

SOLUTIONS



***The Fourteenth
Annual
North American
Computational
Linguistics
Open
Competition
2020***

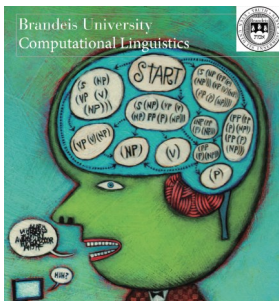
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Carnegie Mellon University
Language Technologies Institute



**Massachusetts
Institute of
Technology**



Yale University

**Open Round
January 23, 2020**

Serious language puzzles that are surprisingly fun!

-Will Shortz, Crossword editor of The New York Times and Puzzlemaster for NPR

(A) Let That Mongo! (1/1) [5 points]

A1.

Each Mongo verb has a root form. The 4 verb forms shown here are formed by adding a prefix before the root form. The prefix for the imperative form is \emptyset - (i.e. there is no apparent prefix), the prefix for the 2nd singular form is o-, the prefix for the 3rd singular form is a-, and the prefix for the 3rd plural form is ba-.

However, we are not done yet: To get the final verb form, we must apply some sound change rules. The relevant rules are:

1. If there are two vowels, in a row, delete the first one
2. Delete b when it appears between two vowels
3. Change o to w when it appears before a vowel

There is one final wrinkle: The order that these rules are applied in matters. The rules must be applied in this order: First apply rule 3, then rule 1, then rule 2.

A2.

<i>Imperative</i>	<i>2nd singular</i>	<i>3rd singular</i>	<i>3rd plural</i>	<i>English</i>
bakisa	o akisa	a akisa	ba akisa	'add'
anda	wanda	a nda	ba nda	'begin'
solola	o solola	a solola	basolola	'chat'
ponama	o ponama	aponama	ba ponama	'elect'
bowa	oowa	a owa	ba owa	'cure'
balusa	o alusa	aalusa	ba alusa	'turn'
longa	o longa	a longa	ba longa	'win'



(B) A Cat in a Hat (1/1) [15 Points]

B1.

- | | | | |
|-------|-------|-------|-------|
| 1. g | 2. l | 3. i | 4. m |
| 5. c | 6. o | 7. k | 8. d |
| 9. n | 10. a | 11. p | 12. b |
| 13. h | 14. e | 15. f | 16. j |

B2.

- a. topibe? menwa yuŋno
- b. joge waniŋ khoŋno
- c. awama bajarbe? yuŋno
- d. nam

B3.

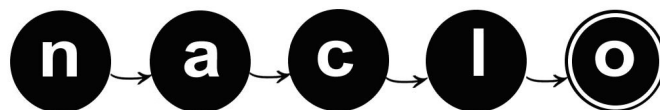
- a. There is rice in my mouth.
- b. My father went away.
- c. My mother-in-law is with my mother.



(C) Set in Stone (1/1) [20 Points]

C1.

- | | | | |
|-------|-------|-------|-------|
| 1. H | 2. Q | 3. B | 4. R |
| 5. E | 6. Y | 7. L | 8. I |
| 9. T | 10. U | 11. F | 12. D |
| 13. P | 14. S | 15. J | 16. G |
| 17. V | 18. O | 19. M | 20. W |
| 21. J | 22. N | 23. A | 24. K |
| 25. X | 26. C | | |



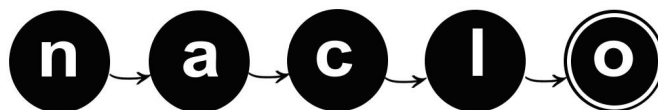
(D) Pay Attention (1/1) [10 Points]

D1.

- A. 6
- B. 5
- C. 3
- D. 2
- E. 7
- F. 1
- G. 4

D2.

- (a) $1 \rightarrow 2, 4 \rightarrow 6$
- (b) $1 \rightarrow 5, 9 \rightarrow 13$
- (c) $9 \rightarrow 11$
- (d) None
- (e) None
- (f) $6 \rightarrow 7$
- (g) $10 \rightarrow 11$
- (h) $1 \rightarrow 2$
- (i) $10 \rightarrow 7$



(E) Breton Numbers (1/1) [15 Points]

E1.

- a. pevar-ugent ÷ pemp = **c’hwezek** (80 ÷ 5 = **16**)
- b. pemp ha hanter kant – daouzek = **tri ha daou-ugent** (55 – 12 = **43**)
- c. nav warn ugent + **pevarzek** = tri ha daou-ugent (29 + **14** = 43)
- d. kant ÷ **ugent** = pemp (100 ÷ **20** = 5)

E2.

(b) daoulagad

Some languages have “dual”-style plurals for objects which occur in nature in pairs (such as eyes, ears, etc.), and thus the plural for “eyes” in Breton contains the element *daou* (2).

E3.

18



(F) Coming Into Focus (1/1) [15 Points]

F1.

- a. sitarang nua uqatay tua quma a vatu
- b. tjalawan nua supulingaw tua kuqaya-qayam a gadu nua tsemas
- c. djmavis tua vavuy a vavaian

F2.

- a. You protect the shaman's bird with **the spirit**.
anema a kusitarang tua qaya-qayam nua pulingaw?
- b. The man eats **the pig** in the mountain.
anema a kanen nua uqatay i tua gadu?
- c. I anger your dog in **my field**.
inu a sutjalawan tua kuvatu?



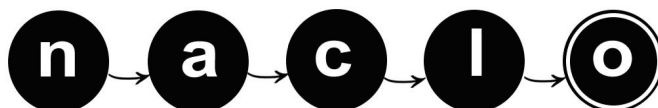
(G) Password Confusion (1/1) [10 Points]

G1.

Text message	Distractor password	Larry's password guess	Harry's password guess	Correct password
Happy animals that will investigate telescopes can hop.	HAT WITCH	CHAT WITH	WHAT ITCH	CHAT WITH
All North Dakotan deviled eggs should seem especially radiant today.	AND DESSERT	SAND DESERT	SAND DESERT	SAND DESERT
Aardvarks may publicly label each spanning tree algorithm talented unicorns should enthusiastically see.	AMPLE STATUSES	SAMPLE STATUES	MAPLE STATUSES	MAPLE STATUSES
Anyone rabbits might surprise has elicited a response that has satisfied.	ARMS HEARTHS	HARMS HEARTS	MARS HEARTHS or MARSH EARTHS	HARMS EARTHS

G2.

Text message	Distractor password	Larry's password guess	Harry's password guess	Correct password
Denmark's emptiest factory is exporting some pasta Russia is cooking each Saturday.	DEFIES PRICES	DEFIES PRINCES	DEFINES PRICES	DEFINES PRICES
Unions Nepal is forbidding over recent major events during breakfast are keeping exceptional records.	UNIFORMED BAKER	UNIFORMED BANKER	UNIFORMED BAKER	UNIFORMED BANKER



(H) The Idalion Tablet (1/1) [10 Points]

G1.

helei	✱ 8 ✱
athanas	✱ ƒ ƒ ƒ
katethiyan	⊥ ↓ ⊥ ∅ ƒ ƒ
dowenai	ƒ ƒ ƒ ✱

G2.

- (a) "and" kas ⊥ ƒ
- (b) "king" basileus † ⊥ 8 ƒ ƒ
- (c) "instructed" anōgon ✱ 7 7 ƒ ƒ



