Surface form	UR
aβaánto	aβaánto
$a\beta amúra$	aβamúra
amahiíndi	amahíínri
amakééndə	amakéénrə
$e \beta \check{a}$	eβắ
eeŋgwé	eeŋywé
eyă	eγă
$eke\beta w\acute{\epsilon}$	$eke\beta w\acute{\epsilon}$
hoorá	hoorá
iβiγúrúβe	iβiγúrúβe
iβirúúŋgúuri	iβirúúŋyúuri
uyusíri	uyusiri
βáinu	βáinu
βorjó	βorjó
it <sup>∫</sup> iiŋgéna	it <sup>∫</sup> iiŋyéna
it <sup>∫</sup> iiŋgúrúβe	it <sup>∫</sup> iiŋyúrúβe
γaβã	γaβã
it <sup>∫</sup> iiŋgúta	it <sup>∫</sup> iiŋyúta
βεrεká	βεrεká
iyitúúmbe	iyitúúmβe
yúúká	yúúká
$\operatorname{rem}$ å	$\operatorname{rem}$ å
reentá	reentá
oβoyááká	oβoyááká
oβotééndééru	oβotéénrééru
okoyéémbá	okoγéémβá
okoómbára	$o$ ko $\acute{o}$ m $\acute{\beta}$ ára
okoβára	okoβára
okoóndóya	okoónróya
okoróya	okoróya
romă	$\operatorname{rom}$ å
teyetá	teyetá
ukuúmbuurjá	ukuúmβuurjá
uruyúta	uruyúta

$The \ surface \ form$	${\it Is \ underlyingly}$
b	β
d	r
g	γ

Surface form	UR
kano	kano
kori	kori
xano	xano
xori	xori
$x^{j}ino$	xino
$k^{j}ino$	kino
krima	krima
xrima	xrima
xufta	xufta
kufeta	kufeta
kali	kali
xali	xali
$\mathrm{x}^{\mathrm{j}}\mathrm{eli}$	xeli
k <sup>j</sup> eri	keri
$\mathrm{x}^{\mathrm{j}}\mathrm{eri}$	xeri
$ox^{j}i$	oxi

The surface form.	Is underlyingly
$x^{j}$	X
$k^{j}$	k

 $Rules: \\ \texttt{[+back -voice]} \rightarrow \texttt{[+palletized]} \; / \; \texttt{[-liquid -back]}$ 

Surface form	UR
ær̃te∫	ær̃te∫
farsi	far̃si
qædři	qædři
$\tilde{r}ah$	$\tilde{\mathrm{r}}\mathrm{ah}$
r̃ast	$\tilde{r}ast$
ĩi∫	ĩi∫
$aha ilde{r}$	$\mathrm{aha} ilde{\mathrm{r}}$
axær̃	axær̃
hærtowr	hærtowr
∫ï̃r	∫ir̃
ahaři	ahari
bæřadæŗ̃	bær̃adær̃
${ m t}^{ m f}{ m e}\check{ m r}{ m a}$	${ m t}^{ m J}{ m e}{ m  ilde{r}a}$
dařid	$da\tilde{r}id$
biřæng	bir̃æng
∫iřini	∫ir̃ini

The surface form	Is underlyingly
ř	ř

[+trill]  $\rightarrow$  ř / [+vowel] \_ [+voice]

O sage:

Surface form	UR
dábri	dábri
áðik <sup>h</sup> ãʒã	ádik <sup>h</sup> ãʒã
$\mathrm{dat}^{ floor}$ pé	$\mathrm{dat}^{\mathrm{J}}\mathrm{p\acute{e}}$
t∫?éðe	t∫?éde
dak?é	dak?é
ðéze	déze
dáli	dáli̇̃
ðíe	díe
da∫tú	da∫tú
ðí∫ki	dí∫ki

The surface form	Is underlyingly
ð	d

 $\begin{array}{c} Rules: \\ d \rightarrow \eth \ / \ \_ \ \hbox{[-low]} \end{array}$ 

Surface form	UR
fərəs	fərəs
tənəsa	tənəsa
jɛlɨʃlɨ∫	jəlɨ∫lɨ∫
$_{ m maj} \epsilon { m t}$	$_{ m majət}$
gənzəb	gənzəb
∫εgna	∫əgna
nəñ	nəñ
məwdəd	mewded
mennesat	m = nn = sat
$_{ m m}$ əmkər	$_{ m məmkər}$
<sub>3εle</sub>	3əle
jεlləm	jəlləm
$\mathrm{mat}^{\mathrm{J}}$	$\mathrm{mat}^{\mathrm{J}}$
məstət	mestet
fəlləgə	fəlləgə
agəññε	agəññə
$\mathrm{temet}^{\int} \mathrm{t}^{\int} \epsilon$	$\mathrm{temet}^{\int}\mathrm{t}^{\int}\mathrm{e}% \mathrm{d}t$
mokkərə	mokkərə
ka33E	каззә
3Emmərə	zəmmərə
$\mathrm{lat}^{\int} \mathrm{t}^{\int} \epsilon$	$lat^{\int}t^{\int}\vartheta$
a∬ε	a∬ə
bəkkələ	bəkkələ
∫ɛməggələ	∫əməggələ

The surface form	Is underlyingly
ε	Э

 $\vartheta \to \epsilon \; / \; \text{[-anterior -liquid -high]} \; \_$ 

Surface form	UR
agble	agble
agoŋglo	agoŋglo
aŋɔli	aŋɔli
akplə	akplə
sabule	sabule
$\operatorname{sra}$	sla
alə	alə
atitrw $\epsilon$	$atitlw\epsilon$
avlo	avlə
blafogbe	blafogbe
$dr\epsilon$	$dl\epsilon$
edro	edlə
exlo	exlo
exle	exle
$hl\epsilon$	$hl\epsilon$
ŋlə	ŋlə
$\mathrm{t}^{\mathrm{J}}\mathrm{r}\widetilde{\mathrm{o}}$	$\mathrm{t}^{\mathrm{J}}\mathrm{l}\tilde{\mathrm{o}}$
ñrã	ñlã
klə	klə
${ m tre}$	tle
vlu	vlu
lə	lə
mla	mla
pleplelu	pleplelu
wla	wla
zro	zlo
esro	eslo
etro	etlo
$ ilde{ m e} ilde{ m r} ilde{ m s}$	$\ \tilde{e}\ _{\tilde{0}}$
$ m d^3 ro$	$d^3$ lo

The surface form	Is underlyingly
r	1

[ ] ightarrow [-lateral] / [+coronal] \_

Surface form	UR
tagi	tagi
kitabu	kitabu
paalika	paalika
ni	ni
ŋombe	ŋombe
matagi	matagi
dodoa	dodoa
go∫a	go∫a
babu	babu
ndimi	ndimi
ŋgoto	ŋgoto
mbeu	mbeu
$\mathrm{nt^humbii}$	$ m nt^humbii$
ŋok <sup>h</sup> uŋguni	ŋok <sup>h</sup> uŋguni
$mp^{h}eho$	$\mathrm{mp^heho}$

The surface form	Is underlyingly
m	m
$\overset{ ext{n}}{\circ}$	n

 $\texttt{[+nasal]} \, \rightarrow \, \texttt{[-voice]} \, / \, \texttt{\_[-voice]}$ 

Surface form	UR
bil	bil
müü	müü
rak	rak
baa	baa
loŋ	loŋ
brüü	brüü
haa	haa
plaa	plaa
dii	dii
$t^{\int}$ aan	${ m t}^{ m J}{ m aan}$
$t^{h}ee$	${ m t^hee}$
$t^h$ ruum $\epsilon\epsilon n$	$t^h ruum \epsilon \epsilon n$
$\mathrm{k}^{\mathrm{h}}$ εŋ	$\mathrm{k^{h}}\mathrm{\epsilon }\mathrm{g}$
panjaa	panjaa
ləəj	ləəj
$p^h$ jaa	$p^{h}jaa$
lüak	lüak
klaaŋ	klaaŋ
$t^{\int h}at$	$t^{\int h}at$
traa	traa
riip	riip
ook 7	ээk
$p^hr\epsilon\epsilon$	$p^hree$
kiə	kiə
k <sup>h</sup> waa	$k^h$ waa
kεε	kεε
draj	draj
düŋ	düŋ
kan	kan
$t^{\int}u\partial k^{\lnot}$	$t^{\int}u\partial k$
$p^{h}leen$	$ m p^h lee g$
$t^{\int h}$ an	${ m t}^{ m fh}{ m an}$
staaŋ	staaŋ
$\operatorname{rap}^{\urcorner}$	rap
jiisip	jiisip
p <sup>h</sup> aa	$p^{h}aa$
$k^{h}aa$	$k^{h}aa$
dam	dam
raaj	raaj
tit	tit
$\sin$	$\sin$
pen	pen
*	-

The surface form	$Is \ underlyingly$
t	t
$\mathbf{p}^{\neg}$	p
k	k

[-voice]  $\rightarrow$  [+unreleased] / \_ #

Surface form	UR
kəðə	kəðə
bəðuk	bəðuk
ðiak	ðiak
diak	$\operatorname{diak}$
$ma\theta t\eta o\theta$	madtŋod
ðe:l	ðerl
derl	$\operatorname{derl}$
ðiosə?	ðiosə?
diosə?	diose?
ðik	ðik
$\operatorname{dik}$	dik
$ku\theta$	kud
?oðiŋəl	?oðiŋəl
$koa\theta$	koad
$eane\theta$	eaŋəd
ŋərarəðə	ŋərarəðə
$ba\theta$	bad
ieðl?əðip	ieðl?əðip
kəðeb	kəðeb
məðəŋei	məðəŋei
$u\delta ou\theta$	uðoud
olðak	olðak

The surface form	Is underlyingly
θ	d

Rules:  $d \rightarrow \theta \ / \ \text{[]} \ \_$ 

Surface form	UR
qori	quri
$\mathrm{t}^{\mathrm{J}}\mathrm{o}\chi\mathrm{l}\mathrm{u}$	$\mathrm{t}^{ m J}$ u $\chi$ lu
qomir	qumir
niŋri	niŋri
moqo	muqu
hoqara	huqara
$ m p^h$ ulju	$ m p^h$ ulju
jujaŋ	jujaŋ
tulju	$\operatorname{tulju}$
api	api
suti	suti
onqoj	uŋquj
$\mathrm{t}^{\mathrm{J}}\mathrm{ilwi}$	$\mathrm{t}^{ m J}\mathrm{ilwi}$
t <sup>∫h</sup> it <sup>∫</sup> iŋ	$\mathrm{t}^{\int \mathrm{h}}\mathrm{i}\mathrm{t}^{\int}\mathrm{i} \mathrm{j}$
$t^{\int h}$ anqaj	${ m t}^{ m fh}$ aŋqaj
anqosaj	aŋqusaj
qet∫uŋ	qit∫uŋ
pisqo	pisqu
$muso\chi$	$musu\chi$
t∫uŋka	${ m t}^{ m J}$ uŋka
janqaŋ	jaŋqaŋ
t∫ulju	$\mathrm{t}^{ m J}$ ulju
qhelja	qhilja
qenqo	qiŋqu
$\mathrm{t}^{ m J}\mathrm{eqan}$	$\mathrm{t}^{ m J}\mathrm{iqan}$
qaŋ	qaŋ
noqa	nuqa
${ m t}^{ m J}{ m axra}$	${ m t}^{ m J}{ m axra}$
$\mathrm{t}^{ m J}\mathrm{e}\chi\mathrm{nij}$	$\mathrm{t}^{ m J}$ i $\chi \mathrm{nij}$
$so\chi ta$	$su\chi ta$
aχna	aχna
ljixlja	ljixlja
qosa	qusa
qara	qara
alqo	alqu
senqa	sinqa
karu	karu
$ato\chi$	$\mathrm{atu}\chi$
qaŋkuna	qaŋkuna
$pusa\chi$	$\mathrm{pusa}\chi$
$te\chi waj$	$ti\chi waj$
$\mathrm{t}^{\mathrm{J}}\mathrm{aki}$	$\mathrm{t}^{ m J}\mathrm{aki}$
$\mathrm{wate}\chi$	$wati\chi$
aŋka	aŋka
waχtaj	$wa\chi taj$
haku	haku
waqaj	waqaj
kaŋka	kaŋka
$waxt^{\int}a$	$waxt^{\int}a$
$wale\chi$	$wali\chi$
$ m t^hakaj$	${ m t^hakaj}$
rexsisqa	$ri\chi sisqa$

The surface form	${\it Is \ underlyingly}$
e	i
0	u
N	ŋ

Surface form	UR
aŋgu	aŋku
aŋṭãã	aŋṭãã
aŋba	aŋpa
apsoo	apsoo
$\mathrm{amt}^{ extsf{J}}\mathrm{pp}$	$\mathrm{amt}^{ extsf{J}}$ ၁၁
tukṭüü	tukţüü
amto	amto
iγu	iyu
$^{ ext{i}} ext{mt}^{ ext{J}} ext{i}$	$\mathrm{imt}^{ m J}{ m i}$
uṭɨ	uț <del>i</del>
սβιι	սβιι
ea	ea
embo	empo
uutsi	vvtsi
qa	ka
qaa	kaa
qaŋba	kaŋpa
qamba	kampa
qam	kam
qamtoo	kamtoo
qaaβo	kaaβo
kikți	k <del>i</del> kți
kɨβu	kɨβu
k <del>ii</del> ŋguu	k <del>ii</del> ŋkuu
kik	kik
kiṭuu	kiṭuu
kucuu	kucuu
kurii	kurii
kiiyuu	kiiyuu
ku	ku
kupci	kupc <del>i</del>
kupcaa	kupcaa
kenca	kenca
kembo	kempo
keyöö	keyöö
kerβa	kerβa
qo	ko
qomba	kompa kər
qər	кэг kээээ
qээээ t <sup>∫h</sup> ea	$ m t^{\int h}ea$
t ea	
t <sup>∫h</sup> uyum	t <sup>∫h</sup> uyum
topcaa t <sup>h</sup> oõõ	topcaa t <sup>h</sup> oõõ
t 000 ṭaaãã	t 000 ṭaaãã
ţuy <del>i</del>	tuyi tungo
tungo nengaa	tungo
nengaa pangoo	nengaa
pangoo pεεβãã	paŋgɔɔ pεεβãã
simgãã	simgãã
	siiiyaa

The surface form	Is underlyingly
b	p
d	t
G	g
ġ	ţ
N	ŋ
q	k
	12

[-anterior -vowel]  $\rightarrow$  [-sonorant -high] / \_ [+high]\* [+back -high] [-coronal]  $\rightarrow$  [+voice] / [-vowel] \_

 $Axininca\ Campa:$ 

no +stem+ ti	UR
notoniroti	toniro
nojaaratoti	jaarato
nojanariti	kanari
nojosiriti	kosiri
nowisiroti	wisiro
noworitati	worita
	notoniroti nojaaratoti nojanariti nojosiriti nowisiroti

Rules:

$$\begin{array}{c} w \rightarrow p \ / \ \# \ \_ \\ k \rightarrow j \ / \ [ \ ] \ \_ \end{array}$$

ko +stem+ a	UR
yotenera	tener
yokuua	kuu
yokoora	koor
koruya	ruy
kooria	ori
komεña	mεñ
kohota	hot
$\mathrm{yot}^{J}\mathrm{ina}$	$\mathrm{t}^{ m fin}$
koyeera	yeer
koina	in
yot∫uuka	$\mathrm{t}^{ m J}\mathrm{uuk}$
yokaja	kaj
koyaja	yaj

$$Rules:$$
 [ ]  $\rightarrow$   $\upgamma$  /  $\#$  \_ [ ] [-low -voice]

Korean:

$\emptyset$ +stem+ a	$\emptyset$ +stem+ ko	UR
ipə	ipko	ip
kupə	kupko	kup
$kap^{h}a$	kapko	$kap^h$
${ m cip^h}$ ə	cipko	$\operatorname{cip^h}$
tata	tatko	tat
$\mathrm{put^h}$ ə	putko	put <sup>h</sup>
məkə	məkko	mək
$\mathrm{t}^{J}\mathrm{uk}$ ə	$\mathrm{t}^{ m J}$ ukko	$\mathrm{t}^{ m J}\mathrm{u}\mathrm{k}$
ikə	ikko	ik
taka	takko	_
kaka	kakko	_
səkə	səkko	_

# Rules:

[ ]  $\rightarrow$  [-aspirated] / \_ [-voice]  $a \rightarrow \vartheta$  / [-low] [ ] \_

$\varnothing$ +stem+ $\varnothing$	Ø +stem+ ban	Ø +stem+ to:l	∅ +stem+ nak	UR
kalap	kalabban	kalapto:l	kalapnak	kalap
•		-	•	1 -
kurt	kuːdban	kurttorl	kurtnak	kurt
3a <b>:</b> k	3a <b>:</b> gban	zarktorl	za:knak	zark
reis	rezben	reistöil	$\operatorname{re}$ : $\operatorname{snek}$	reis
∫roːf	∫roːvban	∫roːftoːl	∫ro:fnak	∫ro:f
laka:∫	lakaraban	lakaː∫toːl	laka:∫nak	laka:∫
ketret <sup>s</sup>	$ketred^{z}ben$	ketret <sup>s</sup> tö:l	ketret <sup>s</sup> nek	ketret <sup>s</sup>
test	tezdben	testtö:l	testnek	tezt
rab	rabban	rapto:l	rabnak	rab
kard	kaːdban	karttorl	kardnak	kard
meleg	melegben	melektörl	melegnek	meleg
viz	vizben	viːstöːl	viznek	viz
varaiz	vara <b>:</b> 3ban	vara:∫to:l	vara <b>:</b> 3nak	_
$\mathrm{a} \mathrm{i} \mathrm{g}^{\mathrm{j}}$	a <b>ː</b> g <sup>j</sup> ban	$a$ k $^{j}$ to $z$ l	arg <sup>j</sup> nak	_
sem	semben	semtörl	semnek	_
bün	bünben	büntö:l	bünnek	_
$toro\tilde{n}$	toroñban	toroñto:l	$toro\tilde{n}nak$	_
fal	falban	falto:l	falnak	_
ör	örben	örtörl	örnek	_
sarj	sarjban	sarjtorl	sarjnak	_

Ø +stem+ a	$\emptyset$ +stem+ era	UR
suraanga	suraangera	suraang
taaŋgata	taaŋgatera	taangat
baamba	baambera	baamb
reenda	reendera	riend
rema	remera	$\operatorname{rem}$
hoora	hoorera	hoor
roma	romera	rom
sooka	sookera	sook
$\mathrm{tat}^{\mathrm{J}}\mathrm{ora}$	$\mathrm{tat}^{\mathrm{J}}\mathrm{orera}$	$\mathrm{tat}^{\mathrm{J}}\mathrm{or}$
siika	seekera	siik
tiga	tegera	tig
ruga	rogera	rug
suka	sokera	_
huuta	hootera	_
riiŋga	reengera	_
siinda	seendera	_

[+tense]  $\rightarrow$  [-high] / \_ [-liquid]\* e

Farsi:

$\varnothing$ +stem+ $\varnothing$	$\emptyset$ +stem+ an	UR
zæn	zænan	zæn
læb	læban	læb
hæsud	hæsudan	hæsud
bæradær	bæradæran	bæradær
bozorg	bozorgan	bozorg
mæleke	mælekean	mæleke
valede	valedean	valede
kæbire	kæbirean	kæbire
ahu	ahuan	ahu
hamele	hamelean	hamele
$\mathrm{bat}^{\int} \mathrm{t}^{\int} \mathrm{e}$	$\mathrm{bat}^{\int} \mathrm{t}^{\int} \mathrm{egan}$	bat <sup>f</sup> t <sup>f</sup> eg
setare	setaregan	setareg
bænde	bændegan	bændeg
azade	azadegan	_
divane	divanegan	_

Rules: 
$$[ \ ] \to \varnothing \ / \ \mathbf{e} \ \_ \ \#$$

Tibet an:

Number	Surface form
10	$\mathrm{d}^3\mathrm{u}$
1	$\mathrm{d}^3\mathrm{i}\mathrm{g}$
11	$\mathrm{d}^3\mathrm{u}\mathrm{g}\mathrm{d}^3\mathrm{i}\mathrm{g}$
4	∫i
14	d³ub∫i
40	∫ibd³u
9	gu
19	$ m d^3urgu$
90	$ m gubd^3u$
5	ŋa
15	$ m d^3$ uŋa
50	$\eta abd^3u$

 $\begin{array}{l} Rules: \\ \texttt{[-nasal]} \, \rightarrow \varnothing \, / \, \# \,\, \_ \end{array}$ 

∅ +stem+ áŋga	∅ +stem+ íle	Ø +stem+ a	UR
amáŋga	amíle	áma	ám
taváŋga	tavíle	táva	tav
akáŋga	akile	áka	ák
patáŋga	patile	póta	pót
tatánga	tatile	tóta	tót
dabáŋga	dabile	dóba	dób
aváŋga	avíle	óva	óv
amáŋga	amíle	$ m \acute{o}ma$	óm
tapáŋga	tapíle	tépa	tép
patáŋga	patile	péta	pét
aváŋga	avíle	éva	év
babáŋga	babile	béba	béb
utáŋga	utíle	úta	ut
lukáŋga	lukile	lúka	luk
lumáŋga	lumíle	lúma	lum
uŋgáŋga	uŋgíle	úŋga	uŋg
iváŋga	ivíle	íva	iv
pitánga	pitile	píta	pit
imbáŋga	imbíle	ímba	_
limáŋga	limíle	líma	_

[+vowel]  $\rightarrow$  [+highTone] / \_ [-highTone]\* [+vowel] # [+highTone]  $\rightarrow$  a / \_ [ ] [+highTone]

$\emptyset$ +stem+ $\emptyset$	$\emptyset$ +stem+ in	UR
varit	varihin	varih
oahpis	oahpisin	oahpis
t∫oarvu∫	t <sup>∫</sup> oarvu∫in	t <sup>∫</sup> oarvu∫
lottaa∫	$lottaad^3in$	lottaad <sup>3</sup>
$t^{\int}$ uoivvat	${ m t}^{ m J}$ uoivvagin	t <sup>∫</sup> uoivvag
ahhkut	ahhkubin	ahhkub
suohkat	suohkaðin	suohkað
heed³o∫	$heed^3od^3in$	$heed^3od^3$
$aad^{3}d^{3}ut$	$aad^{3}d^{3}ubin$	$aad^{3}d^{3}ub$
bissobeahtset	bissobeahtsehin	bissobeahtseh
$t^{\int}$ eahtsit	$t^{\int}$ eahtsibin	t <sup>f</sup> eahtsib
jaa?min	jaa?mimin	jaa?mim
${ m t}^{ m J}{ m uoivat}$	$\mathrm{t}^{\mathrm{J}}\mathrm{uoivagin}$	t <sup>∫</sup> uoivag
laage∫	$laaged^3in$	laaged <sup>3</sup>
gahpir	gahpirin	gahpir
gaauhtsis	gaauhtsisin	gaauhtsis
aaslat	aaslagin	aaslag
baðoo∫gaattset	baðoo∫gaattsebin	_
ahhkit	ahhkiðin	_
bahaanaalat	bahaanaalagin	_
be∫tor	be∫torin	_
heevemeahhtun	heevemeahhtunin	_
$\mathrm{beed}^3\mathrm{ot}$	beed <sup>3</sup> ohin	_
bissomeahtun	bissomeahtumin	_
laðas	laðasin	_
heaijusmielat	heaijusmielagin	_
heaŋkkan	heaŋkkanin	_
jaman	jamanin	_

[-liquid -nasal -sibilant]  $\rightarrow$  t / \_ # [ ]  $\rightarrow$  [+coronal] / \_ # [-sonorant +voice]  $\rightarrow$   $\int$  / \_ #

Samoan:

$\emptyset$ +stem+ $\emptyset$	$\emptyset$ +stem+ ia	UR
olo	oloia	olo
lafo	lafoia	lafo
usu	usuia	usu
tau	tauia	tau
taui	tauia	taui
lele	lelea	lele
tafe	tafea	tafe
tau	taulia	taul
OSO	osofia	osof
valu	valusia	valus
uː	uːtia	–

# Rules:

[-tense]  $\rightarrow \varnothing$  / \_ # [+vowel]  $\rightarrow \varnothing$  / [-back +tense] \_ [+vowel]

~ ~	~	IID
$\varnothing$ +stem+ $\varnothing$	∅ +stem+ a	UR
vagon	vagona	vagon
glas	glaza	glaz
golos	golosa	golos
ras	raza	raz
les	lesa	les
porok	poroga	porog
vrak	vraga	vrag
urok	uroka	urok
tvet	tveta	_
prut	pruda	_
soldat	soldata	_
zavot	zavoda	_
xlep	xleba	_
grip	griba	_
trup	trupa	_

 $\texttt{[-sonorant]} \, \rightarrow \, \texttt{[-voice]} \, \, / \, \, \_ \, \#$ 

English:

$\varnothing$ +stem+ $\varnothing$	$\emptyset$ +stem+ d	$\emptyset$ +stem+ əz	UR
ro	$\operatorname{rod}$	roz	ro
græb	græbd	græbz	græb
$\sin$	$\operatorname{simd}$	$\operatorname{simz}$	sim
liv	livd	livz	liv
həg	həgd	həgz	həg
lʊk	lukt	luks	luk
æsk	æskt	æsks	æsk
werk	werkt	werks	werk
kıs	kıst	kısəz	kıs
fı∫	քւ∫t	fı∫əz	fı∫
kwız	kwızd	kwızəz	kwız
$b_{\Lambda Z}$	bazd	bazəz	bлz
wet	wetəd	wets	wet
wed	wedəd	wedz	wed
lıft	lıftəd	lıfts	lıft
			1

### Rules:

### Finnish:

$\varnothing$ +stem+ $\varnothing$	$\emptyset$ +stem+ æ	UR
aamu	aamua	aamu
hopea	hopeaa	hopea
katto	kattoa	katto
kello	kelloa	kello
külmæ	külmææ	külmæ
koulu	koulua	koulu
lintu	lintua	lintu
hüllü	hüllüæ	hüllü
kömpelö	kömpelöæ	kömpelö
nækö	næköæ	nækö
joki	jokea	joke
kivi	kiveæ	kive
muuri	muuria	muuri
naapuri	naapuria	_
nimi	nimeæ	_
kiirehti	kiirehtiæ	_

# Rules:

```
[+low] \rightarrow [+back] / [+rounded +back] [ ]* _ e \rightarrow [+high] / _ #
```

at +stem+ ti	UR
ateiti	ei
atimti	$_{ m im}$
atleisti	leis
atlikti	lik
atkorpti	korp
atkurti	kur
adbekti	bek
adgauti	gau
adbukti	buk
adgimti	$_{ m gim}$
atiduoti	iduo
atidarixti	idariz
atideti	_
atiteisti	_

 $Rules: \label{eq:rules:} \mbox{[-vowel]} \rightarrow d \ / \ \mbox{[-sonorant +voice]}$ 

### Kerewe:

ku +stem+ a	ku +stem+ ana	ku +stem+ ila	ku +stem+ ilana	kutú +stem+ a	kukí $+$ stem $+$ a	kutú +stem+ ila	kukitú +st
kubala	kubalana	kubalila	kubalilana	kutúbála	kuki̇́bála	kutúbálila	kukitúbalil
kugaja	kugajana	kugajila	kugajilana	kutúgája	kukigája	kutúgájila	kukítúgajil
kugula	kugulana	kugulila	kugulilana	kutúgúla	kukígúla	kutúgúlila	kukitúgulil
kubála	kubálána	kubálíla	kubálilana	kutúbála	kukibála	kutúbálila	kukítúbalil
kulúma	kulúmána	kulúmila	kulúmilana	kutúlúma	kukílúma	kutúlúmila	kukitúlumi
kusúna	kusúnána	kusúnila	kusúnilana	kutúsúna	kukisúna	kutúsúnila	kuki̇́túsuni
kulába	kulábána	kulábíla	kulábilana	kutúlába	kukilába	kutúlábila	kukítúlabil

```
Rules: \begin{tabular}{ll} Rules: \\ [ \ ] \to [-highTone] \ / \ [+highTone] \ [ \ ] \ \_ \ [-vowel] \ [+vowel] \end{tabular}
```

$\emptyset$ +stem+ $\emptyset$	$\emptyset$ +stem+ i	UR
klup	klubi	klub
$\operatorname{trup}$	trupi	trup
dom	domi	$\operatorname{dom}$
$\operatorname{snop}$	snopi	$\operatorname{snp}$
3wup	3wobi	3wob
trut	$\operatorname{trudi}$	$\operatorname{trud}$
dzvon	dzvoni	dzvon
kot	koti	kt
lut	lodi	lod
grus	gruzi	gruz
nos	nosi	ns
vus	vozi	VOZ
wuk	wugi	wug
wuk	wuki	wuk
$\operatorname{sok}$	soki	sk
$\operatorname{ruk}$	rogi	rog
bur	bori	bor
vuw	vowi	_
sul	soli	_
buj	boji	_
∫um	∫umi	_
3ur	3uri	_

Ø +stem+ s	∅ +stem+ os	∅ +stem+ i	∅ +stem+ si	UR
hals	halos	hali	halsi	hal
ojs	ojos	oji	ojsi	oj
sus	suos	sui	susi	su
klorps	klorpos	klorpi	klorpsi	klorp
$ m p^h lexps$	$ m p^h lerbos$	$\mathrm{p^{h}lezbi}$	$ m p^h lerpsi$	p <sup>h</sup> le <b>:</b> b
katerlips	kate:lip <sup>h</sup> os	katerlip <sup>h</sup> i	katerlipsi	katerlip <sup>h</sup>
$ m p^hulaks$	$p^{h}ulakos$	$\mathrm{p^{h}ulaki}$	$ m p^hulaksi$	p <sup>h</sup> ulak
ajks	ajgos	ajgi	ajksi	ajg
salpiŋks	salpingos	salpiŋgi	salpiŋksi	salping
onuks	$\mathrm{onuk^hos}$	$\mathrm{onuk^hi}$	onuksi	onuk <sup>h</sup>
$ m t^he$ is	$ m t^hextos$	$ m t^h e$ : $ m ti$	$ m t^h e si$	t <sup>h</sup> e <b>:</b> t
$ m k^haris$	$k^{h}$ aritos	$ m k^h ariti$	$ m k^h arisi$	k <sup>h</sup> arit
elpis	elpidos	elpidi	elpisi	elpid
korus	korut <sup>h</sup> os	$korut^hi$	korusi	korut <sup>h</sup>
rixs	rimos	rimi	riːsi	rin
$\mathrm{delp^hix}$	$\mathrm{delp^himos}$	$\mathrm{delp^himi}$	$\mathrm{delp^hixsi}$	delp <sup>h</sup> im

$\emptyset$ +stem+ $\emptyset$	Ø +stem+ ə	UR
əkelj	əkeljə	əkelj
$_{\mathrm{mal}}$	$_{ m mal}$	$_{ m mal}$
$si\beta il$	$\mathrm{si}\beta\mathrm{il}$ ə	$si\beta il$
$\operatorname{əskerp}$	əskerpə	$\operatorname{askerp}$
∫op	∫opə	∫op
sεk	sekə	$s\epsilon k$
əspes	əspesə	əspes
gros	grosə	gros
ba∫	ba∫ə	ba∫
ko∫	ko∫ə	ko∫
tot	totə	tot
brut	brutə	brut
pok	pəkə	рэk
prəsis	prəsizə	prəsiz
frenses	frənsezə	frensez
gris	grizə	griz
kəzat	kəzaðə	kəzad
bwit	bwiðə	bwid
$\mathrm{rot}^{\mathrm{f}}$	r539	$rod^3$
$\mathrm{bot}^{\int}$	bo39	$\mathrm{bod}_3$
orp	orβə	orb
ljark	ljaryə	ljarg
sek	seyə	seg
fə∫uk	fə∫uγə	fə∫ug
grok	groyə	grog
puruk	puruyə	purug landid
kandit	kandiðə freðə	kandid fred
fret		
səyu du	səyurə durə	səyur dur
səyəðo	səyəðorə	səgəðor
səγəσσ kla	klarə	klar
nu	nuə	nu
kru	kruə	kru
fləñd³u	flɔñd³ə	fləñd³u
dropu	dropə	dropu
əgzaktə	əgzaktə	əgzaktə
əlβi	əlβinə	əlβin
sa	sanə	san
pla	planə	plan
bo	bonə	bon
səre	sərenə	səren
$\mathrm{su}\beta\mathrm{lim}$	$\mathrm{su}eta\mathrm{lim}$ ə	$\mathrm{su}\beta\mathrm{lim}$
al	altə	alt
for	fortə	fort
kur	kurtə	kurt
sor	sorðə	sord
ber	berðə	berd
san	santə	sant
kəlen	kəlentə	kəlent
prufun	prufundə	prufund
fəkun	fəkundə	fəkund
dəsen	dəsentə	dəsent
dulen	dulentə	dulent
əstuðian	əstuðiantə	əstuðeiant
blaŋ	blaŋkə	blaŋñ
		_

Ø +stem+ man	$\emptyset$ +stem+ maŋkhɨm	$\emptyset$ +stem+ narim	$\emptyset$ +stem+ $\emptyset$	$\emptyset$ +stem+ tero	$\emptyset$ +stem+ kwa	$\emptyset$ +stem+ pota	Ø +8
pamman	pammaŋk <sup>h</sup> ɨm	pamnarim	pap	paptero	papkwa	pappota	papk
summan	summaŋk <sup>h</sup> ɨm	sumnarim	$\sup$	$\operatorname{suptero}$	supkwa	suppota	$\operatorname{supk}$
pamman	pammaŋk <sup>h</sup> ɨm	pamnarim	pam	pamtero	pamkwa	pampota	paml
pamman	pammaŋk <sup>h</sup> ɨm	pannarim	pat	pattero	pakkwa	pappota	pakk
namman	nammaŋk <sup>h</sup> ɨm	nannar <del>i</del> m	nat	nattero	nakkwa	nappota	nakk
namman	nammaŋk <sup>h</sup> ɨm	nannar <del>i</del> m	nat	nattero	nakkwa	nappota	nakk
namman	nammaŋk <sup>h</sup> ɨm	nannar <del>i</del> m	nat	nattero	nakkwa	nappota	nakk
pamman	pammaŋk <sup>h</sup> ɨm	pannarim	pan	pantero	paŋkwa	pampota	paŋk

```
\label{eq:Rules: Rules: thought of the problem} Rules: $$t^h \to t^{fh} / _i$ [+coronal] $\to 1 / _ [-continuant]$ [] $\to [-aspirated] / _ {[-continuant], \#}$ $$p \to m / _ [+nasal]$ [+sibilant] $\to t / _ \#$
```

$\emptyset$ +stem+ $\emptyset$	$\emptyset$ +stem+ a	$\emptyset$ +stem+ o	$\emptyset$ +stem+ i	$\varnothing$ +stem+ ém	$\emptyset$ +stem+ l	$\varnothing$ +stem+ lá	$\emptyset$ +stem+ lo	UR
mlád	mladá	mladó	$\operatorname{mlad}\acute{\mathrm{i}}$	_	_	_	_	_
túp	tupá	tupó	tupí	_	_	_	_	_
blág	blagá	blagó	blagí	_	_	_	_	_
grúb	grubá	grubó	grubí	_	_	_	_	_
krizan	krizana	krizano	krizani	_	_	_	_	_
$\mathrm{sunt}^{\int}\mathrm{an}$	$\mathrm{sunt}^{J}\mathrm{ana}$	$\mathrm{sunt}^{J}\mathrm{ano}$	$\mathrm{sunt}^{\int} \mathrm{ani}$	_	_	_	_	_
$\operatorname{svet}^{\int} \operatorname{an}$	$\mathrm{svet}^{\mathrm{J}}\mathrm{ana}$	$\mathrm{svet}^{\int} \mathrm{ano}$	$\mathrm{svet}^{\mathrm{J}}\mathrm{ani}$	_	_	_	_	_
béo	belá	beló	belí	_	_	_	_	_
veseo	vesela	veselo	veseli	_	_	_	_	_
debéo	debelá	debeló	debelí	_	_	_	_	_
mío	milá	miló	${ m mil}cute{ m i}$	_	_	_	_	_
zelén	zelená	zelenó	zelení	_	_	_	_	_
kradén	kradená	kradenó	kradení	_	_	_	_	_
dalék	daleká	dalekó	dalekí	_	_	_	_	_
visók	visoká	visokó	visokí	_	_	_	_	_
dubók	duboká	dubokó	dubokí	_	_	_	_	_
bogat	bogata	bogato	bogati	_	_	_	_	_
rapav	rapava	rapavo	rapavi	_	_	_	_	_
jásan	jasná	jasnó	jasní	_	_	_	_	_
vázan	vazná	vaznó	vazní	_	_	_	_	_
sitan	sitná	sitnó	sitní	_	_	_	_	_
ledan	ledna	ledno	ledni	_	_	_	_	_
tának	tanká	tankó	anki	_	_	_	_	_
krátak	kratká	kratkó	kratkí	_	_	_	_	_
blízak	bliská	bliskó	bliskí	_	_	_	_	_
úzak	uská	uskó	uskí	_	_	_	_	_
dóbar	dobrá	dobró	dobrí	_	_	_	_	_
ó∫tar	o∫trá	oſtró	o∫trí́	_	_	_	_	_
bodar	bodra	bodro	bodri	_	_	_	_	_
ustao	ustala	ustalo	ustali	_	_	_	_	_
múkao	muklá	mukló	$\operatorname{mukl}\acute{i}$	_	_	_	_	_
óbao	oblá	obló	oblí	_	_	_	_	_
pódao	podlá	podló	podlí	_	_	_	_	_
_	_	_	_	tepém	tépao	teplá	tepló	_
_	_	_	_	skubém	skúbao	skublá	skubló	_
_	_	_	_	tresém	trésao	treslá	tresló	_
_	_	_	_	vezém	vézao	vezlá	vezló	_

[+vowel]  $\rightarrow$  [+highTone] / [+highTone] []\* \_  $\varnothing \rightarrow a$  / [-vowel] \_ [-vowel] # [+vowel]  $\rightarrow$  [-highTone] / \_ []\* [+highTone] l  $\rightarrow$  o / \_ # [-sonorant]  $\rightarrow$  [-voice] / \_ [-voice]

$\varnothing$ +stem+ $\varnothing$	$\emptyset$ +stem+ am	$\emptyset$ +stem+ ov <sup>j</sup> i	$\emptyset$ +stem+ i	$\emptyset$ +stem+ ov <sup>j</sup> i	$\emptyset$ +stem+ o	$\emptyset$ +stem+ a	$\emptyset$ +stem+ u	Ø +ster
zub	zubam	zubov <sup>j</sup> i	zub <sup>j</sup> i	_	_	_	_	_
$\mathrm{sv}^{\mathrm{j}}\mathrm{it}$	$\mathrm{sv}^{\mathrm{j}}\mathrm{itam}$	$\mathrm{sv}^{\mathrm{j}}\mathrm{itov}^{\mathrm{j}}\mathrm{i}$	$\mathrm{sv}^{\mathrm{j}}\mathrm{it}^{\mathrm{j}}\mathrm{i}$	_	_	_	_	_
$z^{j}at^{j}$	$z^{j}at^{j}am$	$z^{j}atev^{j}i$	_	$z^{j}atev^{j}i$	_	_	_	_
ko∫ <sup>j</sup> il <sup>j</sup>	ko∫el <sup>j</sup> am	ko∫elev <sup>j</sup> i	ko∫el <sup>j</sup> i	_	_	_	_	_
zlod <sup>j</sup> ij	zlod <sup>j</sup> ijam	$zlod^{j}ijev^{j}i$	_	$\mathrm{zlod}^{\mathrm{j}}\mathrm{ijev}^{\mathrm{j}}\mathrm{i}$	_	_	_	_
$m^j i s^j a r^{s-j}$	$m^{j}is^{j}ar^{s}$ $^{j}am$	$m^{j}is^{j}at^{s}ev^{j}i$	$m^j i s^j a r^{s-j} i$	_	_	_	_	_
korovaj	korovajam	korovajev <sup>j</sup> i	korovaji	_	_	_	_	_
$kam^{j}in^{j}$	kamen <sup>j</sup> am	kamenev <sup>j</sup> i	kamen <sup>j</sup> i	_	_	_	_	_
$\mathrm{m^{j}id^{j}}$	$m^j i d^j a m$	$m^{j}idev^{j}i$	$m^j i d^j i$	_	_	_	_	_
$xl^{j}iw$	$xl^{j}ivam$	$xl^{j}ivov^{j}i$	$xl^{j}iv^{j}i$	_	_	_	_	_
holub	holubam	holubov <sup>j</sup> i	holub <sup>j</sup> i	_	_	_	_	_
$s^{j}$ in	$s^{j}inam$	$s^{j}inov^{j}i$	$s^{j}in^{j}i$	_	_	_	_	_
$\mathrm{leb}^{\mathrm{j}}\mathrm{id}^{\mathrm{j}}$	$\mathrm{lebed^{j}am}$	$lebedev^{j}i$	lebed <sup>j</sup> i	_	_	_	_	_
$\mathrm{sus}^{\mathrm{j}}\mathrm{id}$	$\mathrm{sus}^{\mathrm{j}}\mathrm{idam}$	$\mathrm{sus}^{\mathrm{j}}\mathrm{idov}^{\mathrm{j}}\mathrm{i}$	_	$\mathrm{sus}^{\mathrm{j}}\mathrm{idov}^{\mathrm{j}}\mathrm{i}$	_	_	_	_
$t^{\int}$ olov $^{j}$ ik	$t^{\int}$ olov $^{j}$ ikam	$t^{\int}$ olov $^{j}$ ikov $^{j}$ i	_	$t^{\int}$ olov $^{j}$ ikov $^{j}$ i	_	_	_	_
$l^{j}id$	ledam	$ m ledov^{j}i$	$\mathrm{led}^{\mathrm{j}}\mathrm{i}$	_	_	_	_	_
$\mathrm{bil}^\mathrm{j}$	$\mathrm{bol}^\mathrm{j}\mathrm{am}$	bolev <sup>j</sup> i	bol <sup>j</sup> i	_	_	_	_	_
riw	rovam	rovov <sup>j</sup> i	$rov^{j}i$	_	_	_	_	_
stiw	stolam	$\mathrm{stolov}^{\mathrm{j}}\mathrm{i}$	$ m stol^{j}i$	_	_	_	_	_
$d^{j}id$	$d^{j}idam$	$\mathrm{d}^{\mathrm{j}}\mathrm{i}\mathrm{d}\mathrm{o}\mathrm{v}^{\mathrm{j}}\mathrm{i}$	_	$d^{j}idov^{j}i$	_	_	_	_
$l^{j}it$	$l^{j}otam$	$l^{j}otov^{j}i$	$l^{j}ot^{j}i$	_	_	_	_	_
mist	mostam	$mostov^{j}i$	$\mathrm{most}^{\mathrm{j}}\mathrm{i}$	_	_	_	_	_
$\mathrm{vet}^{ extsf{j}}\mathrm{ir}$	$\mathrm{vet}^{ extsf{J}}\mathrm{oram}$	${\rm vet}^{\int} {\rm orov}^{\rm j} {\rm i}$	${ m vet}^{ m J}{ m or}^{ m j}{ m i}$	_	_	_	_	_
_	_	_	_	_	$\mathrm{t^{j}ilo}$	$\mathrm{t^{j}ila}$	t <sup>j</sup> ilu	$\mathrm{t}^{\mathrm{j}}\mathrm{i}\mathrm{l}^{\mathrm{j}}\mathrm{i}$
_	_	_	_	_	koleso	kolesa	kolesu	$koles^{j}i$
_	_	_	_	_	ozero	ozera	ozeru	$ozer^{j}i$
_	_	_	_	_	selo	sela	selu	$\mathrm{sel}^{\mathrm{j}}\mathrm{i}$
_	_	_	_	_	pole	$\mathrm{pol}^{\mathrm{j}}\mathrm{a}$	pol <sup>j</sup> u	$\mathrm{pol}^\mathrm{j}\mathrm{i}$
_	_	_	_	_	slovo	slova	slovu	slov <sup>j</sup> i

 $mor^{j}a$ 

more

 $\mathrm{mor}^{\mathrm{j}}\mathrm{u}$ 

 $mor^{j}i$ 

```
Rules:
```

```
\label{eq:continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous
```

- C Latera La	Q Latera Lia	Ø Latera Li	LID
$\emptyset$ +stem+ s	Ø +stem+ is	Ø +stem+ i:	UR
arks	arkis	_	_
duks	dukis	_	_
daps	dapis	_	_
reiks	reigis	_	_
falanks	falangis	_	_
filiks	filikis	_	_
lapis	lapidis	_	_
lixs	lixtis	_	_
fraws	frawdis	_	_
noks	noktis	_	_
frons	frontis	_	_
frons	frondis	_	_
inkuːs	inkuːdis	_	_
sors	sortis	_	_
furr	furris	_	_
murmur	murmuris	_	_
	auguris		
augur arbor	arboris		_
		_	_
pugil	pugilis	_	_
$\operatorname{sal}$	salis	_	_
adeps	adipis	_	_
apeks	apikis	_	_
primkeps	primkipis	_	_
ekwes	ekwitis	_	_
miles	militis	_	_
normen	norminis	_	_
karmen	karminis	_	_
lurmen	lu:minis	_	_
wenter	wentris	_	_
pater	patris	_	_
kada:wer	kadazweris	_	_
turber	turberis	_	_
piper	piperis	_	_
karker	karkeris	_	_
diers	_	dieziz	_
lizber	_	li:beri:	_
miser	_	miseri:	_
ager	_	agri:	_
sinister	_	sinistri:	_
liber	_	libri:	_
as	assis	_	_
os	ossis	_	_
far	farris	_	_
mel	mellis	_	_
ors	orris	_	_
flors	florris		
		_	_
murs	muːris	_	_
cruis	cru:ris	_	_
kinis	kineris	_	_
pulvis	pulveris	_	_

```
Dallog.
```

```
\begin{split} & [-\texttt{sonorant}] \to [-\texttt{voice}] \ / \ \_ [-\texttt{voice}] \\ & e \to 2 \ / \ \_ [-\texttt{liquid}] \ [+\texttt{vowel}] \\ & [-\texttt{vowel}] \to \varnothing \ / \ [+\texttt{coronal}] \ \_ \# \\ & [-\texttt{sonorant}] \to s \ / \ \_ \# \\ & \varnothing \to e \ / \ [-\texttt{sonorant}] \ \_ \ [+\texttt{voice}] \ \# \\ & \varnothing \to 2 \ / \ [+\texttt{sibilant}] \ \_ \ [+\texttt{vowel}] \ [-\texttt{voice}] \ i \\ & \varnothing \to 1 \ / \ \# \ [-\texttt{coronal}] \ [-\texttt{high}] \ \_ \ [+\texttt{voice}] \ i \end{split}
```