 -> Human Readable Value: 6
Checksum (Hex): 23ce -> Human Readable Value: 9166
Source Address (Hex): c0a8014e -> Human Readable Value: 192.168.1.78
gets packet
src — Python scanner.py en1 — 80×24
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en1
Starting packet capture on en1 with filter: ip and tcp
still waits here

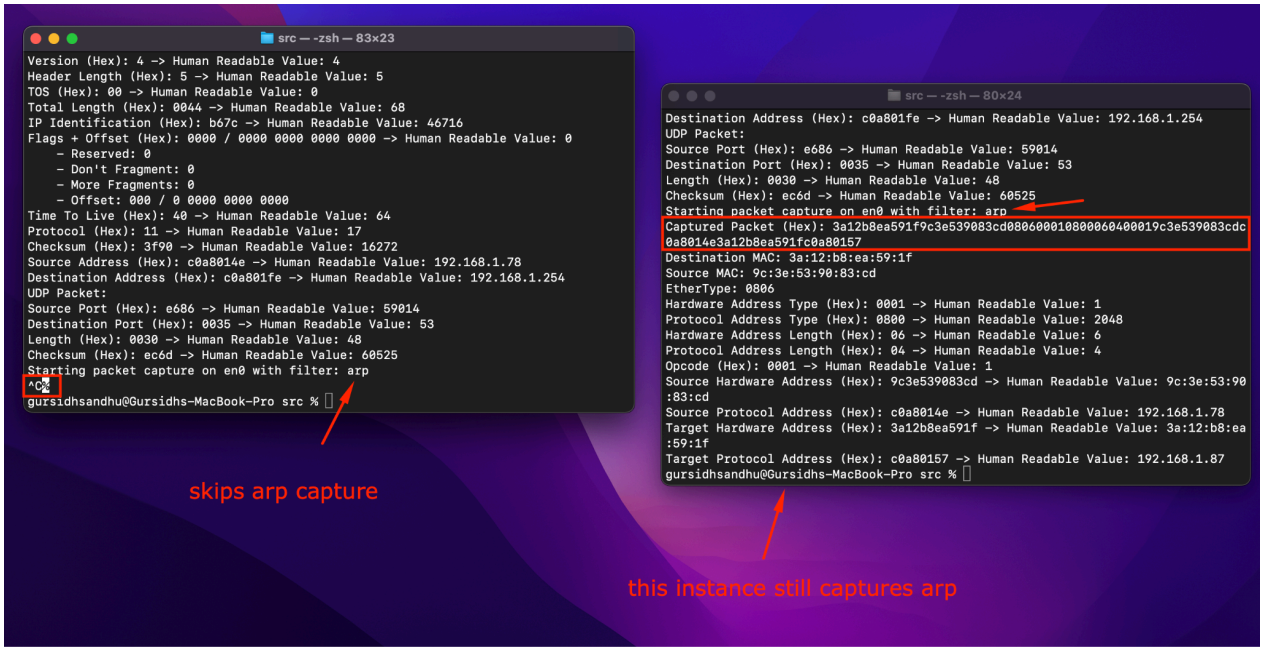
Test 9


src — -zsh — 83×23
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en0
Starting packet capture on en0 with filter: ip and tcp
^CStarting packet capture on en0 with filter: ip and udp
^CStarting packet capture on en0 with filter: arp
^C%
gursidhsandhu@Gursidhs-MacBook-Pro src %
keeps skipping to next

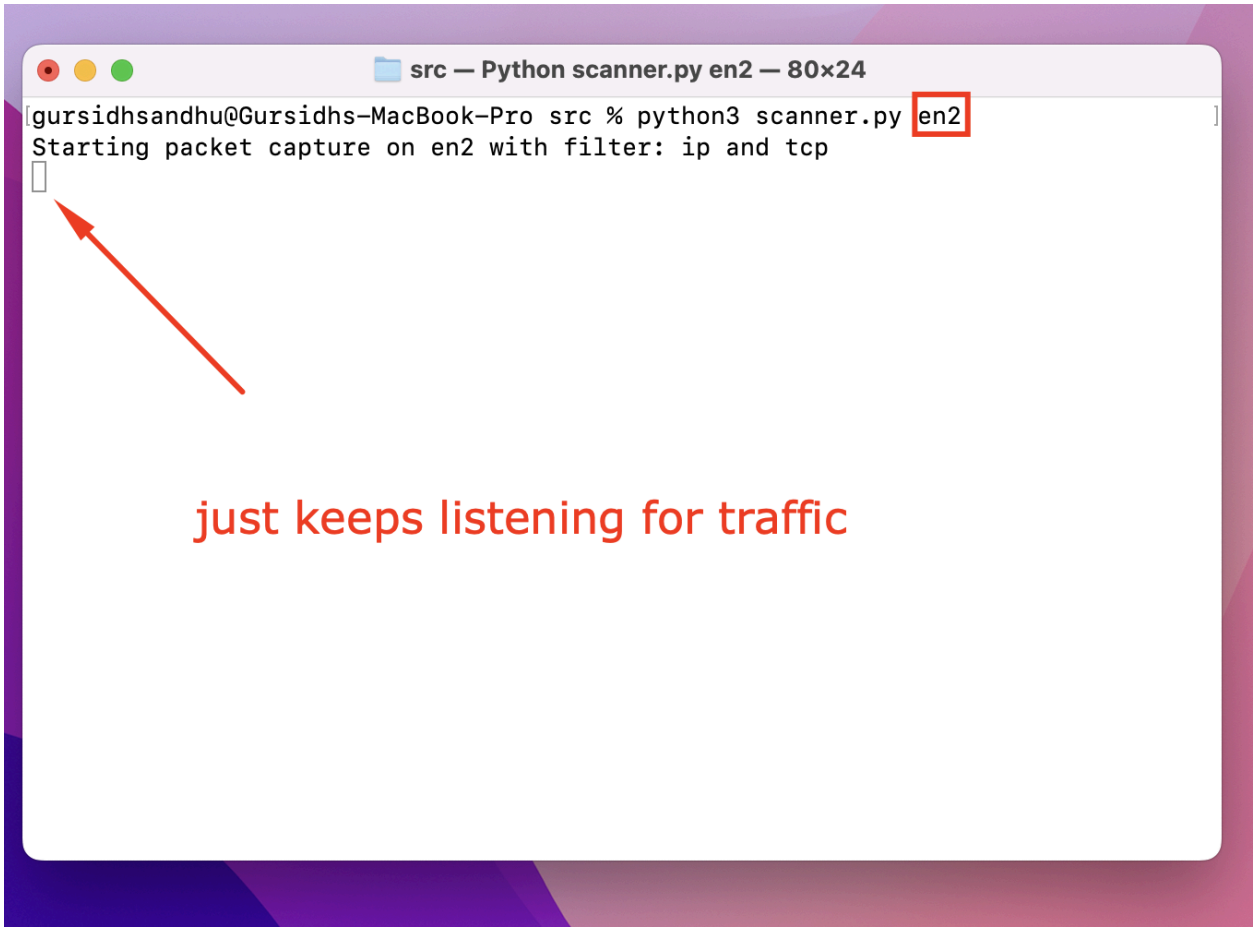
Test 10



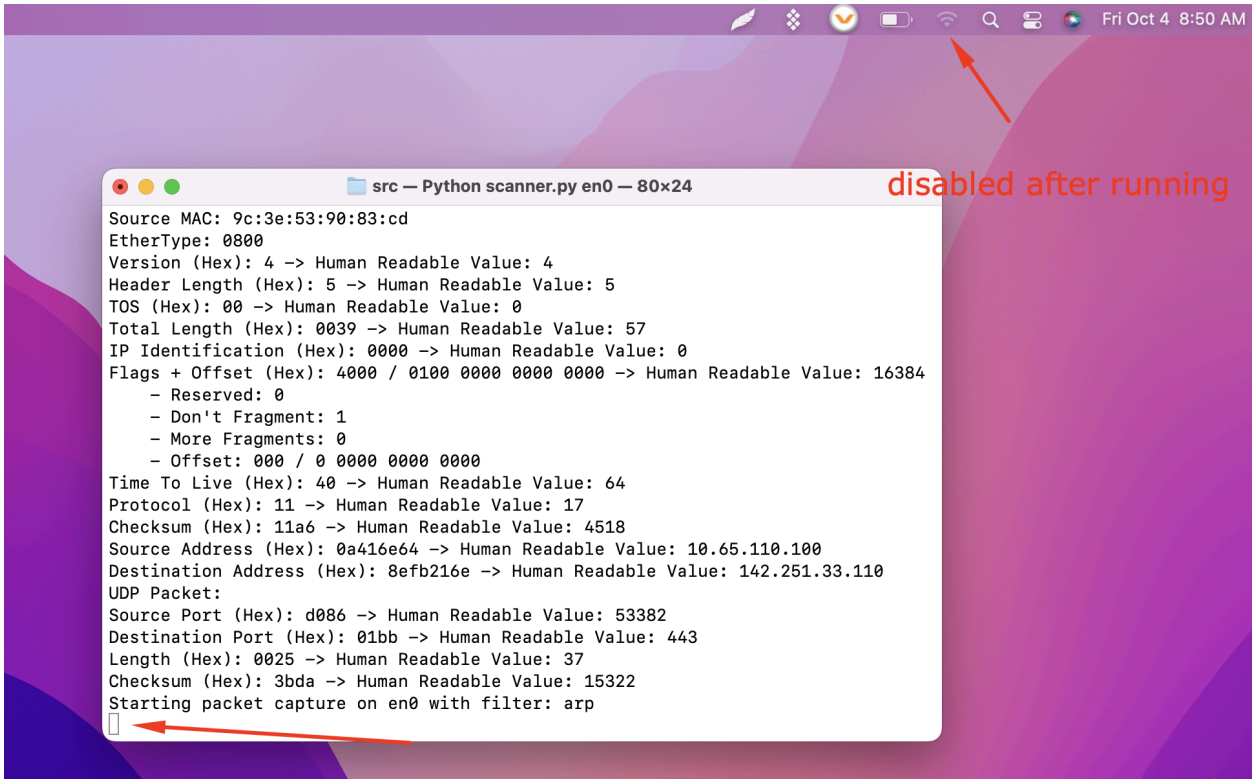
Test 11



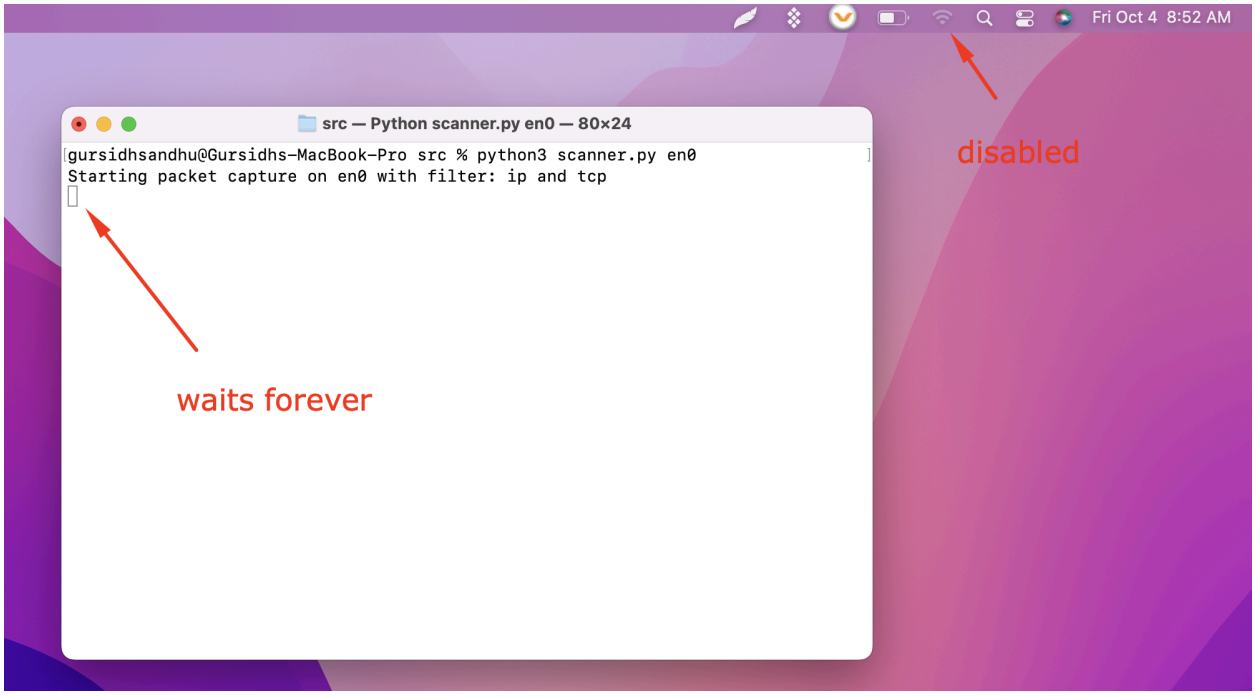
Test 12


src — Python scanner.py en2 — 80×24
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en2
Starting packet capture on en2 with filter: ip and tcp
just keeps listening for traffic

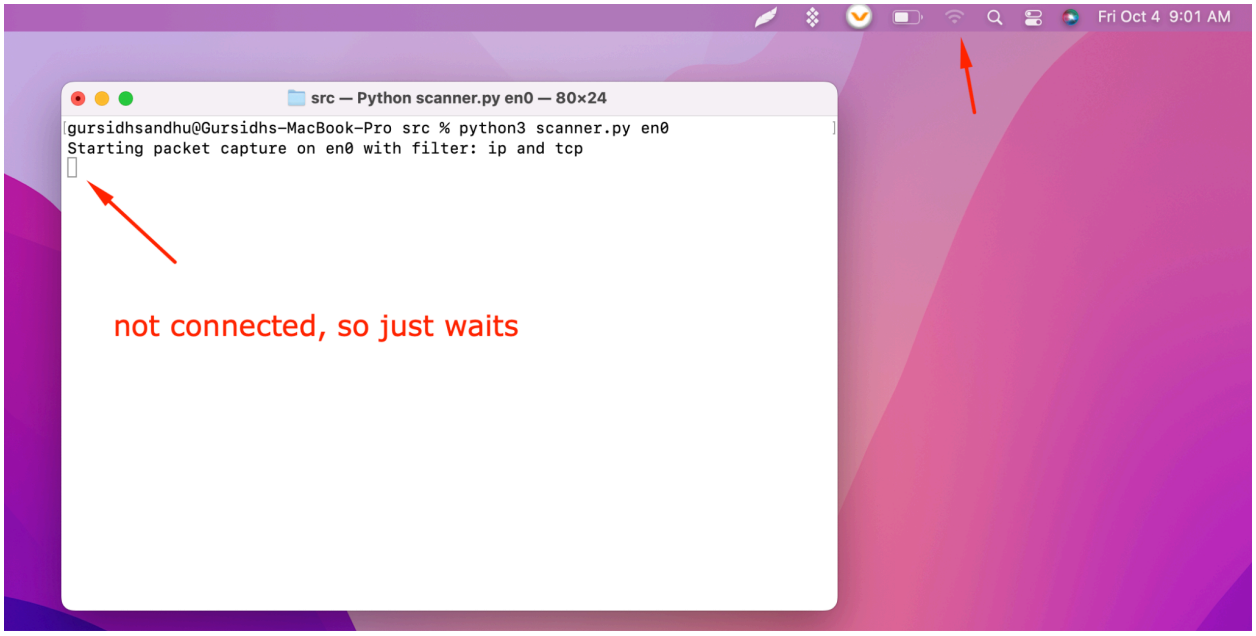
Test 13

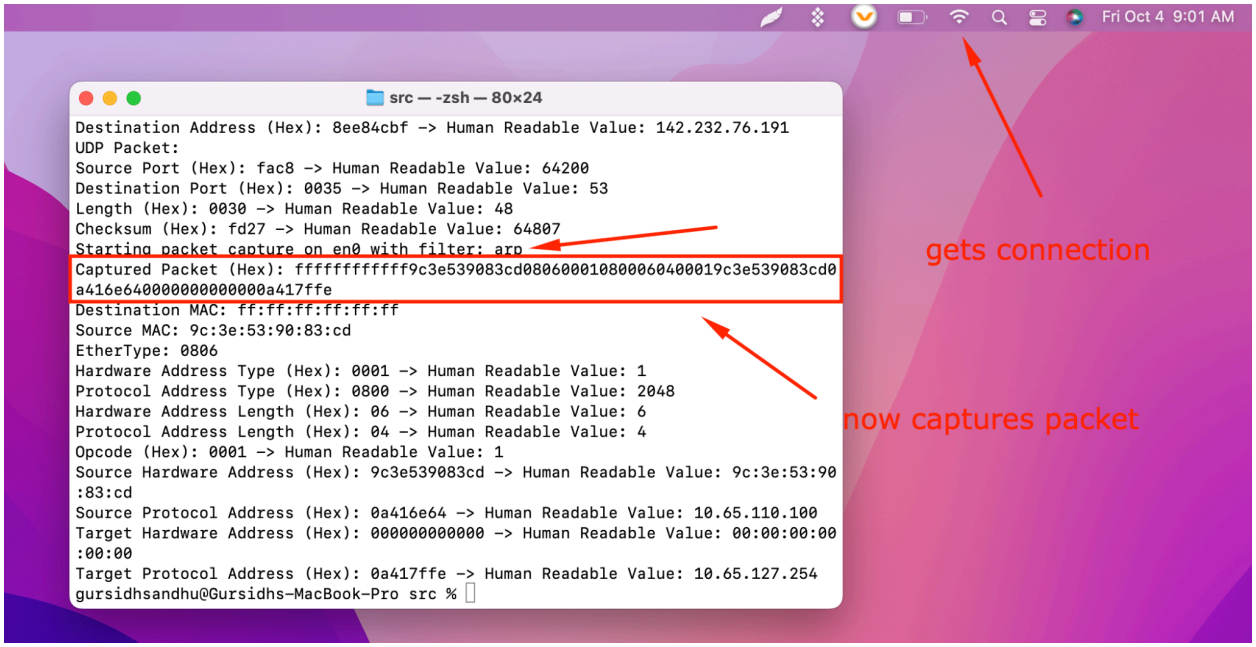


Test 14



Test 15


Fri Oct 4 9:01 AM
src — Python scanner.py en0 — 80×24
gursidhsandhu@Gursidhs-MacBook-Pro src % python3 scanner.py en0
Starting packet capture on en0 with filter: ip and tcp
not connected, so just waits


Fri Oct 4 9:01 AM
src — -zsh — 80×24
Destination Address (Hex): 8ee84cbf -> Human Readable Value: 142.232.76.191
UDP Packet:
Source Port (Hex): fac8 -> Human Readable Value: 64200
Destination Port (Hex): 0035 -> Human Readable Value: 53
Length (Hex): 0030 -> Human Readable Value: 48
Checksum (Hex): fd27 -> Human Readable Value: 64807
Starting packet capture on en0 with filter: arp
Captured Packet (Hex): ffffffffffff9c3e539083cd0806000108000604000 19c3e539083cd0a416e640000000000000a417ffe
Destination MAC: ff:ff:ff:ff:ff:ff
Source MAC: 9c:3e:53:90:83:cd
EtherType: 0806
Hardware Address Type (Hex): 0001 -> Human Readable Value: 1
Protocol Address Type (Hex): 0800 -> Human Readable Value: 2048
Hardware Address Length (Hex): 06 -> Human Readable Value: 6
Protocol Address Length (Hex): 04 -> Human Readable Value: 4
Opcode (Hex): 0001 -> Human Readable Value: 1
Source Hardware Address (Hex): 9c3e539083cd -> Human Readable Value: 9c:3e:53:90:83:cd
Source Protocol Address (Hex): 0a416e64 -> Human Readable Value: 10.65.110.100
Target Hardware Address (Hex): 000000000000 -> Human Readable Value: 00:00:00:00:00:00
Target Protocol Address (Hex): 0a417ffe -> Human Readable Value: 10.65.127.254
gursidhsandhu@Gursidhs-MacBook-Pro src %
gets connection
now captures packet