

Sector67 Monthly Meeting - \$25 Prize!!

\$25 Syntax-Locking Challenge!

Syntax locking involves locking ideas up in the syntax of a particular language or syntax. This repo explores the ideas of different ways to represent exactly the same information, either in Syntax-Locked or Syntax-FREE formats. The saying that a picture is worth a thouuand words is because of this dichotomy

1. Using xO-XO Language, describe 2 different 6x5 shapes. In addition to the . spacer character, there is an X, and an O symbol in it's alphabet.
2. Repeat using Hashtag-ONLY-XO Lang, that, in addition to the . spacer character has only the Hashtag # symbol available.
3. Hashtag-ONLY Lang **requires to define a "dictionary"** in order to communicate what we need. 4. Syntax-FREE Shapes also use only Xs, and Os, but critical information about the idea is conveyed leveraging the 2nd dimension!
5. Even losing 33% of the symbols available, the Syntax-FREE shape still effortlessly communicates, with almost no loss of fidelity.

XO-XO Language for Shapes

XO-XO Lang has 3 symbols in it's alphabet: They are, x, o and Period . Using only these symbols, the challenge decypher these 2 XO-XO Lang sentences :

1st Sentence

```
X.....X...00000.....X...X...0.....0....X.X.....0.....0...X...
X...0.....0..X.....X...00000..
```

2nd Sentence

```
.X.....X...X...X.....X...X.....X.X.....X...X...X.....X.....
. ...00000...0.....0..0.....0..0.....0...00000..
```

Hashtag-ONLY Language for Shapes

In this language, the only real symbol other than period spacer symbol is the **Hashtag (#)** symbol. To use only Xs and Periods, we'll need to start building words using the symbols in the Hashtag Alphabet. We'll need 3 words.

Hashtag Only Dictionary

These define the three "words" needed in **Hashtag-lang**, in order to describe another shape.

X is 2 hashtags, ##. 0 is 1 hashtag, # and a spacer period. A space is 2 periods.

With this word based Hashtag-ONLY Language, we can now describe shapes again:

Pop Quiz...

What shape does this describe?

..##.....##.....##.....##.....##.....##.....
.
.##..##.....##.....##.....##.....##.....
.
.....#.#.#.#.....#.....#.....#.....#.....
.....#.....#.#.#.#.....

It would be QUITE difficult to figure out in this format.

.
.

\$25 Dollar Prize!!

The challenge is that the 3 sentences above describe 3 different shapes, but because they are based on just a series of sequential, linear tokens, the meaning must be decoded.

Are you up to it?

Earn \$25 if you can figure out what's described here before the end of the meeting.

Syntax-FREE Shapes - Leveraging the 2nd Dimnsion

Because a Picture is Worth 1,000 word!!!

By adding a 2nd dimension, it is much easier to encode even complex ideas (like the concept of an X), without complex "decoding" needed before the meaning is effectively communicated.

1st Sentence

.X.....X.	..00000..
..X...X..	.0.....0.
...X.X...	.0.....0.
..X...X..	.0.....0.
.X.....X.	..00000..

2nd Sentence

.X.....X.
..X...X..
...X.X...
..X...X..
.X.....X.

..00000..
.0.....0.
.0.....0.
.0.....0.
..00000..

Hashtag-ONLY Syntax-FREE Sentence 1

.#.....#.	..#####..
..#...#..	.#.....#.
...#.#...	.#.....#.
..#...#..	.#.....#.
.#.....#.	..#####..

Syntax#FREE Sentence 2

.#.....#.
..#...#..
...#.#...
..#...#..
.#.....#.

..#####..
.#.....#.
.#.....#.
.#.....#.
..#####..

Syntax-Locked vs. Syntax Free Formats

The difference between syntax-locking and syntax-free formats lies in how information is encoded and interpreted.

Syntax-Locking Formats:

Linear and Sequential: Information is presented in a linear sequence of symbols.

Dependent on Syntax Rules: Understanding the message requires decoding based on specific syntax rules or a predefined dictionary.

Example: In your XO-XO and Hashtag-ONLY languages, shapes are encoded as sequences of characters (e.g., x , o , # , and .). To comprehend the shapes, one must interpret these sequences according to the rules of the language.

Syntax-Free Formats:

Spatial Arrangement: Information is conveyed through the two-dimensional placement of symbols.

Immediate Recognition: The meaning is apparent without needing to decode syntax; the visual representation communicates the idea directly.

Example: By arranging the same symbols in a grid to form shapes, the intended image (like a letter or symbol) becomes immediately recognizable.

Understanding the Difference:

Cognitive Load: Syntax-locking formats require more mental effort to decode, as they rely on remembering and applying syntax rules.

Efficiency of Communication: Syntax-free formats can convey complex ideas more efficiently by leveraging our natural ability to recognize patterns and shapes.

Dimensions of Communication: Adding a second dimension (height and width) allows for more information to be presented simultaneously, enhancing clarity.

Illustration:

In the syntax-locking example, the sequence x x . . . 00000 . . . x . . . x . . . 0 0 x . x . . . 0 0 . . . x . . . requires parsing and interpretation.

In the syntax-free example, arranging symbols in a grid forms a recognizable shape, such as a letter or icon, which can be understood at a glance.

Conclusion:

Syntax-free formats leverage visual spatial relationships to communicate more effectively, bypassing the need for complex decoding. This demonstrates why "a picture is worth a thousand words"—visual representations can convey information more directly and intuitively than linear sequences of symbols bound by syntax rules.

GPT4 Attempt 1 to complete the challenge

Certainly! Let's tackle the challenge step by step to figure out the shapes described in the given sentences.

XO-XO Language Sentences

Alphabet:

x
o
. (Period) (as a spacer)

1st Sentence:

x.....x...00000....x...x...0.....0....x.x...0.....0...x...
x...0.....0..x.....x...00000..

2nd Sentence:

.x.....x...x...x...x...x.....x.x.....x...x...x.....x.....
...00000...0.....0..0.....0..0.....0...00000..

Decoding the Sentences

To decode these sentences, we'll consider them as representations of shapes or letters formed by arranging the symbols in a certain pattern.

Approach:

- 1. **Segment the Sentences:** Break the sentences into lines to see the pattern.
- 2. **Visualize the Arrangement:** Think of each line as a row in a grid.
- 3. **Interpret the Symbols:** Recognize how x , o , and . can form shapes when placed appropriately.

Decoding the 1st Sentence

Let's split the first sentence into lines:

Line 1:

X.....X...00000....X...X...0.....0....X.X...0.....0...X...

Line 2:

X...0.....0..X.....X...00000..

Now, let's attempt to align these lines in a way that forms a recognizable shape.

Reformatted:

```
Line 1: X.....X...00000
Line 2: .X...X...0.....0
Line 3: ..X.X....0.....0
Line 4: .X...X...0.....0
Line 5: X.....X...00000
```

Visualization:

```
1: X X 00000
2: X X 0 0
3: X X 0 0
4: X X 0 0
5: X X 00000
```

This pattern resembles the letter "X" next to the letter "O".

Decoding the 2nd Sentence

Split the second sentence:

Line 1:

.X.....X...X...X...X...X.....X.X.....X...X...X.....X.....

Line 2:

...00000...0.....0..0.....0..0.....0...00000..

Reformatted:

```
Line 1: .X.....X
Line 2: ..X...X
Line 3: ...X.X
Line 4: ..X...X
Line 5: .X.....X
```

Line 6: ..00000
Line 7: .0.....0
Line 8: .0.....0
Line 9: .0.....0
Line 10: ..00000

Visualization:

First Shape:

1: .X X
2: .X X
3: .X X
4: .X X
5: .X X

Second Shape:

6: ..00000
7: .0 0
8: .0 0
9: .0 0
10: ..00000

Again, the shapes are "X" and "O".

Hashtag-ONLY Language Sentence

Dictionary:

x is ##
o is #. (a hashtag and a period)
A space is .. (two periods)

Pop Quiz Sentence:

..##.....##.....##.....##.....##.....##.....
.##.##.....##.....##.....##.....##.....
.....#.#.#.#.....#.....#.....#.....#.....#.....#
.....#.....#.#.#.#.....

Decoding the Pop Quiz

Step 1: Segment the Lines

Line 1:

..##.....##.....##.....##.....##.....##.....

Line 2:

..##..##.....##.....##.....##.....##.....

Line 3:

.....#.#.#.#.....#.....#.....#.....#.....#.....#

Line 4:

.....#.....#.#.#.#.....

Step 2: Replace Symbols Using the Dictionary

Replace ## with x

Replace #. or .# with o

Replace .. with a space

Interpreted Lines:

Line 1: X X X X X X

Line 2: X X X X X X

Line 3: O O O O O O O O O

Line 4: O O O O O O

Visualization:

First Shape:

1: X X X X X X

2: X X X X X X

Second Shape:

3: O O O O O O O O O

4: O O O O O O

This forms the shapes "X" and "O" again.

Conclusion

All the given sentences, when decoded, represent the shapes of the letters **"X"** and **"O"**.

Answer to the Challenge

The shapes described in the sentences are the letters **"X"** and **"O"**.

By interpreting the sequences using the provided alphabets and dictionaries, and arranging them appropriately, we can visualize the letters "X" and "O" in both the XO-XO Language and the Hashtag-ONLY Language.

Explanation

Syntax-Locked Formats: The sequences require decoding based on specific syntax rules.

Syntax-Free Formats: Arranging symbols in two dimensions forms shapes that are immediately recognizable.

This exercise demonstrates how adding a second dimension to information representation can make complex ideas easier to understand, highlighting why "a picture is worth a thousand words."

SOLVE SCORE: 66%