

```
ec2-user@ip-172-31-43-117:~/sa
(tensorflow_p36) [ec2-user@ip-172-31-43-117 sa]$ python chatbot.py train
/home/ec2-user/anaconda3/envs/tensorflow_p36/lib/python3.6/site-packages/h5py/_init_.py:36: FutureWarning: Conversion of the second argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.dtype(float).type`.
  from .conv import register_converters as _register_converters
/home/ec2-user/anaconda3/envs/tensorflow_p36/lib/python3.6/site-packages/matplotlib/_init_.py:1067: UserWarning: Duplicate key in file "/home/ec2-user/.config/matplotlib/matplotliblibrc", line #2
  (fname, cnt))
/home/ec2-user/anaconda3/envs/tensorflow_p36/lib/python3.6/site-packages/matplotlib/_init_.py:1067: UserWarning: Duplicate key in file "/home/ec2-user/.config/matplotlib/matplotliblibrc", line #3
  (fname, cnt))
usage: chatbot.py [-h] [--mode {chat,train}]
chatbot.py: error: unrecognized arguments: train
(tensorflow_p36) [ec2-user@ip-172-31-43-117 sa]$ python chatbot.py
/home/ec2-user/anaconda3/envs/tensorflow_p36/lib/python3.6/site-packages/h5py/_init_.py:36: FutureWarning: Conversion of the second argument of issubdtype from `float` to `np.floating` is deprecated. In future, it will be treated as `np.float64 == np.dtype(float).type`.
  from .conv import register_converters as _register_converters
/home/ec2-user/anaconda3/envs/tensorflow_p36/lib/python3.6/site-packages/matplotlib/_init_.py:1067: UserWarning: Duplicate key in file "/home/ec2-user/.config/matplotlib/matplotliblibrc", line #2
  (fname, cnt))
/home/ec2-user/anaconda3/envs/tensorflow_p36/lib/python3.6/site-packages/matplotlib/_init_.py:1067: UserWarning: Duplicate key in file "/home/ec2-user/.config/matplotlib/matplotliblibrc", line #3
  (fname, cnt))
Data ready!
Bucketing conversation number 9999
Bucketing conversation number 19999
Bucketing conversation number 29999
Bucketing conversation number 39999
Bucketing conversation number 49999
Bucketing conversation number 59999
Bucketing conversation number 69999
Bucketing conversation number 79999
Bucketing conversation number 89999
Bucketing conversation number 99999
Bucketing conversation number 109999
Bucketing conversation number 119999
Bucketing conversation number 129999
Number of samples in each bucket:
[54053, 31229, 12026, 15393, 9186, 4990]
Bucket scale:
[0.426026781843833, 0.6721628033449719, 0.7669475160982684, 0.8882697415607241, 0.9606705707102154, 1.0]
Initialize new model
Create placeholders
Create inference
```

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It might take a couple of minutes depending on how many buckets you have.
WARNING:tensorflow:From /home/ec2-user/anaconda3/envs/tensorflow_p36/lib/python3.6/site-packages/tensorflow/python/ops/nns_ops.py:114: tf.nn.softmax_cross_entropy_with_logits (from tensorflow.python.ops.nn_ops) is deprecated and will be removed in a future version.
Instructions for updating:

Future major versions of TensorFlow will allow gradients to flow into the labels input on backprop by default.

See tf.nn.softmax_cross_entropy_with_logits_v2.

Time: 43.34873962402344

Create optimizer...

It might take a couple of minutes depending on how many buckets you have.

Creating opt for bucket 0 took 9.26350998878479 seconds

Creating opt for bucket 1 took 14.212249994277954 seconds

Creating opt for bucket 2 took 16.797549724578857 seconds

Creating opt for bucket 3 took 21.394756078720093 seconds

Creating opt for bucket 4 took 25.268720149993896 seconds

Creating opt for bucket 5 took 31.325716495513916 seconds

Running session

Initializing fresh parameters for the Chatbot

Iter 30: loss 8.89868777592977, time 0.32906246185302734

Iter 60: loss 8.658186864852905, time 0.32674622535705566

Iter 90: loss 9.843418312072753, time 0.32558155059814453

Iter 200: loss 7.848064217567444, time 0.21550321578979492

Iter 300: loss 5.78878924369812, time 0.6486258506774902

Iter 400: loss 5.59123010635376, time 0.6654014587402344

Iter 500: loss 5.441218214035034, time 0.5147759914398193

Iter 600: loss 5.368125610351562, time 0.21951746940612793

Iter 700: loss 5.207046089172363, time 0.6453530788421631

Iter 800: loss 5.170561327934265, time 0.2178502082824707

Iter 900: loss 5.107185263633728, time 0.2265326976776123

Iter 1000: loss 5.03168493270874, time 0.21813249588012695

Test bucket 0: loss 4.7049336433410645, time 3.609483003616333

Test bucket 1: loss 5.389109134674072, time 4.793724060058594

Test bucket 2: loss 5.452221870422363, time 5.43575382232666

Test bucket 3: loss 5.554190635681152, time 6.691232681274414

Test bucket 4: loss 5.5792341232299805, time 8.19983720779419

Test bucket 5: loss 5.779138088226318, time 9.615256309509277

Iter 1100: loss 5.042825155258178, time 0.21717309951782227

Iter 1200: loss 4.954168906211853, time 0.2274186611175537

Iter 1300: loss 4.937328419685364, time 0.4055197238922119

Iter 1400: loss 4.958192238807678, time 0.789262056350708

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```
Iter 1500: loss 4.880737991333008, time 0.3324398994445801
Iter 1600: loss 4.797527070045471, time 0.6562678813934326
Iter 1700: loss 4.816973705291748, time 0.2238173484802246
Iter 1800: loss 4.770853953361511, time 0.22107434272766113
Iter 1900: loss 4.743301019668579, time 0.5169210433959961
Iter 2000: loss 4.713447198867798, time 0.5181944370269775
Test bucket 0: loss 4.076702117919922, time 0.15118980407714844
Test bucket 1: loss 4.885541915893555, time 0.22041821479797363
Test bucket 2: loss 4.978752136230469, time 0.26415205001831055
Test bucket 3: loss 5.066431999206543, time 0.3383147716522217
Test bucket 4: loss 5.167607307434082, time 0.4431304931640625
Test bucket 5: loss 5.208902835845947, time 0.5206944942474365
Iter 2100: loss 4.688263111114502, time 0.3347923755645752
Iter 2200: loss 4.748114337921143, time 0.5103170871734619
Iter 2300: loss 4.51256040096283, time 0.21866917610168457
Iter 2400: loss 4.430300660133362, time 0.33464503288269043
Iter 2500: loss 4.416459329128266, time 0.3328678607940674
Iter 2600: loss 4.403066835403442, time 0.2172527313232422
Iter 2700: loss 4.310304238796234, time 0.3339266777038574
Iter 2800: loss 4.33678026676178, time 0.21482491493225098
Iter 2900: loss 4.209860873222351, time 0.39421653747558594
Iter 3000: loss 4.248493654727936, time 0.22020435333251953
Test bucket 0: loss 3.729546070098877, time 0.15474271774291992
Test bucket 1: loss 4.252395153045654, time 0.22086071968078613
Test bucket 2: loss 4.308103561401367, time 0.26401615142822266
Test bucket 3: loss 4.638463020324707, time 0.34961962699890137
Test bucket 4: loss 4.561388969421387, time 0.4233973026275635
Test bucket 5: loss 4.7666192054748535, time 0.5169916152954102
Iter 3100: loss 4.137952041625977, time 0.3312504291534424
Iter 3200: loss 4.070792529582977, time 0.33112645149230957
Iter 3300: loss 4.049643859863282, time 0.21898365020751953
Iter 3400: loss 4.067890417575836, time 0.4011521339416504
Iter 3500: loss 3.971778509616852, time 0.2166285514831543
Iter 3600: loss 3.8833352637290957, time 0.22280120849609375
Iter 3700: loss 3.9272263169288637, time 0.33409810066223145
Iter 3800: loss 3.7826313281059267, time 0.3349592685699463
Iter 3900: loss 3.7672171926498415, time 0.2171154022216797
Iter 4000: loss 3.7389298939704894, time 0.5183877944946289
Test bucket 0: loss 3.308666706085205, time 0.15432453155517578
Test bucket 1: loss 4.076326370239258, time 0.23046493530273438
Test bucket 2: loss 4.166895389556885, time 0.2667548656463623
Test bucket 3: loss 4.341611862182617, time 0.3446955680847168
Test bucket 4: loss 4.365646839141846, time 0.42407894134521484
```

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```
Test bucket 1: loss 4.076326370239258, time 0.23046493530273438
Test bucket 2: loss 4.166895389556885, time 0.2667548656463623
Test bucket 3: loss 4.341611862182617, time 0.3446955680847168
Test bucket 4: loss 4.365646839141846, time 0.42407894134521484
Test bucket 5: loss 4.49351692199707, time 0.5166451930999756
Iter 4100: loss 3.7461024856567384, time 0.22211217880249023
Iter 4200: loss 3.6904496717453004, time 0.6533718109130859
Iter 4300: loss 3.6322893929481506, time 0.5119295120239258
Iter 4400: loss 3.588795852661133, time 0.2194385528564453
Iter 4500: loss 3.52936927318573, time 0.2164301872253418
Iter 4600: loss 3.557802503108978, time 0.33750176429748535
Iter 4700: loss 3.5832150650024412, time 0.22191929817199707
Iter 4800: loss 3.44859721660614, time 0.34291625022888184
Iter 4900: loss 3.415976896286011, time 0.6448755264282227
Iter 5000: loss 3.445050685405731, time 0.22464227676391602
Test bucket 0: loss 3.169142246246338, time 0.1546006202697754
Test bucket 1: loss 3.4175047874450684, time 0.22073793411254883
Test bucket 2: loss 3.7200138568878174, time 0.25870227813720703
Test bucket 3: loss 3.784128189086914, time 0.3442246913909912
Test bucket 4: loss 3.8430092334747314, time 0.4288921356201172
Test bucket 5: loss 3.930708885192871, time 0.5163860321044922
Iter 5100: loss 3.407413456439972, time 0.5149133205413818
Iter 5200: loss 3.3668888854980468, time 0.32857370376586914
Iter 5300: loss 3.335889163017273, time 0.2234649658203125
Iter 5400: loss 3.3386714124679564, time 0.21954822540283203
Iter 5500: loss 3.2434234023094177, time 0.22041702270507812
Iter 5600: loss 3.2265210700035096, time 0.39963626861572266
Iter 5700: loss 3.185126013755798, time 0.22186803817749023
Iter 5800: loss 3.2204997324943543, time 0.33304786682128906
Iter 5900: loss 3.172650866508484, time 0.5088210105895996
Iter 6000: loss 3.2054664063453675, time 0.7858192920684814
Test bucket 0: loss 2.752748966217041, time 0.15591859817504883
Test bucket 1: loss 3.262129545211792, time 0.22153806686401367
Test bucket 2: loss 3.2447428703308105, time 0.2614705562591553
Test bucket 3: loss 3.6802000999450684, time 0.3330881595611572
Test bucket 4: loss 3.663970708847046, time 0.4222531318664551
Test bucket 5: loss 3.7212162017822266, time 0.5117819309234619
Iter 6100: loss 3.164783947467804, time 0.39792871475219727
Iter 6200: loss 3.1568378472328185, time 0.21793293952941895
Iter 6300: loss 3.1162605905532836, time 0.3368520736694336
Iter 6400: loss 3.039796223640442, time 0.5119264125823975
Iter 6500: loss 3.04595059633255, time 0.21605134010314941
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Iter 6600: loss 3.0028065752983095, time 0.5119190216064453
Iter 6700: loss 2.964719853401184, time 0.22681808471679688
Iter 6800: loss 3.0102652859687806, time 0.34475111961364746
Iter 6900: loss 2.9644304180145262, time 0.33515238761901855
Iter 7000: loss 2.936395230293274, time 0.2197418212890625
Test bucket 0: loss 2.6036829948425293, time 0.15135717391967773
Test bucket 1: loss 3.21254825592041, time 0.2202310562133789
Test bucket 2: loss 3.1545393466949463, time 0.26874780654907227
Test bucket 3: loss 3.4554643630981445, time 0.3431878089904785
Test bucket 4: loss 3.4656577110290527, time 0.43115711212158203
Test bucket 5: loss 3.5789692401885986, time 0.52156662940979
Iter 7100: loss 2.8900091791152955, time 0.21916794776916504
Iter 7200: loss 2.8866611456871034, time 0.21979284286499023
Iter 7300: loss 2.8758001279830934, time 0.40036606788635254
Iter 7400: loss 2.835366311073303, time 0.33003735542297363
Iter 7500: loss 2.8682531929016113, time 0.22162866592407227
Iter 7600: loss 2.840366072654724, time 0.21639275550842285
Iter 7700: loss 2.8193191123008727, time 0.33295297622680664
Iter 7800: loss 2.795538489818573, time 0.509019136428833
Iter 7900: loss 2.7517249369621277, time 0.22109508514404297
Iter 8000: loss 2.833625521659851, time 0.7857265472412109
Test bucket 0: loss 2.387570858001709, time 0.1551191806793213
Test bucket 1: loss 2.9710731506347656, time 0.22038960456848145
Test bucket 2: loss 3.0843324661254883, time 0.2653191089630127
Test bucket 3: loss 3.412127733230591, time 0.3373582363128662
Test bucket 4: loss 3.2847163677215576, time 0.43050098419189453
Test bucket 5: loss 3.2590842247009277, time 0.514758825302124
Iter 8100: loss 2.7975312733650206, time 0.649390697479248
Iter 8200: loss 2.720222988128662, time 0.21714425086975098
Iter 8300: loss 2.721072940826416, time 0.32379746437072754
Iter 8400: loss 2.7166952967643736, time 0.3295116424560547
Iter 8500: loss 2.6814762568473816, time 0.3276684284210205
Iter 8600: loss 2.7220819997787475, time 0.5147664546966553
Iter 8700: loss 2.686651749610901, time 0.22376489639282227
Iter 8800: loss 2.6425868248939515, time 0.6526370048522949
Iter 8900: loss 2.652915148735046, time 0.6499059200286865
Iter 9000: loss 2.6580804562568665, time 0.22553634643554688
Test bucket 0: loss 2.5327675342559814, time 0.15353870391845703
Test bucket 1: loss 3.2112231254577637, time 0.22441554069519043
Test bucket 2: loss 2.8841724395751953, time 0.26473259925842285
Test bucket 3: loss 3.2444772720336914, time 0.34448933601379395
Test bucket 4: loss 2.9602460861206055, time 0.4356081485748291
Test bucket 5: loss 3.171501636505127, time 0.5267179012298584
```

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```
Test bucket 1: loss 2.9201126098632812, time 0.2228379249572754
Test bucket 2: loss 2.842639923095703, time 0.26696348190307617
Test bucket 3: loss 2.992037296295166, time 0.3535728454589844
Test bucket 4: loss 2.7820887565612793, time 0.42255377769470215
Test bucket 5: loss 3.048442840576172, time 0.5142779350280762
Iter 10100: loss 2.5465527272224424, time 0.22018218040466309
Iter 10200: loss 2.5687870001792907, time 0.396975040435791
Iter 10300: loss 2.5374316799640657, time 0.21616530418395996
Iter 10400: loss 2.5258736670017243, time 0.21873974800109863
Iter 10500: loss 2.48261723279953, time 0.2175307273864746
Iter 10600: loss 2.4721818661689756, time 0.2170734405517578
Iter 10700: loss 2.5063261556625367, time 0.7844550609588623
Iter 10800: loss 2.508521965742111, time 0.22655010223388672
Iter 10900: loss 2.496350244283676, time 0.22139477729797363
Iter 11000: loss 2.5255261135101317, time 0.3975868225097656
Test bucket 0: loss 2.5218396186828613, time 0.15467286109924316
Test bucket 1: loss 2.7143402099609375, time 0.22387313842773438
Test bucket 2: loss 2.7501626014709473, time 0.26265382766723633
Test bucket 3: loss 2.8240227699279785, time 0.3409442901611328
Test bucket 4: loss 2.8387022018432617, time 0.42541027069091797
Test bucket 5: loss 2.8437225818634033, time 0.5201737880706787
Iter 11100: loss 2.420155690908432, time 0.21715760231018066
Iter 11200: loss 2.4625895011425016, time 0.3321199417114258
Iter 11300: loss 2.4522762537002563, time 0.22316479682922363
Iter 11400: loss 2.4170533657073974, time 0.6595816612243652
Iter 11500: loss 2.443330316543579, time 0.6568207740783691
Iter 11600: loss 2.43395467877388, time 0.5199625492095947
Iter 11700: loss 2.3789181303977966, time 0.21720194816589355
Iter 11800: loss 2.4049579334259032, time 0.3284571170806885
Iter 11900: loss 2.371259388923645, time 0.522258996963501
Iter 12000: loss 2.392636855840683, time 0.5056662559509277
Test bucket 0: loss 2.0517349243164062, time 0.1576082706451416
Test bucket 1: loss 2.6733298301696777, time 0.23123908042907715
Test bucket 2: loss 2.6236631870269775, time 0.2633175849914551
Test bucket 3: loss 2.9780349731445312, time 0.339092493057251
Test bucket 4: loss 2.7995550632476807, time 0.4353301525115967
Test bucket 5: loss 2.8706459999084473, time 0.5179319381713867
Iter 12100: loss 2.4021402740478517, time 0.2199399471282959
Iter 12200: loss 2.4073999798297883, time 0.3492915630340576
Iter 12300: loss 2.3235300576686857, time 0.2178668975830078
Iter 12400: loss 2.4057089996337893, time 0.5179989337921143
Iter 12500: loss 2.3625195372104644, time 0.511115550994873
Iter 12600: loss 2.3767488372325896, time 0.2197268009185791
```


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```
Iter 12600: loss 2.3767488372325896, time 0.2197268009185791
Iter 12700: loss 2.366772130727768, time 0.3321080207824707
Iter 12800: loss 2.3521997797489167, time 0.21887707710266113
Iter 12900: loss 2.351635948419571, time 0.5098674297332764
Iter 13000: loss 2.368657661676407, time 0.33646678924560547
Test bucket 0: loss 2.402421474456787, time 0.15172219276428223
Test bucket 1: loss 2.5341086387634277, time 0.21918606758117676
Test bucket 2: loss 2.723322629928589, time 0.26593613624572754
Test bucket 3: loss 2.8719637393951416, time 0.349428653717041
Test bucket 4: loss 2.813617706298828, time 0.4322509765625
Test bucket 5: loss 2.9742376804351807, time 0.5167207717895508
Iter 13100: loss 2.3112393867969514, time 0.2204289436340332
Iter 13200: loss 2.3008423948287966, time 0.21780085563659668
Iter 13300: loss 2.3146582865715026, time 0.3319694995880127
Iter 13400: loss 2.3195932865142823, time 0.328594446182251
Iter 13500: loss 2.3229055905342104, time 0.2153618335723877
Iter 13600: loss 2.2706024837493897, time 0.6527886390686035
Iter 13700: loss 2.2840435028076174, time 0.21871113777160645
Iter 13800: loss 2.304152239561081, time 0.3335559368133545
Iter 13900: loss 2.2455998504161836, time 0.22000408172607422
Iter 14000: loss 2.258630247116089, time 0.21698355674743652
Test bucket 0: loss 2.3071253299713135, time 0.15303325653076172
Test bucket 1: loss 2.5520179271698, time 0.2204887866973877
Test bucket 2: loss 2.7391152381896973, time 0.26463842391967773
Test bucket 3: loss 2.823533535003662, time 0.3444485664367676
Test bucket 4: loss 2.7587428092956543, time 0.43067169189453125
Test bucket 5: loss 2.734966993331909, time 0.5127582550048828
Iter 14100: loss 2.2552288615703584, time 0.5196707248687744
Iter 14200: loss 2.320509909391403, time 0.22313880920410156
Iter 14300: loss 2.300918416976929, time 0.33327722549438477
Iter 14400: loss 2.2650514471530916, time 0.2168891429901123
Iter 14500: loss 2.2939620447158813, time 0.5069625377655029
Iter 14600: loss 2.203347682952881, time 0.2225956916809082
Iter 14700: loss 2.2359731650352477, time 0.3353612422943115
Iter 14800: loss 2.2512208724021914, time 0.3974437713623047
Iter 14900: loss 2.285194605588913, time 0.5204229354858398
Iter 15000: loss 2.2023117005825044, time 0.22037911415100098
Test bucket 0: loss 1.9982786178588867, time 0.15868091583251953
Test bucket 1: loss 2.4789018630981445, time 0.2232377529144287
Test bucket 2: loss 2.6456480026245117, time 0.26637911796569824
Test bucket 3: loss 2.7727901935577393, time 0.3378634452819824
Test bucket 4: loss 2.7424378395080566, time 0.42687034606933594
Test bucket 5: loss 2.783897876739502, time 0.5197646617889404
```

 PuTTY (inactive)


```
Test bucket 0: loss 1.9982786178588867, time 0.15868091583251953
Test bucket 1: loss 2.4789018630981445, time 0.2232377529144287
Test bucket 2: loss 2.6456480026245117, time 0.26637911796569824
Test bucket 3: loss 2.7727901935577393, time 0.3378634452819824
Test bucket 4: loss 2.7424378395080566, time 0.42687034606933594
Test bucket 5: loss 2.783897876739502, time 0.5197646617889404
Iter 15100: loss 2.267461279630661, time 0.3365466594696045
Iter 15200: loss 2.2551102364063262, time 0.22003579139709473
Iter 15300: loss 2.191489044427872, time 0.2153186798095703
Iter 15400: loss 2.252888696193695, time 0.5135107040405273
Iter 15500: loss 2.23857852101326, time 0.3317270278930664
Iter 15600: loss 2.2731337213516234, time 0.21436524391174316
Iter 15700: loss 2.1887519085407257, time 0.5109214782714844
Iter 15800: loss 2.1562873804569245, time 0.6588125228881836
Iter 15900: loss 2.1497457003593445, time 0.5102107524871826
Iter 16000: loss 2.2202027428150175, time 0.21487903594970703
Test bucket 0: loss 2.1628386974334717, time 0.15412664413452148
Test bucket 1: loss 2.339334487915039, time 0.22170305252075195
Test bucket 2: loss 2.583597421646118, time 0.2637600898742676
Test bucket 3: loss 2.7623322010040283, time 0.3362867832183838
Test bucket 4: loss 2.7527410984039307, time 0.4233531951904297
Test bucket 5: loss 2.8975489139556885, time 0.5163347721099854
Iter 16100: loss 2.210935218334198, time 0.21993541717529297
Iter 16200: loss 2.1873189640045165, time 0.32772278785705566
Iter 16300: loss 2.1675243270397186, time 0.33542704582214355
Iter 16400: loss 2.1803139126300812, time 0.22548484802246094
Iter 16500: loss 2.179705020189285, time 0.2164912223815918
Iter 16600: loss 2.1879294192790986, time 0.32917237281799316
Iter 16700: loss 2.2040135300159456, time 0.33190178871154785
Iter 16800: loss 2.126707640886307, time 0.33014678955078125
Iter 16900: loss 2.158260842561722, time 0.3280198574066162
Iter 17000: loss 2.1843294489383696, time 0.39432477951049805
Test bucket 0: loss 1.9189045429229736, time 0.14667057991027832
Test bucket 1: loss 2.407992362976074, time 0.22763919830322266
Test bucket 2: loss 2.390017032623291, time 0.2622387409210205
Test bucket 3: loss 2.599665641784668, time 0.33506178855895996
Test bucket 4: loss 2.422525405883789, time 0.4317142963409424
Test bucket 5: loss 2.5985355377197266, time 0.5142130851745605
Iter 17100: loss 2.2036368584632875, time 0.32468509674072266
Iter 17200: loss 2.1731252455711365, time 0.5091249942779541
Iter 17300: loss 2.101500103473663, time 0.22037124633789062
Iter 17400: loss 2.1890852034091948, time 0.420243501663208
Iter 17500: loss 2.0890311408042908, time 0.21611618995666504
```


 PuTTY (inactive)

```
Iter 17600: loss 2.1532701551914215, time 0.5164227485656738
Iter 17700: loss 2.1417032742500304, time 0.3948831558227539
Iter 17800: loss 2.174484958648682, time 0.328045129776001
Iter 17900: loss 2.1188641595840454, time 0.2157590389251709
Iter 18000: loss 2.1670653009414673, time 0.21503567695617676
Test bucket 0: loss 1.9358865022659302, time 0.15090060234069824
Test bucket 1: loss 2.557506799697876, time 0.2260417938232422
Test bucket 2: loss 2.41300630569458, time 0.26297497749328613
Test bucket 3: loss 2.647803783416748, time 0.34633612632751465
Test bucket 4: loss 2.480865955352783, time 0.44107699394226074
Test bucket 5: loss 2.7970197200775146, time 0.5156779289245605
Iter 18100: loss 2.1551081740856173, time 0.21815919876098633
Iter 18200: loss 2.105514208078384, time 0.22266912460327148
Iter 18300: loss 2.1243057692050935, time 0.22132635116577148
Iter 18400: loss 2.079256293773651, time 0.3328979015350342
Iter 18500: loss 2.094200986623764, time 0.7825586795806885
Iter 18600: loss 2.095650272369385, time 0.6527378559112549
Iter 18700: loss 2.008966361284256, time 0.21854257583618164
Iter 18800: loss 2.0961914896965026, time 0.2166152000427246
Iter 18900: loss 2.173020578622818, time 0.40041637420654297
Iter 19000: loss 2.087756062746048, time 0.2171323299407959
Test bucket 0: loss 2.039457082748413, time 0.15400981903076172
Test bucket 1: loss 2.485788583755493, time 0.2213759422302246
Test bucket 2: loss 2.4843637943267822, time 0.26448583602905273
Test bucket 3: loss 2.783578872680664, time 0.3344745635986328
Test bucket 4: loss 2.763845920562744, time 0.4266676902770996
Test bucket 5: loss 2.5572855472564697, time 0.5305190086364746
Iter 19100: loss 2.0874904561042786, time 0.2166612148284912
Iter 19200: loss 2.137723114490509, time 0.22266411781311035
Iter 19300: loss 2.033715866804123, time 0.217193603515625
Iter 19400: loss 2.1034226143360137, time 0.6485106945037842
Iter 19500: loss 2.100615677833557, time 0.21585965156555176
Iter 19600: loss 2.128760960102081, time 0.21622323989868164
Iter 19700: loss 2.0955670630931853, time 0.21780037879943848
Iter 19800: loss 2.1208937418460847, time 0.21726512908935547
Iter 19900: loss 2.050928167104721, time 0.2149343490600586
Iter 20000: loss 2.062524973154068, time 0.21858811378479004
Test bucket 0: loss 1.7134562730789185, time 0.15021657943725586
Test bucket 1: loss 2.603827476501465, time 0.22087359428405762
Test bucket 2: loss 2.542764663696289, time 0.2634871006011963
Test bucket 3: loss 2.6095035076141357, time 0.3350844383239746
Test bucket 4: loss 2.3607101440429688, time 0.43663978576660156
Test bucket 5: loss 2.722623825073242, time 0.5241248607635498
```

 PuTTY (inactive)


```
Test bucket 5: loss 2.722623825073242, time 0.5241248607635498
Iter 20100: loss 2.116844083070755, time 0.33634305000305176
Iter 20200: loss 2.08819944024086, time 0.6504693031311035
Iter 20300: loss 2.073420763015747, time 0.517949104309082
Iter 20400: loss 2.0898444986343385, time 0.33641481399536133
Iter 20500: loss 2.0929664039611815, time 0.21541190147399902
Iter 20600: loss 2.0762871980667112, time 0.32575511932373047
Iter 20700: loss 2.004641877412796, time 0.21510028839111328
Iter 20800: loss 2.0753047108650207, time 0.3286607265472412
Iter 20900: loss 2.0347176361083985, time 0.22108125686645508
Iter 21000: loss 2.056731399297714, time 0.21431493759155273
Test bucket 0: loss 2.1129186153411865, time 0.15105247497558594
Test bucket 1: loss 2.529641628265381, time 0.22363662719726562
Test bucket 2: loss 2.4400157928466797, time 0.26954102516174316
Test bucket 3: loss 2.6654052734375, time 0.3350832462310791
Test bucket 4: loss 2.451432704925537, time 0.4303619861602783
Test bucket 5: loss 2.517275333404541, time 0.5179879665374756
Iter 21100: loss 2.028754757642746, time 0.3328990936279297
Iter 21200: loss 2.0309590637683868, time 0.2190546989440918
Iter 21300: loss 1.9805770850181579, time 0.3265266418457031
Iter 21400: loss 1.9999688136577607, time 0.21677708625793457
Iter 21500: loss 1.9981890428066253, time 0.6466186046600342
Iter 21600: loss 1.997959234714508, time 0.2170543670654297
Iter 21700: loss 2.0496742045879364, time 0.21950864791870117
Iter 21800: loss 2.0399477565288544, time 0.7873711585998535
Iter 21900: loss 2.026617592573166, time 0.3375880718231201
Iter 22000: loss 2.058547476530075, time 0.33016490936279297
Test bucket 0: loss 2.0965569019317627, time 0.15182280540466309
Test bucket 1: loss 2.4065914154052734, time 0.223097562789917
Test bucket 2: loss 2.4294183254241943, time 0.26740384101867676
Test bucket 3: loss 2.6739249229431152, time 0.3388946056365967
Test bucket 4: loss 2.606311559677124, time 0.4307544231414795
Test bucket 5: loss 2.611304998397827, time 0.5221302509307861
Iter 22100: loss 1.9689411473274232, time 0.4039022922515869
Iter 22200: loss 2.0404945933818817, time 0.39698028564453125
Iter 22300: loss 2.0290218710899355, time 0.7914972305297852
Iter 22400: loss 1.9606348085403442, time 0.21391940116882324
Iter 22500: loss 1.9921906793117523, time 0.32604455947875977
Iter 22600: loss 2.0405414378643036, time 0.39560651779174805
Iter 22700: loss 2.0298019921779633, time 0.21756720542907715
Iter 22800: loss 2.022055141925812, time 0.3375849723815918
Iter 22900: loss 2.0114144706726074, time 0.33700990676879883
Iter 23000: loss 2.0090902602672576, time 0.21396899223327637
```

 PuTTY (inactive)


```
Iter 23000: loss 2.0090902602672576, time 0.21396899223327637
Test bucket 0: loss 2.2504940032958984, time 0.15125203132629395
Test bucket 1: loss 2.626657485961914, time 0.21979784965515137
Test bucket 2: loss 2.535414457321167, time 0.26427340507507324
Test bucket 3: loss 2.39422607421875, time 0.347491979598999
Test bucket 4: loss 2.48770809173584, time 0.4360666275024414
Test bucket 5: loss 2.628823757171631, time 0.5204944610595703
Iter 23100: loss 1.9739180135726928, time 0.5037682056427002
Iter 23200: loss 1.9501934492588042, time 0.5141057968139648
Iter 23300: loss 1.9862774777412415, time 0.21674633026123047
Iter 23400: loss 1.9865673303604126, time 0.792231559753418
Iter 23500: loss 1.9321376168727875, time 0.6556265354156494
Iter 23600: loss 1.9831316995620727, time 0.33617353439331055
Iter 23700: loss 1.9160899388790131, time 0.21596837043762207
Iter 23800: loss 1.9703070676326753, time 0.33687877655029297
Iter 23900: loss 1.9875079429149627, time 0.6585025787353516
Iter 24000: loss 2.020816960334778, time 0.5136852264404297
Test bucket 0: loss 2.083012104034424, time 0.1579723358154297
Test bucket 1: loss 2.3154892921447754, time 0.23325800895690918
Test bucket 2: loss 2.4249348640441895, time 0.26453638076782227
Test bucket 3: loss 2.5262646675109863, time 0.34162235260009766
Test bucket 4: loss 2.3970541954040527, time 0.42739152908325195
Test bucket 5: loss 2.7878081798553467, time 0.5170125961303711
Iter 24100: loss 1.9836225748062133, time 0.22002005577087402
Iter 24200: loss 1.973355189561844, time 0.33100152015686035
Iter 24300: loss 1.926238569021225, time 0.3327314853668213
Iter 24400: loss 1.966112493276596, time 0.2206275463104248
Iter 24500: loss 1.9128168988227845, time 0.7892999649047852
Iter 24600: loss 1.9383454632759094, time 0.6449546813964844
Iter 24700: loss 1.9440296125411987, time 0.4017908573150635
Iter 24800: loss 2.0198374915122987, time 0.21568870544433594
Iter 24900: loss 1.9172333872318268, time 0.21791839599609375
Iter 25000: loss 1.9036774337291718, time 0.6544501781463623
Test bucket 0: loss 2.036055088043213, time 0.15121030807495117
Test bucket 1: loss 2.2500131130218506, time 0.22361040115356445
Test bucket 2: loss 2.378909111022949, time 0.2632274627685547
Test bucket 3: loss 2.5077474117279053, time 0.3397023677825928
Test bucket 4: loss 2.5177907943725586, time 0.4323244094848633
Test bucket 5: loss 2.6100945472717285, time 0.5180873870849609
Iter 25100: loss 1.8837535178661347, time 0.33599066734313965
Iter 25200: loss 1.9406389582157135, time 0.3332035541534424
Iter 25300: loss 1.8900599670410156, time 0.21960687637329102
Iter 25400: loss 1.946382908821106, time 0.21943259239196777
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 PuTTY (inactive)

```
Iter 25400: loss 1.946382908821106, time 0.21943259239196777
Iter 25500: loss 1.9384262001514434, time 0.21599936485290527
Iter 25600: loss 1.9227660310268402, time 0.3990180492401123
Iter 25700: loss 1.9605188024044038, time 0.5198929309844971
Iter 25800: loss 1.9593940544128419, time 0.33899712562561035
Iter 25900: loss 1.9587033092975616, time 0.5129721164703369
Iter 26000: loss 1.9446957576274873, time 0.6459319591522217
Test bucket 0: loss 1.7840099334716797, time 0.14994406700134277
Test bucket 1: loss 2.502702474594116, time 0.2201371192932129
Test bucket 2: loss 2.4245123863220215, time 0.2649247646331787
Test bucket 3: loss 2.5473897457122803, time 0.3482811450958252
Test bucket 4: loss 2.62918758392334, time 0.43265819549560547
Test bucket 5: loss 2.79038405418396, time 0.5257556438446045
Iter 26100: loss 1.9354506039619446, time 0.5113763809204102
Iter 26200: loss 1.9520282983779906, time 0.2199554443359375
Iter 26300: loss 1.9434345865249634, time 0.3331427574157715
Iter 26400: loss 1.8958368217945099, time 0.22094488143920898
Iter 26500: loss 1.9300484442710877, time 0.21909427642822266
Iter 26600: loss 1.9246825385093689, time 0.5158288478851318
Iter 26700: loss 1.9119018054008483, time 0.7913286685943604
Iter 26800: loss 1.9928764033317565, time 0.2198925018310547
Iter 26900: loss 1.952648071050644, time 0.33063602447509766
Iter 27000: loss 1.9636521708965302, time 0.21549201011657715
Test bucket 0: loss 1.6786437034606934, time 0.15660548210144043
Test bucket 1: loss 2.7066235542297363, time 0.22269725799560547
Test bucket 2: loss 2.522952079772949, time 0.270153284072876
Test bucket 3: loss 2.4366114139556885, time 0.33413171768188477
Test bucket 4: loss 2.508145332336426, time 0.42571139335632324
Test bucket 5: loss 2.560703754425049, time 0.5146863460540771
Iter 27100: loss 1.946645143032074, time 0.2140495777130127
Iter 27200: loss 1.9097727346420288, time 0.3335692882537842
Iter 27300: loss 1.8721386039257049, time 0.5192763805389404
Iter 27400: loss 1.876555927991867, time 0.39792752265930176
Iter 27500: loss 1.9107896077632904, time 0.6481337547302246
Iter 27600: loss 1.9048265326023102, time 0.5118882656097412
Iter 27700: loss 1.8739005208015442, time 0.21816158294677734
Iter 27800: loss 1.8821414601802826, time 0.21440410614013672
Iter 27900: loss 1.8973301684856414, time 0.21239495277404785
Iter 28000: loss 1.8756716561317444, time 0.33074426651000977
Test bucket 0: loss 1.8957245349884033, time 0.15636277198791504
Test bucket 1: loss 2.427772045135498, time 0.22018146514892578
Test bucket 2: loss 2.4261486530303955, time 0.2636415958404541
Test bucket 3: loss 2.481095790863037, time 0.33505916595458984
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 PuTTY (inactive)

```
Test bucket 3: loss 2.481095790863037, time 0.33505916595458984
Test bucket 4: loss 2.4137911796569824, time 0.4326193332672119
Test bucket 5: loss 2.5592267513275146, time 0.5239572525024414
Iter 28100: loss 1.9322800886631013, time 0.6497395038604736
Iter 28200: loss 1.8976384782791138, time 0.22829151153564453
Iter 28300: loss 1.959025160074234, time 0.3435516357421875
Iter 28400: loss 1.9171232438087464, time 0.40625715255737305
Iter 28500: loss 1.8582133960723877, time 0.33820199966430664
Iter 28600: loss 1.886248891353607, time 0.511162519454956
Iter 28700: loss 1.9585080826282502, time 0.33917784690856934
Iter 28800: loss 1.8813480567932128, time 0.33111143112182617
Iter 28900: loss 1.8674846732616424, time 0.2202613353729248
Iter 29000: loss 1.882440060377121, time 0.341705322265625
Test bucket 0: loss 1.9486820697784424, time 0.15547442436218262
Test bucket 1: loss 2.31984281539917, time 0.2220466136932373
Test bucket 2: loss 2.4182848930358887, time 0.2696835994720459
Test bucket 3: loss 2.5788769721984863, time 0.34084486961364746
Test bucket 4: loss 2.5602831840515137, time 0.43415307998657227
Test bucket 5: loss 2.793524742126465, time 0.5168354511260986
Iter 29100: loss 1.9005150496959686, time 0.2178051471710205
Iter 29200: loss 1.8054890370368957, time 0.2239236831665039
Iter 29300: loss 1.876233686208725, time 0.21980738639831543
Iter 29400: loss 1.8926740419864654, time 0.21843743324279785
Iter 29500: loss 1.8459130609035492, time 0.3409311771392822
Iter 29600: loss 1.896986060142517, time 0.21938467025756836
Iter 29700: loss 1.8547543168067933, time 0.5145213603973389
Iter 29800: loss 1.8770238852500916, time 0.3316655158996582
Iter 29900: loss 1.8383246564865112, time 0.21396112442016602
Iter 30000: loss 1.8565046608448028, time 0.22425150871276855
Test bucket 0: loss 1.734666109085083, time 0.1546308994293213
Test bucket 1: loss 2.6476521492004395, time 0.22334980964660645
Test bucket 2: loss 2.444732666015625, time 0.2582728862762451
Test bucket 3: loss 2.5024728775024414, time 0.3375685214996338
Test bucket 4: loss 2.461829423904419, time 0.4242067337036133
Test bucket 5: loss 2.411362648010254, time 0.5166130065917969
Iter 30100: loss 1.8680740630626678, time 0.32787275314331055
Iter 30200: loss 1.8568235754966735, time 0.34698033332824707
Iter 30300: loss 1.9121734845638274, time 0.6601583957672119
Iter 30400: loss 1.8499482011795043, time 0.21674036979675293
Iter 30500: loss 1.8503176391124725, time 0.22179317474365234
Iter 30600: loss 1.9301167953014373, time 0.21764206886291504
Iter 30700: loss 1.9263625895977021, time 0.21562910079956055
Iter 30800: loss 1.8415178954601288, time 0.21639394760131836
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 PuTTY (inactive)

```
Iter 30800: loss 1.8415178954601288, time 0.21639394760131836
Iter 30900: loss 1.8391102468967437, time 0.32178211212158203
Iter 31000: loss 1.8356153225898744, time 0.40116453170776367
Test bucket 0: loss 1.7983837127685547, time 0.15146660804748535
Test bucket 1: loss 2.3918843269348145, time 0.2195756435394287
Test bucket 2: loss 2.361626386642456, time 0.2617778778076172
Test bucket 3: loss 2.545680046081543, time 0.33984875679016113
Test bucket 4: loss 2.503784418106079, time 0.4377882480621338
Test bucket 5: loss 2.6744072437286377, time 0.512136697769165
Iter 31100: loss 1.935467106103897, time 0.39708733558654785
Iter 31200: loss 1.8491250360012055, time 0.5205647945404053
Iter 31300: loss 1.9007219696044921, time 0.3991520404815674
Iter 31400: loss 1.7942154502868652, time 0.6513915061950684
Iter 31500: loss 1.792462295293808, time 0.3394601345062256
Iter 31600: loss 1.833866275548935, time 0.21969890594482422
Iter 31700: loss 1.847810788154602, time 0.3943939208984375
Iter 31800: loss 1.8709815382957458, time 0.33000993728637695
Iter 31900: loss 1.8599544835090638, time 0.5119016170501709
Iter 32000: loss 1.7933437812328339, time 0.22163677215576172
Test bucket 0: loss 2.020839214324951, time 0.15842676162719727
Test bucket 1: loss 2.520376682281494, time 0.22245311737060547
Test bucket 2: loss 2.287108898162842, time 0.2636582851409912
Test bucket 3: loss 2.5787787437438965, time 0.3477919101715088
Test bucket 4: loss 2.507448434829712, time 0.430497407913208
Test bucket 5: loss 2.599839925765991, time 0.5229310989379883
Iter 32100: loss 1.8368729293346404, time 0.340320348739624
Iter 32200: loss 1.8668065905570983, time 0.7914860248565674
Iter 32300: loss 1.8655352544784547, time 0.3315582275390625
Iter 32400: loss 1.7750608479976655, time 0.21526145935058594
Iter 32500: loss 1.7941745340824127, time 0.34264659881591797
Iter 32600: loss 1.803850017786026, time 0.2225484848022461
Iter 32700: loss 1.822410364151001, time 0.5174274444580078
Iter 32800: loss 1.8538226640224458, time 0.22022151947021484
Iter 32900: loss 1.8619991791248323, time 0.524383544921875
Iter 33000: loss 1.8239289927482605, time 0.21611785888671875
Test bucket 0: loss 1.907381534576416, time 0.1512126922607422
Test bucket 1: loss 2.189498186111145, time 0.22684359550476074
Test bucket 2: loss 2.2835867404937744, time 0.26548171043395996
Test bucket 3: loss 2.445326328277588, time 0.34331679344177246
Test bucket 4: loss 2.51950740814209, time 0.429274320602417
Test bucket 5: loss 2.509958028793335, time 0.5171792507171631
Iter 33100: loss 1.7873741006851196, time 0.522852897644043
Iter 33200: loss 1.8585931980609893, time 0.6434228420257568
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Iter 33300: loss 1.8431566774845123, time 0.2226119041442871
Iter 33400: loss 1.826191029548645, time 0.21897339820861816
Iter 33500: loss 1.8159765207767486, time 0.3409695625305176
Iter 33600: loss 1.8623936975002289, time 0.7893362045288086
Iter 33700: loss 1.8660987627506256, time 0.32851696014404297
Iter 33800: loss 1.7808185601234436, time 0.21969008445739746
Iter 33900: loss 1.8178972804546356, time 0.3404083251953125
Iter 34000: loss 1.806809253692627, time 0.32822585105895996
```