

P2: Gə̀əmg (Gaahmg; Gaam)

It's another possession problem: Now with tones!

David Hultman

IOL 2025, Taipei

The grading group!

I would like to thank **Aleksejs Peguševs**, **Daniel Rucki**, **Kazune Sato**, and **Shinjini Ghosh** of the jury, who in addition to myself, graded your solutions to this problem.

The grading group!

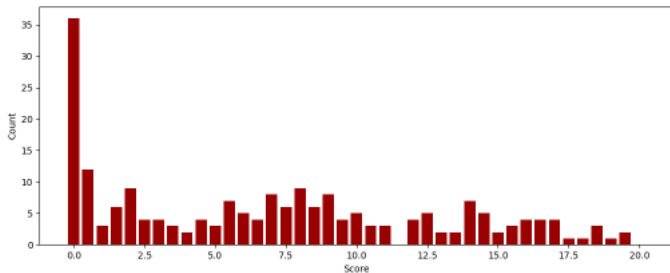
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204 out of 227 participants submitted an answer to P2.

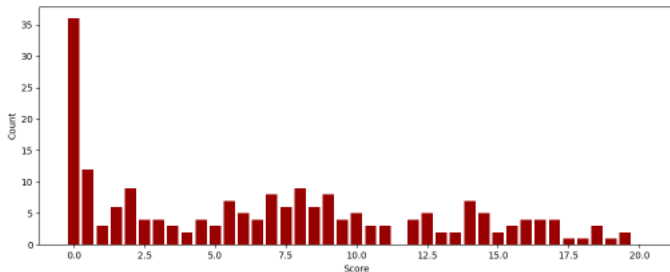
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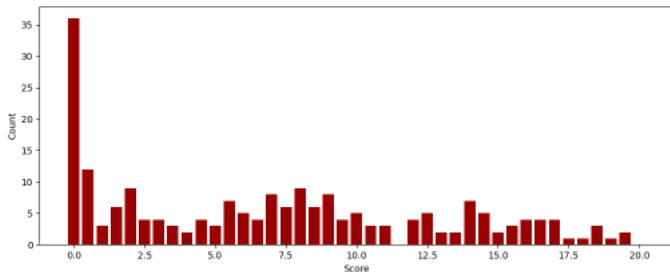
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- ▶ The median score is 6.75

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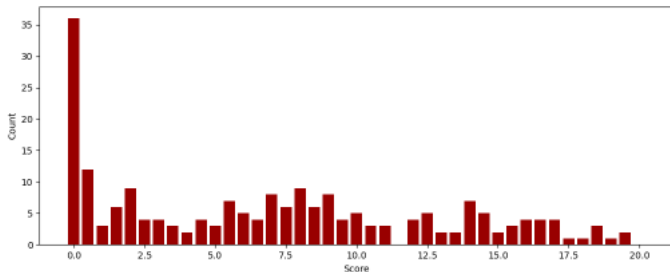
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- ▶ The median score is 6.75
- ▶ The average is 6.91

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The distribution of their scores is as follows:



- ▶ The median score is 6.75
- ▶ The average is 6.91
- ▶ No perfect score...

Introduction to the solution

Now how might one solve this problem?

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ā f̄ndóg, á máámàád, á tááðà, áðág ūyùg, āg pèbàrēēg, āg máàm, d̄ōr
ìinī, ē ìl, ē pēbārēēg, ēg ìlōg, ēg tááðàd, gùùr òyèn, gùùrìig ònòg, ó ābēé,
ō bōōràà, ō ìlòg, ōg tùndùliig, ōg mōōðōōd, t̄éèl úùn, t̄éèlààg ínìgī

? ? ?

*my aunts, his horn, your_{sg} anchor, my grandmother, our ribs, his hammer,
my grindstones, their grandmothers, your_{pl} grandfathers, my cheeks, your_{sg}
horns, their horns, your_{sg} uncle, our grindstone, your_{pl} elbows, his ribs, your_{sg}
shoulder, his anchors, our aunt, your_{pl} dogs*

Types of possession

my aunts, his horn, your_{sg} anchor, my grandmother, our ribs, his hammer, my grindstones, their grandmothers, your_{pl} grandfathers, my cheeks, your_{sg} horns, their horns, your_{sg} uncle, our grindstone, your_{pl} elbows, his ribs, your_{sg} shoulder, his anchors, our aunt, your_{pl} dogs

Types of possession

Family	Body parts	Other
my aunts	his horn	your _{sg} anchor
my grandmother	our ribs	his hammer
their grandmothers	my cheeks	my grindstones
your _{pl} grandfathers	your _{sg} horns	our grindstone
your _{sg} uncle	their horns	his anchors
our aunt	your _{pl} elbows	your _{pl} dogs
	his ribs	
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- Possession of family terms and/or body parts is often special.

Types of possession

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my aunts	his horn	your _{sg} anchor
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our aunt	your _{pl} elbows	your _{pl} dogs
	his ribs	
	your _{sg} shoulder	

- ▶ Possession of family terms and/or body parts is often special.
- ▶ So too in Gaahmg.

Types of possession

ā fñdég, á máámààd, á tááðà, áðág ūyùg, āg pèbàrēēg, āg máàm, dḷḅṛ
ìinī, ē íl, ē pēbārēēg, ēg ìlāg, ēg tááðàd, gùùr ēyèn, gùùrìig éng, ó ābéé, ḅ
bḅṛàà, ḅ ìlāg, ḅg tùndùliig, ḅg mḅḅḅḅḅd, ṽèl ùùn, ṽélààg ínìgī

Inalienable possession

ā f̄ndóg, á máámààd, á tááðà, āg pèbàrēēg, āg máàm, ē îl, ē pēbārēēg, ēg
ìlōōg, ēg tááðàd, ó ābéé, ɔ̄ bōràà, ɔ̄ ìlòòg, ɔ̄g t̀nd̀l̀iig, ɔ̄g m̀ṑð̀ó̀d̀

? ? ?

my aunts, his horn, my grandmother, our ribs, their grandmothers,
your_{pl} grandfathers, my cheeks, your_{sg} horns, their horns, your_{sg} uncle,
your_{pl} elbows, his ribs, your_{sg} shoulder, our aunt, your_{pl} dogs

Inalienable possession

ā fōndóg = my cheeks

á máámààd = my aunts

á tááðà = my grandma

ó ābéé ?

ō bōràà ?

ō ìlà̀g = your_{sg} horns

ē ìl = his horn

ē pēbārēēg = his ribs

āg pèbàrēēg = our ribs

āg máàm = our aunt

ōg tùndùliīg ?

ōg mōōðóōd ?

ēg ìlōōg = their horns

ēg tááðàd = their grandmas

your_{sg} shoulder; your_{sg} uncle; your_{pl} grandpas; your_{pl} elbows

Inalienable possession

ā f̄ndóg	= my cheeks	āg p̄bàrēēg	= our ribs
á máámààd	= my aunts	āg máàm	= our aunt
á tááðà	= my grandma		
ó ābéé	?	ōg t̄ndùlīg	?
ō b̄ōràà	?	ōg m̄āðáð	?
ō ìl̄àg	= your _{sg} horns		
ē ìl	= his horn	ēg ìl̄ōg	= their horns
ē p̄bārēēg	= his ribs	ēg tááðàd	= their grandmas

How to distinguish *your_{sg} shoulder* and *your_{sg} uncle*?

Inalienable possession

ā f̄ndóg	= my cheeks	āg p̄èbàrēēg	= our ribs
á máámààd	= my aunts	āg máàm	= our aunt
á tááðà	= my grandma		
ó ābéé	?	ōg t̄ndùlīig	?
ō b̄ōràà	?	ōg m̄ōðóād	?
ō ìl̄òg	= your _{sg} horns		
ē ìl	= his horn	ēg ìl̄ōg	= their horns
ē p̄ēbārēēg	= his ribs	ēg tááðàd	= their grandmas

How to distinguish *your_{sg} shoulder* and *your_{sg} uncle*?

Singular pronouns have high tone before family terms. (With an exception noted in the assignments.)

Inalienable possession

ā f̄ndóg = my cheeks

á máámààd = my aunts

á tááðà = my grandma

ó ābéé = your_{sg} uncle

ō bōràà = your_{sg} shoulder

ō íl̀̀эг = your_{sg} horns

ē íl = his horn

ē p̄bārēэг = his ribs

āg p̄bàrēэг = our ribs

āg máàm = our aunt

ōg t̀̀nd̀̀l̀̀iig ?

ōg m̄̀̀ð̀̀ád ?

ēg íl̀̀эг = their horns

ēg tááðàd = their grandmas

Inalienable possession

ā f̄ndóg	= my cheeks	āg p̄bàrēēg	= our ribs
á máámààd	= my aunts	āg máàm	= our aunt
á tááðà	= my grandma		
ó ābéé	= your _{sg} uncle	ōg t̄ndùlīg	?
ō b̄ōràà	= your _{sg} shoulder	ōg m̄āðáād	?
ō íl̄òg	= your _{sg} horns		
ē íl	= his horn	ēg íl̄ōg	= their horns
ē p̄bārēēg	= his ribs	ēg tááðàd	= their grandmas

Now how do we distinguish *your_{pl} grandpas* and *your_{pl} elbows*?

Inalienable possession

ā f̄ndóg	= my cheeks	āg p̄bàrēēg	= our ribs
á máámààd	= my aunts	āg máàm	= our aunt
á tááðà	= my grandma		
ó ābéé	= your _{sg} uncle	ōg t̄ndùliīg	?
ō b̄ōràà	= your _{sg} shoulder	ōg m̄ōðóād	?
ō íl̄òg	= your _{sg} horns		
ē íl	= his horn	ēg íl̄ōg	= their horns
ē p̄bārēēg	= his ribs	ēg tááðàd	= their grandmas

Now how do we distinguish *your_{pl} grandpas* and *your_{pl} elbows*?

Plural nouns normally end in *-g* (like the pronouns).

Inalienable possession

ā f̄ndóǵ	= my cheeks	āǵ p̄èbàrēēǵ	= our ribs
á máámààd	= my aunts	āǵ máàm	= our aunt
á tááǵà	= my grandma		
ó ābéé	= your _{sg} uncle	ōǵ t̄ndùlīǵ	?
ō b̄ōr̄àà	= your _{sg} shoulder	ōǵ m̄ōōǵóǵd	?
ō íl̄òǵ	= your _{sg} horns		
ē íl	= his horn	ēǵ íl̄ōǵ	= their horns
ē p̄ēbārēēǵ	= his ribs	ēǵ tááǵàd	= their grandmas

Now how do we distinguish *your_{pl} grandpas* and *your_{pl} elbows*?

However, it seems that plural family terms end in *-d*.

Inalienable possession

ā f̄ndóg = my cheeks

á máámààd = my aunts

á tááðà = my grandma

ó ābéé = your_{sg} uncle

ō bōràà = your_{sg} shoulder

ō ílèèg = your_{sg} horns

ē íl = his horn

ē pēbārēēg = his ribs

āg pèbàrēēg = our ribs

āg máàm = our aunt

ōg tùndùliīg = your_{pl} elbows

ōg mōōðóād = your_{pl} grandpas

ēg ílōōg = their horns

ēg tááðàd = their grandmas

So what about the remaining words?

So what about the remaining words?

áǎág ūyùg, ǫǭr ìinì, gùùr ēyèn, gùùrììg éng, ǫéèl úùn, ǫéèlààg ìnìgì

? ? ?

your_{sg} anchor, his hammer, my grindstones, our grindstone, his anchors,
your_{pl} dogs

Alienable possession

áǰág ūyùg, ɖɔ̄r ìnī, gùùr ɛ̀yèn, gùùrììg ɛ̀nɛ̀g, ʦéèl úùn, ʦéèlààg ínìgī

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your_{sg} anchor, his hammer, my grindstones, our grindstone, his anchors,
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áǎág ūyùg, ɖǎ̄r ìnì, gùr ǎyèn, gùrìg ǎnèg, ʦéèl úùn, ʦéèlààg ínìgì

? ? ?

your_{sg} anchor, his hammer, my grindstones, our grindstone, his anchors,
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- ▶ Unlike the inalienable possession, it's the *second* word that looks similar across these expressions.

Alienable possession

áǎág ūyùg, ɖɔ̄r ìnì, gùr ɛyèn, gùrìg ɛnèg, ʦéèl úùn, ʦéèlààg ínìgì

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your_{sg} anchor, his hammer, my grindstones, our grindstone, his anchors,
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- ▶ Unlike the inalienable possession, it's the *second* word that looks similar across these expressions.
- ▶ The second word is the pronoun, i.e. the opposite word order.

Alienable possession

áǎǎg ūyùg, ǎǎǎr ìnì, gùr ãyèn, gùrììg ǎnèg, ǎǎǎl ún, ǎǎǎlààg ìnìg

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your_{sg} anchor, his hammer, my grindstones, our grindstone, his anchors,
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- ▶ Unlike the inalienable possession, it's the *second* word that looks similar across these expressions.
- ▶ The second word is the pronoun, i.e. the opposite word order.
- ▶ Frequencies/plurality:
áǎǎg ūyùg = your_{pl} dogs; ǎǎǎr ìnì = his hammer.

Alienable possession

áǎǎg ūyùg, ǎǎǎr ìnì, gùr ãyèn, gùrìg ǎnǎg, ǎǎǎl ún, ǎǎǎlàǎg ìnìg

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- ▶ The second word is the pronoun, i.e. the opposite word order.
- ▶ Frequencies/plurality:
áǎǎg ūyùg = your_{pl} dogs; ǎǎǎr ìnì = his hammer.
- ▶ In inalienable pronouns, different vowels correspond to different persons. We can see if the same is true in alienable pronouns.

The alienable vowels are raised versions of their inalienable counterparts.

	1 st person	2 nd person	3 rd person
Alienable	ə	u	i
Inalienable	a	ɔ	ɛ

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This makes the final matches easy:

áǎág ūyùg = your_{pl} dogs

gùùr ēyèn = **my** grindstones

ʃéèl úùn = **your**_{sg} anchor

qǔǔr ìnī = his hammer

gùùrììg énnèg = **our** grindstone

ʃééllààg ínìgī = **his** anchors

Are we done?

Are we done?

Not quite...

Alienable pronouns, again

We still don't fully understand the alienable pronouns.

ɖɔ̃r **ɪ̃nɪ** = his hammer; ʈéélààg **ɪ̃nɪgɪ** = his anchors

Why does *his* have two different forms?

Alienable pronouns, again

We still don't fully understand the alienable pronouns.

ḍṣṣr **ìṅī** = his hammer; ʦéélààg **ínìgī** = his anchors

Why does *his* have two different forms?

	my	your _{sg}	his	our	your _{pl}
Singular noun		úùn	ìṅ-ī	āyèn	
Plural noun	ónèg		ínìg-ī		ūyùg

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Why does *his* have two different forms?

	my	your _{sg}	his	our	your _{pl}
Singular noun		úùn	ĩn-ĩ	ǎyǎn	
Plural noun	ǎnǎg		ínìg-ĩ	(ǎyǎg)	ũyùg

Alienable pronouns, again

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ɖɔ̃r **íinī** = his hammer; ʦéélààg **ínìgī** = his anchors

Why does *his* have two different forms?

	my	your _{sg}	his	our	your _{pl}
Singular noun	?	úùn	íin-ī	āyən	?
Plural noun	ánə̀g	?	ínìg-ī	āyə̀g	ūyùg

Alienable pronouns, again

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ɖɔ̄r **ìnī** = his hammer; ʦéélààg **ínìgī** = his anchors

Why does *his* have two different forms?

	my	your _{sg}	his	our	your _{pl}
Singular noun	á̄n	ú̄n	ì̄n-ī	āȳn	ūȳn
Plural noun	án̄g	ún̄g	ín̄g-ī	āȳg	ūȳg

Ready to try some translations?

	Gaahmg	English
21.	āg bòràāg	
22.	ḑṵṵréēg āyàg	
23.	ē bṵṵrààg	
24.	ṵ túndúliìg	
25.	ó máàm	
26.		my grindstone
27.		their cheeks
28.		your _{pl} anchor
29.		our uncle
30.		your _{sg} dogs

Ready to try some translations?

	Gaahmg	English
21.	āg bò̀ràāg	<i>our shoulders</i>
22.	ḑḑ̄r̄éēg āyàg	
23.	ē bḡrààg	
24.	ō túndúliìg	
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24.	ō túndúliìg	<i>your_{sg} elbows</i>
25.	ó máàm	<i>your_{sg} aunt</i>
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27.		<i>their cheeks</i>
28.		<i>your_{pl} anchor</i>
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But wait, what's this?

Body parts, for the last time

It turns out that the tone pattern of plural body parts can change.

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'ribs'	ē pēbārēēg	āg pèbàrēēg
'horns'	ō ílòòg	ēg ìlōōg
'elbows'	ō túndùlììg	ōg tùndùlììg
'shoulders'	ē bōōrààg	āg bòòràāg

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- ▶ In the left-hand column, there is chaos. But in the right-hand column, every noun has a Low-(Low)-Mid tone pattern.

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'shoulders'	ē bōōrààg	āg bòòràāg

- ▶ In the left-hand column, there is chaos. But in the right-hand column, every noun has a Low-(Low)-Mid tone pattern.
- ▶ This always happens when the possessor (of a body part) is plural.

Finishing the translations

	Gaahmg	English
21.	āg bò̀ràāg	<i>our shoulders</i>
22.	ḑṵ̀rēēg āyàg	<i>our hammers</i>
23.	ē bṵ̀rààg	<i>his shoulders</i>
24.	ō túndúliìg	<i>your_{sg} elbows</i>
25.	ó máàm	<i>your_{sg} aunt</i>
26.		<i>my grindstone</i>
27.		<i>their cheeks</i>
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25.	ó máàm	<i>your_{sg} aunt</i>
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25.	ó máàm	<i>your_{sg} aunt</i>
26.	<i>gùùr áàn</i>	<i>my grindstone</i>
27.		<i>their cheeks</i> (ā f̄̀ndóg = <i>my cheeks</i>)
28.		<i>your_{pl} anchor</i>
29.		<i>our uncle</i>
30.		<i>your_{sg} dogs</i>

Finishing the translations

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24.	ō túndúliìg	<i>your_{sg} elbows</i>
25.	ó máàm	<i>your_{sg} aunt</i>
26.	<i>gùùr áàn</i>	<i>my grindstone</i>
27.	<i>ēg f̀̀̀ndāg</i>	<i>their cheeks</i> (ā f̀̀̀ndóg = my cheeks)
28.		<i>your_{pl} anchor</i>
29.		<i>our uncle</i>
30.		<i>your_{sg} dogs</i>

Best solution award for problem #2

?

Max Fisher-Ayres



UK (Trap-Bath)