CTF Class Test intake 082024

TP Number: TP067125	**Name: SIOW HAN BIN**

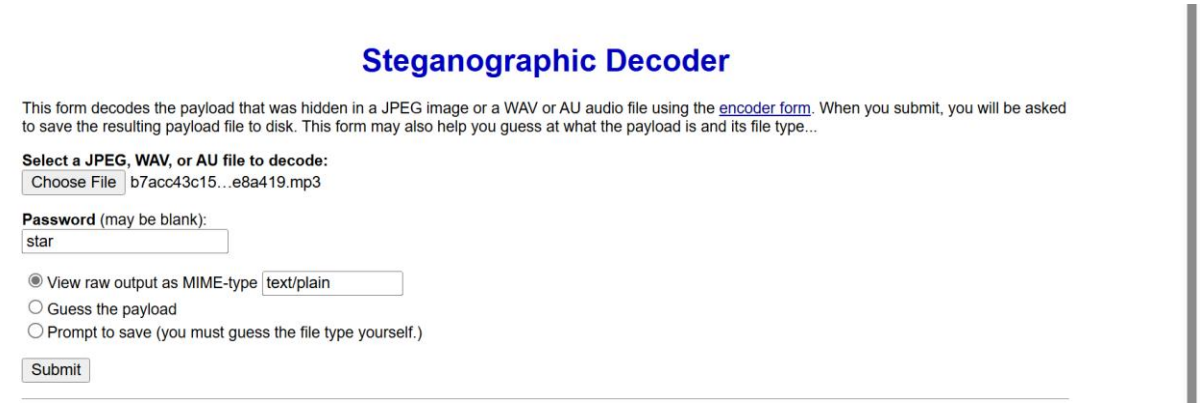
Marking Rubrics for Writeup (5 marks for each required questions)

	Fail (0-1 mark)	**Marginal Fail (2 mark)**	**Pass (3 marks)**	**Credit (4 marks)**	**Distinction (5 marks)**
PLO2 – Cognitive skills	*Fail to apply skill / knowledge to a range of approaches in the field of study / work / practice.*	*Below average skills to apply skill / knowledge to a range of approaches in the field of study / work / practice.*	*Average skills to apply skill / knowledge to a range of approaches in the field of study / work / practice.*	*Good skills to apply skill / knowledge to a range of approaches in the field of study / work / practice.*	*Excellent skills to apply skill / knowledge to a range of approaches in the field of study / work / practice.*
Writeup showing steps, flow and screenshot (5 marks for each required questions)	Incorrect answer, no write-up provided, no storytelling/ELIF, no screenshots, no demonstration of applying skills / knowledge.	Partially answered, brief write-up provided, no storytelling/ELIF, no screenshots, no demonstration of applying skills / knowledge.	Partially answered, brief write-up provided, minimal storytelling/ELIF, minimal screenshots, no caption, minimal demonstration of applying skills / knowledge.	Correct answer with acceptable details, acceptable storytelling/ELIF, acceptable screenshots with caption, acceptable write-up provided to demonstrate skills / knowledge applied.	Correct answer with excellent details, detailed screenshots with caption, detailed write-up provided to demonstrate skills / knowledge applied. Excellent storytelling/ELIF.

Writeup showing steps, flow and screenshot for each question:

Question 1.1

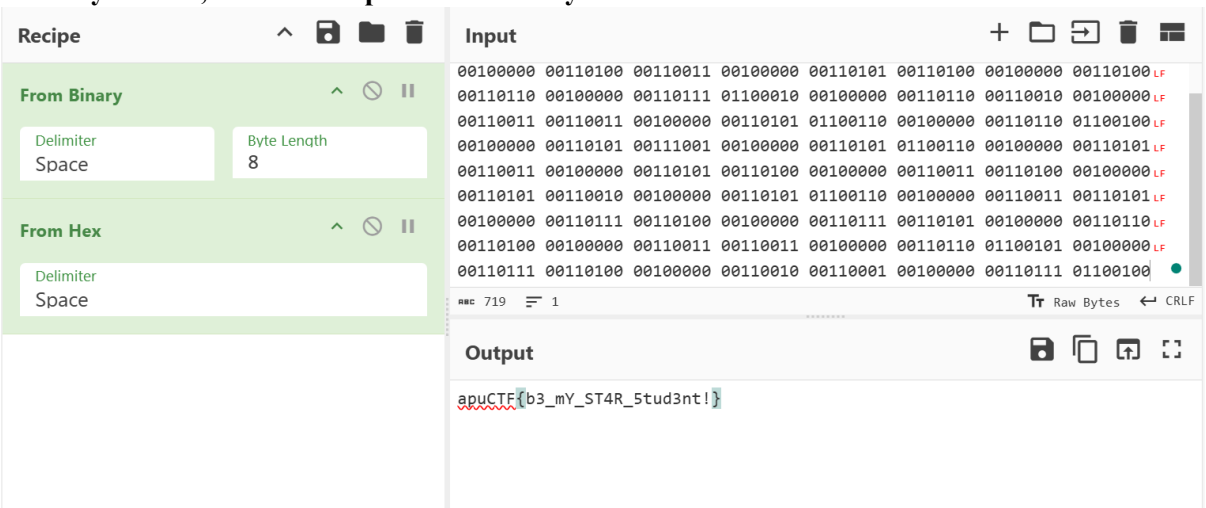
1) **Download the mp3 file from https://lms2.apiit.edu.my/pluginfile.php/1274549/question/questiontext/1263515/2/659735/b7acc43c15ed268a1bcb81b528e8a419.mp3**



2) **Go to https://futureboy.us/stegano/decinput.html, upload the mp3 file, then listen to the audio. I heard "star" multiple times. So I guess the password is star**
3) **Got a output which is binary**

```
00110110 00110001 00100000 00110111 00110000 00100000 00110111 00110101
00100000 00110100 00110011 00100000 00110101 00110100 00100000 00110100
00110110 00100000 00110111 01100010 00100000 00110110 00110010 00100000
00110011 00110011 00100000 00110101 01100110 00100000 00110110 01100100
00100000 00110101 00111001 00100000 00110101 01100110 00100000 00110101
00110011 00100000 00110101 00110100 00100000 00110011 00110100 00100000
00110101 00110010 00100000 00110101 01100110 00100000 00110011 00110101
00100000 00110111 00110100 00100000 00110111 00110101 00100000 00110110
00110100 00100000 00110011 00110011 00100000 00110110 01100101 00100000
00110111 00110100 00100000 00110010 00110001 00100000 00110111 01100100
```

4) **Go to cyberchef, and use recipe "From Binary" and "From Hex"**

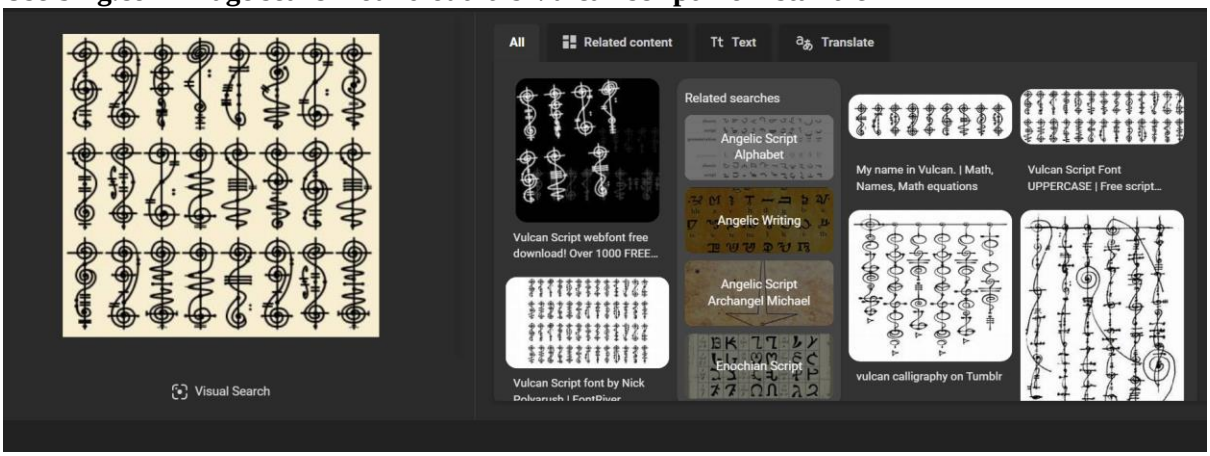


5) **The flag is apuCTF{b3_mY_ST4R_5tud3nt!}**

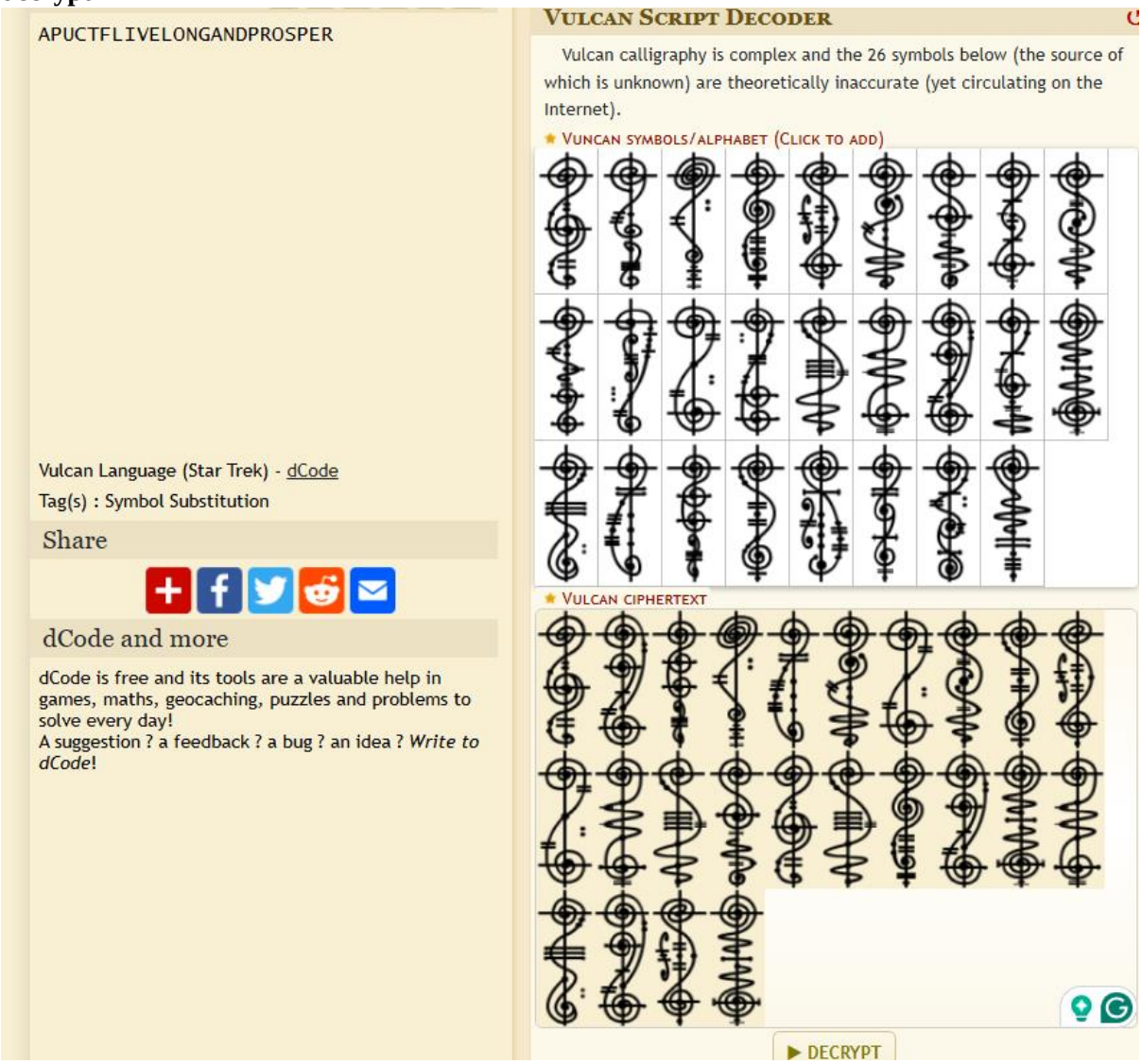
Question 1.2

1) **Go to Microsoft teams Download the images**

2) **Use bing.com image search found out it is Vulcan script from star trek**



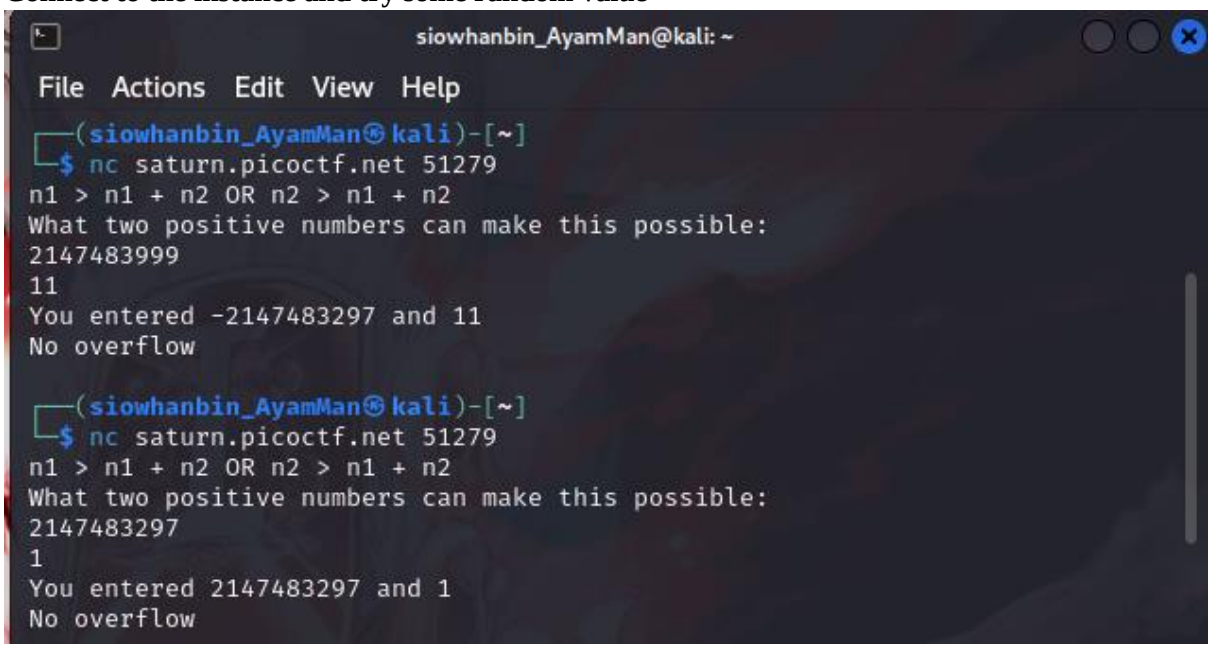
3) **Go to https://www.dcode.fr/vulcan-language, click followed by the images. Then Click decrypt**



4) **apuCTF{LIVELONGANDPROSPER}**

Question 2.1

1) **Connect to the instance and try some random value**

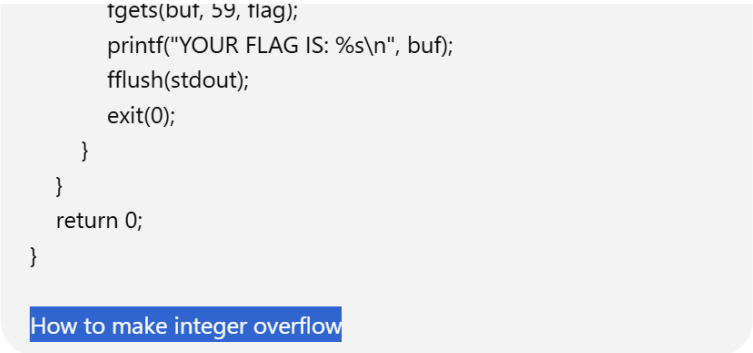


2) **Read the code and google integer overflow**

```
#include <stdio.h>
#include <stdlib.h>

static int addIntOvf(int result, int a, int b) {
   result = a + b;
   if(a > 0 && b > 0 && result < 0)
      return -1;
   if(a < 0 && b < 0 && result > 0)
      return -1;
   return 0;
}

int main() {
   int num1, num2, sum;
   FILE *flag;
   char c;

   printf("n1 > n1 + n2 OR n2 > n1 + n2 \n");
   fflush(stdout);
   printf("What two positive numbers can make this possible: \n");
   fflush(stdout);

   if (scanf("%d", &num1) && scanf("%d", &num2)) {
      printf("You entered %d and %d\n", num1, num2);
      fflush(stdout);
      sum = num1 + num2;
      if (addIntOvf(sum, num1, num2) == 0) {
         printf("No overflow\n");
         fflush(stdout);
         exit(0);
      } else if (addIntOvf(sum, num1, num2) == -1) {
```

```
                printf("You have an integer overflow\n");
                fflush(stdout);
            }

            if (num1 > 0 || num2 > 0) {
                flag = fopen("flag.txt","r");
                if(flag == NULL){
                    printf("flag not found: please run this on the server\n");
                    fflush(stdout);
                    exit(0);
                }
                char buf[60];
                fgets(buf, 59, flag);
                printf("YOUR FLAG IS: %s\n", buf);
                fflush(stdout);
                exit(0);
            }
        }
        return 0;
}
```

3) **Maximum value can be inserted after executing the code is 4,294,967,295. Which is range between -2,147,483,648 and 2,147,483,647. [reference: https://www.twingate.com/blog/glossary/integer%20overflow]**
4) **Go to Chatgpt(unlogin version), paste the code with a prompt "How to make integer overflow"**



In the provided C code, the key part is in the `addIntOvf` function, which checks for integer overflow

5) **Read text given by chatgpt**

For an integer overflow to occur, it must exceed the maximum value that can be represented by an `int`. On most systems with a 32-bit `int`, the maximum value is `INT_MAX` (2,147,483,647). If the sum of two positive integers exceeds this value, an overflow will occur, and the `addIntOvf` function will return `-1`.

Let's break down the conditions for causing overflow:

- **Overflow Condition**: If both `num1` and `num2` are positive integers, and their sum exceeds `INT_MAX` (the maximum positive value an `int` can hold).

6) **Connect to instance again and input 2147483647 as first input, 1 as second input**

```
┌──(siowhanbin_AyamMan㉿kali)-[~]
└─$ nc saturn.picoctf.net 51279
n1 > n1 + n2 OR n2 > n1 + n2
What two positive numbers can make this possible:
2147483647
1
You entered 2147483647 and 1
You have an integer overflow
YOUR FLAG IS: picoCTF{Tw0_Sum_Integer_Bu773R_0v3rfl0w_e06700c0}
```

7) **The flag is: apuCTF{Tw0_Sum_Integer_Bu773R_0v3rfl0w_e06700c0}**

Question 3.1

1) **Connect to instance**

JAuth

Medium | Web Exploitation | picoGym Exclusive

AUTHOR: GEOFFREY NJOGU

Description

Most web application developers use third party components without testing their security. Some of the past affected companies are:

- Equifax (a US credit bureau organization) - breach due to unpatched Apache Struts web framework CVE-2017-5638
- Mossack Fonesca (Panama Papers law firm) breach - unpatched version of Drupal CMS used
- VerticalScope (internet media company) - outdated version of vBulletin forum software used

This challenge launches an instance on demand.
Its current status is:
RUNNING

Instance Time Remaining:
6:07

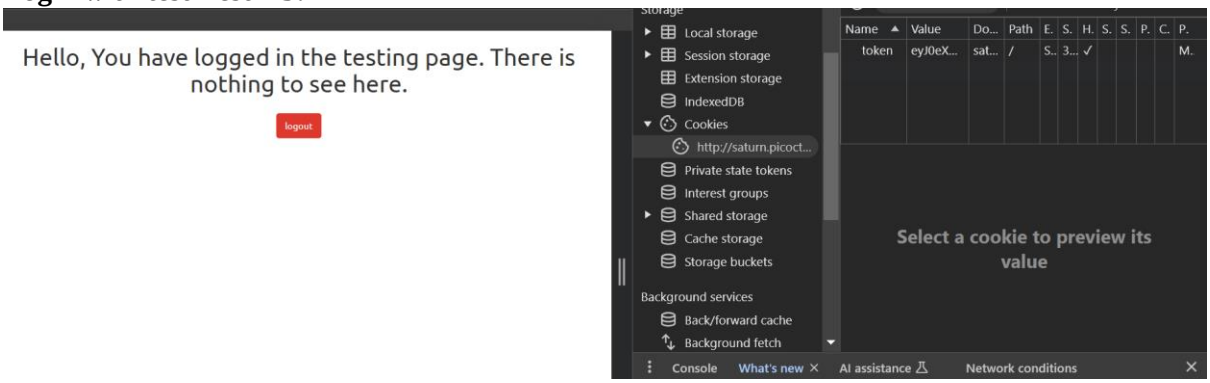
Restart Instance

Hints

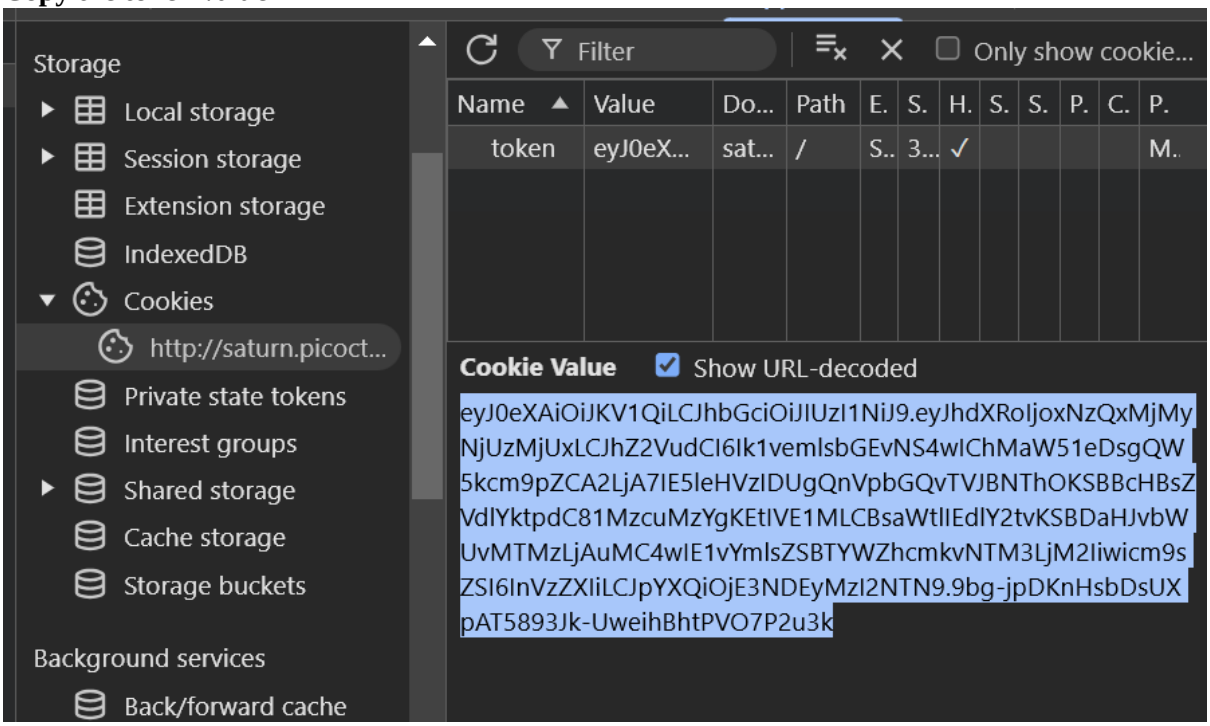
1 2

The JWT should always have two (2) . separators.

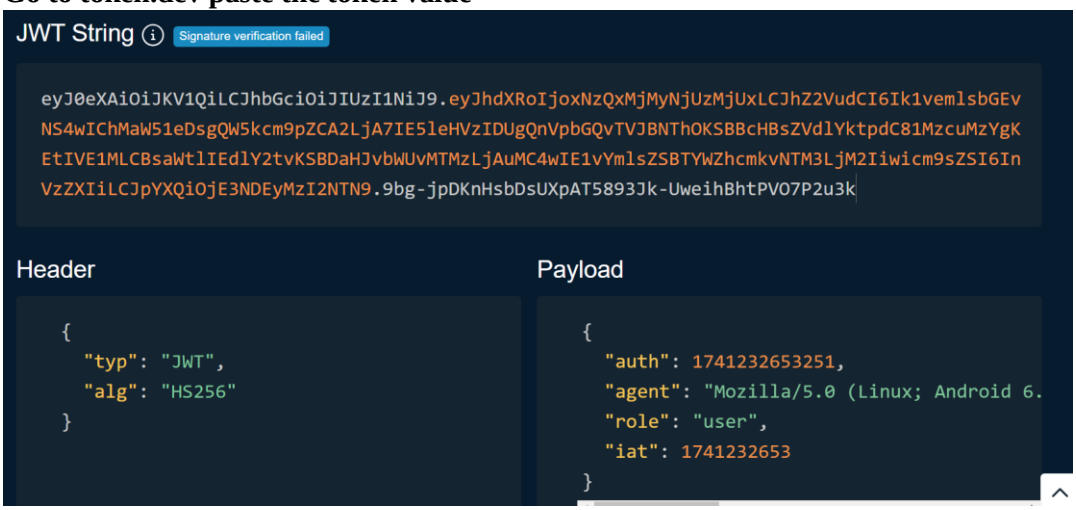
2) Login with test Test123!



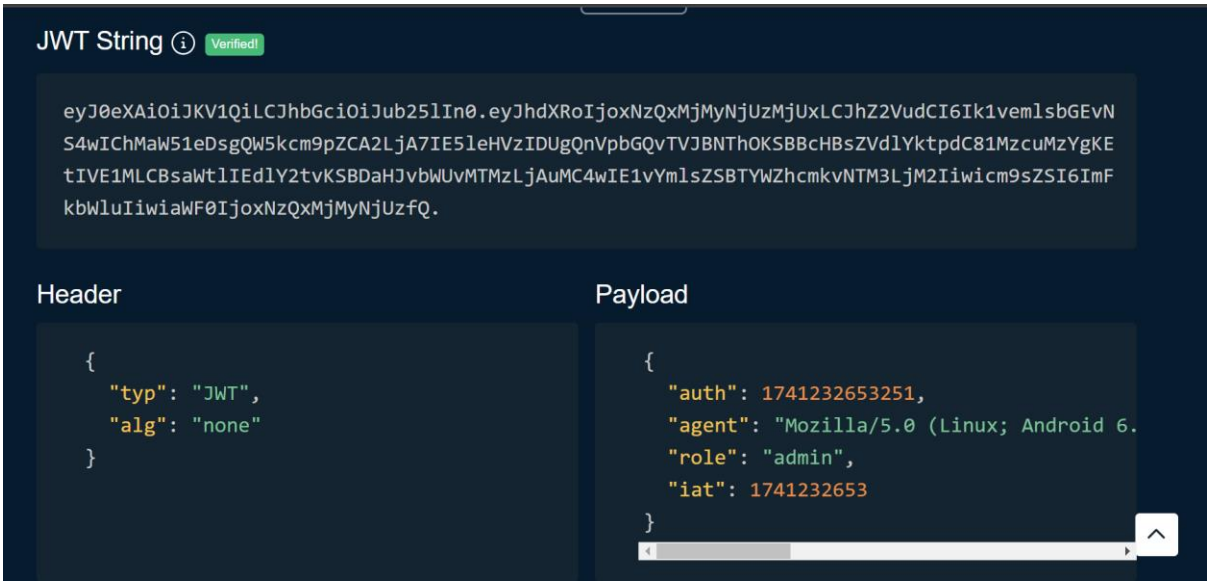
3) Copy the token value



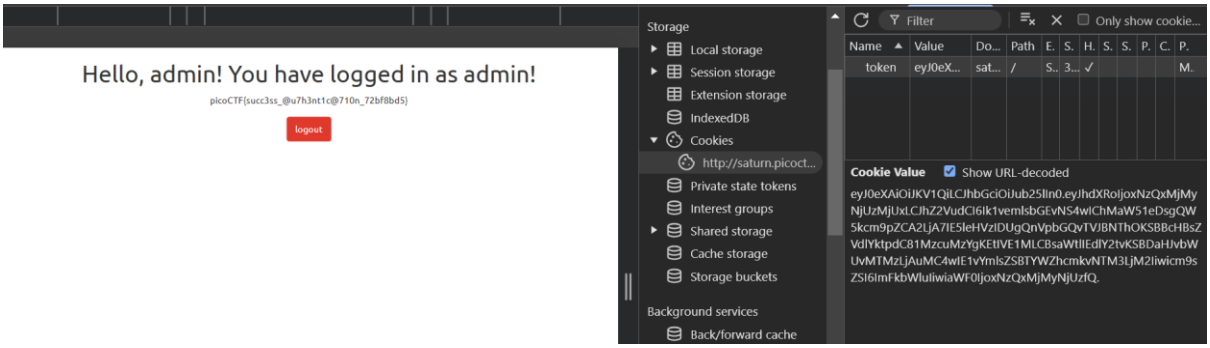
4) Go to token.dev paste the token value



5) change “alg” from HS256 to none, change “role” from user to admin, add a separator . at the end of token



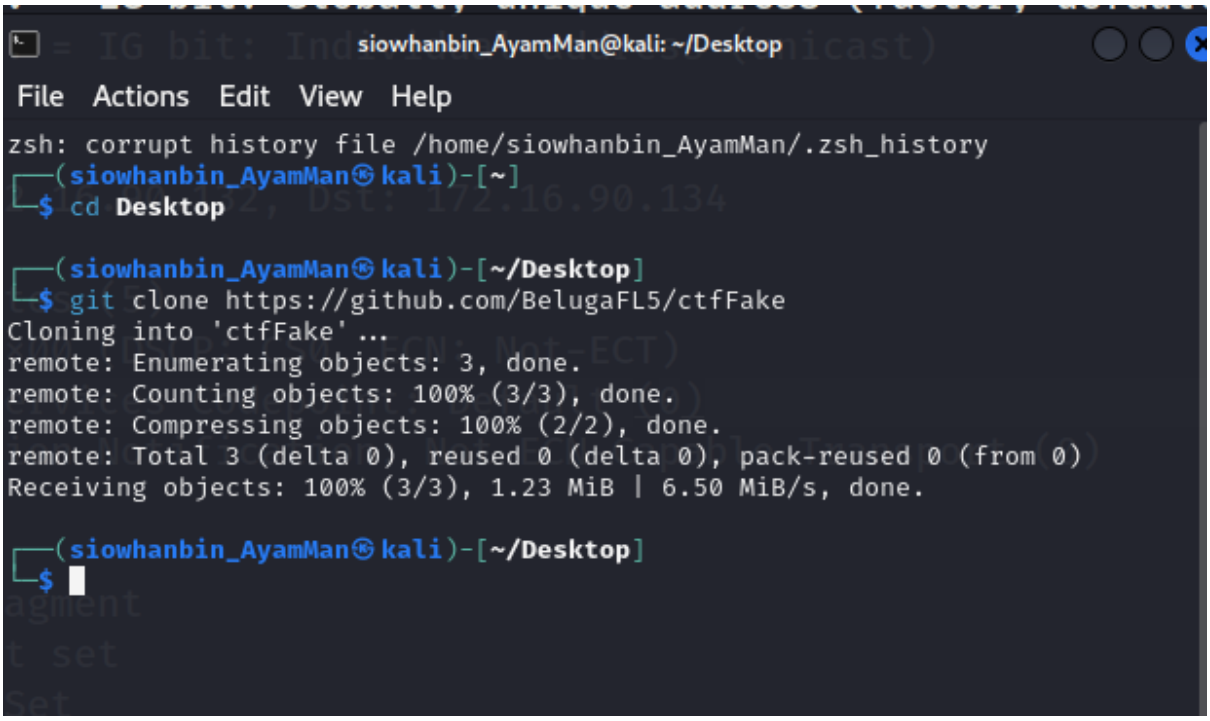
6) Paste the token and refresh



7) The flag is apuCTF{succ3ss_@u7h3nt1c@710n_72bf8bd5}

Question 3.2

1) **First download the file**



2) **Then read the question, dits and dahs refer to morse code. Sending message on internet is http or https proctocol**

Question 3.2 - Network Forensic (15 marks)

Title: dits and dahs

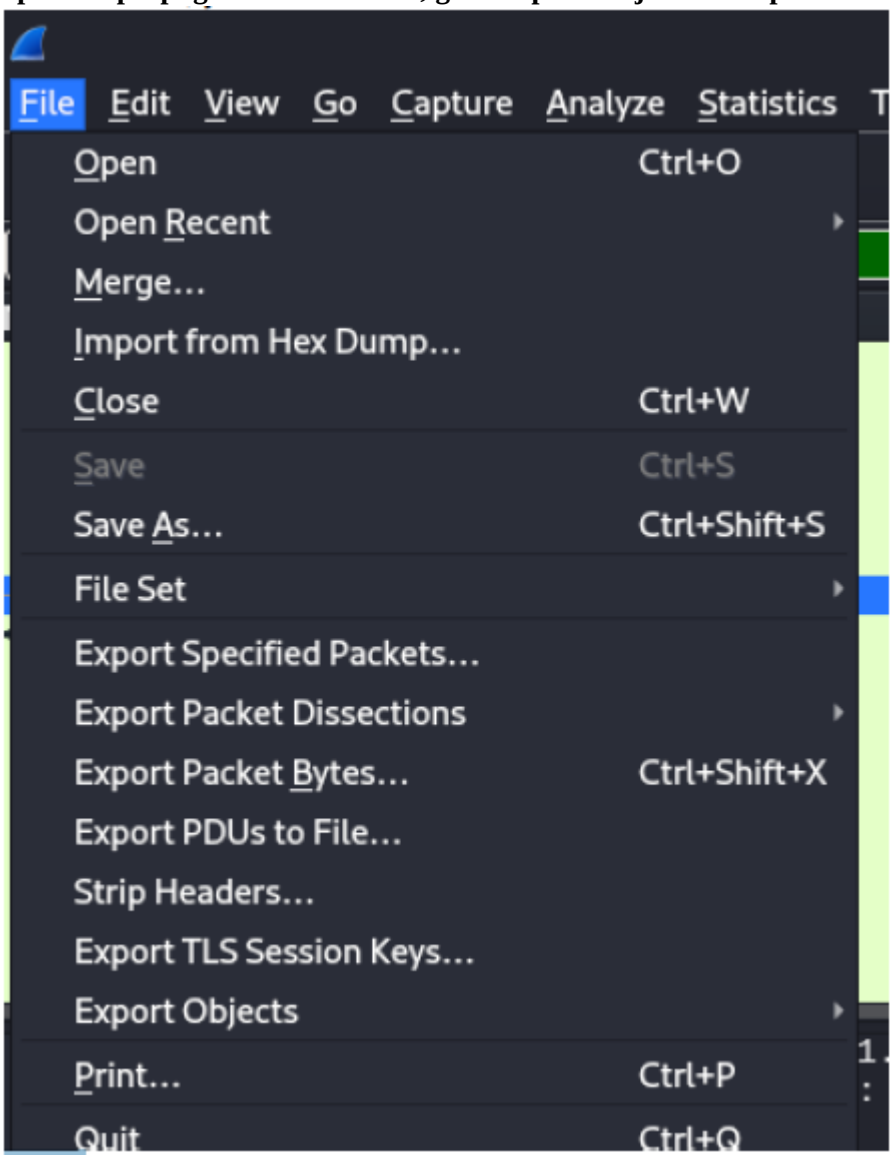
Description:
Somebody is asking for help by sending a message on the internet. We manage to intercept the traffic in the network. Discover the flag and help this person.

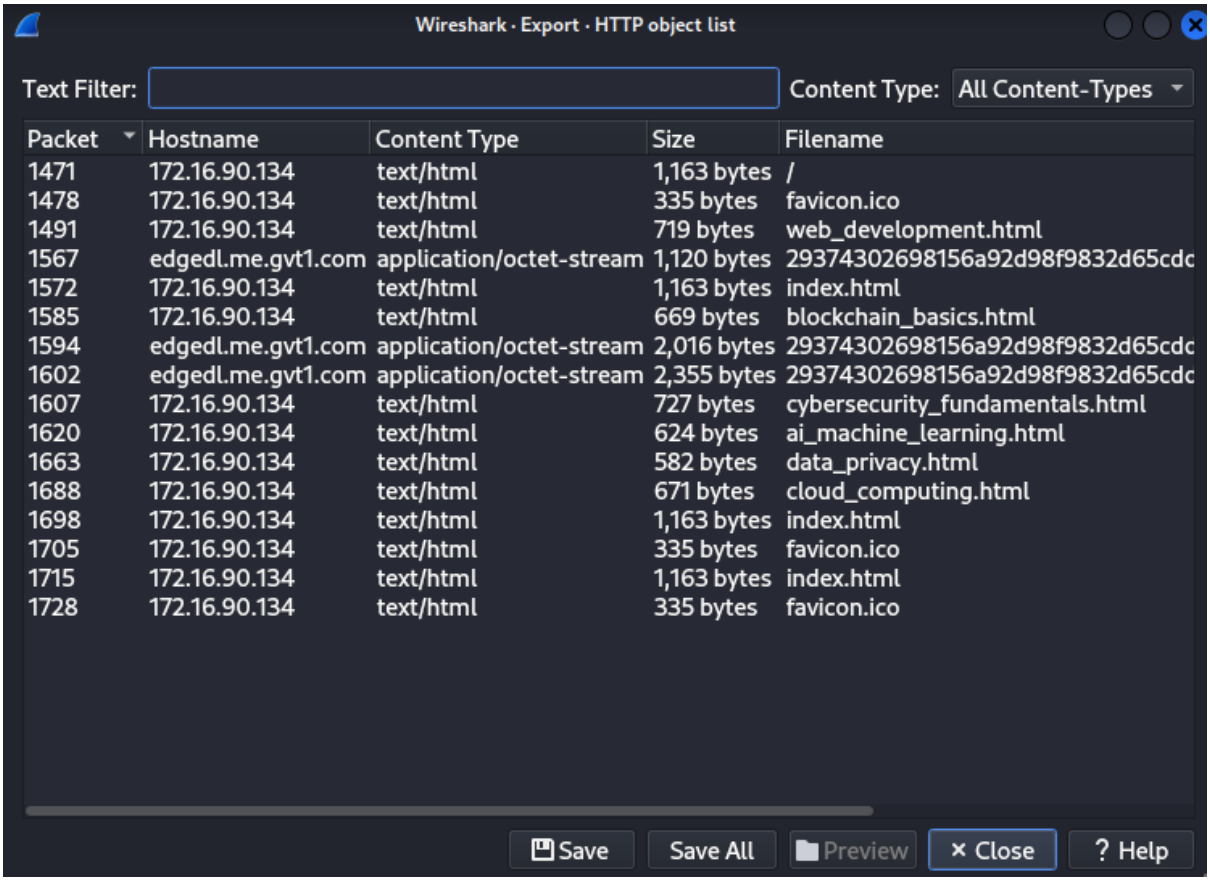
Attached file: dits-and-dahs.pcapng

Hint: *There are three (3) part of the flag.*

Flag Format: **apuCTF{flag}**

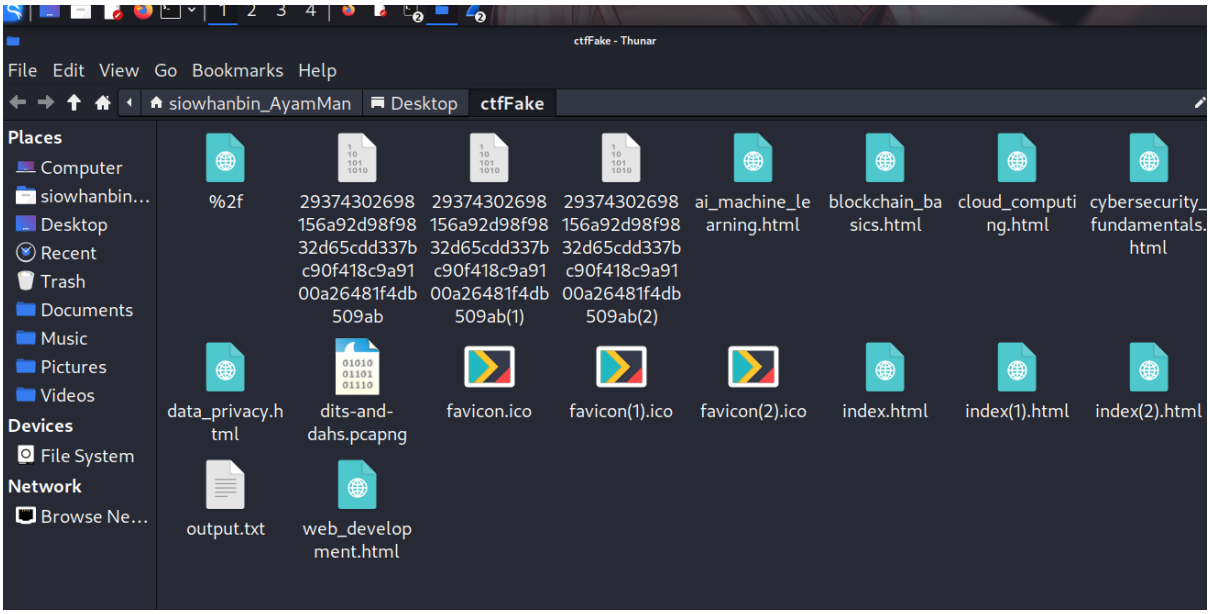
3) Open the pcapng file in wireshark, go to exports objects -> http -> save all



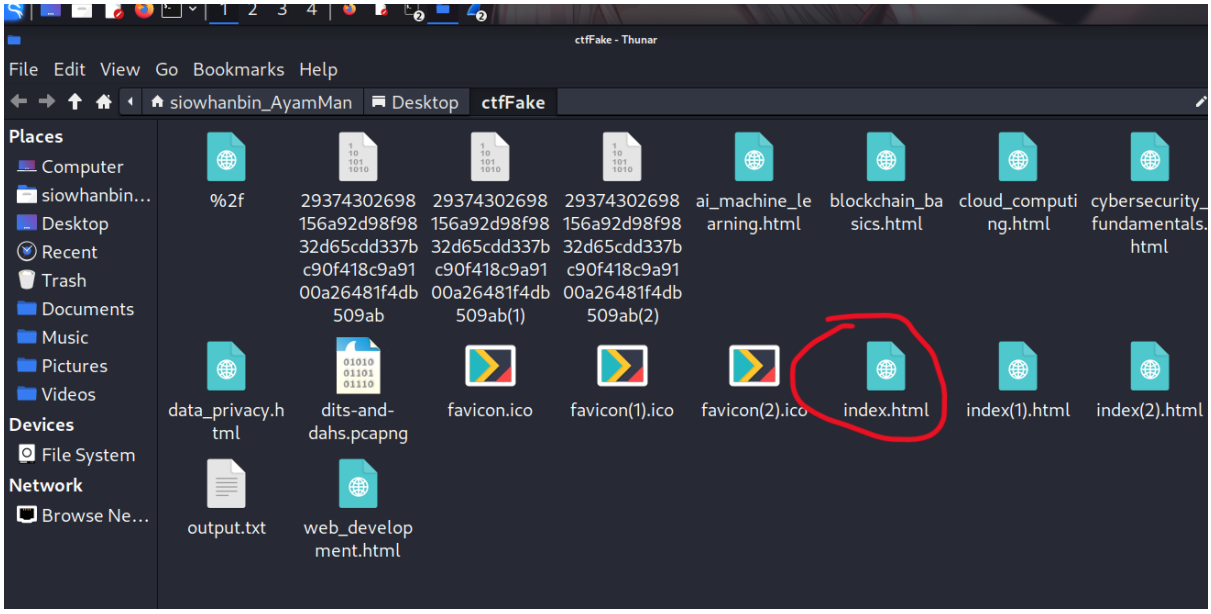


Packet	Hostname	Content Type	Size	Filename
1471	172.16.90.134	text/html	1,163 bytes	/
1478	172.16.90.134	text/html	335 bytes	favicon.ico
1491	172.16.90.134	text/html	719 bytes	web_development.html
1567	edgedl.me.gvt1.com	application/octet-stream	1,120 bytes	29374302698156a92d98f9832d65cdc
1572	172.16.90.134	text/html	1,163 bytes	index.html
1585	172.16.90.134	text/html	669 bytes	blockchain_basics.html
1594	edgedl.me.gvt1.com	application/octet-stream	2,016 bytes	29374302698156a92d98f9832d65cdc
1602	edgedl.me.gvt1.com	application/octet-stream	2,355 bytes	29374302698156a92d98f9832d65cdc
1607	172.16.90.134	text/html	727 bytes	cybersecurity_fundamentals.html
1620	172.16.90.134	text/html	624 bytes	ai_machine_learning.html
1663	172.16.90.134	text/html	582 bytes	data_privacy.html
1688	172.16.90.134	text/html	671 bytes	cloud_computing.html
1698	172.16.90.134	text/html	1,163 bytes	index.html
1705	172.16.90.134	text/html	335 bytes	favicon.ico
1715	172.16.90.134	text/html	1,163 bytes	index.html
1728	172.16.90.134	text/html	335 bytes	favicon.ico

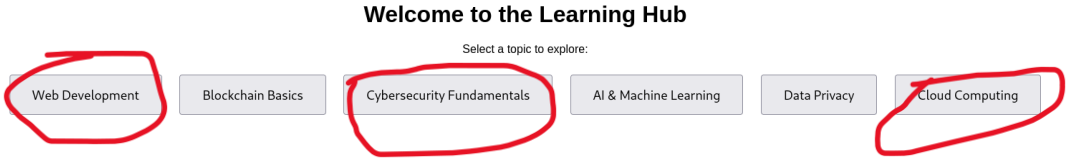
4)
5) **File is saved in the selected file**



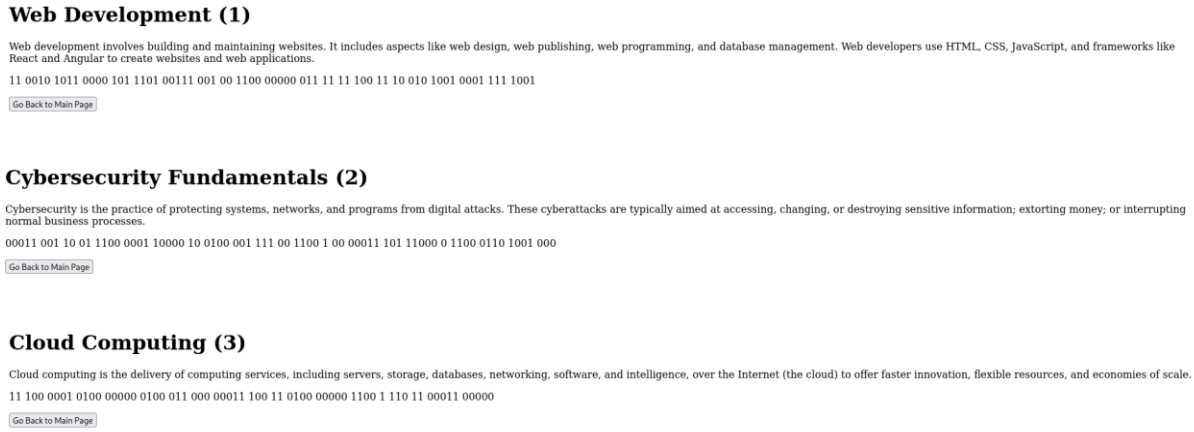
6) Access index.html at firefox



7) Click Web Development, Cybersecurity Fundamentals and Cloud Computing



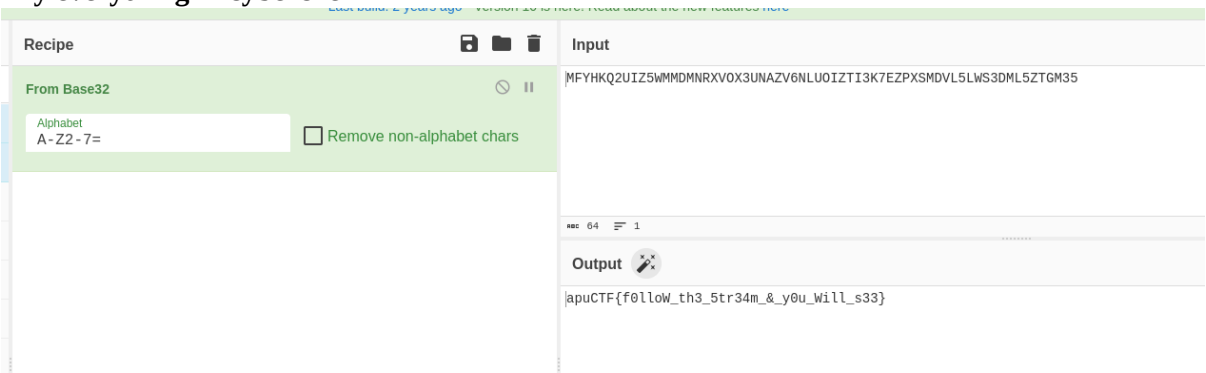
8)



9)

10) Paste all the binary code into dcode.fr/morse-code

11) Try everything in cyberchef



12) The flag is: apuCTF{f0lloW_th3_5tr34m_&_y0u_Will_s33}

13) Learnt from: https://github.com/BelugaFL5/ctf_Writeups/