```
C:\Users\alexs\AppData\Local\Programs\Python\Python310\python.exe C:\Users\alexs\PycharmProjects\pythonProject\main.py
x_train shape: (50000, 32, 32, 3)
y_train shape: (50000, 1)
[[[ 59  62  63]
  [ 43  46  45]
  [ 50  48  43]
  ...
  [158 132 108]
  [152 125 102]
  [148 124 103]]

 [[ 16  20  20]
  [  0   0   0]
  [ 18   8   0]
  ...
  [123  88  55]
  [119  83  50]
  [122  87  57]]

 [[ 25  24  21]
  [ 16   7   0]
  [ 49  27   8]
  ...
  [118  84  50]
  [120  84  50]
  [109  73  42]]

 ...

 [[208 170  96]
  [201 153  34]
  [198 161  26]
  ...
  [160 133  70]
  [ 56  31   7]
  [ 53  34  20]]

 [[180 139  96]
  [173 123  42]
```

```
40   [186 144  30]
41   ...
42   [184 148  94]
43   [ 97  62  34]
44   [ 83  53  34]]
45
46  [[177 144 116]
47   [168 129  94]
48   [179 142  87]
49   ...
50   [216 184 140]
51   [151 118  84]
52   [123  92  72]]]
53 The label is: [6]
54 The label is: [9]
55 The one hot label is: [0. 0. 0. 0. 0. 0. 0. 0. 0. 1.]
56 2022-12-05 00:19:56.484411: I tensorflow/core/
   platform/cpu_feature_guard.cc:193] This TensorFlow
   binary is optimized with oneAPI Deep Neural Network
   Library (oneDNN) to use the following CPU
   instructions in performance-critical operations:  AVX
    AVX2
57 To enable them in other operations, rebuild
   TensorFlow with the appropriate compiler flags.
58 Model: "sequential"
59 _________________________________________________
   _____________
60  Layer (type)                Output Shape
                 Param #
61 =================================================
   =============
62  conv2d (Conv2D)             (None, 32, 32, 32
   )        896
63
64  conv2d_1 (Conv2D)           (None, 32, 32, 32
   )        9248
65
66  max_pooling2d (MaxPooling2D  (None, 16, 16, 32
   )       0
```

```
67  )
68
69  dropout (Dropout)           (None, 16, 16, 32
    )         0
70
71  conv2d_2 (Conv2D)           (None, 16, 16, 64
    )         18496
72
73  conv2d_3 (Conv2D)           (None, 16, 16, 64
    )         36928
74
75  max_pooling2d_1 (MaxPooling  (None, 8, 8, 64
    )          0
76  2D
    )
77
78  dropout_1 (Dropout)         (None, 8, 8, 64
    )           0
79
80  flatten (Flatten)           (None, 4096
    )               0
81
82  dense (Dense)               (None, 512
    )                2097664
83
84  dropout_2 (Dropout)         (None, 512
    )                0
85
86  dense_1 (Dense)             (None, 10
    )                 5130
```

```
 87
 88 =================================================================
    =============
 89 Total params: 2,168,362
 90 Trainable params: 2,168,362
 91 Non-trainable params: 0
 92 _________________________________________________________________
    _____________
 93 Epoch 1/20
 94 1250/1250 [==============================] - 132s
    105ms/step - loss: 1.5889 - accuracy: 0.4141 -
    val_loss: 1.2013 - val_accuracy: 0.5748
 95 Epoch 2/20
 96 1250/1250 [==============================] - 124s
    99ms/step - loss: 1.1555 - accuracy: 0.5897 -
    val_loss: 0.9860 - val_accuracy: 0.6513
 97 Epoch 3/20
 98 1250/1250 [==============================] - 108s
    87ms/step - loss: 0.9848 - accuracy: 0.6540 -
    val_loss: 0.8642 - val_accuracy: 0.6954
 99 Epoch 4/20
100 1250/1250 [==============================] - 108s
    87ms/step - loss: 0.8701 - accuracy: 0.6955 -
    val_loss: 0.8182 - val_accuracy: 0.7143
101 Epoch 5/20
102 1250/1250 [==============================] - 111s
    89ms/step - loss: 0.8026 - accuracy: 0.7179 -
    val_loss: 0.7615 - val_accuracy: 0.7358
103 Epoch 6/20
104 1250/1250 [==============================] - 106s
    85ms/step - loss: 0.7437 - accuracy: 0.7393 -
    val_loss: 0.7586 - val_accuracy: 0.7426
105 Epoch 7/20
106 1250/1250 [==============================] - 108s
    86ms/step - loss: 0.7070 - accuracy: 0.7528 -
    val_loss: 0.7020 - val_accuracy: 0.7664
107 Epoch 8/20
108 1250/1250 [==============================] - 149s
    119ms/step - loss: 0.6634 - accuracy: 0.7666 -
    val_loss: 0.6845 - val_accuracy: 0.7689
```

```
109 Epoch 9/20
110 1250/1250 [==============================] - 108s
    86ms/step - loss: 0.6253 - accuracy: 0.7806 -
    val_loss: 0.6856 - val_accuracy: 0.7688
111 Epoch 10/20
112 1250/1250 [==============================] - 109s
    88ms/step - loss: 0.6013 - accuracy: 0.7871 -
    val_loss: 0.6837 - val_accuracy: 0.7667
113 Epoch 11/20
114 1250/1250 [==============================] - 108s
    86ms/step - loss: 0.5635 - accuracy: 0.8017 -
    val_loss: 0.6887 - val_accuracy: 0.7674
115 Epoch 12/20
116 1250/1250 [==============================] - 108s
    87ms/step - loss: 0.5431 - accuracy: 0.8081 -
    val_loss: 0.6984 - val_accuracy: 0.7739
117 Epoch 13/20
118 1250/1250 [==============================] - 108s
    86ms/step - loss: 0.5225 - accuracy: 0.8171 -
    val_loss: 0.7000 - val_accuracy: 0.7746
119 Epoch 14/20
120 1250/1250 [==============================] - 108s
    87ms/step - loss: 0.5000 - accuracy: 0.8227 -
    val_loss: 0.6679 - val_accuracy: 0.7809
121 Epoch 15/20
122 1250/1250 [==============================] - 108s
    86ms/step - loss: 0.4860 - accuracy: 0.8287 -
    val_loss: 0.6982 - val_accuracy: 0.7791
123 Epoch 16/20
124 1250/1250 [==============================] - 108s
    86ms/step - loss: 0.4694 - accuracy: 0.8347 -
    val_loss: 0.7037 - val_accuracy: 0.7778
125 Epoch 17/20
126 1250/1250 [==============================] - 108s
    86ms/step - loss: 0.4511 - accuracy: 0.8392 -
    val_loss: 0.7933 - val_accuracy: 0.7599
127 Epoch 18/20
128 1250/1250 [==============================] - 110s
    88ms/step - loss: 0.4483 - accuracy: 0.8413 -
    val_loss: 0.6795 - val_accuracy: 0.7841
129 Epoch 19/20
```

```
1250/1250 [==============================] - 137s
    110ms/step - loss: 0.4286 - accuracy: 0.8491 -
    val_loss: 0.7298 - val_accuracy: 0.7791
Epoch 20/20
1250/1250 [==============================] - 108s
    86ms/step - loss: 0.4166 - accuracy: 0.8528 -
    val_loss: 0.6914 - val_accuracy: 0.7841
```