LING20001: Discussion
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For this problem, identify and describe the alternation in the nouns for 'country' and 'girl'; then, determine each noun's underlying form. Write a rule to account for the alternation, using the features given below. The inventory of phonemes is given for convenience and reference.

Sudanese Colloquial Arabic

balat fihim	'a country understood'
balas samħa	'a beautiful country'
balaʃ ʃaaf	'a country saw'
balaz ziʕil	'a country got angry'
balad͡ʒ d͡ʒaab	'a country brought'
balat xirib	'a country was ruined'
balat ħaarab	'a country fought'
balad liʕib	'a country played'
balad malak	'a country owned'
balad wazzaʕ	'a country distributed'
balad ribiħ	'a country profited'

bit faahma	'a knowledgeable girl'
bis samħa	'a beautiful girl'
biʃ ʃeena	'an ugly girl'
biz zakiyya	'an intelligent girl'
bid͡ʒ d͡ʒamila	'beautiful girl'
bit xaamsa	'fifth girl'
bit ħilwa	'a beautiful girl'
bit laʔiima	'a wicked girl'
bit mardˤaana	'a sick girl'
bit wannaasa	'storyteller girl'

Inventory of phonemes for Sudanese Colloquial Arabic

	labial	dental	alveolar	palato-alveolar	palatal	velar	uvular	pharyn-geal	glottal
stop	p		t d tˤ dˤ			k	q		ʔ
nasal	m		n						
fricative	f	θ ð ðˤ	s z sˤ	ʃ			χ ʁ	ħ ʕ	h
trill			r						
affricate				d͡ʒ					
approx.				l/ɬ	j		w		

	Voicing	Manner	Region	Emphasis
b	+voice	plosive	labial	-emphatic
f	-voice	fricative	labial	-emphatic
t	-voice	plosive	coronal	-emphatic
d	+voice	plosive	coronal	-emphatic
s	-voice	fricative	coronal	-emphatic
ʃ	-voice	fricative	coronal	-emphatic
z	+voice	fricative	coronal	-emphatic
d͡ʒ	+voice	affricate	coronal	-emphatic
k	-voice	plosive	back	-emphatic
g	+voice	plosive	back	-emphatic
x	-voice	fricative	back	-emphatic
ɣ	+voice	fricative	back	-emphatic
ħ	-voice	fricative	—	+emphatic
ʕ	+voice	fricative	—	+emphatic
m	+voice	nasal	—	—
n	+voice	nasal	—	—
r	+voice	liquid	—	—
l	+voice	liquid	—	—
w	+voice	glide	—	—

Basic steps to working on a phonological data set:

1. If not certain about inventory of phonemes, look for minimal pairs:
   - if you find a minimal pair with sound α and sound β, then α, β phonemes
   - **Example**: [bit] 'beat' and [pit] 'Pete' ⇒ b, p are phonemes — i.e. /b/, /p/
   - **Remark**: you usually can't find minimal pairs for all pairs of sounds, so this is only a good first diagnostic
2. For suspect (or all) sounds, list the environment in which they occur (start with just immediate environment)
   - **Environment schema**:

     previous context ___ following context

     the '___' is a placeholder for the sound of interest
   - **Example**: English 'dark l' vs. 'light l' vs. 'n' — i.e. [ɬ] vs. [l] vs. [n]

     Consider this very small data set:

dɛliz	'delis'	dɛniz	'Denny's'
lɑɪt	'light'	dəlɑɪt	'delight'
nɑɪt	'night'	fɑɬ	'fall'
din	'dean'	diɬ	'deal'

     Contexts:

[n]	[l]	[ɬ]
$[_{word}$ _ ɑɪ	$[_{word}$ _ ɑɪ	ɑ _$]_{word}$
ɛ _ i	ə _ ɑɪ	i _$]_{word}$
i _$]_{word}$	ɛ _ i	

3. Write a rule to relate predictable to unpredictable — name the rule and use prose to (concisely) describe it

   - **Mantra**: X becomes Y in the context of Z
   - **Schema**: $X \longrightarrow Y \Big/ Z$
   - **Interpretation**: The underlying form X (phoneme /·/ or set of features) changes to the surface form Y (allophone [·] or set of features) in the context Z
   - **Example**

     Name: /l/ velarization

     Description: /l/ becomes velarized and surfaces as [ɬ] at the end of a word.

     In symbols: /l/ $\longrightarrow$ [ɬ] $\Big/$ $\_\_]_{word}$