Assignment 7 - Wireless Security

- This is an individual assignment and worth 20 points.
- This is due on Wednesday, November 29 at midnight.
- Apply the usual naming convention.

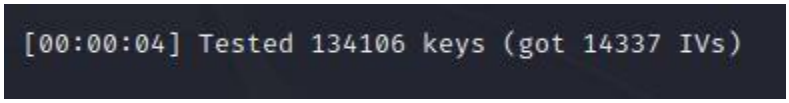
Background

- This assignment is from National Cyber League (NCL) exercise. Use the attached "NCL-PCAP1.pcap".
- You need to use Kali to answer the questions below. You can use your own Kali VM.
- When you use Proxmox, send the attached pcap file to the Kali on Proxmox. The file will be downloaded to the following directory: **/home/kali/Downloads**.
- Use **aircrack-ng** on Kali. Refer to the "CIS 480 Aircrack-ng.pptx" for ideas. You do not need to install aircrack-ng on Kali.
- You can find several websites that discuss "how to crack WEP with aircrack-ng." For example, refer to: https://null-byte.wonderhowto.com/how-to/hack-wi-fi-cracking-wep-passwords-with-aircrack-ng-0147340/.

Tasks

1. How many IVs are in the packet capture? Provide a screenshot that supports your answer. Run the following command: **aircrack-ng NCL-PCAP1.pcap**.

   There are 14337 IVs in the packet capture.



2. What is the initialization vector (IV) in the first packet in the capture (in hex)? Provide a screenshot that supports your answer.

   The initialization vector of the first packet in the capture is 0x003a33

3. What is the key (i.e., password input) you obtained after running aircrack-ng? Provide a screenshot that supports your answer.

   The key obtained is A4:81:53:B4:CF.

```
                    KEY FOUND! [ A4:81:53:B4:CF ]
  Decrypted correctly: 100%
```

s

4. What is the TCP checksum in the first packet of the capture (in hex)? Provide a screenshot that supports your answer. You must decrypt the capture with the key you obtained.

   The TCP checksum of the first packet of the capture is 0x897b.

```
    Source Port: 56985
    Destination Port: 22
    [Stream index: 0]
    [Conversation completeness: Incomplete (12)]
    [TCP Segment Len: 1448]
    Sequence Number: 1    (relative sequence number)
    Sequence Number (raw): 3890121788
    [Next Sequence Number: 1449    (relative sequence number)]
    Acknowledgment Number: 1    (relative ack number)
    Acknowledgment number (raw): 4190872430
    1000 .... = Header Length: 32 bytes (8)
  ▸ Flags: 0x010 (ACK)
    Window: 4096
    [Calculated window size: 4096]
    [Window size scaling factor: -1 (unknown)]
    Checksum: 0x897b [unverified]
    [Checksum Status: Unverified]
    Urgent Pointer: 0
  ▸ Options: (12 bytes), No-Operation (NOP), No-Operation (NOP), Timestamps
  ▸ [Timestamps]
  ▸ [SEQ/ACK analysis]
    TCP payload (1448 bytes)
```

- How to decrypt the capture?
  - Go to Wireshark > Edit > Preferences > IEEE 802.11 > …