

## Nano Name Generator - NNG

### Overview:

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NNG is a generative AI project that learns the statistical probabilities of next character given the first character.  
NNG learns statistical probabilities from a input files with child names.  
NNG uses multinomial sampling to generate first letter of new name and generates next characters based on probability it learnt from input child names

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Input = Text file with child names  
Output = Generated names through bigram prediction  
Output = Loss function or Maximum likelihood estimation  
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Number of names in the input file = 32033  
First 5 names in the input file ['emma', 'olivia', 'ava', 'isabella', 'sophia']

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Bigram table based on learning from input child names  
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Row = Input character  
Column = Output character  
Output value of array = Likelihood count - Not Normalized  
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.0	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
	1306	1542	1690	1531		417	669	874	591	2422	2963	1572	2538	1146	394	515	92	1639	2055	1308	78	376	307	134	535	929
a.6640	aa556	ab541	ac470	ad1042	ae692	af134	ag168	ah2332	ai1650	aj175	ak568	al2528	am1634	an5438	ao63	ap82	aq60	ar3264	as1118	at687	au381	av834	aw161	ax182	ay2050	az435
b.114	ba321	bb38	bc1	bd65	be655	bf0	bg0	bh41	bi217	bj1	bk0	bl103	bm0	bn4	bo105	bp0	bq0	br842	bs8	bt2	bu45	bv0	bw0	bx0	by83	bz0
c.97	ca815	cb0	cc42	cd1	ce551	cf0	cg2	ch664	ci271	cj3	ck316	cl116	cm0	cn0	co380	cp1	cq11	cr76	cs5	ct35	cu35	cv0	cw0	cx3	cy104	cz4
d.516	da1303	db1	dc3	dd149	de1283	df5	dg25	dh118	di674	dj9	dk3	dl60	dm30	dn31	do378	dp0	dq1	dr424	ds29	dt4	du92	dv17	dw23	dx0	dy317	dz1
e.3983	ea679	eb121	ec153	ed384	ee1271	ef82	eg125	eh152	ei818	ej55	ek178	el3248	em769	en2675	eo269	ep83	eq14	er1958	es861	et580	eu69	ev463	ew50	ex132	ey1070	ez181
f.80	fa242	fb0	fc0	fd0	fe123	ff44	fg1	fh1	fi160	fj0	fk2	fl20	fm0	fn4	fo60	fp0	fq0	fr114	fs6	ft18	fu10	fv0	fw4	fx0	fy14	fz2
g.108	ga330	gb3	gc0	gd19	ge334	gf1	gg25	gh360	gi190	gj3	gk0	gl32	gm6	gn27	go83	gp0	gq0	gr201	gs30	gt31	gu85	gv1	gw26	gx0	gy31	gz1
h.2409	ha2244	hb8	hc2	hd24	he674	hf2	hg2	hh1	hi729	hj9	hk29	hl185	hm117	hn138	ho287	hp1	hq1	hr204	hs31	ht71	hu166	hv39	hw10	hx0	hy213	hz20
i.2489	ia2445	ib110	ic509	id440	ie1653	if101	ig428	ih95	ii82	ij76	ik445	il1345	im427	in2126	io588	ip53	iq52	ir849	is1316	it541	iu109	iv269	iw8	ix89	iy779	iz277
j.71	ja1473	jb1	jc4	jd4	je440	jf0	ig0	jh45	ji119	jj2	jk2	jl9	jm5	jn2	jo479	jp1	jq0	jr11	js7	jt2	ju202	jv5	jw6	jx0	iy10	jz0
k.363	ka1731	kb2	kc2	kd2	ke895	kf1	kg0	kh307	ki509	kj2	kk20	kl139	km9	kn26	ko344	kp0	kq0	kr109	ks95	kt17	ku50	kv2	kw34	kx0	ky379	kz2
l.1314	la2623	lb52	lc25	ld138	le2921	lf22	lg6	lh19	li2480	lj6	lk24	ll1345	lm60	ln14	lo692	lp15	lq3	lr18	ls94	lt77	lu324	lv72	lw16	lx0	ly1588	lz10
m.516	ma2590	mb112	mc51	md24	me818	mf1	mg0	mh5	mi1256	mj7	mk1	ml5	mm168	mn20	mo452	mp38	mq0	mr97	ms35	mt4	mu139	mv3	nw2	mx0	my287	mz11
n.6763	na2977	nb8	nc213	nd704	ne1359	nf11	ng273	nh26	ni1725	nj44	nk58	nl195	nm19	nn1906	no496	np5	nq2	nr44	ns278	nt443	nu96	nv55	nw11	nx6	ny465	nz145
o.855	oa149	ob140	oc114	od190	oe132	of34	og44	oh171	oi69	oj16	ok68	ol619	om261	on2411	oo115	op95	oq3	or1059	os504	ot118	ou275	ov176	ow114	ox45	oy103	oz54
p.33	pa209	pb2	pc1	pd0	pe197	pf1	pg0	ph204	pi61	pj1	pk1	pl16	pm1	pn1	po59	pp39	pq0	pr151	ps16	pt17	pu4	pq0	pw0	px0	py12	pz0
q.28	qa13	qb0	qc0	qd0	qe1	qf0	qg0	qh0	qi13	qj0	qk0	ql1	qm2	qn0	qo2	qp0	qq0	qr1	qs2	qt0	qu206	qv0	qw3	qx0	qy0	qz0
r.1377	ra2356	rb41	rc99	rd187	re1697	rf9	rg76	rh121	ri3033	rj25	rk90	rl413	rm162	rn140	ro869	rp14	rq16	rr425	rs190	rt208	ru252	rv80	rw21	rx3	ry773	rz23
s.1169	sa1201	sb21	sc60	sd9	se884	sf2	sg2	sh1285	si684	sj2	sk82	sl279	sm90	sn24	so531	sp51	sq1	sr55	ss461	st765	su185	sv14	sw24	sx0	sy215	sz10
t.483	ta1027	tb1	tc17	td0	te716	tf2	tg2	th647	ti532	tj3	tk0	tl134	tm4	tn22	to667	tp0	tq0	tr352	ts35	tt374	tu78	tv15	tw11	tx2	ty341	tz105
u.155	ua163	ub103	uc103	ud136	ue169	uf19	ug47	uh58	ui121	uj14	uk93	ul301	um154	un275	uo10	up16	uq10	ur414	us474	ut82	uu3	uv37	uw86	ux34	uy13	uz45
v.88	va642	vb1	vc0	vd1	ve568	vf0	vg0	vh1	vi911	vj0	vk3	vl4	vm0	vn8	vo153	vp0	vq0	vr48	vs0	vt0	vu7	vv7	vw0	vx0	vy121	vz0
w.51	wa280	wb1	wc0	wd8	we149	wf2	wg1	wh23	wi148	wj0	wk6	wl13	wm2	wn58	wo36	wp0	wq0	wr22	ws20	wt8	wu25	wv0	ww2	wx0	wy73	wz1
x.164	xa103	xb1	xc4	xd5	xe36	xf3	xg0	xh1	xi102	xj0	xk0	xl39	xm1	xn1	xo41	xp0	xq0	xr0	xs31	xt70	xu5	xv0	xw3	xx38	xy30	xz19
y.2007	ya2143	yb27	yc115	yd272	ye301	yf12	yg30	yh22	yi192	yj23	yk86	yl1104	ym148	yn1826	yo271	yp15	yq6	yr291	ys401	yt104	yu141	yv106	yw4	yx28	yy23	yz78
z.160	za860	zb4	zc2	zd2	ze373	zf0	zg1	zh43	zi364	zj2	zk2	zl123	zm35	zn4	zo110	zp2	zq0	zr32	zs4	zt4	zu73	zv2	zw3	zx1	zy147	zz45

OUTPUT

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Create 20 new names based on bigram probabilites

junide.  
janasah.  
p.  
cony.  
a.  
nn.  
kohin.  
tolian.

juee.  
ksahnaauranilevias.  
dedainrwieta.  
ssonielylarte.  
faveumerifontume.  
phynslenaruani.  
core.  
yaenon.  
ka.  
jabdinerimikimaynin.  
anaasn.  
ssorionsush.

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Loss function - Maximum likelihood estimation = 2.4544  
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