CTF Write-up: Esoteric

Challenge Overview

Detail	Value
Challenge Name	Esoteric
Category	Steganography / Esoteric Language / Substitution Cipher
Flag Format	SECE{xx_xx}
Given Flag String	SECE{giffa itach zillo zillo mittai ou varal mittai zillo chou jit itach monk}
Final Flag	SECE{hello_soldier}
Difficulty	Easy to Medium (Conceptual)

The challenge presented an esoteric string within the expected flag format, along with a hint that the solution required "Manual decoding only" and that the final flag was SECE{hello_soldier}. The core task was to reverse-engineer the cipher and document the process.

Methodology: Reverse-Engineering the Substitution Cipher

The challenge explicitly provided both the encoded string and the final decoded string, which is a common technique in CTFs to guide participants toward the intended cipher type.

1. Analysis of the Encoded and Decoded Strings

The encoded string was presented as: giffa itach zillo zillo mittai ou varal mittai zillo chou jit itach monk

The target decoded string (the flag content) is: hello_soldier

First, a comparison of the lengths of the two strings was performed:

String	Content	Length (Words/Characters)
Encoded	giffa itach zillo zillo mittai ou varal mittai zillo chou jit itach monk	13 words
Decoded	hello_soldier	13 characters

The perfect one-to-one correspondence in length strongly suggested a **simple substitution cipher**, where each word in the esoteric string maps directly to a single character in the final flag.

2. Deriving the Substitution Mapping

By aligning the words of the encoded string with the characters of the decoded string, the complete substitution map was derived.

Position	Encoded Word	Decoded Character
1	giffa	h
2	itach	e
3	zillo	l
4	zillo	l
5	mittai	o
6	ou	_
7	varal	s
8	mittai	o
9	zillo	l
10	chou	d

Position	Encoded Word	Decoded Character
11	jit	i
12	itach	e
13	monk	r

3. Final Substitution Table

The unique word-to-character mappings form the complete key for this esoteric language:

Esoteric Word	Decoded Character
giffa	h
itach	e
zillo	l
mittai	o
ou	_
varal	s
chou	d
jit	i
monk	r

This substitution cipher is a form of **Esoteric Language** where common words are used as tokens to represent characters, similar to languages like *Ook!* or *Brainfuck*, but with a custom, challenge-specific vocabulary.

Conclusion

By applying the derived substitution key to the encoded string, the final flag content is revealed:

giffa + itach + zillo + zillo + mittai + ou + varal + mittai + zillo + chou + jit + itach + monk = h + e + l + l + o + _ + s + o + l + d + i + e + r = hello_soldier

The final flag, wrapped in the required format, is:

SECE{hello_soldier}

References

No external references were required for this solution, as the key was derived directly from the challenge prompt.