

# Sinsy

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## 1 How to use Japanese lyrics with alphabet

Sinsy supports direct input of phonemes. The examples are as follows.

Figure 1 shows three musical staves illustrating Japanese lyrics and their phoneme representations. The first staff shows the lyrics 'こん に ち わ' with vertical bars between characters. The second staff shows the same lyrics with phoneme sequences: 'こん[k, o|N] に[n, i] ち[ch, i] わ[w, a]'. The third staff shows the phoneme sequences without the Japanese characters: '[k, o|N] [n, i] [ch, i] [w, a]'.

Figure 1: The examples of Japanese lyrics.

The ',' (commas) and the '|' (vertical bars) represent the phoneme boundary and the mora (syllable-like unit in Japanese) boundary, respectively. The phoneme sequence must be delimited by both ',' and '|'. Please note that if both the Japanese lyrics and phoneme sequence are included in the same musical note, the Japanese lyrics are ignored by the system. The conversion table of Japanese lyrics to phonemes is shown in Table 3.

## 2 How to input English phonemes directly

Sinsy supports direct input of English phonemes in a similar manner as Japanese. See following figure 2.

Figure 2 shows a musical staff illustrating English lyrics and their phoneme representations. The lyrics are 'there will be an answer let it be'. The phoneme sequences are: 'there', 'will', 'be', 'an[æ\*, n]-swer[s, w, er]', 'let[l, eh\*]', 'it[r, iy\*]', 'be\_\_\_\_\_'. The asterisks indicate word stress.

Figure 2: The example of English lyrics.

The ',' (commas) and the '|' (vertical bars) represent the phoneme boundary and the syllable boundary, respectively. The '\*' (asterisks) after the vowel represents the flag of word-stress. The phoneme table is shown in Table 2.

### 3 How to input Chinese (Mandarin) lyrics

Sinsy supports pinyin input for Chinese (Mandarin) songs. See following figure 3.



Figure 3: The example of Chinese (Mandarin) lyrics.

The phoneme table is shown in Table 3.

Table 1: Conversion table of Japanese lyrics to phonemes

a	i	u	e	o	N	double consonant	a	i	u	e	o	N	double consonant
あ	い	う	え	お	ん		ア	イ	ウ	エ	オ	ン	
a	i	u	e	o	N	cl	A	I	U	E	O	N	cl
か	き	く	け	こ			カ	キ	ク	ケ	コ		
k,a	k,i	k,u	k,e	k,o			k,a	k,i	k,u	k,e	k,o		
さ	し	ず	せ	そ			サ	シ	ズ	セ	ソ		
s,a	sh,i	s,u	s,e	s,o			s,a	sh,i	s,u	s,e	s,o		
た	ち	つ	て	と			タ	チ	ツ	テ	ト		
t,a	ch,i	ts,u	t,e	t,o			t,a	ch,i	ts,u	t,e	t,o		
な	に	ぬ	ね	の			ナ	ニ	ヌ	ネ	ノ		
n,a	n,i	n,u	n,e	n,o			n,a	n,i	n,u	n,e	n,o		
は	ひ	ふ	へ	ほ			ハ	ヒ	フ	ヘ	ホ		
h,a	h,i	f,u	h,e	h,o			h,a	h,i	f,u	h,e	h,o		
ま	み	む	め	も			マ	ミ	ム	メ	モ		
m,a	m,i	m,u	m,e	m,o			m,a	m,i	m,u	m,e	m,o		
や		ゆ	い	よ			ヤ		ユ	イ	ヨ		
y,a		y,u	y,e	y,o			y,a		y,u	y,e	y,o		
ら	り	る	れ	ろ			ラ	リ	ル	レ	ロ		
r,a	r,i	r,u	r,e	r,o			r,a	r,i	r,u	r,e	r,o		
わ	ゐ		ゑ	を			ワ	ヰ		ヱ	ヲ		
w,a	i		e	o			w,a	i		e	o		

  

が	ぎ	ぐ	げ	ご			ガ	ギ	グ	ゲ	ゴ		
g,a	g,i	g,u	g,e	g,o			g,a	g,i	g,u	g,e	g,o		
ざ	じ	ず	ぜ	ぞ			ザ	ジ	ズ	ゼ	ゾ		
z,a	j,i	z,u	z,e	z,o			z,a	j,i	z,u	z,e	z,o		
だ	ぢ	づ	で	ど			ダ	ヂ	ヅ	デ	ド		
d,a	j,i	z,u	d,e	d,o			d,a	j,i	z,u	d,e	d,o		
ば	び	ぶ	べ	ぼ			バ	ビ	ブ	ベ	ボ		
b,a	b,i	b,u	b,e	b,o			b,a	b,i	b,u	b,e	b,o		
ぱ	ぴ	ぷ	ぺ	ぽ			パ	ピ	プ	ペ	ポ		
p,a	p,i	p,u	p,e	p,o			p,a	p,i	p,u	p,e	p,o		

  

きゃ		きゅ	きょ	きよ			キヤ		キユ	キョ	キヨ		
ky,a		ky,u	ky,e	ky,o			ky,a		ky,u	ky,e	ky,o		
しゃ	しい	しゅ	しょ	しよ			シャ	シイ	シユ	ショ	シヨ		
sh,a	s,i	sh,u	sh,e	sh,o			sh,a	s,i	sh,u	sh,e	sh,o		
ちゃ		ちゅ	ちょ	ちよ			チャ		チュ	チョ	チョ		
ch,a		ch,u	ch,e	ch,o			ch,a		ch,u	ch,e	ch,o		
てや	てい	てゅ	てょ	てよ			テヤ	テイ	テユ	テョ	テヨ		
ty,a	t,i	ty,u	ty,e	ty,o			ty,a	t,i	ty,u	ty,e	ty,o		
ちや		ちゅ	ちょ	ちよ			チャ		チュ	チョ	チョ		
ch,a		ch,u	ch,e	ch,o			ch,a		ch,u	ch,e	ch,o		
にや		にゅ	にょ	によ			ニヤ		ニユ	ニョ	ニヨ		
ny,a		ny,u	ny,e	ny,o			ny,a		ny,u	ny,e	ny,o		
ひや		ひゅ	ひょ	ひよ			ヒヤ		ヒユ	ヒョ	ヒヨ		
hy,a		hy,u	hy,e	hy,o			hy,a		hy,u	hy,e	hy,o		
みや		みゅ	みょ	みよ			ミヤ		ミユ	ミョ	ミヨ		
my,a		my,u	my,e	my,o			my,a		my,u	my,e	my,o		
りや		りゅ	りょ	りよ			リヤ		リユ	リョ	リヨ		
ry,a		ry,u	ry,e	ry,o			ry,a		ry,u	ry,e	ry,o		
びや		びゅ	びょ	びよ			ビヤ		ビユ	ビョ	ビヨ		
by,a		by,u	by,e	by,o			by,a		by,u	by,e	by,o		
ぎゃ		ぎゅ	ぎょ	ぎよ			ギヤ		ギユ	ギョ	ギヨ		
gy,a		gy,u	gy,e	gy,o			gy,a		gy,u	gy,e	gy,o		
じゃ		じゅ	じょ	じよ			ジャ		ジュ	ジョ	ジヨ		
j,a		j,u	j,e	j,o			j,a		j,u	j,e	j,o		
ひゃ		ひゅ	ひょ	ひよ			ヒヤ		ヒユ	ヒョ	ヒヨ		
by,a		by,u	by,e	by,o			by,a		by,u	by,e	by,o		
ぴゃ		ぴゅ	ぴょ	ぴよ			ピヤ		ピユ	ピョ	ピヨ		
py,a		py,u	py,e	py,o			py,a		py,u	py,e	py,o		
ぢゃ	ぢい	ぢゅ	ぢょ	ぢよ			ヂヤ	ヂイ	ヂユ	ヂョ	ヂヨ		
dy,a	d,i	dy,u	dy,e	dy,o			dy,a	d,i	dy,u	dy,e	dy,o		

  

くわ	くい	くう	くえ	くお			クア	クイ	クウ	クエ	クオ		
k,w,a	k,w,i	k,w,u	k,w,e	k,w,o			k,w,a	k,w,i	k,w,u	k,w,e	k,w,o		
ぐわ	ぐい	ぐう	ぐえ	ぐお			グア	グイ	グウ	グエ	グオ		
g,w,a	g,w,i	g,w,u	g,w,e	g,w,o			g,w,a	g,w,i	g,w,u	g,w,e	g,w,o		
くわ							グワ						
g,w,a							g,w,a						

  

	うい		うえ	うお				ウイ		ウエ	ウオ		
	w,i		w,e	w,o				w,i		w,e	w,o		
	ずい							スイ					
	s,i							s,i					
つあ	つい		つえ	つお			ツア	ツイ		ツエ	ツオ		
ts,a	ts,i		ts,e	ts,o			ts,a	ts,i		ts,e	ts,o		
		とう							トウ				
		t,u							t,u				
ふあ	ふい		ふえ	ふお			ファ	フィ		フェ	フォ		
f,a	f,i		f,e	f,o			f,a	f,i		f,e	f,o		
	ずい							ズイ					
	z,i							z,i					
		どう							ドウ				
		d,u							d,u				
ヴあ	ヴい		ヴえ	ヴお			ヴァ	ヴィ		ヴェ	ヴォ		
v,a	v,i		v,e	v,o			v,a	v,i		v,e	v,o		

Table 2: Phoneme table of English

IPA	Sinsy (CMU Pronouncing Dictionary)
a	aa
æ	ae
ə	ax
ʌ	ah
ɔ	ao
aʊ	aw
aɪ	ay
b	b
tʃ	ch
d	d
ð	dh
e	eh
ər	er
eɪ	ey
f	f
g	g
h	hh
ɪ	ih
i	iy
dʒ	jh
k	k
l	l
m	m
n	n
ŋ	ng
əʊ	ow
oʊ	
ɔɪ	oy
p	p
r	r
s	s
ʃ	sh
t	t
θ	th
ʊ	uh
u	uw
v	v
w	w
j	y
z	z
ʒ	zh

Table 3: Phoneme table of Chinese (Mandarin)

	a	o	e	ai	ei	ao	ou	an	en	ang	eng	ong	ii
∅	a	o	e	ai	ei	ao	ou	an	en	ang	eng		
b	ba	bo		bai	bei	bao		ban	ben	bang	beng		
p	pa	po		pai	pei	pao	pou	pan	pen	pang	peng		
m	ma	mo	me	mai	mei	mao	mou	man	men	mang	meng		
f	fa	fo		fei	fei	dao	fou	fan	fen	fang	feng		
d	da		de	dai	dei	dao	dou	dan	den	dang	deng	dong	
t	ta		te	tai	tei	tao	tou	tan		tang	teng	tong	
n	na		ne	nai	nei	nao	nou	nan	nen	nang	neng	nong	
l	la	lo	le	lai	lei	lao	lou	lan		lang	leng	long	
g	ga		ge	gai	gei	gao	gou	gan	gen	gang	geng	gong	
k	ka		ke	kai	kei	kao	kou	kan	ken	kang	keng	kong	
h	ha		he	hai	hei	hao	hou	han	hen	hang	heng	hong	
j													
q													
x													
zh	zha		zhe	zhai	zhei	zhao	zhou	zhan	zhen	zhang	zheng	zhong	
ch	cha		che	chai	ch ei	chao	chou	chan	chen	chang	cheng	chong	
sh	sha		she	shai	shei	shao	shou	shan	shen	shang	sheng	shong	
r			re			rao	rou	ran	ren	rang	reng	rong	
z	za		ze	zai	zei	zao	zou	zan	zen	zang	zeng	zong	zi
c	ca		ce	c ai		cao	cou	can	cen	cang	ceng	cong	ci
s	sa		se	sai		sao	sou	san	sen	sang	seng	song	si

	iii	i	ia	ie	iao	iou	ian	in	iang	ing	iong	wu	wa
∅		yi	ya	ye	yao	you	yan	yin	yang	ying	yong	wu	wa
b		bi		bie	biao		bian	bin		bing		bu	
p		pi		pie	piao		pian	pin		ping		pu	
m		mi		mie	miao	miu	mian	min		ming		mu	
f												fu	
d		di	d ia	d ie	diao	diu	dian			d ing		du	
t		ti		t ie	tiao		tian			t ing		tu	
n		ni		n ie	niao	niu	nian	nin	niang	ning		nu	
l		li	li a	li e	liao	liu	lian	lin	liang	ling		lu	
g												gu	gua
k												ku	kua
h												hu	hua
j		ji	ji a	ji e	jiao	jiu	jian	jin	jiang	jing	jiong		
q		qi	qi a	qi e	qiao	qiu	qian	qin	qiang	qing	qiong		
x		xi	xia	xie	xiao	xiu	xian	xin	xiang	xing	xiong		
zh	zhi											zhu	zhua
ch	chi											chu	chua
sh	shi											shu	shua
r	ri											ru	
z												zu	
c												cu	
s												su	

	uo	uai	uei	uan	uen	uang	ueng	v	ve	van	vn	er
∅	wo	wai	wei	wan	wen	wang	weng	yu	yue	yuan	yun	er
b												
p												
m												
f												
d	duo		dui	duan	dun							
t	tuo		tui	tuan	tun							
n	nuo			nuan	nun			nv	nve			
l	luo			luan	lun			lv	lve			
g	guo	guai	gui	guan	gun	guang						
k	kuo	kuai	kui	kuan	kun	kuang						
h	huo	huai	hui	huan	hun	huang						
j								ju	jue	juan	jun	
q								qu	que	quan	qun	
x								xu	xue	xuan	xun	
zh	zhuo	zhuai	zhui	zhuan	zhun	zhuang						
ch	chuo	chuai	chui	chuan	chun	chuang						
sh	shuo	shuai	shui	shuan	shun	shuang						
r	ruo		ru i	ruan	run							
z	zuo		zui	zuan	zun							
c	cuo		cui	cuan	cun							
s	suo		sui	suan	sun							