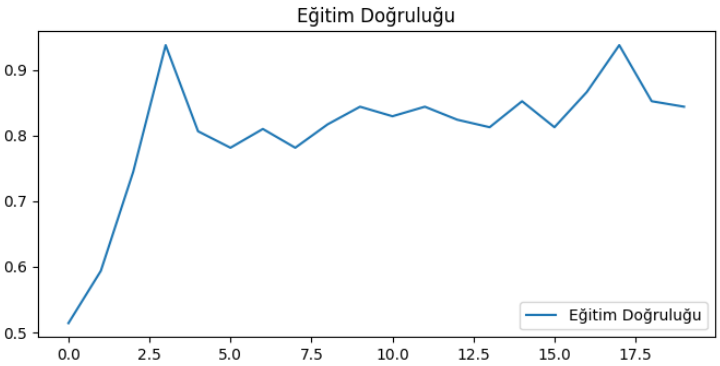
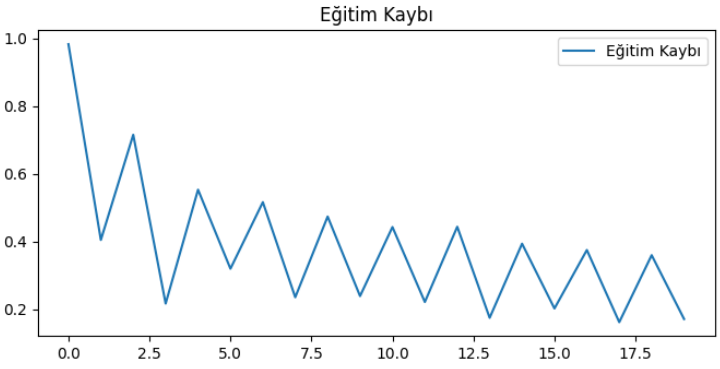
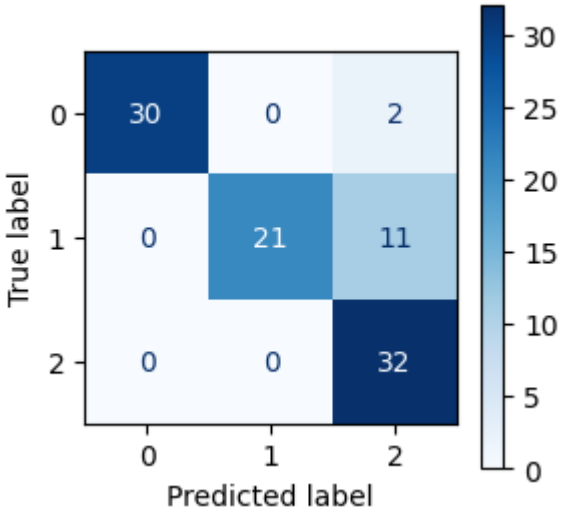
- Trying to find the model that has the highest accuracy of learning.
- 3 classes of wheat and 200 photos each.
- Using the Mobilenet model.

```
train_datagen = ImageDataGenerator(
    rescale=1./255,
    rotation_range=40,
    width_shift_range=0.2,
    height_shift_range=0.2,
    shear_range=0.2,
    zoom_range=0.2,
    horizontal_flip=True,
    fill_mode='nearest')
##epochs 20
train_generator =
train_datagen.flow_from_directory(
    train_dir,
    target_size=(224, 224),
    batch_size=32,
    class_mode='categorical')
```






```
x = base_model.output
x = GlobalAveragePooling2D()(x)
x = Dense(1024, activation='relu')(x)  # Yeni katmanlar ekleyin
predictions = Dense(3, activation='softmax')(x)  # 3 sınıfınız varsa
```



	f1-score
0	0.967742
1	0.792453
2	0.831169
accuracy	0.864583
macro avg	0.863788
weighted avg	0.863788

```
model.compile(optimizer=Adam(learning_rate=0.0001),loss='categorical_crossentropy', metrics=['accuracy'])
```

18/18 ━━━━━━━━━━━━━━━━━━━━ 1s 945us/step - accuracy: 0.8125 - loss: 0.2137

18/18 ━━━━━━━━━━━━━━━━━━━━ 13s 587ms/step - accuracy: 0.8643 - loss: 0.3925

18/18 ━━━━━━━━━━━━━━━━━━━━ 1s 596us/step - accuracy: 0.9375 - loss: 0.1710

18/18 ━━━━━━━━━━━━━━━━━━━━ 13s 609ms/step - accuracy: 0.8600 - loss: 0.3369

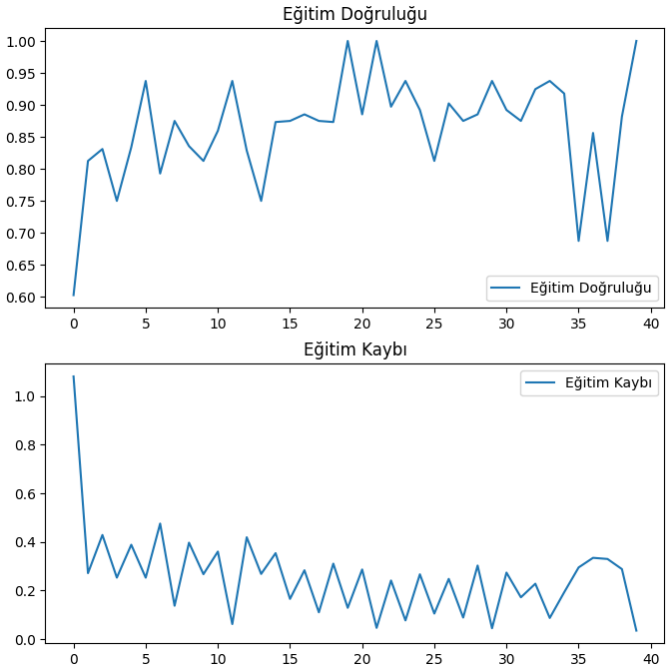
Epoch 20/20

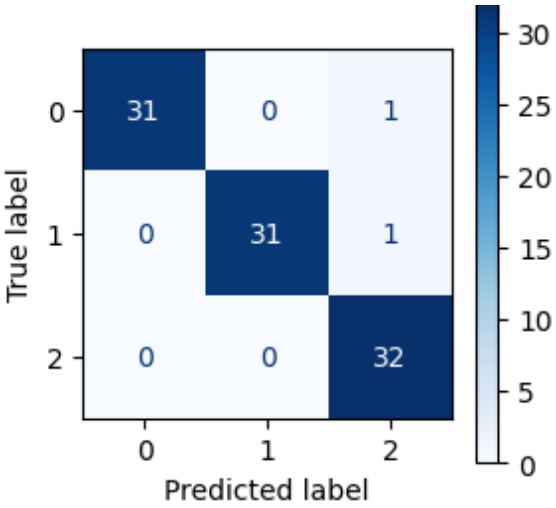
18/18 ━━━━━━━━━━━━━━━━━━━━ 1s 293us/step - accuracy: 0.8438 - loss: 0.1809

History , 4,5

batch_size=16 learning_rate=0.001 epochs--40

Epoch 36/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 173us/step - accuracy: 0.6875 - loss: 0.3029
Epoch 37/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **14s** 338ms/step - accuracy: 0.8828 - loss: 0.2424
Epoch 38/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 195us/step - accuracy: 0.6875 - loss: 0.3386
Epoch 39/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **14s** 341ms/step - accuracy: 0.8561 - loss: 0.3342
Epoch 40/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 592us/step - accuracy: 1.0000 - loss: 0.0360

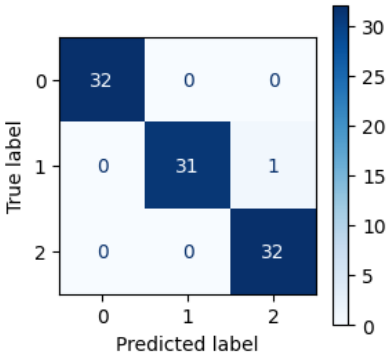


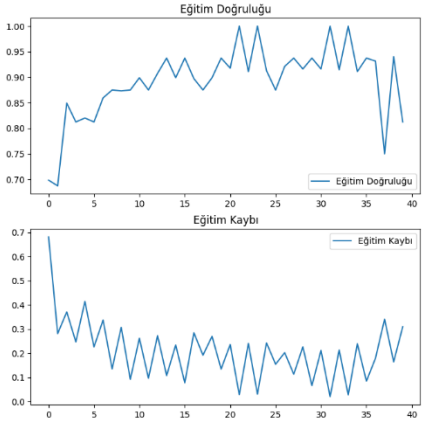


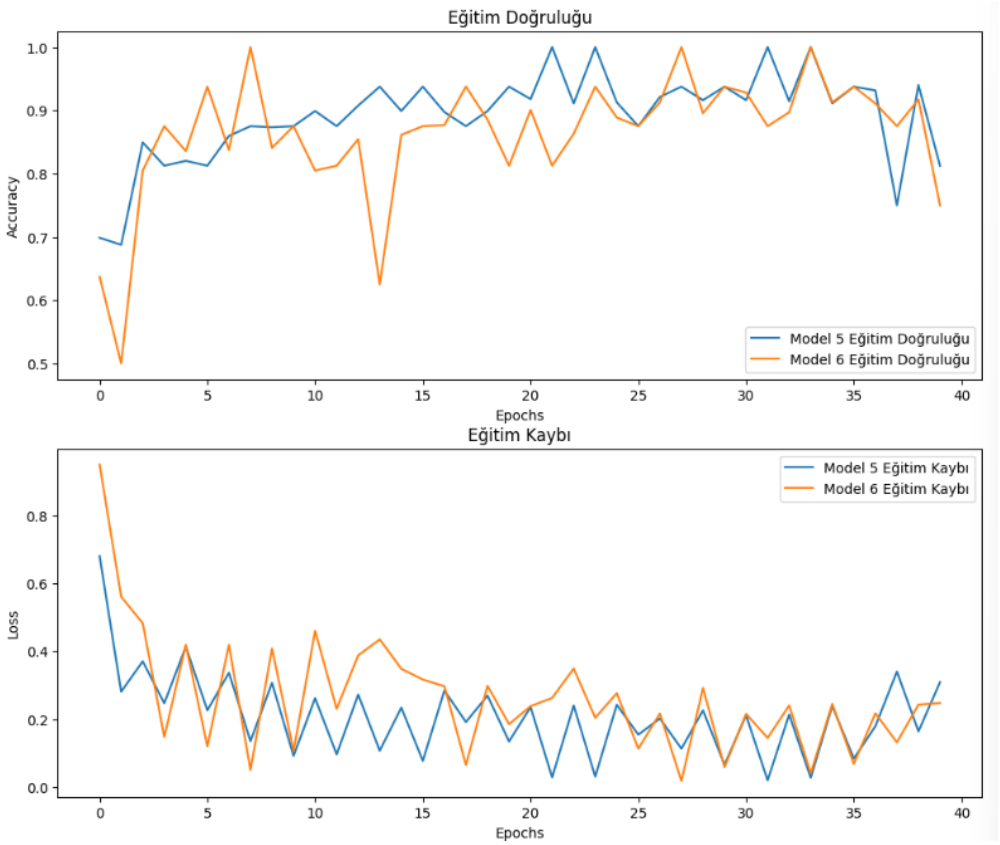
	f1-score
0	0.984127
1	0.984127
2	0.969697
accuracy	0.979167
macro avg	0.979317
weighted avg	0.979317

Normalizasyon katmanı ekledikten sonra:

	f1-score
0	1.000000
1	0.984127
2	0.984615
accuracy	0.989583
macro avg	0.989581
weighted avg	0.989581

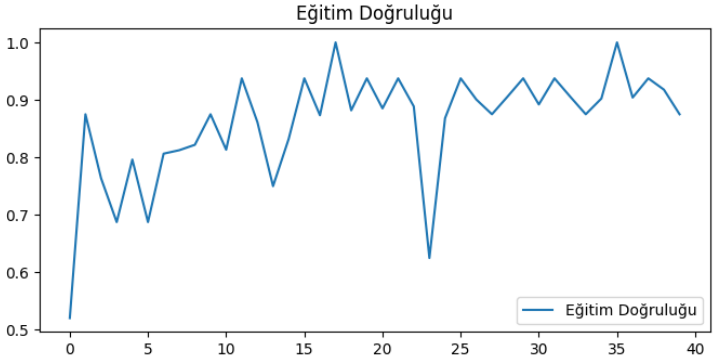


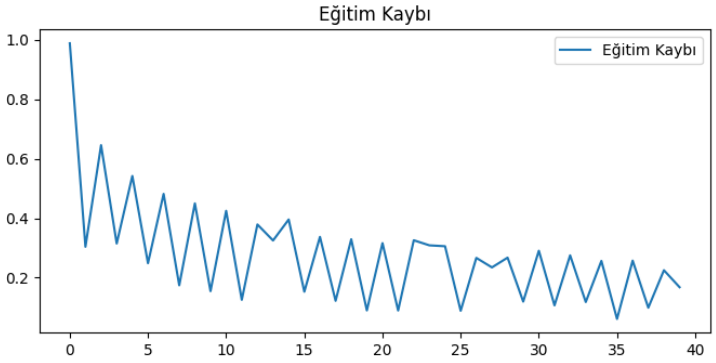


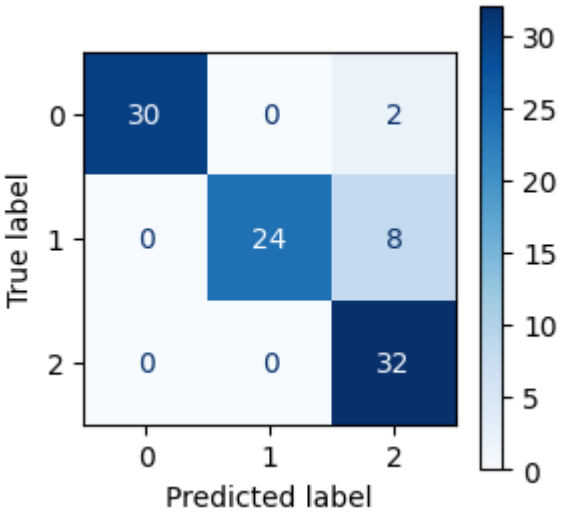


History1: learning_rate=0.0001 ----- batch_size=16

Epoch 30/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 198us/step - accuracy: 0.9375 - loss: 0.1228
Epoch 31/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **15s** 376ms/step - accuracy: 0.9001 - loss: 0.2634
Epoch 32/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 0s/step - accuracy: 0.9375 - loss: 0.1098
Epoch 33/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **14s** 326ms/step - accuracy: 0.9091 - loss: 0.2719
Epoch 34/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 434us/step - accuracy: 0.8750 - loss: 0.1213
Epoch 35/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **16s** 395ms/step - accuracy: 0.9169 - loss: 0.2316
Epoch 36/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 283us/step - accuracy: 1.0000 - loss: 0.0628
Epoch 37/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **20s** 485ms/step - accuracy: 0.9230 - loss: 0.2240
Epoch 38/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 434us/step - accuracy: 0.9375 - loss: 0.1016
Epoch 39/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **14s** 367ms/step - accuracy: 0.9427 - loss: 0.1927
Epoch 40/40
37/37 ━━━━━━━━━━━━━━━━━━━━ **0s** 382us/step - accuracy: 0.8750 - loss: 0.1725





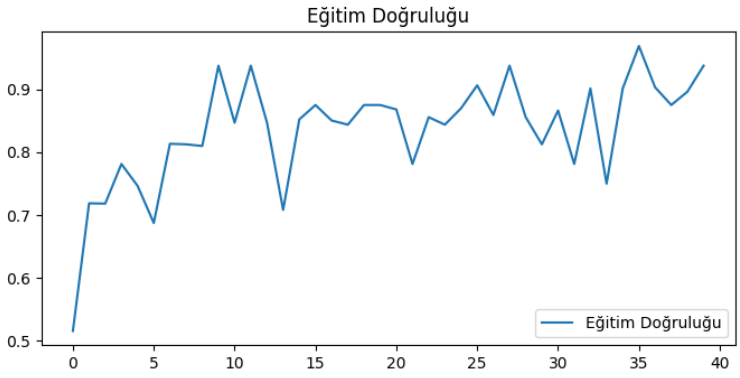


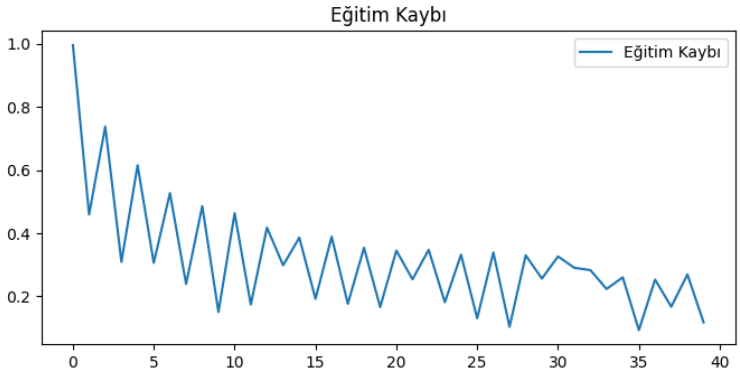
	f1-score
0	0.967742
1	0.857143
2	0.864865
accuracy	0.895833
macro avg	0.896583
weighted avg	0.896583

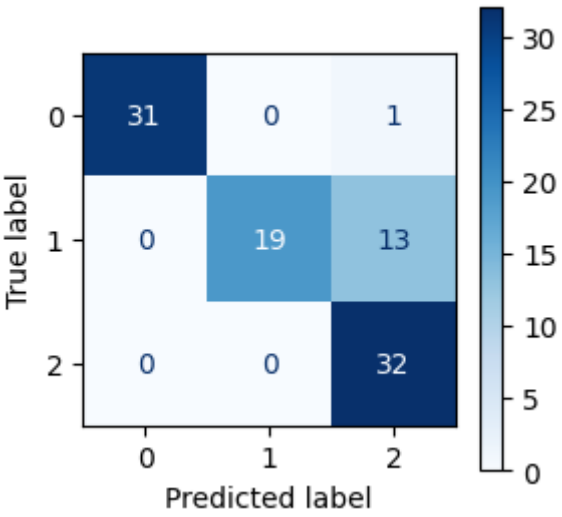
History2: learning_rate=0.0001 ----- batch_size=32

Epoch 30/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **1s** 608us/step - accuracy: 0.8125 - loss: 0.2709
Epoch 31/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **13s** 622ms/step - accuracy: 0.8642 - loss: 0.3212
Epoch 32/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **1s** 634us/step - accuracy: 0.7812 - loss: 0.3070
Epoch 33/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **13s** 613ms/step - accuracy: 0.9013 - loss: 0.2801
Epoch 34/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **1s** 644us/step - accuracy: 0.7500 - loss: 0.2361
Epoch 35/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **13s** 606ms/step - accuracy: 0.9169 - loss: 0.2423
Epoch 36/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **1s** 616us/step - accuracy: 0.9688 - loss: 0.0986
Epoch 37/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **13s** 604ms/step - accuracy: 0.8956 - loss: 0.2739
Epoch 38/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **1s** 410us/step - accuracy: 0.8750 - loss: 0.1768
Epoch 39/40
18/18 ━━━━━━━━━━━━━━━━━━━━ **14s** 638ms/step - accuracy: 0.8940 - loss: 0.2639
Epoch 40/40

18/18 ——————————————————— **1s** 0s/step - accuracy: 0.9375 - loss: 0.1243

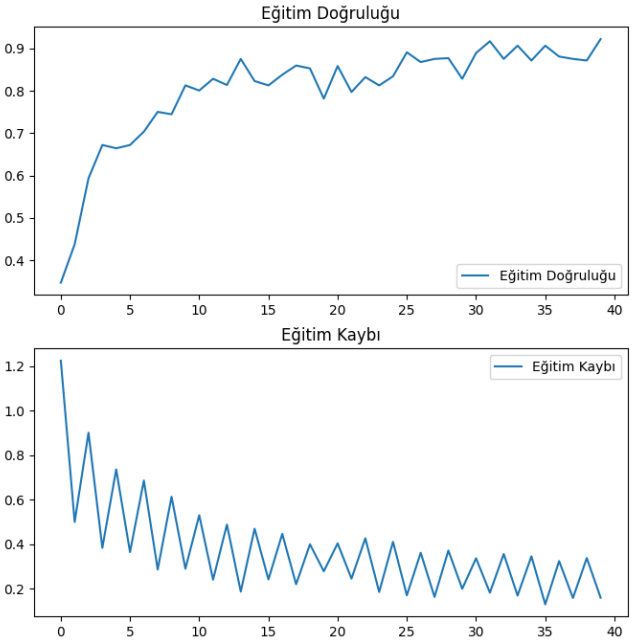


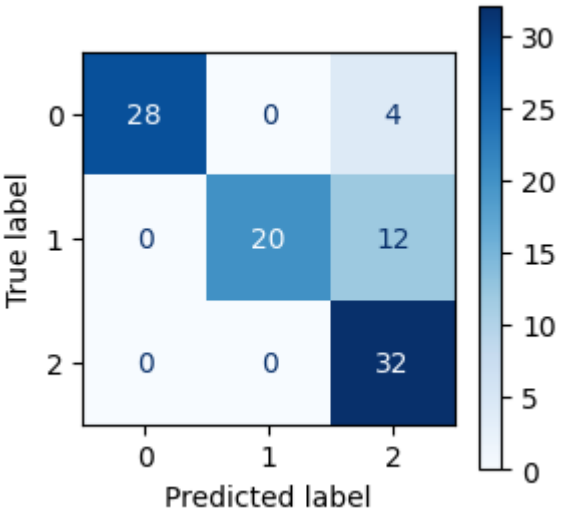




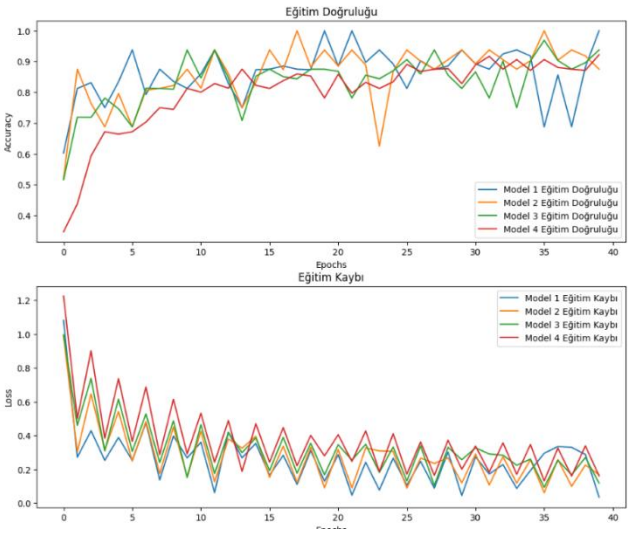
	f1-score
0	0.984127
1	0.745098
2	0.820513
accuracy	0.854167
macro avg	0.849913
weighted avg	0.849913

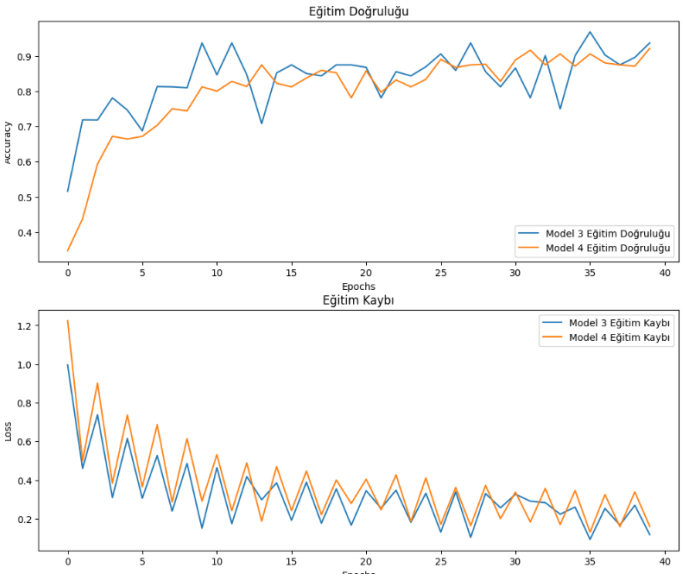
History3: learning_rate=0.0001 ----- batch_size=64

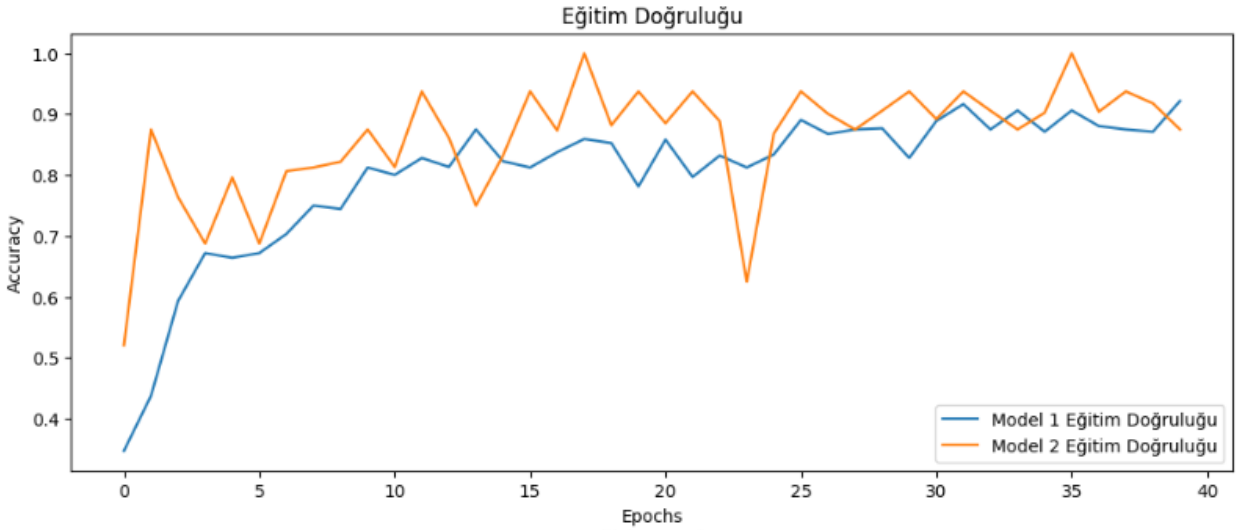


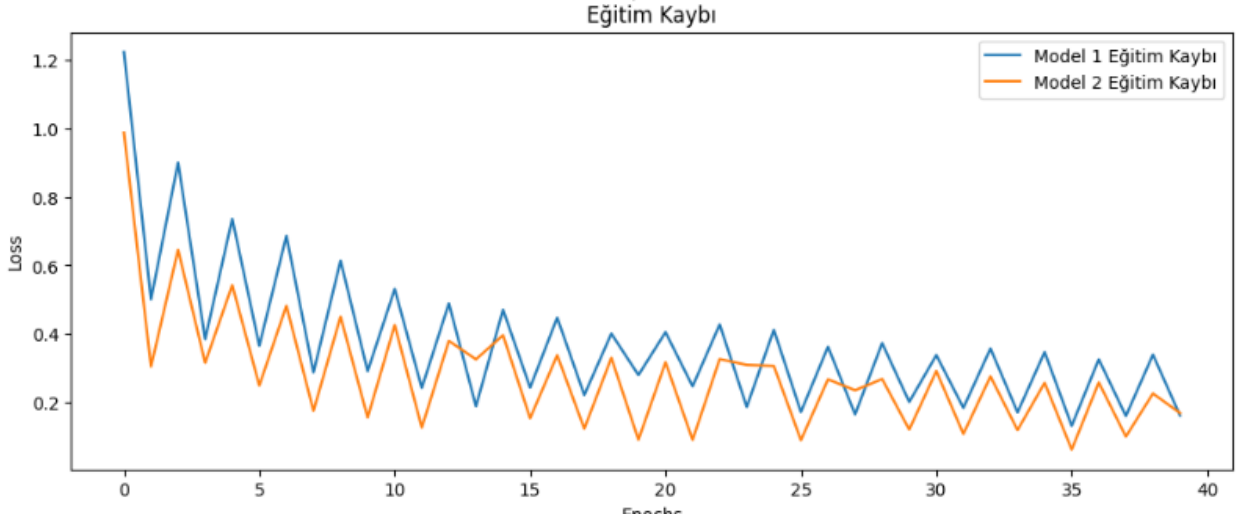


	f1-score
0	0.933333
1	0.769231
2	0.800000
accuracy	0.833333
macro avg	0.834188
weighted avg	0.834188


Eğitim Doğruluğu
Accuracy
Epochs
Model 1 Eğitim Doğruluğu
Model 2 Eğitim Doğruluğu
Model 3 Eğitim Doğruluğu
Model 4 Eğitim Doğruluğu
Eğitim Kaybı
Loss
Model 1 Eğitim Kaybı
Model 2 Eğitim Kaybı
Model 3 Eğitim Kaybı
Model 4 Eğitim Kaybı


Eğitim Doğruluğu
Accuracy
Epochs
Model 3 Eğitim Doğruluğu
Model 4 Eğitim Doğruluğu
Eğitim Kaybı
Loss
Model 3 Eğitim Kaybı
Model 4 Eğitim Kaybı


Eğitim Doğruluğu
Accuracy
Epochs
Model 1 Eğitim Doğruluğu
Model 2 Eğitim Doğruluğu


Eğitim Kaybı
Loss
Model 1 Eğitim Kaybı
Model 2 Eğitim Kaybı