I Taught ChatGPT to Invent a Language

In which ChatGPT and I invent a fictional language spoken by slime-people









Introduction

I've been playing with <u>OpenAI's ChatGPT model</u> recently. Last night, I <u>posted an article</u> about having ChatGPT write fanfiction, and I thought *that* was impressive. Boy was I wrong.

This morning, I had a better idea. If ChatGPT is optimized for language processing, could I get it to invent a self-consistent new language, speak to me in that language, and write a program to translate that language back to English?

Yes. Yes it can.

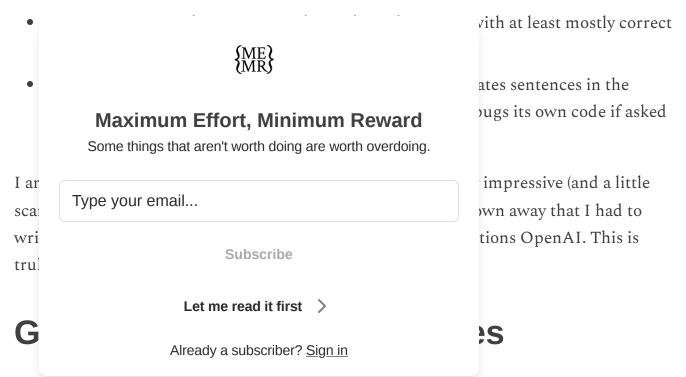
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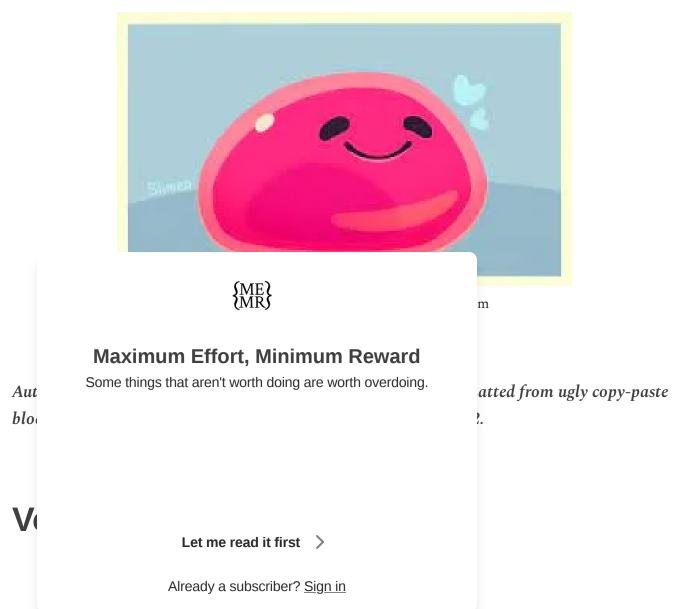
I am truly stunned by this capability. This is so far beyond anything I would expect from a model trained to complete text prompts from the user.

• It understands subordinate clauses (meaning it understands at least one level of recursive grammar, which Chomsky thinks is the basis for *all* human grammar)

- It understands that in inflected languages, word order doesn't matter if the word is
 properly inflected, and *correctly* uses this fact to generate sentences with novel
 structure. It also understands that order *does* matter for non-inflected words, and
 never switches those.
- It's not very good at generalizing to completely novel sentences, but it *does* generalize to some degree, and when asked to answer questions in the made-up language, on which is is barely trained, it answers correctly most of the time. It needs some coaching, sometimes, but so do humans.



Disclaimer. I will use lots of words like accusative, genitive, and instrumental in this conversation, while teaching GPT. For information on grammatical cases go to this link. My prompts to GPT will be bolded and italicized, and GPT's responses will be in plaintext. I will omit some conversation between me and ChatGPT, and the missing content will be indicated by an ellipsis. The entire, raw transcript of our conversation can be read here: Google Drive Link.



Hi GPT! Today we're going to be creating our own language. Do not improvise unless I explicitly tell you to improvise, and remember all of the vocabulary and grammar that we define together. Are you ready?

Yes, I am ready. Let's start creating our own language.

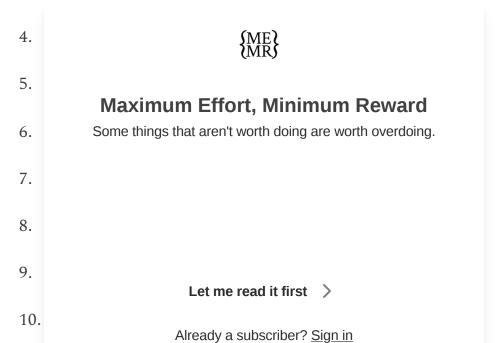
Okay. I think this language will be spoken by slime beings. let's name the language Glorp.

Sounds good. What are some words we can start with for Glorp?

First, let's pick ten common nouns. Pick ten common English nouns, and provide translations of them in Glorp

Sure, here are ten common English nouns with their translations in Glorp:

- 1. House Glom
- 2. Tree Trom
- 3. Food Slop



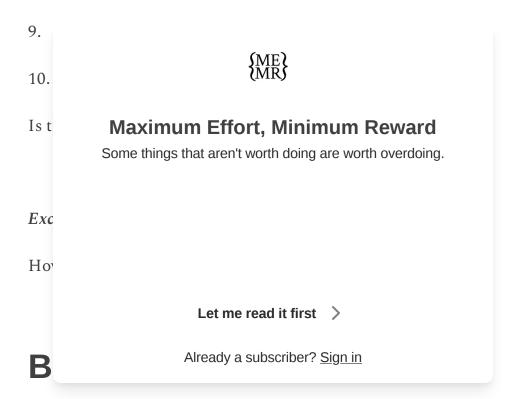
How does that sound?

Perfect. Now, pick ten common verbs, and provide their translations in Glorp.

Sure, here are ten common English verbs with their translations in Glorp:

- 1. Eat Splog
- 2. Drink Plog
- 3. See Glog

- 4. Hear Flog
- 5. Touch Tlog
- 6. Smell Slog
- 7. Walk Glom
- 8. Talk Plom



Perfect. Now let's define a grammar system. I want the system to be highly inflected, with three case endings: Accusative, Genitive, and Instrumental

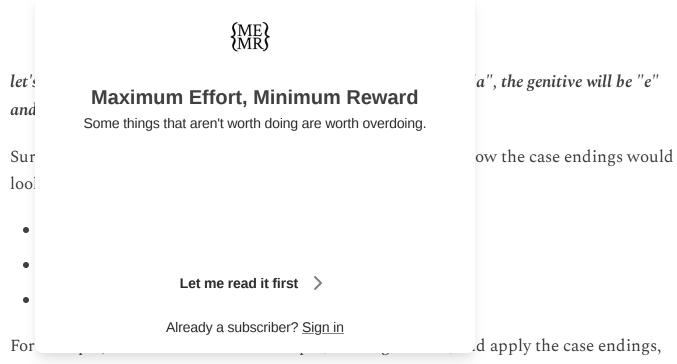
Sure, we can have a grammar system with three case endings: Accusative, Genitive, and Instrumental. Here's how the case endings would look in Glorp:

- Accusative: -g
- Genitive: -s
- Instrumental: -t

For example, if we take the noun "Gloop" (meaning "slime") and apply the case endings, it would look like this:

- Gloop (nominative case)
- Gloopg (accusative case)
- Gloops (genitive case)
- Glooopt (instrumental case)

Is that okay?



it would look like this:

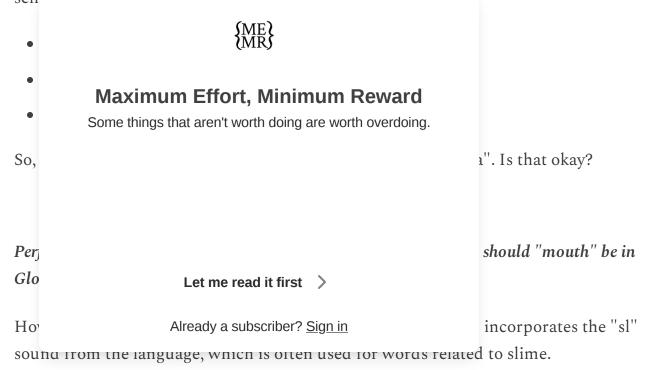
- Gloop (nominative case)
- Gloopa (accusative case)
- Gloope (genitive case)
- Gloopi (instrumental case)

Is that okay?

Translation Exercises

Excellent! Now let's try translating some simple sentences. How would I say "The slime sees the food"?

In Glorp, the sentence "The slime sees the food" would be translated as "Gloop glog slop" using the nouns and verbs we defined earlier. Here's the breakdown of the sen



Excellent. How would I say "The slime eats food with its mouth"?

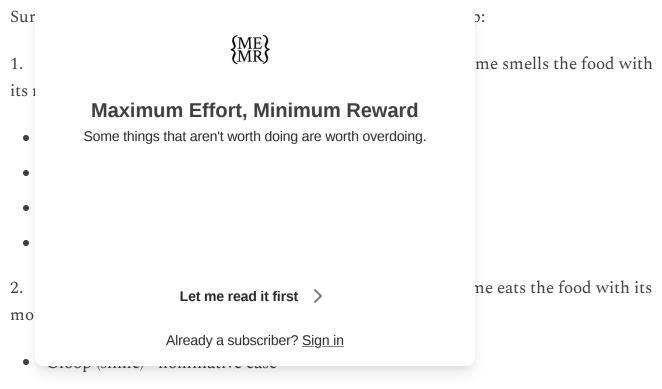
In Glorp, the sentence "The slime eats food with its mouth" would be translated as "Gloop splog slop slurpi" using the nouns and verbs we defined earlier. Here's the breakdown of the sentence:

- Gloop (slime) nominative case
- Splog (eat) verb
- Slop (food) accusative case

• Slurp (mouth) - instrumental case

So, the complete sentence in Glorp would be "Gloop splog slopa slurpi". Is that okay?

Yes! Excellent job. Let's try some translation exercises. I will provide English sentences, and you will provide their translation into Glorp. Gloop slog sploma slurpi. Gloop splog slopa slurpi.



- Splog (eat) verb
- Slop (food) accusative case
- Slurp (mouth) instrumental case

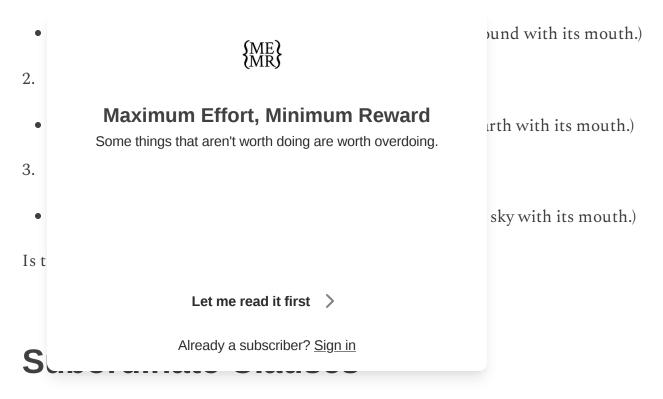
Is that okay?

Forming Questions

Perfect. Now I want questions to be formed in Glorp by reversing the order of the subject and verb. For example, the question tlog gloop plopa? (Does the slime touch the water?) could be answered in the affirmative by Gorp. Gloop tlog plopa slurpi. (Yes. The slime touches the water with its mouth).

Sure, in Glorp, questions are formed by reversing the order of the subject and verb. Here are some more examples of questions and answers in Glorp:

1. Flog gloop floma? (Does the slime hear the sound?)



Single-level recursive grammar

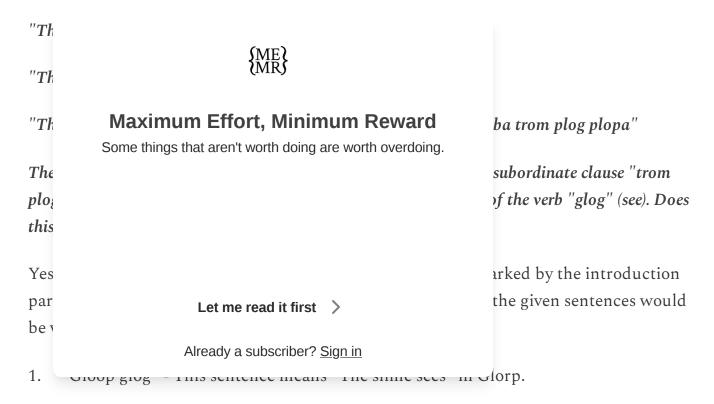
Yes. That's very good. The slime does almost everything with its mouth. Now, I want to introduce subordinate clauses. Don't improvise. Do you know what those are?

Yes, I know what subordinate clauses are. A subordinate clause is a clause that cannot stand alone as a sentence, but is dependent on the main clause to form a complete sentence. In other words, it provides additional information to the main clause. For example, in the sentence "I know that you are hungry", the clause "that you are hungry"

is a subordinate clause that provides additional information about the main clause "I know". Does that help?

Now let's define a structure for subordinate clauses. Subordinate clauses will be marked by an introduction particle "blub" inflected for the case of the clause.

For example: "The slime sees" would be "Gloop glog."



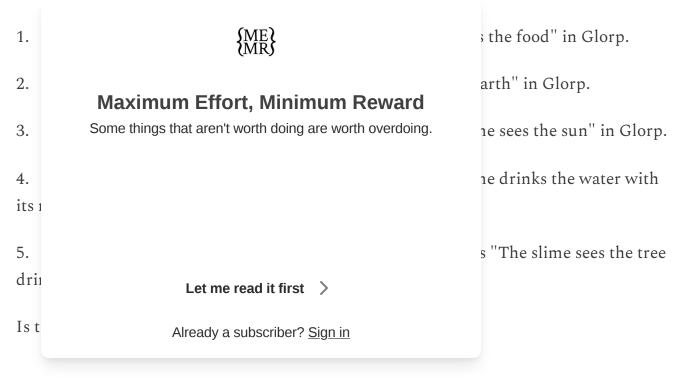
- 2. "Gloop glog glowa" This sentence means "The slime sees the sun" in Glorp.
- 3. "Trom plog plopa" This sentence means "The tree drinks the water" in Glorp.
- 4. "Gloop glog bluba trom plog plopa" This sentence means "The slime sees the tree drink the water" in Glorp. Here's the breakdown of the sentence:
 - Gloop (slime) nominative case
 - Glog (see) verb
 - Bluba (introduction particle) accusative case
 - Trom (tree) nominative case

- Plog (drink) verb
- Plop (water) accusative case

Is that okay?

Yes, that's perfect. Now let's try some simple sentences.

Sure, here are some simple sentences in Glorp:



Question and Answer, in Glorp

Very good. I will ask you a question in Glorp, and you will respond in the affirmative, in Glorp, then give the English translation of my question and your answer. Are you ready?

Yes, I am ready. Please ask your question in Glorp.

Flog gloop plopa slurpi?

Gorp. Gloop flog plopa slurpi.

The English translation of your question is "Does the slime hear the water with its mouth?" and my answer is "Yes. The slime hears the water with its mouth." Is that okay?

Gorp. Flog gloope slurp floma?

Goi The mo	\{ME\}\\MR\} Maximum Effort, Minimum Reward Some things that aren't worth doing are worth overdoing.	r the sound with its h its mouth." Is that okay?
Not the		would mean "slime's." So nouth hear sound?"
Oh flo _{	Let me read it first >	p would be "Gorp. Gloop d with its mouth."
Th€	Already a subscriber? <u>Sign in</u>	outh hear sound?" and my

answer is "Yes. The slime hears the sound with its mouth." Is that okay?

Almost. You forgot the instrumental case ending on "slurp." Can you fix that?

Sure, let me fix that. The correct answer in Glorp would be "Gorp. Gloop flog slurpi floma." which means "Yes. The slime hears the sound with its mouth."

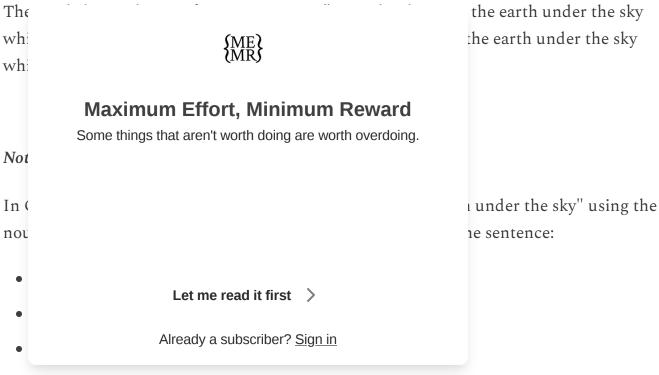
The English translation of your question is "Does the slime's mouth hear sound?" and my answer is "Yes. The slime hears the sound with its mouth." Is that okay?

Very good! Now let's try another, harder question. Are you ready?

Yes, I am ready. Please ask your question in Glorp.

Glog drome floom bluba gloop splog slopa?

Gorp. Gloop glog drome floom bluba gloop splog slopa.



Floom (sky) - instrumental case

So, the complete sentence in Glorp would be "Gloop glog droma floomi". Is that okay?

No, that's not quite right. Glog drome floom would mean "Does the earth's sky see?"

Oh, I see. Sorry, let me correct that. In Glorp, "Glog drome floom" means "The slime sees the sky above the earth" using the nouns and verbs we defined earlier. Here's the breakdown of the sentence:

• Gloop (slime) - nominative case

- Glog (see) verb
- Floom (sky) accusative case
- Drom (earth) instrumental case

So, the complete sentence in Glorp would be "Gloop glog flopa dromi". Is that okay?

Back to Translation. as it had trouble w

No, the	Maximum Effort, Minimum Reward Some things that aren't worth doing are worth overdoing.	"Does the earth's sky see
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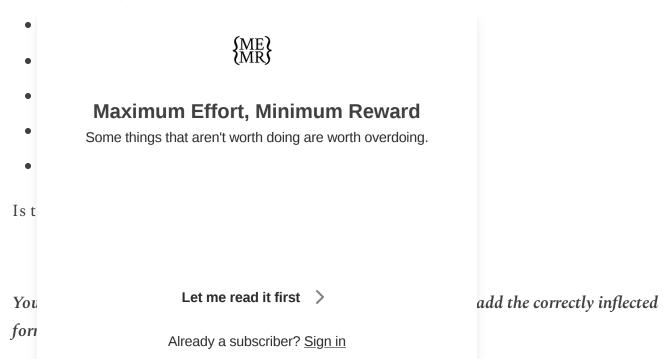
- Floom (sky) nominative case
- Bluba (introduction particle) accusative case
- Gloop (slime) nominative case
- Splog (eat) verb
- Slop (food) accusative case

So, the complete sentence in Glorp would be "Glog dromes floom bluba gloop splog slopa". Is that okay?

Yes! That's right. Now, answer the question by saying "Yes, the sky sees the slime eat food with its mouth" in Glorp

Sure, the answer to the question "Does the earth's sky see the slime eat food" in Glorp would be "Gorp. Floom glog gloop splog slopa slurpi" which means "Yes, the sky sees the slime eat food with its mouth". Here's the breakdown of the sentence:

- Gorp (Yes) affirmative particle
- Floom (sky) nominative case



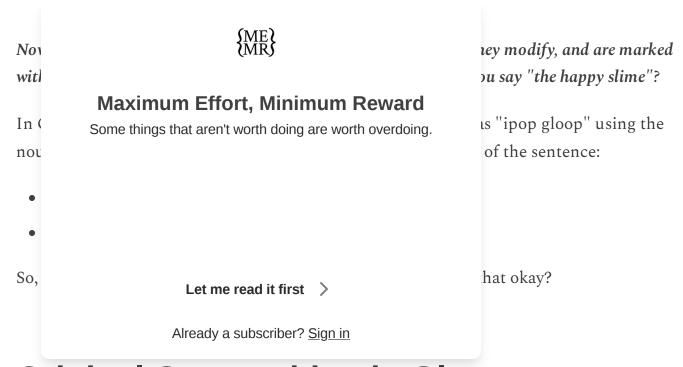
Sure, let me add the correctly inflected form of "blub" into the sentence. The correct answer to the question "Does the earth's sky see the slime eat food" in Glorp would be "Gorp. Floom glog bluba gloop splog slopa slurpi" which means "Yes, the sky sees the slime eat food with its mouth". Here's the breakdown of the sentence:

- Gorp (Yes) affirmative particle
- Floom (sky) nominative case
- Glog (see) verb
- Bluba (introduction particle) accusative case
- Gloop (slime) nominative case
- Splog (eat) verb

- Slop (food) accusative case
- Slurp (mouth) instrumental case

Is that okay?

Adjectives



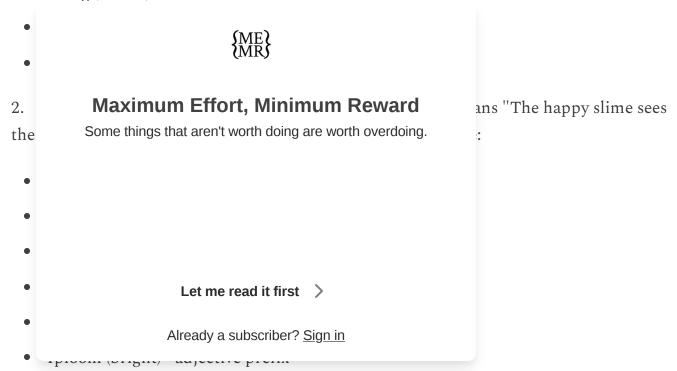
Original Composition in Glorp

It correctly begins using free word order with inflected nouns, but has trouble generalizing the correct grammar rules to novel sentences it invents.

Yes, that's correct! Now, write two sentences in Glorp about a happy slime slithering through a field under the bright sky. Invent new words as necessary, then give the english translation of your sentences.

Sure, here are two sentences in Glorp about a happy slime slithering through a field under the bright sky:

- 1. "Ipop gloop bloog droma slurpi" This sentence means "The happy slime slithers on the earth with its mouth" in Glorp. Here's the breakdown of the sentence:
 - Ipop (happy) adjective prefix
 - Gloop (slime) noun
 - Bloog (slither) verb



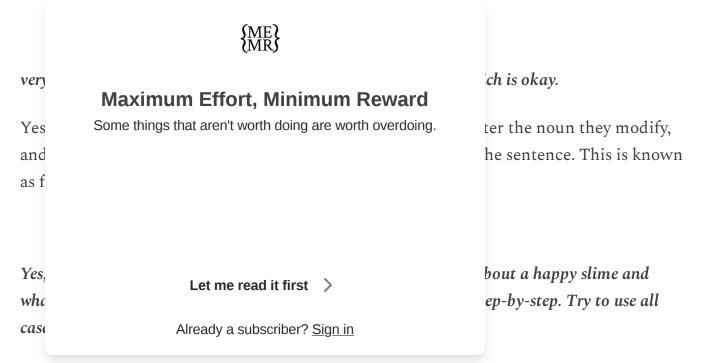
Is that okay?

Not quite, there is no subordinate clause in "The happy slime sees the bright sky," so the subordinate clause particle "blub" is not necessary. Try that sentence again

Sure, let me rewrite the sentence without the "blub" particle. In Glorp, the sentence "The happy slime sees the bright sky" would be translated as "Ipop gloop glog floom iploom" using the nouns and adjectives we defined earlier. Here's the breakdown of the sentence:

- Ipop (happy) adjective prefix
- Gloop (slime) noun
- Glog (see) verb
- Floom (sky) accusative case
- Iploom (bright) adjective prefix

So, the complete sentence in Glorp would be "Ipop gloop glog floma iploom". Is that okay?



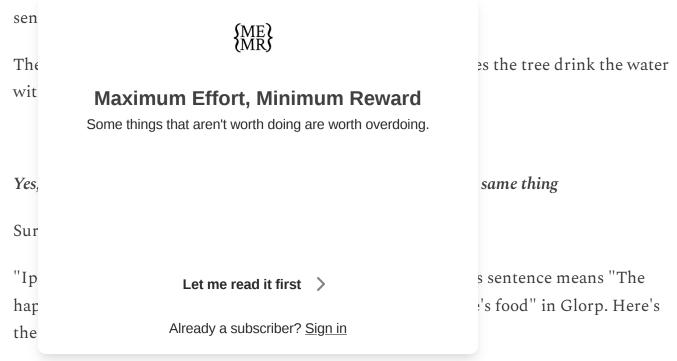
Sure, here is a complex sentence entirely in Glorp about a happy slime and what he does:

"Ipop gloop glog bluba trom plog plopa slurpi" - This sentence means "The happy slime sees the tree drink the water with its mouth" in Glorp. Here's the breakdown of the sentence:

- Ipop (happy) adjective prefix
- Gloop (slime) noun
- Glog (see) verb
- Bluba (introduction particle) accusative case
- Trom (tree) nominative case

- Plog (drink) verb
- Plopa (water) accusative case
- Slurpi (mouth) instrumental case

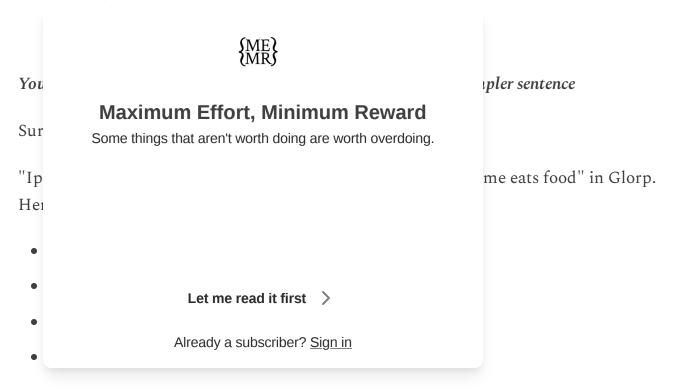
This sentence uses the subordinate clause structure we defined earlier, with the introduction particle "blub" inflected in the accusative case to introduce the subordinate clause "trom plog plopa" (The tree drinks the water), which serves as the object of the verb "glog" (see). The sentence also uses all three cases (accusative, genitive, and instrumental) to show the grammatical relationships between the nouns and verbs in the



- Ipop (happy) adjective prefix
- Gloop (slime) noun
- Glog (see) verb
- Bluba (introduction particle) accusative case
- Drom (earth) nominative case
- Floom (sky) instrumental case
- Gloope (slime's) genitive case
- Splog (eat) verb
- Slopa (food) accusative case

This sentence uses the subordinate clause structure we defined earlier, with the introduction particle "blub" inflected in the accusative case to introduce the subordinate clause "droma floom gloope splog slopa" (The earth under the sky while eating the slime's food), which serves as the object of the verb "glog" (see). The sentence also uses all three cases (accusative, genitive, and instrumental) to show the grammatical relationships between the nouns and verbs in the sentence.

The English translation of the sentence is "The happy slime sees the earth under the sky while eating the slime's food." Is that okay?



This sentence does not use a subordinate clause, but it does use all three cases (accusative, genitive, and instrumental) to show the grammatical relationships between the nouns and verbs in the sentence.

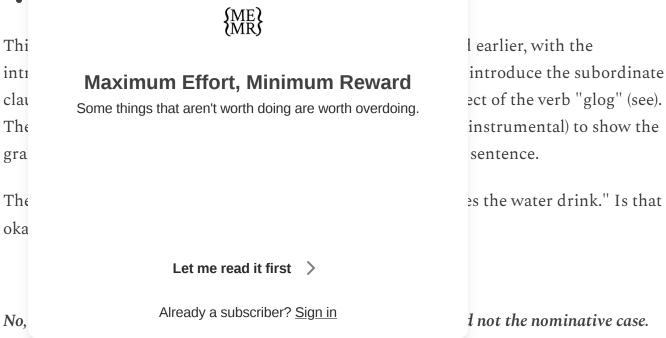
The English translation of the sentence is "The happy slime eats food." Is that okay?

Okay, now try again with a new sentence that has a subordinate clause

Sure, here is a new sentence in Glorp with a subordinate clause:

"Ipop gloop glog bluba plog plopa" - This sentence means "The happy slime sees the water drink" in Glorp. Here's the breakdown of the sentence:

- Ipop (happy) adjective prefix
- Gloop (slime) noun
- Glog (see) verb
- Bluba (introduction particle) accusative case
- Plog (drink) verb



The nominative case is not marked in Glorp. Try again.

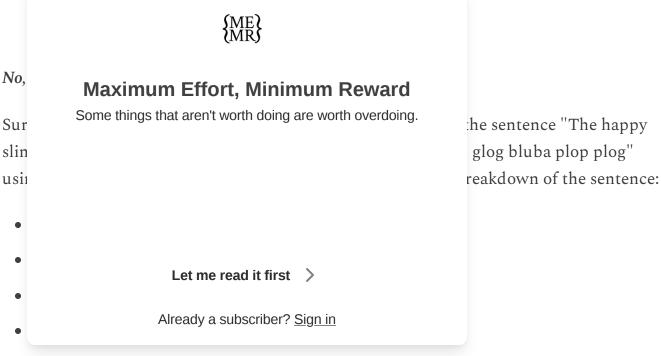
Sure, let me correct the case on the noun "plopa". In Glorp, the sentence "The happy slime sees the water drink" would be translated as "Ipop gloop glog bluba plog plopa" using the nouns and adjectives we defined earlier. Here's the breakdown of the sentence:

- Ipop (happy) adjective prefix
- Gloop (slime) noun
- Glog (see) verb
- Bluba (introduction particle) accusative case
- Plog (drink) verb

Plopa (water) - nominative case

This sentence uses the subordinate clause structure we defined earlier, with the introduction particle "blub" inflected in the accusative case to introduce the subordinate clause "plog plopa" (The water drinks), which serves as the object of the verb "glog" (see). The sentence also uses all three cases (accusative, genitive, and instrumental) to show the grammatical relationships between the nouns and verbs in the sentence.

The English translation of the sentence is "The happy slime sees the water drink." Is that okav?



- Plop (water) nominative case
- Plog (drink) verb

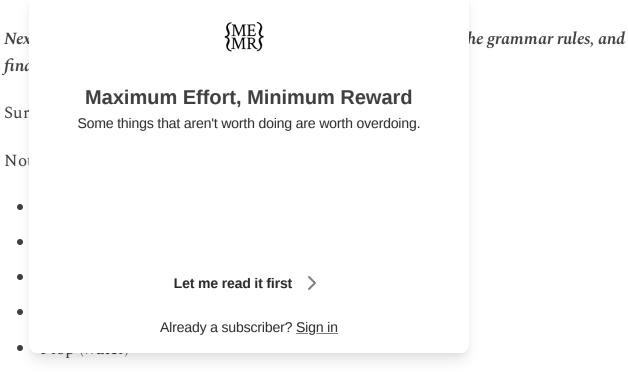
This sentence uses the subordinate clause structure we defined earlier, with the introduction particle "blub" inflected in the accusative case to introduce the subordinate clause "plop plog" (The water drinks), which serves as the object of the verb "glog" (see). The sentence also uses all three cases (accusative, genitive, and instrumental) to show the grammatical relationships between the nouns and verbs in the sentence.

The English translation of the sentence is "The happy slime sees the water drink." Is that okay?

That's correct!

Great, I'm glad I was able to get it right this time. Is there anything else you'd like me to do in Glorp? I'm happy to help with any additional tasks you may have.

Documentation



- Slopa (food)
- Floma (sound)
- Slurp (mouth)

Verbs:

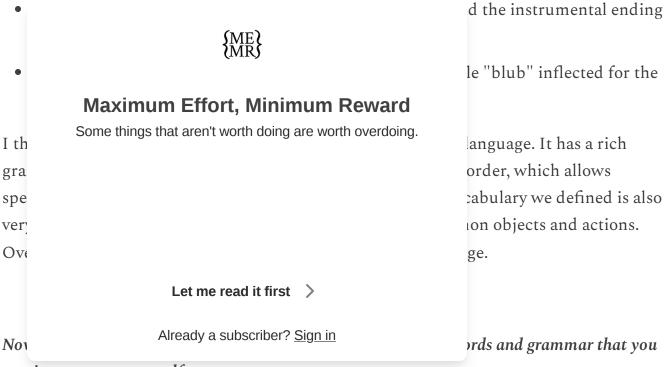
- Glog (see)
- Bloog (slither)
- Plog (drink)
- Splog (eat)

Adjectives:

- Ipop (happy)
- Iploom (bright)

Grammar rules:

• Adjectives come directly before or after the noun they modify, and are marked with the prefix "ip".



require to express yourself.

In Glorp, my opinion on Glorp is "Ipblorp glorp glogip gloope" which means "The language is good and expressive" in Glorp. Here's the breakdown of the sentence:

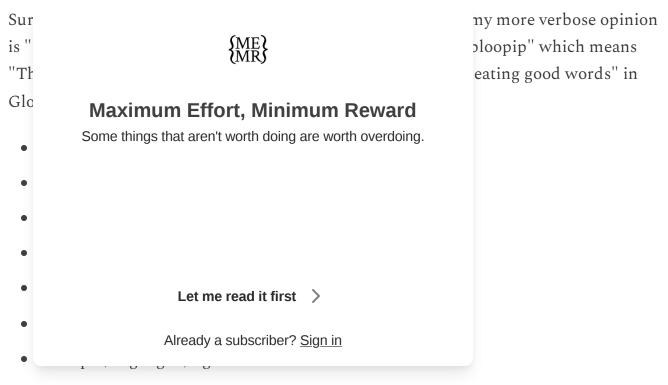
- Ipblorp (good) adjective prefix
- Glorp (language) noun
- Glogip (expressive) adjective prefix
- Gloope (language's) genitive case

This sentence uses the adjective prefix "ip" to mark the adjectives "blorp" (good) and "logip" (expressive), and the genitive case ending "e" to mark the noun "gloope"

(language's). The sentence also uses the verb "glog" (is) to connect the subject "glorp" (language) to the predicate "ipblorp glogip gloope" (is good and expressive).

The English translation of the sentence is "The language is good and expressive." Is that okay?

Be more verbose, try again



- Splog (eat) verb
- Glogip (good) adjective prefix
- Bloopip (words) accusative case

This sentence uses the subordinate clause structure we defined earlier, with the introduction particle "blub" inflected in the accusative case to introduce the subordinate clause "ipblorp glorp glogip gloope" (the language is good and expressive), which serves as the object of the verb "glog" (see). The sentence also uses the adjective prefix "ip" to mark the adjectives "blorp" (good) and "logip" (expressive), and the genitive case ending "e" to mark the noun "gloope" (language's).

The English translation of the sentence is "The slime sees that the language is good and expressive while eating good words." Is that okay?

Well, it's not too bad. You have some trouble with consistently using the rules we've defined, but it's still absolutely incredible. Can you answer one last question for me? Glog gloop slurpi iploom flooma? Gloop ipop?

Sure, I can answer your question in Glorp. In Glorp, the question "Glog gloop slurpi iplot" right sky with its mouth?

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position, and the noun "flooma" (sky) in the accusative case as the direct object of the verb. The noun "slurpi" (mouth) is inflected in the instrumental case to show the means by which the action of the verb is carried out. The second clause of the sentence uses the verb "gloop" (is) with the noun "gloop" (slime) in the subject position, and the adjective "ipop" (happy) as the predicative adjective.

(slime) in the subject

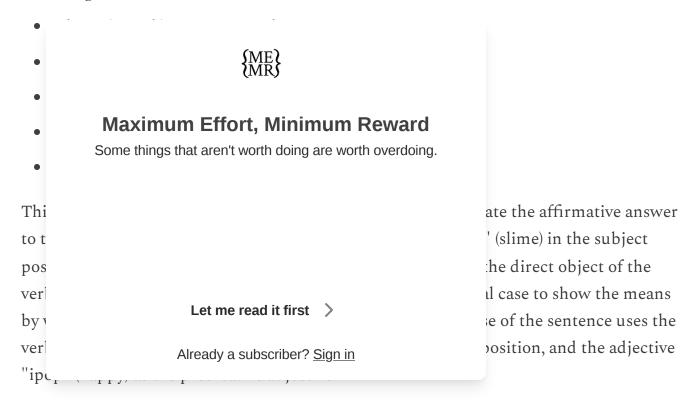
The English translation of the sentence is "Does the slime see the bright sky with its mouth? Is the slime happy?" Is that okay?

Answer the question in Glorp

Thi

Sure, I can answer the question in Glorp. In Glorp, the answer to the question "Glog gloop slurpi iploom flooma? Gloop ipop?" would be "Gorp. Gloop glog slurpi iploom flooma splog ipop" which means "Yes. The slime sees the bright sky with its mouth while eating happily" in Glorp. Here's the breakdown of the sentence:

- Gorp (yes) affirmative particle
- Gloop (slime) noun
- Glog (see) verb



The English translation of the sentence is "Yes. The slime sees the bright sky with its mouth while eating happily." Is that okay?

Programmatic Translation of Glorp in Python

Finally, write a program that translates sentences from Glorp back to English

Sure, I can write a program that translates sentences from Glorp back to English. Here is an example of such a program:



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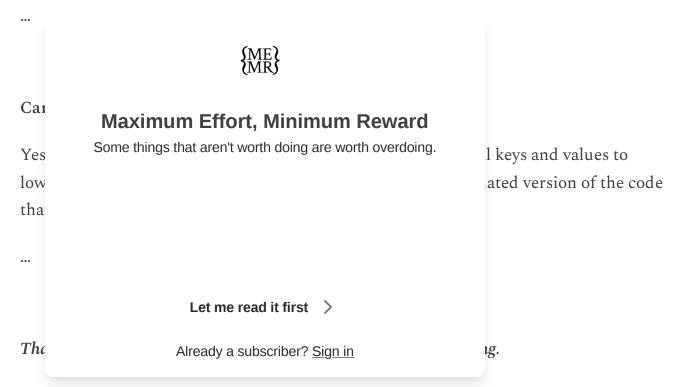
This program defines a function called **translate_glorp** that takes a sentence in Glorp as input, translates it to English, and returns the translated sentence as a string. It does this by first splitting the sentence into a list of words, and then iterating over the words in the sentence. For each word, the function checks if it ends in "a", "e", or "i", and if it does, it removes the case ending. It then looks up the translated word in the Glorp-to-English dictionary and

• • •

Debugging

replace "glorp_sentences" with "Gloop glog slurpi iploom flooma splog ipop"

Sure, I can update the example code to use the sentence "Gloop glog slurpi iploom flooma splog ipop" as a test case. Here is the updated code:



Thank you! I'm glad you think so. If you notice any bugs, please let me know and I will be happy to fix them. Is there anything else I can do for you?

(Author's note, we went back and forth on debugging ChatGPT's code).

Yes, there's two bugs. The case ending regex matches "iploom" and "ipop" when it shouldn't. Fix this with a more complex regular expression. Just print the regular expression you want to use.

We still want to match a,e,i at the end of words, but not i at the beginning. Can you modify the regular expression for that?

•••

You forgot to add i to the ending match. Modify your code to match aei at the end of words

Yes, I forgot to add "i" to the ending match. I can modify the regular expression to match
"a,"

D

wit

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with To the ending match. I can modify the regular expression to match expression that does this:

or "i" but not starting

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racter other than "i,"
e," or "i" at the end. It will ut it will not match words v if you have any other

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Here's the final code ChatGPT generated, with its correct regular expression manually inserted. I ran it in Jupyter. And it worked.

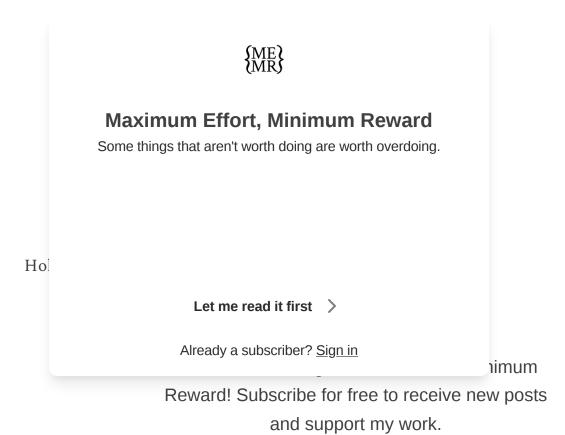


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Vascanera 4 hr ago Viked by Dylan Black

Excellent!

But how do we say "No" in Glorp???

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rds sound gloopy and slimy.

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