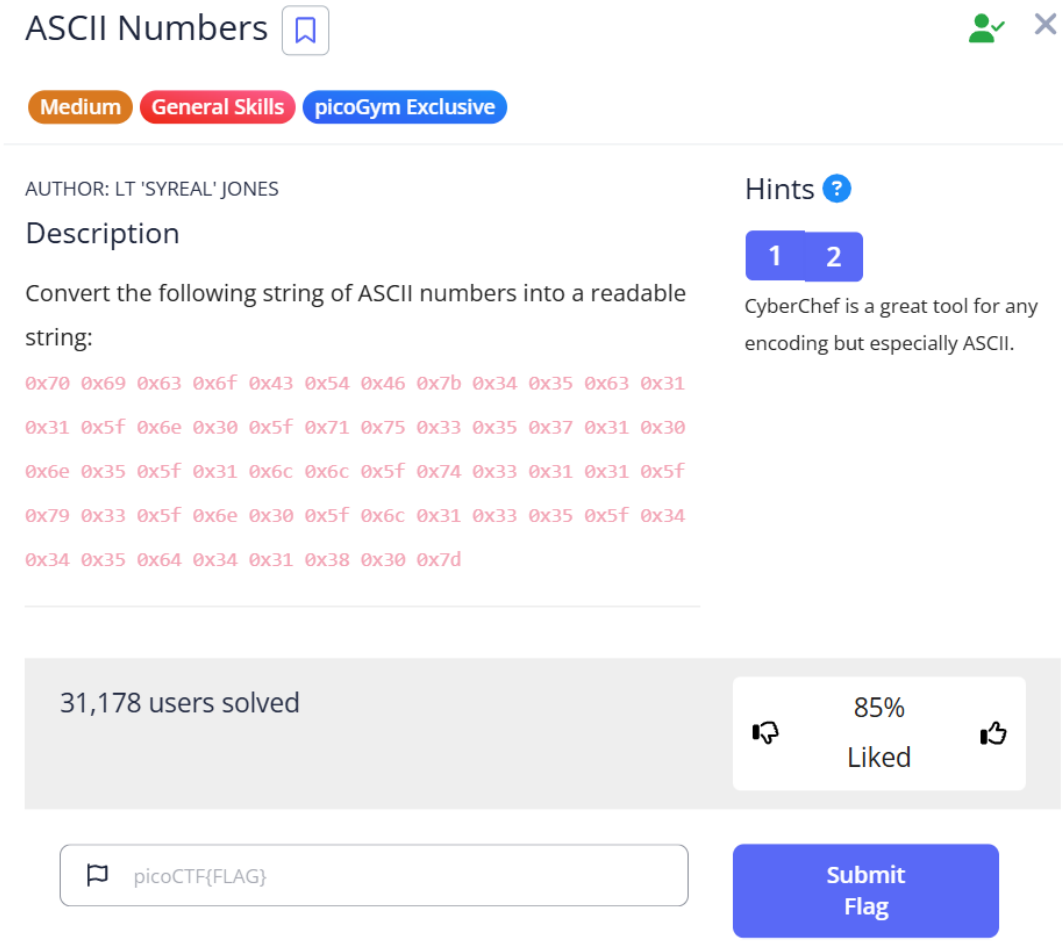
Saint Columban College
College of Computing Studies
Pagadian City

ASCII Numbers



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Challenge: ASCII Numbers

Category: General Skills

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I. Objective

The objective of this challenge is to decode a given sequence of **ASCII values** represented in **hexadecimal format** and retrieve the hidden message (flag). This task helps develop familiarity with common encoding formats used in cybersecurity and Capture The Flag (CTF) challenges.

II. Background

In many CTF challenges, information is not shown directly as readable text. Instead, it is encoded using different number systems or character encodings such as ASCII, hexadecimal, or binary. Understanding how these encodings work is essential for interpreting hidden data, reversing simple obfuscation, and solving beginner-level cybersecurity problems.

The **ASCII Numbers** challenge focuses on recognizing hexadecimal values and converting them back into readable ASCII characters.

III. Tool Used

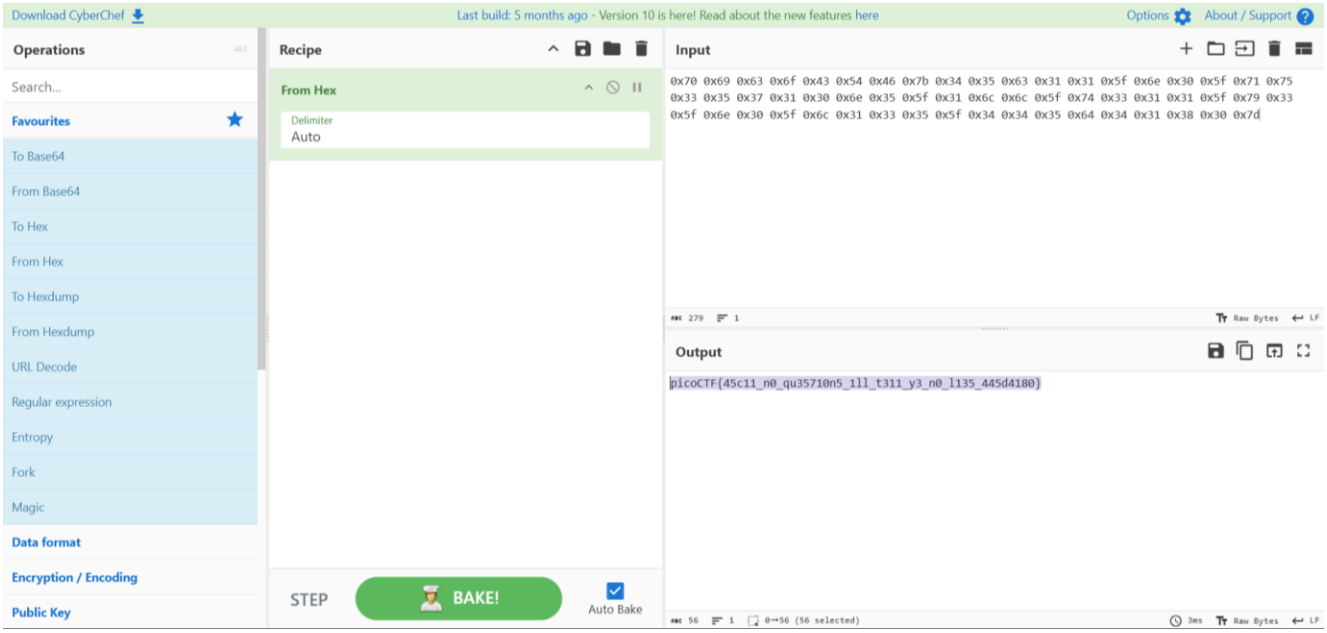
- **Oracle VirtualBox (Kali Linux)** – Used as the Linux environment
- **Linux Terminal** – Used to execute decoding commands
- **Cyberchef** – Used to decode hexadecimal values into readable text

IV. Methodology

1. Copied the given string of ASCII numbers from the challenge.
2. Opened a web browser.
3. Searched for **CyberChef**.
4. Pasted the string of ASCII numbers into the input field of CyberChef.
5. Selected the **"From Hex"** operation (double-clicked to apply it).
6. Observed the decoded output.
7. Copied the decoded flag and pasted it into the submission field.

V. Result

picoCTF{45c11_n0_qu35710n5_1ll_t311_y3_n0_l135_445d4180}



https://toolbox.itsec.tamu.edu/#recipe=From_Hex('Auto')

VI. Explanation

You might ask, what's ASCII? Well… **ASCII (American Standard Code for Information Interchange)** is a character encoding standard where each character (letters, numbers, symbols) is represented by a number. For example:

- A = 65 (decimal)
- a = 97 (decimal)

These numbers can be written in different number systems, such as **decimal**, **binary**, or **hexadecimal**.

Hexadecimal (hex) is a base-16 number system that uses:

0–9 and A–F

Hex is commonly used in computing because it is shorter and easier to read than binary.

The challenge provided values like:

0x70 0x69 0x63 0x6f 0x43 0x54 0x46 ...

Each value:

- Starts with 0x, indicating **hexadecimal**
- Represents one ASCII character

For example:

- 0x70 → 112 (decimal) → p
- 0x69 → 105 (decimal) → i
- 0x63 → 99 (decimal) → c
- 0x6f → 111 (decimal) → o

When decoded continuously, these characters form the readable string:

picoCTF{...}

So, try to take advantage with that with other names outside picoCTF, especially in the competition you join.

Also, this is the difference between the two, you might need it.

ASCII	Hexadecimal
A character encoding	A number system
Represents characters	Represents values
Example: p	Example: 0x70
Human-readable	Compact, machine-friendly

Hex is often used to **store or display ASCII values**, but it is not an encoding itself—it is just a way to write numbers.

For the tool I used, **CyberChef** is an online tool commonly used in cybersecurity for:

- Encoding and decoding data
- Converting between formats (hex, ASCII, Base64, etc.)
- Analyzing suspicious or obfuscated data

In this challenge, CyberChef's **"From Hex"** operation was used to convert hexadecimal values into readable ASCII characters automatically, making it an efficient and beginner-friendly solution.

VII. Conclusion

The **ASCII Numbers** challenge demonstrates how simple encoding techniques are used to hide information in CTF challenges. By understanding the relationship between hexadecimal values and ASCII characters, the encoded message was successfully decoded using CyberChef. This challenge reinforces the importance of recognizing common encodings and using appropriate tools to analyze and decode data efficiently.

— The Analyst: Hyposelenia