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1 /usr/local/bin/python3.8 "/Users/surajvaddi/Desktop
/TarPrint Full Journey/Machine Learning Code/Neural
-Network-NO-test.py"
2 ['norm_imperVIOUS' 'tan_imperVIOUS' '
norm_imperVIOUS' ...]
3 ['norm_imperVIOUS' 'dry_pervious' 'norm_pervious']
4 [2 5 2 ... 2 0 3]
5 2020-09-03 19:18:30.252463: I tensorflow/core/
platform/cpu_feature_guard.cc:142] This TensorFlow
binary is optimized with oneAPI Deep Neural Network
Library (oneDNN)to use the following CPU
instructions in performance-critical operations:
AVX2 FMA
6 To enable them in other operations, rebuild
TensorFlow with the appropriate compiler flags.
7 2020-09-03 19:18:30.262687: I tensorflow/compiler/
xla/service/service.cc:168] XLA service
0x7feac5584aa0 initialized for platform Host (this
does not guarantee that XLA will be used). Devices:
8 2020-09-03 19:18:30.262697: I tensorflow/compiler/
xla/service/service.cc:176] StreamExecutor device
(0): Host, Default Version
9 [[0.30362644 0.32236881 0.29612949 ... 0.37484746 0
.38234441 0.32236881]
10 [0.38498641 0.33609925 0.26582395 ... 0.35748738 0
.32998835 0.25665761]
11 [0.32926562 0.33627127 0.29774019 ... 0.37830518 0
.381808 0.31875714]
12 ...
13 [0.31306804 0.32338897 0.28554558 ... 0.40251605 0
.40595636 0.35435174]
14 [0.42824723 0.39255996 0.27955027 ... 0.26765452 0
.28549815 0.19925392]
15 [0.21592634 0.31118796 0.19052324 ... 0.38739725 0
.450905 0.28578486]]
16 (2138, 9)
17 (2138, 7)
18 Epoch 1/350
19 143/143 [=====] - 0s 627us
/step - loss: 1.5381 - accuracy: 0.4144
20 Epoch 2/350
21 143/143 [=====] - 0s 579us
/step - loss: 0.9419 - accuracy: 0.6660
22 Epoch 3/350

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23 143/143 [=====] - 0s 641us
  /step - loss: 0.7440 - accuracy: 0.7456
24 Epoch 4/350
25 143/143 [=====] - 0s 610us
  /step - loss: 0.6624 - accuracy: 0.7610
26 Epoch 5/350
27 143/143 [=====] - 0s 667us
  /step - loss: 0.6177 - accuracy: 0.7792
28 Epoch 6/350
29 143/143 [=====] - 0s 626us
  /step - loss: 0.5903 - accuracy: 0.7881
30 Epoch 7/350
31 143/143 [=====] - 0s 589us
  /step - loss: 0.5844 - accuracy: 0.7961
32 Epoch 8/350
33 143/143 [=====] - 0s 749us
  /step - loss: 0.5658 - accuracy: 0.7970
34 Epoch 9/350
35 143/143 [=====] - 0s 688us
  /step - loss: 0.5488 - accuracy: 0.7933
36 Epoch 10/350
37 143/143 [=====] - 0s 682us
  /step - loss: 0.5323 - accuracy: 0.8092
38 Epoch 11/350
39 143/143 [=====] - 0s 612us
  /step - loss: 0.5319 - accuracy: 0.8036
40 Epoch 12/350
41 143/143 [=====] - 0s 604us
  /step - loss: 0.5250 - accuracy: 0.8026
42 Epoch 13/350
43 143/143 [=====] - 0s 602us
  /step - loss: 0.5192 - accuracy: 0.8148
44 Epoch 14/350
45 143/143 [=====] - 0s 594us
  /step - loss: 0.5039 - accuracy: 0.8157
46 Epoch 15/350
47 143/143 [=====] - 0s 634us
  /step - loss: 0.4992 - accuracy: 0.8269
48 Epoch 16/350
49 143/143 [=====] - 0s 645us
  /step - loss: 0.4807 - accuracy: 0.8302
50 Epoch 17/350
51 143/143 [=====] - 0s 597us
  /step - loss: 0.4740 - accuracy: 0.8349
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52 Epoch 18/350
53 143/143 [=====] - 0s 599us
    /step - loss: 0.4709 - accuracy: 0.8382
54 Epoch 19/350
55 143/143 [=====] - 0s 573us
    /step - loss: 0.4729 - accuracy: 0.8293
56 Epoch 20/350
57 143/143 [=====] - 0s 648us
    /step - loss: 0.4770 - accuracy: 0.8260
58 Epoch 21/350
59 143/143 [=====] - 0s 640us
    /step - loss: 0.4694 - accuracy: 0.8307
60 Epoch 22/350
61 143/143 [=====] - 0s 593us
    /step - loss: 0.4650 - accuracy: 0.8349
62 Epoch 23/350
63 143/143 [=====] - 0s 600us
    /step - loss: 0.4513 - accuracy: 0.8377
64 Epoch 24/350
65 143/143 [=====] - 0s 570us
    /step - loss: 0.4736 - accuracy: 0.8316
66 Epoch 25/350
67 143/143 [=====] - 0s 656us
    /step - loss: 0.4572 - accuracy: 0.8326
68 Epoch 26/350
69 143/143 [=====] - 0s 924us
    /step - loss: 0.4573 - accuracy: 0.8414
70 Epoch 27/350
71 143/143 [=====] - 0s 664us
    /step - loss: 0.4432 - accuracy: 0.8386
72 Epoch 28/350
73 143/143 [=====] - 0s 570us
    /step - loss: 0.4421 - accuracy: 0.8414
74 Epoch 29/350
75 143/143 [=====] - 0s 589us
    /step - loss: 0.4496 - accuracy: 0.8386
76 Epoch 30/350
77 143/143 [=====] - 0s 630us
    /step - loss: 0.4371 - accuracy: 0.8447
78 Epoch 31/350
79 143/143 [=====] - 0s 570us
    /step - loss: 0.4295 - accuracy: 0.8428
80 Epoch 32/350
81 143/143 [=====] - 0s 656us
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81 /step - loss: 0.4304 - accuracy: 0.8461
82 Epoch 33/350
83 143/143 [=====] - 0s
600us/step - loss: 0.4367 - accuracy: 0.8414
84 Epoch 34/350
85 143/143 [=====] - 0s
595us/step - loss: 0.4396 - accuracy: 0.8438
86 Epoch 35/350
87 143/143 [=====] - 0s
605us/step - loss: 0.4174 - accuracy: 0.8428
88 Epoch 36/350
89 143/143 [=====] - 0s
596us/step - loss: 0.4172 - accuracy: 0.8457
90 Epoch 37/350
91 143/143 [=====] - 0s
656us/step - loss: 0.4146 - accuracy: 0.8536
92 Epoch 38/350
93 143/143 [=====] - 0s
600us/step - loss: 0.4393 - accuracy: 0.8386
94 Epoch 39/350
95 143/143 [=====] - 0s
576us/step - loss: 0.4080 - accuracy: 0.8499
96 Epoch 40/350
97 143/143 [=====] - 0s
618us/step - loss: 0.4223 - accuracy: 0.8461
98 Epoch 41/350
99 143/143 [=====] - 0s
588us/step - loss: 0.4230 - accuracy: 0.8461
100 Epoch 42/350
101 143/143 [=====] - 0s
654us/step - loss: 0.4095 - accuracy: 0.8457
102 Epoch 43/350
103 143/143 [=====] - 0s
601us/step - loss: 0.4113 - accuracy: 0.8489
104 Epoch 44/350
105 143/143 [=====] - 0s
582us/step - loss: 0.4063 - accuracy: 0.8438
106 Epoch 45/350
107 143/143 [=====] - 0s
610us/step - loss: 0.4126 - accuracy: 0.8485
108 Epoch 46/350
109 143/143 [=====] - 0s
570us/step - loss: 0.4078 - accuracy: 0.8513
110 Epoch 47/350
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111 143/143 [=====] - 0s
    687us/step - loss: 0.3860 - accuracy: 0.8531
112 Epoch 48/350
113 143/143 [=====] - 0s
    591us/step - loss: 0.3947 - accuracy: 0.8527
114 Epoch 49/350
115 143/143 [=====] - 0s
    603us/step - loss: 0.4122 - accuracy: 0.8475
116 Epoch 50/350
117 143/143 [=====] - 0s
    618us/step - loss: 0.3914 - accuracy: 0.8527
118 Epoch 51/350
119 143/143 [=====] - 0s
    570us/step - loss: 0.3963 - accuracy: 0.8522
120 Epoch 52/350
121 143/143 [=====] - 0s
    656us/step - loss: 0.3992 - accuracy: 0.8517
122 Epoch 53/350
123 143/143 [=====] - 0s
    628us/step - loss: 0.3987 - accuracy: 0.8489
124 Epoch 54/350
125 143/143 [=====] - 0s
    606us/step - loss: 0.3785 - accuracy: 0.8611
126 Epoch 55/350
127 143/143 [=====] - 0s
    604us/step - loss: 0.4058 - accuracy: 0.8494
128 Epoch 56/350
129 143/143 [=====] - 0s
    578us/step - loss: 0.3991 - accuracy: 0.8545
130 Epoch 57/350
131 143/143 [=====] - 0s
    690us/step - loss: 0.3788 - accuracy: 0.8616
132 Epoch 58/350
133 143/143 [=====] - 0s
    626us/step - loss: 0.3720 - accuracy: 0.8601
134 Epoch 59/350
135 143/143 [=====] - 0s
    595us/step - loss: 0.3708 - accuracy: 0.8644
136 Epoch 60/350
137 143/143 [=====] - 0s
    606us/step - loss: 0.3703 - accuracy: 0.8625
138 Epoch 61/350
139 143/143 [=====] - 0s
    571us/step - loss: 0.3908 - accuracy: 0.8564
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140 Epoch 62/350
141 143/143 [=====] - 0s
    655us/step - loss: 0.3889 - accuracy: 0.8559
142 Epoch 63/350
143 143/143 [=====] - 0s
    604us/step - loss: 0.3696 - accuracy: 0.8597
144 Epoch 64/350
145 143/143 [=====] - 0s
    620us/step - loss: 0.3997 - accuracy: 0.8531
146 Epoch 65/350
147 143/143 [=====] - 0s
    587us/step - loss: 0.3678 - accuracy: 0.8634
148 Epoch 66/350
149 143/143 [=====] - 0s
    579us/step - loss: 0.3635 - accuracy: 0.8639
150 Epoch 67/350
151 143/143 [=====] - 0s
    673us/step - loss: 0.3489 - accuracy: 0.8714
152 Epoch 68/350
153 143/143 [=====] - 0s
    602us/step - loss: 0.3557 - accuracy: 0.8573
154 Epoch 69/350
155 143/143 [=====] - 0s
    599us/step - loss: 0.3716 - accuracy: 0.8606
156 Epoch 70/350
157 143/143 [=====] - 0s
    635us/step - loss: 0.3592 - accuracy: 0.8630
158 Epoch 71/350
159 143/143 [=====] - 0s
    570us/step - loss: 0.3597 - accuracy: 0.8695
160 Epoch 72/350
161 143/143 [=====] - 0s
    617us/step - loss: 0.3437 - accuracy: 0.8737
162 Epoch 73/350
163 143/143 [=====] - 0s
    671us/step - loss: 0.3584 - accuracy: 0.8681
164 Epoch 74/350
165 143/143 [=====] - 0s
    638us/step - loss: 0.3628 - accuracy: 0.8639
166 Epoch 75/350
167 143/143 [=====] - 0s
    627us/step - loss: 0.3488 - accuracy: 0.8616
168 Epoch 76/350
169 143/143 [=====] - 0s
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169 552us/step - loss: 0.3529 - accuracy: 0.8672
170 Epoch 77/350
171 143/143 [=====] - 0s
    656us/step - loss: 0.3574 - accuracy: 0.8616
172 Epoch 78/350
173 143/143 [=====] - 0s
    664us/step - loss: 0.3458 - accuracy: 0.8690
174 Epoch 79/350
175 143/143 [=====] - 0s
    601us/step - loss: 0.3537 - accuracy: 0.8686
176 Epoch 80/350
177 143/143 [=====] - 0s
    603us/step - loss: 0.3536 - accuracy: 0.8639
178 Epoch 81/350
179 143/143 [=====] - 0s
    595us/step - loss: 0.3398 - accuracy: 0.8667
180 Epoch 82/350
181 143/143 [=====] - 0s
    650us/step - loss: 0.3529 - accuracy: 0.8728
182 Epoch 83/350
183 143/143 [=====] - 0s
    605us/step - loss: 0.3486 - accuracy: 0.8667
184 Epoch 84/350
185 143/143 [=====] - 0s
    602us/step - loss: 0.3354 - accuracy: 0.8742
186 Epoch 85/350
187 143/143 [=====] - 0s
    605us/step - loss: 0.3389 - accuracy: 0.8751
188 Epoch 86/350
189 143/143 [=====] - 0s
    557us/step - loss: 0.3265 - accuracy: 0.8789
190 Epoch 87/350
191 143/143 [=====] - 0s
    703us/step - loss: 0.3350 - accuracy: 0.8709
192 Epoch 88/350
193 143/143 [=====] - 0s
    607us/step - loss: 0.3237 - accuracy: 0.8761
194 Epoch 89/350
195 143/143 [=====] - 0s
    583us/step - loss: 0.3401 - accuracy: 0.8761
196 Epoch 90/350
197 143/143 [=====] - 0s
    583us/step - loss: 0.3376 - accuracy: 0.8761
198 Epoch 91/350
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199 143/143 [=====] - 0s
    554us/step - loss: 0.3408 - accuracy: 0.8775
200 Epoch 92/350
201 143/143 [=====] - 0s
    649us/step - loss: 0.3319 - accuracy: 0.8779
202 Epoch 93/350
203 143/143 [=====] - 0s
    660us/step - loss: 0.3296 - accuracy: 0.8761
204 Epoch 94/350
205 143/143 [=====] - 0s
    620us/step - loss: 0.3410 - accuracy: 0.8695
206 Epoch 95/350
207 143/143 [=====] - 0s
    610us/step - loss: 0.3295 - accuracy: 0.8737
208 Epoch 96/350
209 143/143 [=====] - 0s
    573us/step - loss: 0.3359 - accuracy: 0.8761
210 Epoch 97/350
211 143/143 [=====] - 0s
    663us/step - loss: 0.3340 - accuracy: 0.8667
212 Epoch 98/350
213 143/143 [=====] - 0s
    641us/step - loss: 0.3231 - accuracy: 0.8756
214 Epoch 99/350
215 143/143 [=====] - 0s
    596us/step - loss: 0.3335 - accuracy: 0.8709
216 Epoch 100/350
217 143/143 [=====] - 0s
    609us/step - loss: 0.3228 - accuracy: 0.8793
218 Epoch 101/350
219 143/143 [=====] - 0s
    570us/step - loss: 0.3190 - accuracy: 0.8742
220 Epoch 102/350
221 143/143 [=====] - 0s
    641us/step - loss: 0.3251 - accuracy: 0.8714
222 Epoch 103/350
223 143/143 [=====] - 0s
    628us/step - loss: 0.3413 - accuracy: 0.8695
224 Epoch 104/350
225 143/143 [=====] - 0s
    594us/step - loss: 0.3232 - accuracy: 0.8775
226 Epoch 105/350
227 143/143 [=====] - 0s
    606us/step - loss: 0.3287 - accuracy: 0.8746
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228 Epoch 106/350
229 143/143 [=====] - 0s
    570us/step - loss: 0.3166 - accuracy: 0.8817
230 Epoch 107/350
231 143/143 [=====] - 0s
    651us/step - loss: 0.3219 - accuracy: 0.8803
232 Epoch 108/350
233 143/143 [=====] - 0s
    592us/step - loss: 0.3183 - accuracy: 0.8775
234 Epoch 109/350
235 143/143 [=====] - 0s
    591us/step - loss: 0.3145 - accuracy: 0.8779
236 Epoch 110/350
237 143/143 [=====] - 0s
    597us/step - loss: 0.3286 - accuracy: 0.8779
238 Epoch 111/350
239 143/143 [=====] - 0s
    580us/step - loss: 0.3060 - accuracy: 0.8798
240 Epoch 112/350
241 143/143 [=====] - 0s
    652us/step - loss: 0.3309 - accuracy: 0.8704
242 Epoch 113/350
243 143/143 [=====] - 0s
    593us/step - loss: 0.3152 - accuracy: 0.8728
244 Epoch 114/350
245 143/143 [=====] - 0s
    577us/step - loss: 0.3267 - accuracy: 0.8658
246 Epoch 115/350
247 143/143 [=====] - 0s
    640us/step - loss: 0.3060 - accuracy: 0.8812
248 Epoch 116/350
249 143/143 [=====] - 0s
    582us/step - loss: 0.3094 - accuracy: 0.8807
250 Epoch 117/350
251 143/143 [=====] - 0s
    659us/step - loss: 0.3170 - accuracy: 0.8817
252 Epoch 118/350
253 143/143 [=====] - 0s
    583us/step - loss: 0.3321 - accuracy: 0.8770
254 Epoch 119/350
255 143/143 [=====] - 0s
    576us/step - loss: 0.3004 - accuracy: 0.8948
256 Epoch 120/350
257 143/143 [=====] - 0s
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257 703us/step - loss: 0.3159 - accuracy: 0.8817
258 Epoch 121/350
259 143/143 [=====] - 0s
    571us/step - loss: 0.2931 - accuracy: 0.8817
260 Epoch 122/350
261 143/143 [=====] - 0s
    661us/step - loss: 0.2958 - accuracy: 0.8910
262 Epoch 123/350
263 143/143 [=====] - 0s
    601us/step - loss: 0.3091 - accuracy: 0.8793
264 Epoch 124/350
265 143/143 [=====] - 0s
    594us/step - loss: 0.3085 - accuracy: 0.8817
266 Epoch 125/350
267 143/143 [=====] - 0s
    606us/step - loss: 0.3021 - accuracy: 0.8906
268 Epoch 126/350
269 143/143 [=====] - 0s
    596us/step - loss: 0.2915 - accuracy: 0.8920
270 Epoch 127/350
271 143/143 [=====] - 0s
    655us/step - loss: 0.3160 - accuracy: 0.8817
272 Epoch 128/350
273 143/143 [=====] - 0s
    602us/step - loss: 0.2981 - accuracy: 0.8859
274 Epoch 129/350
275 143/143 [=====] - 0s
    577us/step - loss: 0.2961 - accuracy: 0.8803
276 Epoch 130/350
277 143/143 [=====] - 0s
    612us/step - loss: 0.3059 - accuracy: 0.8807
278 Epoch 131/350
279 143/143 [=====] - 0s
    571us/step - loss: 0.2944 - accuracy: 0.8817
280 Epoch 132/350
281 143/143 [=====] - 0s
    686us/step - loss: 0.2932 - accuracy: 0.8924
282 Epoch 133/350
283 143/143 [=====] - 0s
    598us/step - loss: 0.2992 - accuracy: 0.8845
284 Epoch 134/350
285 143/143 [=====] - 0s
    596us/step - loss: 0.3204 - accuracy: 0.8732
286 Epoch 135/350
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287 143/143 [=====] - 0s
    609us/step - loss: 0.2914 - accuracy: 0.8891
288 Epoch 136/350
289 143/143 [=====] - 0s
    573us/step - loss: 0.2977 - accuracy: 0.8868
290 Epoch 137/350
291 143/143 [=====] - 0s
    674us/step - loss: 0.2985 - accuracy: 0.8868
292 Epoch 138/350
293 143/143 [=====] - 0s
    613us/step - loss: 0.2911 - accuracy: 0.8938
294 Epoch 139/350
295 143/143 [=====] - 0s
    598us/step - loss: 0.2986 - accuracy: 0.8887
296 Epoch 140/350
297 143/143 [=====] - 0s
    604us/step - loss: 0.2981 - accuracy: 0.8877
298 Epoch 141/350
299 143/143 [=====] - 0s
    572us/step - loss: 0.2745 - accuracy: 0.8887
300 Epoch 142/350
301 143/143 [=====] - 0s
    654us/step - loss: 0.2908 - accuracy: 0.8845
302 Epoch 143/350
303 143/143 [=====] - 0s
    631us/step - loss: 0.2804 - accuracy: 0.8971
304 Epoch 144/350
305 143/143 [=====] - 0s
    596us/step - loss: 0.3105 - accuracy: 0.8784
306 Epoch 145/350
307 143/143 [=====] - 0s
    610us/step - loss: 0.2919 - accuracy: 0.8803
308 Epoch 146/350
309 143/143 [=====] - 0s
    568us/step - loss: 0.2806 - accuracy: 0.8863
310 Epoch 147/350
311 143/143 [=====] - 0s
    651us/step - loss: 0.2818 - accuracy: 0.8934
312 Epoch 148/350
313 143/143 [=====] - 0s
    608us/step - loss: 0.2920 - accuracy: 0.8915
314 Epoch 149/350
315 143/143 [=====] - 0s
    606us/step - loss: 0.2681 - accuracy: 0.9013
```

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316 Epoch 150/350
317 143/143 [=====] - 0s
    604us/step - loss: 0.2845 - accuracy: 0.8887
318 Epoch 151/350
319 143/143 [=====] - 0s
    578us/step - loss: 0.2770 - accuracy: 0.8910
320 Epoch 152/350
321 143/143 [=====] - 0s
    634us/step - loss: 0.2663 - accuracy: 0.8971
322 Epoch 153/350
323 143/143 [=====] - 0s
    621us/step - loss: 0.2805 - accuracy: 0.8873
324 Epoch 154/350
325 143/143 [=====] - 0s
    625us/step - loss: 0.2901 - accuracy: 0.8901
326 Epoch 155/350
327 143/143 [=====] - 0s
    606us/step - loss: 0.2792 - accuracy: 0.8943
328 Epoch 156/350
329 143/143 [=====] - 0s
    568us/step - loss: 0.2824 - accuracy: 0.8943
330 Epoch 157/350
331 143/143 [=====] - 0s
    650us/step - loss: 0.2600 - accuracy: 0.8962
332 Epoch 158/350
333 143/143 [=====] - 0s
    606us/step - loss: 0.2821 - accuracy: 0.8952
334 Epoch 159/350
335 143/143 [=====] - 0s
    595us/step - loss: 0.2899 - accuracy: 0.8915
336 Epoch 160/350
337 143/143 [=====] - 0s
    631us/step - loss: 0.2748 - accuracy: 0.8943
338 Epoch 161/350
339 143/143 [=====] - 0s
    572us/step - loss: 0.2686 - accuracy: 0.8962
340 Epoch 162/350
341 143/143 [=====] - 0s
    654us/step - loss: 0.2748 - accuracy: 0.8934
342 Epoch 163/350
343 143/143 [=====] - 0s
    605us/step - loss: 0.2737 - accuracy: 0.8910
344 Epoch 164/350
345 143/143 [=====] - 0s
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345 599us/step - loss: 0.2679 - accuracy: 0.9008
346 Epoch 165/350
347 143/143 [=====] - 0s
    613us/step - loss: 0.2657 - accuracy: 0.9008
348 Epoch 166/350
349 143/143 [=====] - 0s
    588us/step - loss: 0.2838 - accuracy: 0.8901
350 Epoch 167/350
351 143/143 [=====] - 0s
    659us/step - loss: 0.2646 - accuracy: 0.8980
352 Epoch 168/350
353 143/143 [=====] - 0s
    603us/step - loss: 0.2560 - accuracy: 0.9032
354 Epoch 169/350
355 143/143 [=====] - 0s
    596us/step - loss: 0.2601 - accuracy: 0.9022
356 Epoch 170/350
357 143/143 [=====] - 0s
    605us/step - loss: 0.2576 - accuracy: 0.9022
358 Epoch 171/350
359 143/143 [=====] - 0s
    594us/step - loss: 0.2684 - accuracy: 0.8966
360 Epoch 172/350
361 143/143 [=====] - 0s
    637us/step - loss: 0.2757 - accuracy: 0.8924
362 Epoch 173/350
363 143/143 [=====] - 0s
    611us/step - loss: 0.2889 - accuracy: 0.8910
364 Epoch 174/350
365 143/143 [=====] - 0s
    580us/step - loss: 0.2690 - accuracy: 0.8985
366 Epoch 175/350
367 143/143 [=====] - 0s
    620us/step - loss: 0.2700 - accuracy: 0.8948
368 Epoch 176/350
369 143/143 [=====] - 0s
    573us/step - loss: 0.2537 - accuracy: 0.9032
370 Epoch 177/350
371 143/143 [=====] - 0s
    672us/step - loss: 0.2560 - accuracy: 0.9018
372 Epoch 178/350
373 143/143 [=====] - 0s
    595us/step - loss: 0.2599 - accuracy: 0.8994
374 Epoch 179/350
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375 143/143 [=====] - 0s
    630us/step - loss: 0.2628 - accuracy: 0.8994
376 Epoch 180/350
377 143/143 [=====] - 0s
    606us/step - loss: 0.2751 - accuracy: 0.8943
378 Epoch 181/350
379 143/143 [=====] - 0s
    570us/step - loss: 0.2526 - accuracy: 0.9004
380 Epoch 182/350
381 143/143 [=====] - 0s
    616us/step - loss: 0.2527 - accuracy: 0.9074
382 Epoch 183/350
383 143/143 [=====] - 0s
    683us/step - loss: 0.2601 - accuracy: 0.8971
384 Epoch 184/350
385 143/143 [=====] - 0s
    619us/step - loss: 0.2835 - accuracy: 0.8952
386 Epoch 185/350
387 143/143 [=====] - 0s
    603us/step - loss: 0.2725 - accuracy: 0.9022
388 Epoch 186/350
389 143/143 [=====] - 0s
    555us/step - loss: 0.2433 - accuracy: 0.9121
390 Epoch 187/350
391 143/143 [=====] - 0s
    681us/step - loss: 0.2641 - accuracy: 0.9013
392 Epoch 188/350
393 143/143 [=====] - 0s
    650us/step - loss: 0.2574 - accuracy: 0.8971
394 Epoch 189/350
395 143/143 [=====] - 0s
    596us/step - loss: 0.2417 - accuracy: 0.9051
396 Epoch 190/350
397 143/143 [=====] - 0s
    605us/step - loss: 0.2560 - accuracy: 0.8952
398 Epoch 191/350
399 143/143 [=====] - 0s
    570us/step - loss: 0.2441 - accuracy: 0.9051
400 Epoch 192/350
401 143/143 [=====] - 0s
    655us/step - loss: 0.2390 - accuracy: 0.9139
402 Epoch 193/350
403 143/143 [=====] - 0s
    603us/step - loss: 0.2494 - accuracy: 0.9013
```

```
404 Epoch 194/350
405 143/143 [=====] - 0s
    622us/step - loss: 0.2591 - accuracy: 0.8999
406 Epoch 195/350
407 143/143 [=====] - 0s
    607us/step - loss: 0.2458 - accuracy: 0.9060
408 Epoch 196/350
409 143/143 [=====] - 0s
    581us/step - loss: 0.2485 - accuracy: 0.9022
410 Epoch 197/350
411 143/143 [=====] - 0s
    656us/step - loss: 0.2441 - accuracy: 0.9055
412 Epoch 198/350
413 143/143 [=====] - 0s
    600us/step - loss: 0.2339 - accuracy: 0.9083
414 Epoch 199/350
415 143/143 [=====] - 0s
    602us/step - loss: 0.2506 - accuracy: 0.9036
416 Epoch 200/350
417 143/143 [=====] - 0s
    655us/step - loss: 0.2533 - accuracy: 0.9027
418 Epoch 201/350
419 143/143 [=====] - 0s
    579us/step - loss: 0.2504 - accuracy: 0.9036
420 Epoch 202/350
421 143/143 [=====] - 0s
    659us/step - loss: 0.2424 - accuracy: 0.9046
422 Epoch 203/350
423 143/143 [=====] - 0s
    602us/step - loss: 0.2345 - accuracy: 0.9065
424 Epoch 204/350
425 143/143 [=====] - 0s
    568us/step - loss: 0.2314 - accuracy: 0.9079
426 Epoch 205/350
427 143/143 [=====] - 0s
    638us/step - loss: 0.2378 - accuracy: 0.9088
428 Epoch 206/350
429 143/143 [=====] - 0s
    610us/step - loss: 0.2430 - accuracy: 0.9065
430 Epoch 207/350
431 143/143 [=====] - 0s
    660us/step - loss: 0.2586 - accuracy: 0.8999
432 Epoch 208/350
433 143/143 [=====] - 0s
```

```
433 598us/step - loss: 0.2382 - accuracy: 0.9139
434 Epoch 209/350
435 143/143 [=====] - 0s
    570us/step - loss: 0.2478 - accuracy: 0.9065
436 Epoch 210/350
437 143/143 [=====] - 0s
    605us/step - loss: 0.2386 - accuracy: 0.9097
438 Epoch 211/350
439 143/143 [=====] - 0s
    636us/step - loss: 0.2412 - accuracy: 0.9079
440 Epoch 212/350
441 143/143 [=====] - 0s
    685us/step - loss: 0.2397 - accuracy: 0.9046
442 Epoch 213/350
443 143/143 [=====] - 0s
    594us/step - loss: 0.2263 - accuracy: 0.9125
444 Epoch 214/350
445 143/143 [=====] - 0s
    576us/step - loss: 0.2463 - accuracy: 0.9027
446 Epoch 215/350
447 143/143 [=====] - 0s
    631us/step - loss: 0.2480 - accuracy: 0.8994
448 Epoch 216/350
449 143/143 [=====] - 0s
    621us/step - loss: 0.2289 - accuracy: 0.9121
450 Epoch 217/350
451 143/143 [=====] - 0s
    660us/step - loss: 0.2260 - accuracy: 0.9107
452 Epoch 218/350
453 143/143 [=====] - 0s
    599us/step - loss: 0.2322 - accuracy: 0.9125
454 Epoch 219/350
455 143/143 [=====] - 0s
    585us/step - loss: 0.2348 - accuracy: 0.9022
456 Epoch 220/350
457 143/143 [=====] - 0s
    608us/step - loss: 0.2277 - accuracy: 0.9153
458 Epoch 221/350
459 143/143 [=====] - 0s
    567us/step - loss: 0.2327 - accuracy: 0.9149
460 Epoch 222/350
461 143/143 [=====] - 0s
    670us/step - loss: 0.2267 - accuracy: 0.9191
462 Epoch 223/350
```

```
463 143/143 [=====] - 0s
    600us/step - loss: 0.2161 - accuracy: 0.9167
464 Epoch 224/350
465 143/143 [=====] - 0s
    594us/step - loss: 0.2300 - accuracy: 0.9055
466 Epoch 225/350
467 143/143 [=====] - 0s
    606us/step - loss: 0.2490 - accuracy: 0.9055
468 Epoch 226/350
469 143/143 [=====] - 0s
    570us/step - loss: 0.2139 - accuracy: 0.9158
470 Epoch 227/350
471 143/143 [=====] - 0s
    672us/step - loss: 0.2105 - accuracy: 0.9298
472 Epoch 228/350
473 143/143 [=====] - 0s
    612us/step - loss: 0.2251 - accuracy: 0.9125
474 Epoch 229/350
475 143/143 [=====] - 0s
    608us/step - loss: 0.2219 - accuracy: 0.9111
476 Epoch 230/350
477 143/143 [=====] - 0s
    634us/step - loss: 0.2736 - accuracy: 0.8999
478 Epoch 231/350
479 143/143 [=====] - 0s
    570us/step - loss: 0.2377 - accuracy: 0.9083
480 Epoch 232/350
481 143/143 [=====] - 0s
    645us/step - loss: 0.2196 - accuracy: 0.9153
482 Epoch 233/350
483 143/143 [=====] - 0s
    632us/step - loss: 0.2396 - accuracy: 0.9032
484 Epoch 234/350
485 143/143 [=====] - 0s
    598us/step - loss: 0.2135 - accuracy: 0.9214
486 Epoch 235/350
487 143/143 [=====] - 0s
    604us/step - loss: 0.2063 - accuracy: 0.9149
488 Epoch 236/350
489 143/143 [=====] - 0s
    570us/step - loss: 0.2179 - accuracy: 0.9153
490 Epoch 237/350
491 143/143 [=====] - 0s
    631us/step - loss: 0.2140 - accuracy: 0.9172
```

```
492 Epoch 238/350
493 143/143 [=====] - 0s
    618us/step - loss: 0.2157 - accuracy: 0.9177
494 Epoch 239/350
495 143/143 [=====] - 0s
    603us/step - loss: 0.2224 - accuracy: 0.9135
496 Epoch 240/350
497 143/143 [=====] - 0s
    611us/step - loss: 0.2207 - accuracy: 0.9121
498 Epoch 241/350
499 143/143 [=====] - 0s
    612us/step - loss: 0.2149 - accuracy: 0.9228
500 Epoch 242/350
501 143/143 [=====] - 0s
    673us/step - loss: 0.2036 - accuracy: 0.9238
502 Epoch 243/350
503 143/143 [=====] - 0s
    602us/step - loss: 0.2317 - accuracy: 0.9041
504 Epoch 244/350
505 143/143 [=====] - 0s
    621us/step - loss: 0.2365 - accuracy: 0.9093
506 Epoch 245/350
507 143/143 [=====] - 0s
    602us/step - loss: 0.2078 - accuracy: 0.9191
508 Epoch 246/350
509 143/143 [=====] - 0s
    568us/step - loss: 0.2333 - accuracy: 0.9097
510 Epoch 247/350
511 143/143 [=====] - 0s
    638us/step - loss: 0.1884 - accuracy: 0.9270
512 Epoch 248/350
513 143/143 [=====] - 0s
    616us/step - loss: 0.2089 - accuracy: 0.9233
514 Epoch 249/350
515 143/143 [=====] - 0s
    580us/step - loss: 0.2128 - accuracy: 0.9139
516 Epoch 250/350
517 143/143 [=====] - 0s
    638us/step - loss: 0.2126 - accuracy: 0.9181
518 Epoch 251/350
519 143/143 [=====] - 0s
    568us/step - loss: 0.2190 - accuracy: 0.9093
520 Epoch 252/350
521 143/143 [=====] - 0s
```

```
521 646us/step - loss: 0.2065 - accuracy: 0.9196
522 Epoch 253/350
523 143/143 [=====] - 0s
    600us/step - loss: 0.2156 - accuracy: 0.9130
524 Epoch 254/350
525 143/143 [=====] - 0s
    578us/step - loss: 0.2002 - accuracy: 0.9294
526 Epoch 255/350
527 143/143 [=====] - 0s
    621us/step - loss: 0.2028 - accuracy: 0.9224
528 Epoch 256/350
529 143/143 [=====] - 0s
    568us/step - loss: 0.1966 - accuracy: 0.9191
530 Epoch 257/350
531 143/143 [=====] - 0s
    634us/step - loss: 0.2019 - accuracy: 0.9196
532 Epoch 258/350
533 143/143 [=====] - 0s
    618us/step - loss: 0.1921 - accuracy: 0.9270
534 Epoch 259/350
535 143/143 [=====] - 0s
    597us/step - loss: 0.2121 - accuracy: 0.9214
536 Epoch 260/350
537 143/143 [=====] - 0s
    607us/step - loss: 0.2232 - accuracy: 0.9116
538 Epoch 261/350
539 143/143 [=====] - 0s
    587us/step - loss: 0.2168 - accuracy: 0.9191
540 Epoch 262/350
541 143/143 [=====] - 0s
    619us/step - loss: 0.1962 - accuracy: 0.9219
542 Epoch 263/350
543 143/143 [=====] - 0s
    636us/step - loss: 0.1973 - accuracy: 0.9214
544 Epoch 264/350
545 143/143 [=====] - 0s
    619us/step - loss: 0.2015 - accuracy: 0.9238
546 Epoch 265/350
547 143/143 [=====] - 0s
    603us/step - loss: 0.1996 - accuracy: 0.9242
548 Epoch 266/350
549 143/143 [=====] - 0s
    569us/step - loss: 0.2033 - accuracy: 0.9242
550 Epoch 267/350
```

```
551 143/143 [=====] - 0s
    670us/step - loss: 0.1938 - accuracy: 0.9163
552 Epoch 268/350
553 143/143 [=====] - 0s
    602us/step - loss: 0.2092 - accuracy: 0.9181
554 Epoch 269/350
555 143/143 [=====] - 0s
    594us/step - loss: 0.2003 - accuracy: 0.9172
556 Epoch 270/350
557 143/143 [=====] - 0s
    603us/step - loss: 0.1967 - accuracy: 0.9252
558 Epoch 271/350
559 143/143 [=====] - 0s
    569us/step - loss: 0.1905 - accuracy: 0.9270
560 Epoch 272/350
561 143/143 [=====] - 0s
    639us/step - loss: 0.2057 - accuracy: 0.9242
562 Epoch 273/350
563 143/143 [=====] - 0s
    629us/step - loss: 0.1928 - accuracy: 0.9177
564 Epoch 274/350
565 143/143 [=====] - 0s
    590us/step - loss: 0.1987 - accuracy: 0.9153
566 Epoch 275/350
567 143/143 [=====] - 0s
    606us/step - loss: 0.1933 - accuracy: 0.9308
568 Epoch 276/350
569 143/143 [=====] - 0s
    570us/step - loss: 0.1889 - accuracy: 0.9233
570 Epoch 277/350
571 143/143 [=====] - 0s
    630us/step - loss: 0.1940 - accuracy: 0.9303
572 Epoch 278/350
573 143/143 [=====] - 0s
    642us/step - loss: 0.1813 - accuracy: 0.9266
574 Epoch 279/350
575 143/143 [=====] - 0s
    592us/step - loss: 0.1896 - accuracy: 0.9233
576 Epoch 280/350
577 143/143 [=====] - 0s
    608us/step - loss: 0.2067 - accuracy: 0.9172
578 Epoch 281/350
579 143/143 [=====] - 0s
    570us/step - loss: 0.1765 - accuracy: 0.9294
```

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580 Epoch 282/350
581 143/143 [=====] - 0s
    649us/step - loss: 0.2008 - accuracy: 0.9205
582 Epoch 283/350
583 143/143 [=====] - 0s
    600us/step - loss: 0.1871 - accuracy: 0.9242
584 Epoch 284/350
585 143/143 [=====] - 0s
    616us/step - loss: 0.2088 - accuracy: 0.9144
586 Epoch 285/350
587 143/143 [=====] - 0s
    605us/step - loss: 0.1836 - accuracy: 0.9289
588 Epoch 286/350
589 143/143 [=====] - 0s
    566us/step - loss: 0.2011 - accuracy: 0.9256
590 Epoch 287/350
591 143/143 [=====] - 0s
    637us/step - loss: 0.1825 - accuracy: 0.9322
592 Epoch 288/350
593 143/143 [=====] - 0s
    612us/step - loss: 0.1993 - accuracy: 0.9261
594 Epoch 289/350
595 143/143 [=====] - 0s
    580us/step - loss: 0.1793 - accuracy: 0.9312
596 Epoch 290/350
597 143/143 [=====] - 0s
    635us/step - loss: 0.1696 - accuracy: 0.9336
598 Epoch 291/350
599 143/143 [=====] - 0s
    567us/step - loss: 0.1742 - accuracy: 0.9252
600 Epoch 292/350
601 143/143 [=====] - 0s
    655us/step - loss: 0.1992 - accuracy: 0.9210
602 Epoch 293/350
603 143/143 [=====] - 0s
    648us/step - loss: 0.1824 - accuracy: 0.9266
604 Epoch 294/350
605 143/143 [=====] - 0s
    594us/step - loss: 0.1966 - accuracy: 0.9233
606 Epoch 295/350
607 143/143 [=====] - 0s
    629us/step - loss: 0.1951 - accuracy: 0.9270
608 Epoch 296/350
609 143/143 [=====] - 0s
```

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609 569us/step - loss: 0.1724 - accuracy: 0.9303
610 Epoch 297/350
611 143/143 [=====] - 0s
    658us/step - loss: 0.1750 - accuracy: 0.9284
612 Epoch 298/350
613 143/143 [=====] - 0s
    607us/step - loss: 0.1949 - accuracy: 0.9261
614 Epoch 299/350
615 143/143 [=====] - 0s
    592us/step - loss: 0.1997 - accuracy: 0.9200
616 Epoch 300/350
617 143/143 [=====] - 0s
    587us/step - loss: 0.1929 - accuracy: 0.9219
618 Epoch 301/350
619 143/143 [=====] - 0s
    608us/step - loss: 0.1835 - accuracy: 0.9322
620 Epoch 302/350
621 143/143 [=====] - 0s
    675us/step - loss: 0.1753 - accuracy: 0.9359
622 Epoch 303/350
623 143/143 [=====] - 0s
    587us/step - loss: 0.1662 - accuracy: 0.9359
624 Epoch 304/350
625 143/143 [=====] - 0s
    563us/step - loss: 0.1719 - accuracy: 0.9350
626 Epoch 305/350
627 143/143 [=====] - 0s
    617us/step - loss: 0.1651 - accuracy: 0.9355
628 Epoch 306/350
629 143/143 [=====] - 0s
    585us/step - loss: 0.1847 - accuracy: 0.9289
630 Epoch 307/350
631 143/143 [=====] - 0s
    668us/step - loss: 0.1953 - accuracy: 0.9210
632 Epoch 308/350
633 143/143 [=====] - 0s
    608us/step - loss: 0.1735 - accuracy: 0.9303
634 Epoch 309/350
635 143/143 [=====] - 0s
    599us/step - loss: 0.1889 - accuracy: 0.9266
636 Epoch 310/350
637 143/143 [=====] - 0s
    606us/step - loss: 0.1684 - accuracy: 0.9364
638 Epoch 311/350
```

```
639 143/143 [=====] - 0s
    566us/step - loss: 0.1691 - accuracy: 0.9364
640 Epoch 312/350
641 143/143 [=====] - 0s
    693us/step - loss: 0.1722 - accuracy: 0.9326
642 Epoch 313/350
643 143/143 [=====] - 0s
    617us/step - loss: 0.1640 - accuracy: 0.9326
644 Epoch 314/350
645 143/143 [=====] - 0s
    582us/step - loss: 0.1552 - accuracy: 0.9364
646 Epoch 315/350
647 143/143 [=====] - 0s
    608us/step - loss: 0.1584 - accuracy: 0.9350
648 Epoch 316/350
649 143/143 [=====] - 0s
    584us/step - loss: 0.1810 - accuracy: 0.9294
650 Epoch 317/350
651 143/143 [=====] - 0s
    631us/step - loss: 0.1820 - accuracy: 0.9312
652 Epoch 318/350
653 143/143 [=====] - 0s
    633us/step - loss: 0.1611 - accuracy: 0.9369
654 Epoch 319/350
655 143/143 [=====] - 0s
    579us/step - loss: 0.1666 - accuracy: 0.9336
656 Epoch 320/350
657 143/143 [=====] - 0s
    621us/step - loss: 0.1672 - accuracy: 0.9392
658 Epoch 321/350
659 143/143 [=====] - 0s
    570us/step - loss: 0.1591 - accuracy: 0.9429
660 Epoch 322/350
661 143/143 [=====] - 0s
    648us/step - loss: 0.1735 - accuracy: 0.9317
662 Epoch 323/350
663 143/143 [=====] - 0s
    625us/step - loss: 0.1735 - accuracy: 0.9308
664 Epoch 324/350
665 143/143 [=====] - 0s
    596us/step - loss: 0.1724 - accuracy: 0.9378
666 Epoch 325/350
667 143/143 [=====] - 0s
    603us/step - loss: 0.1935 - accuracy: 0.9256
```

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668 Epoch 326/350
669 143/143 [=====] - 0s
    570us/step - loss: 0.1744 - accuracy: 0.9289
670 Epoch 327/350
671 143/143 [=====] - 0s
    633us/step - loss: 0.1601 - accuracy: 0.9364
672 Epoch 328/350
673 143/143 [=====] - 0s
    622us/step - loss: 0.1592 - accuracy: 0.9369
674 Epoch 329/350
675 143/143 [=====] - 0s
    624us/step - loss: 0.1612 - accuracy: 0.9341
676 Epoch 330/350
677 143/143 [=====] - 0s
    602us/step - loss: 0.1568 - accuracy: 0.9373
678 Epoch 331/350
679 143/143 [=====] - 0s
    555us/step - loss: 0.1750 - accuracy: 0.9326
680 Epoch 332/350
681 143/143 [=====] - 0s
    634us/step - loss: 0.1490 - accuracy: 0.9453
682 Epoch 333/350
683 143/143 [=====] - 0s
    664us/step - loss: 0.1506 - accuracy: 0.9383
684 Epoch 334/350
685 143/143 [=====] - 0s
    607us/step - loss: 0.1543 - accuracy: 0.9401
686 Epoch 335/350
687 143/143 [=====] - 0s
    626us/step - loss: 0.1648 - accuracy: 0.9364
688 Epoch 336/350
689 143/143 [=====] - 0s
    574us/step - loss: 0.2058 - accuracy: 0.9238
690 Epoch 337/350
691 143/143 [=====] - 0s
    654us/step - loss: 0.1738 - accuracy: 0.9289
692 Epoch 338/350
693 143/143 [=====] - 0s
    593us/step - loss: 0.1751 - accuracy: 0.9289
694 Epoch 339/350
695 143/143 [=====] - 0s
    602us/step - loss: 0.1699 - accuracy: 0.9317
696 Epoch 340/350
697 143/143 [=====] - 0s
```

```
697 675us/step - loss: 0.1511 - accuracy: 0.9369
698 Epoch 341/350
699 143/143 [=====] - 0s
    570us/step - loss: 0.1558 - accuracy: 0.9406
700 Epoch 342/350
701 143/143 [=====] - 0s
    660us/step - loss: 0.1648 - accuracy: 0.9369
702 Epoch 343/350
703 143/143 [=====] - 0s
    603us/step - loss: 0.1519 - accuracy: 0.9373
704 Epoch 344/350
705 143/143 [=====] - 0s
    603us/step - loss: 0.1631 - accuracy: 0.9397
706 Epoch 345/350
707 143/143 [=====] - 0s
    602us/step - loss: 0.1542 - accuracy: 0.9406
708 Epoch 346/350
709 143/143 [=====] - 0s
    595us/step - loss: 0.1483 - accuracy: 0.9392
710 Epoch 347/350
711 143/143 [=====] - 0s
    699us/step - loss: 0.1594 - accuracy: 0.9401
712 Epoch 348/350
713 143/143 [=====] - 0s
    628us/step - loss: 0.1549 - accuracy: 0.9350
714 Epoch 349/350
715 143/143 [=====] - 0s
    602us/step - loss: 0.1982 - accuracy: 0.9200
716 Epoch 350/350
717 143/143 [=====] - 0s
    593us/step - loss: 0.1731 - accuracy: 0.9266
718 WARNING:tensorflow:From /Library/Frameworks/Python
.framework/Versions/3.8/lib/python3.8/site-
packages/tensorflow/python/training/tracking/
tracking.py:111: Model.state_updates (from
tensorflow.python.keras.engine.training) is
deprecated and will be removed in a future version
.
719 Instructions for updating:
720 This property should not be used in TensorFlow 2.0
, as updates are applied automatically.
721 2020-09-03 19:19:01.992635: W tensorflow/python/
util/util.cc:348] Sets are not currently
considered sequences, but this may change in the
```

```
721 future, so consider avoiding using them.  
722 WARNING:tensorflow:From /Library/Frameworks/Python  
.framework/Versions/3.8/lib/python3.8/site-  
packages/tensorflow/python/training/tracking/  
tracking.py:111: Layer.updates (from tensorflow.  
python.keras.engine.base_layer) is deprecated and  
will be removed in a future version.  
723 Instructions for updating:  
724 This property should not be used in TensorFlow 2.0  
, as updates are applied automatically.  
725  
726 Process finished with exit code 0  
727
```