

## Exercise 12

### Machine Learning Finding Optimal Model and Hyperparameters

For digits dataset in sklearn.dataset, please try following classifiers and find out the one that gives best performance. Also find the optimal parameters for that classifier.

```
In [20]: from sklearn import svm
from sklearn.ensemble import RandomForestClassifier
from sklearn.linear_model import LogisticRegression
from sklearn.naive_bayes import GaussianNB
from sklearn.naive_bayes import MultinomialNB
from sklearn.tree import DecisionTreeClassifier
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sn
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix
from sklearn.model_selection import cross_val_score
from sklearn.datasets import load_digits
from sklearn.model_selection import GridSearchCV
```

```
In [21]: data = load_digits()
dir(data)
```

```
Out[21]: ['DESCR', 'data', 'feature_names', 'frame', 'images', 'target', 'target_names']
```

```
In [22]: data.data
```

```
Out[22]: array([[ 0.,  0.,  5., ...,  0.,  0.],
 [ 0.,  0.,  0., ..., 10.,  0.,  0.],
 [ 0.,  0.,  0., ..., 16.,  9.,  0.],
 ...,
 [ 0.,  0.,  1., ...,  6.,  0.,  0.],
 [ 0.,  0.,  2., ..., 12.,  0.,  0.],
 [ 0.,  0., 10., ..., 12.,  1.,  0.]])
```

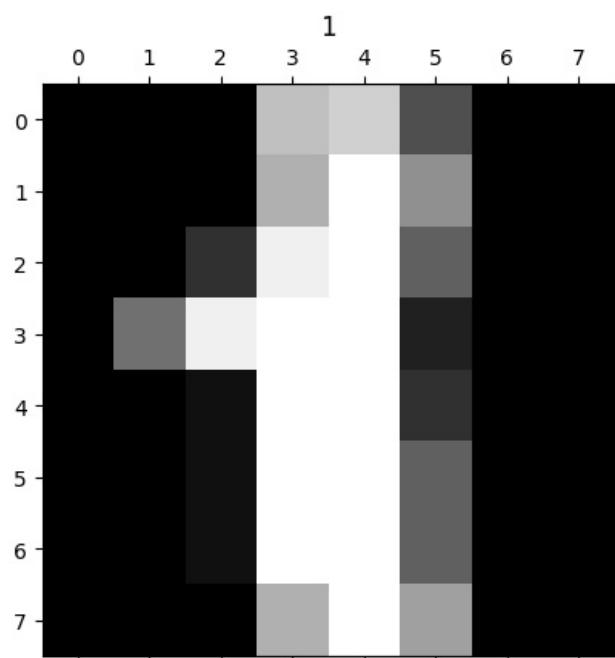
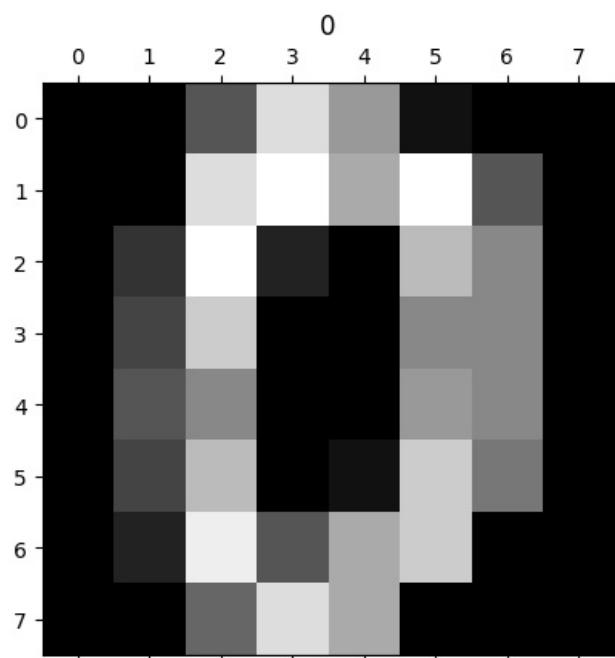
```
In [23]: df = pd.DataFrame(data.data, columns=data.feature_names)
df.head()
```

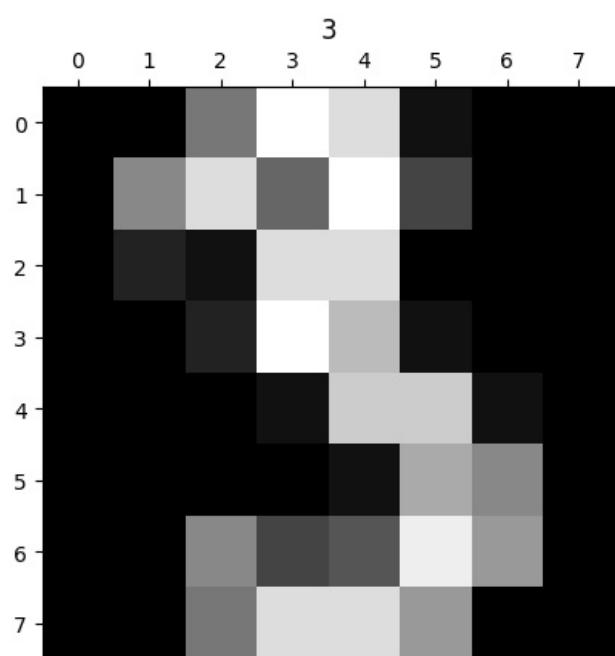
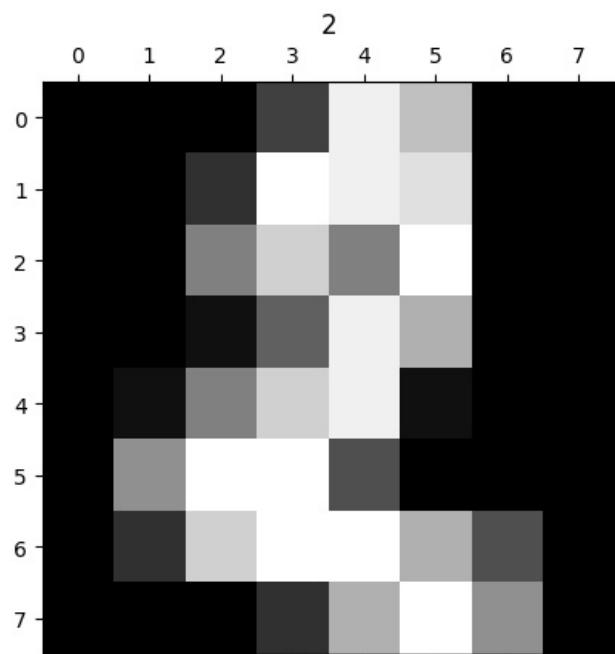
```
Out[23]:   pixel_0_0  pixel_0_1  pixel_0_2  pixel_0_3  pixel_0_4  pixel_0_5  pixel_0_6  pixel_0_7  pixel_1_0  pixel_1_1  ...  pixel_6_6  pixel_6_7
0         0.0       0.0      5.0     13.0      9.0      1.0      0.0      0.0      0.0      0.0  ...
1         0.0       0.0      0.0     12.0     13.0      5.0      0.0      0.0      0.0      0.0  ...
2         0.0       0.0      0.0      4.0     15.0     12.0      0.0      0.0      0.0      0.0  ...
3         0.0       0.0      7.0     15.0     13.0      1.0      0.0      0.0      0.0      8.0  ...
4         0.0       0.0      0.0      1.0     11.0      0.0      0.0      0.0      0.0      0.0  ...  0.0
```

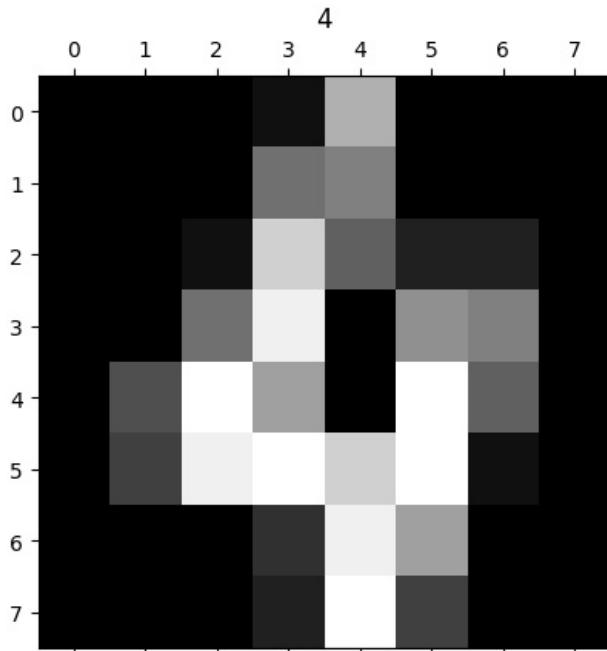
5 rows × 64 columns

```
In [24]: plt.gray()
for i in range(5):
    plt.matshow(data.images[i])
    plt.title(data.target[i])
```

<Figure size 640x480 with 0 Axes>







```
In [31]: model_params = {
    'svm': {
        'model': svm.SVC(gamma='auto'),
        'params' : {
            'C': [1,10,20],
            'kernel': ['rbf','linear']
        }
    },
    'random_forest': {
        'model': RandomForestClassifier(),
        'params' : {
            'n_estimators': [1,5,10]
        }
    },
    'logistic_regression' : {
        'model': LogisticRegression(solver='liblinear',multi_class='auto'),
        'params': {
            'C': [1,5,10]
        }
    },
    'decision_tree' : {
        'model' : DecisionTreeClassifier(),
        'params' : {
            'criterion': ['gini','entropy'],
        }
    },
    'gaussian' : {
        'model' : GaussianNB(),
        'params' : {}
    },
    'multinomial' : {
        'model' : MultinomialNB(),
        'params' : {}
    }
}
```

```
In [32]: scores = []
for model_name, mp in model_params.items():
    clf = GridSearchCV(mp['model'], mp['params'], cv=5, return_train_score=False)
```

```
clf.fit(data.data, data.target)
scores.append({
    'model': model_name,
    'best_score': clf.best_score_,
    'best_params': clf.best_params_
})
```

```
In [33]: newdf = pd.DataFrame(scores, columns=['model', 'best_score', 'best_params'])
newdf
```

```
Out[33]:
```

	model	best_score	best_params
0	svm	0.947697	{'C': 1, 'kernel': 'linear'}
1	random_forest	0.894850	{'n_estimators': 10}
2	logistic_regression	0.922114	{'C': 1}
3	decision_tree	0.805803	{'criterion': 'entropy'}
4	gaussian	0.806928	{}
5	multinomial	0.870350	{}

```
In [36]: np.mean(cross_val_score(svm.SVC(), data.data, data.target))
```

```
Out[36]: 0.9632838130609718
```

```
In [37]: np.mean(cross_val_score(svm.SVC(C=1, kernel="linear"), data.data, data.target))
```

```
Out[37]: 0.9476973073351903
```

```
In [38]: X_train, X_test, y_train, y_test = train_test_split(data.data, data.target, test_size=0.25)
```

```
In [40]: len(X_test)
```

```
Out[40]: 450
```

```
In [41]: model = svm.SVC()
model.fit(X_train, y_train)
```

```
Out[41]:
```

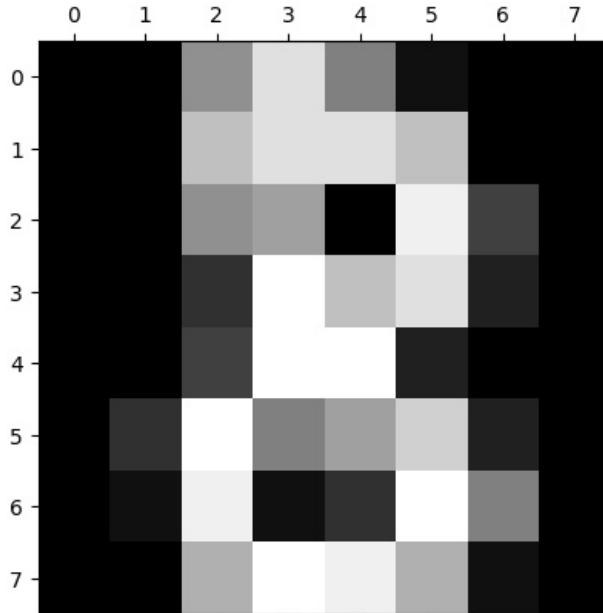
▼ SVC  
SVC()

```
In [45]: predict = model.predict([df.iloc[8]])
predict
```

```
Out[45]: array([8])
```

```
In [50]: plt.matshow(data.images[8])
```

```
Out[50]: <matplotlib.image.AxesImage at 0x14edf96c7d0>
```



```
In [51]: predict = model.predict(X_test)
predict
```

```
Out[51]: array([2, 4, 7, 0, 3, 5, 6, 8, 7, 4, 1, 6, 8, 5, 7, 7, 0, 1, 4, 2, 3, 4,
   4, 9, 2, 6, 5, 6, 7, 3, 2, 2, 9, 2, 6, 7, 8, 7, 1, 5, 2, 8, 5, 8,
   2, 3, 6, 1, 0, 4, 0, 8, 1, 7, 3, 5, 8, 1, 2, 1, 7, 1, 9, 4, 9, 2,
   9, 3, 3, 4, 7, 0, 7, 3, 2, 8, 7, 2, 0, 1, 7, 1, 0, 9, 1, 6, 8, 2,
   1, 2, 5, 9, 1, 4, 3, 0, 4, 5, 6, 4, 6, 8, 6, 3, 5, 9, 4, 2, 0, 5,
   5, 7, 8, 1, 2, 7, 0, 9, 6, 8, 8, 6, 9, 5, 6, 5, 6, 1, 7, 1, 7, 4,
   0, 4, 9, 2, 9, 1, 2, 4, 2, 7, 6, 8, 5, 1, 2, 6, 5, 6, 5, 6, 7, 6,
   5, 7, 2, 7, 6, 0, 2, 5, 1, 9, 0, 4, 9, 6, 3, 1, 4, 0, 5, 5, 3, 6,
   4, 3, 3, 9, 6, 2, 6, 6, 6, 7, 6, 4, 2, 7, 5, 5, 5, 8, 1, 2, 1, 5,
   3, 6, 7, 8, 9, 5, 2, 8, 2, 3, 7, 8, 6, 4, 0, 8, 3, 8, 8, 5, 3, 6,
   9, 3, 8, 4, 3, 9, 6, 2, 0, 2, 1, 6, 1, 8, 0, 0, 0, 7, 7, 8, 2, 8,
   0, 1, 2, 7, 6, 4, 5, 7, 7, 6, 3, 3, 9, 0, 1, 7, 3, 2, 2, 0, 2, 4,
   4, 9, 3, 6, 5, 5, 7, 7, 3, 3, 3, 4, 7, 9, 5, 5, 8, 0, 6, 6, 7, 7,
   4, 5, 0, 9, 0, 5, 2, 5, 7, 3, 7, 0, 1, 1, 8, 6, 4, 9, 4, 6, 0, 9,
   5, 5, 2, 2, 9, 3, 8, 7, 6, 1, 2, 1, 0, 0, 7, 6, 0, 5, 0, 3, 1, 3,
   4, 1, 3, 2, 9, 3, 1, 9, 3, 3, 6, 6, 5, 6, 9, 2, 1, 9, 8, 6, 7, 4,
   5, 3, 6, 6, 5, 6, 0, 8, 1, 7, 9, 2, 1, 4, 9, 7, 2, 1, 9, 4, 5, 3,
   5, 0, 0, 1, 6, 9, 7, 2, 9, 8, 4, 2, 8, 4, 6, 9, 5, 1, 1, 9, 3, 4,
   2, 5, 9, 1, 1, 6, 1, 7, 2, 7, 0, 4, 4, 9, 0, 1, 4, 9, 2, 9, 9, 1,
   0, 4, 0, 5, 3, 2, 4, 0, 6, 3, 9, 2, 1, 7, 6, 9, 9, 5, 8, 5, 6, 3,
   8, 0, 1, 8, 1, 5, 9, 0, 8, 2])
```

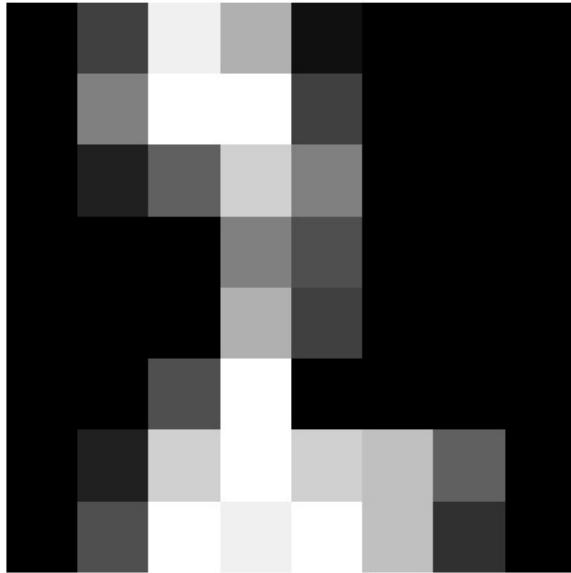
```
In [52]: model.score(X_test, y_test)
```

```
Out[52]: 0.9866666666666667
```

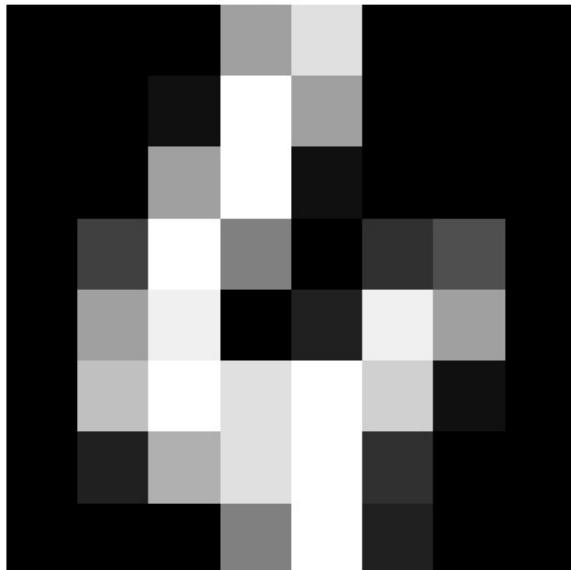
```
In [66]: # Display actual and predicted values alongside the images
for i in range(len(predict)):
    plt.imshow(X_test[i].reshape(8, 8), cmap='gray') # Reshape the flattened image to its original shape
    plt.title(f'Actual: {y_test[i]}, Predicted: {predict[i]}')
    plt.axis('off') # Turn off axis labels for better visualization

    plt.show()
```

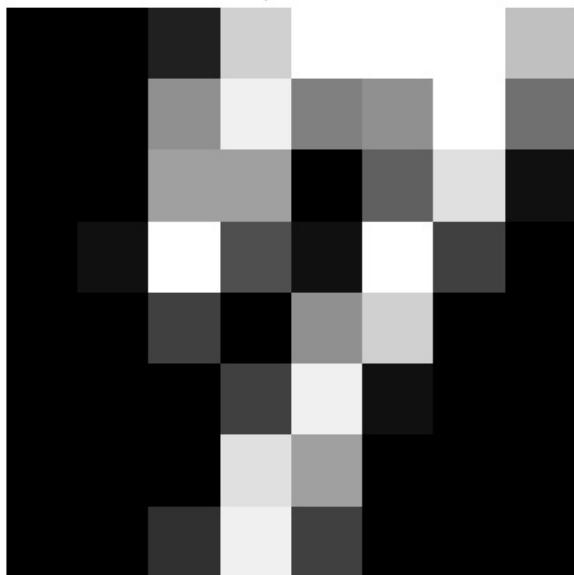
Actual: 2, Predicted: 2



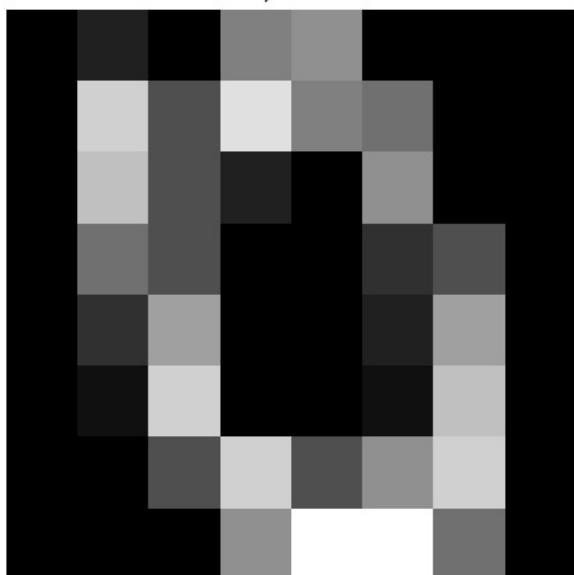
Actual: 4, Predicted: 4



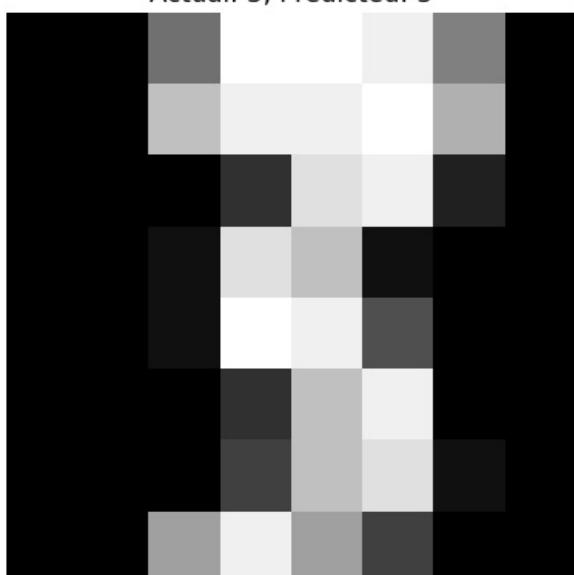
Actual: 7, Predicted: 7



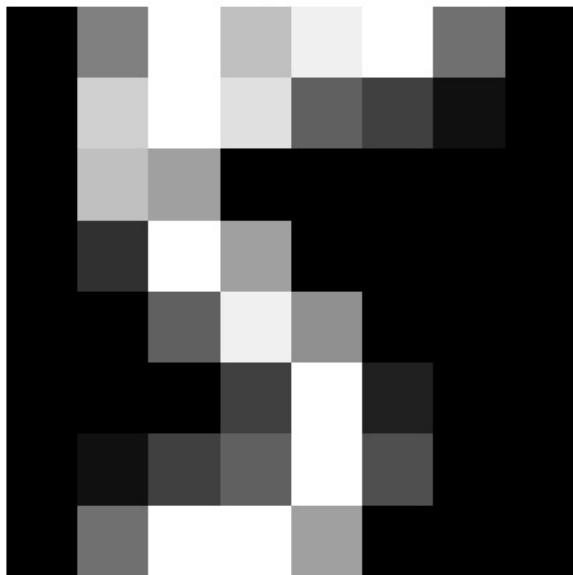
Actual: 0, Predicted: 0



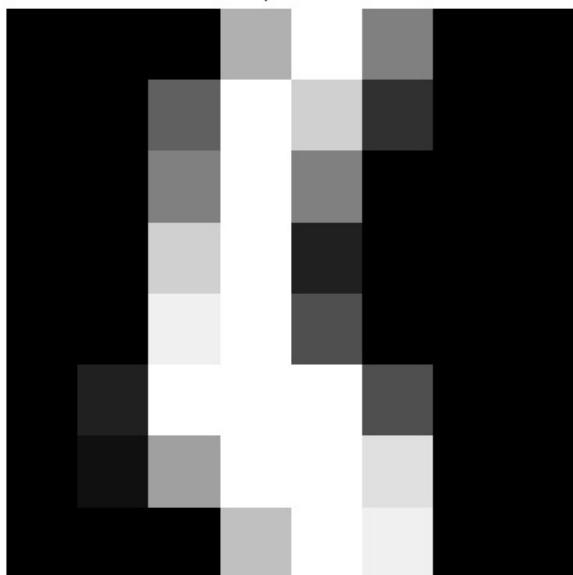
Actual: 3, Predicted: 3



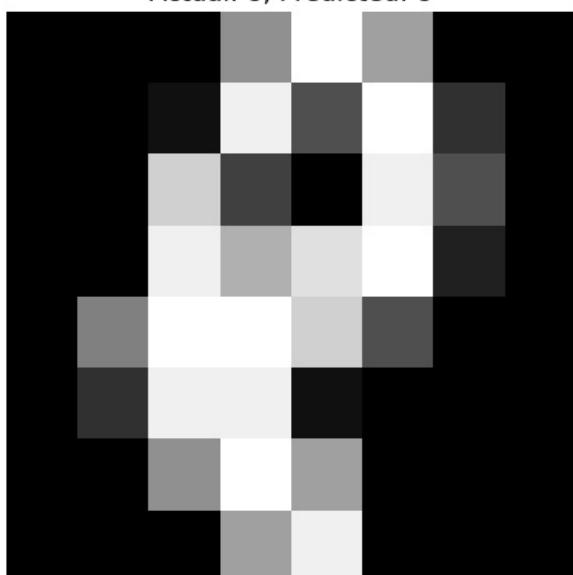
Actual: 5, Predicted: 5



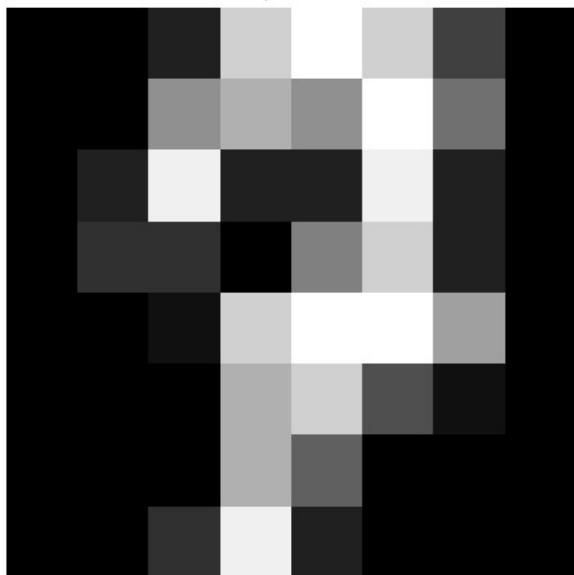
Actual: 6, Predicted: 6



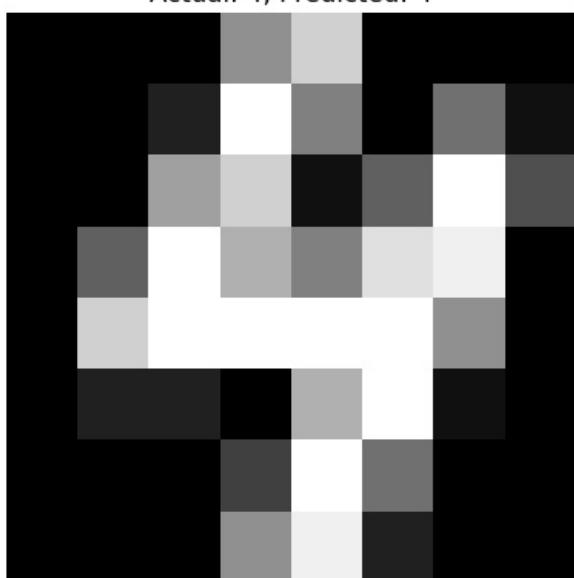
Actual: 8, Predicted: 8



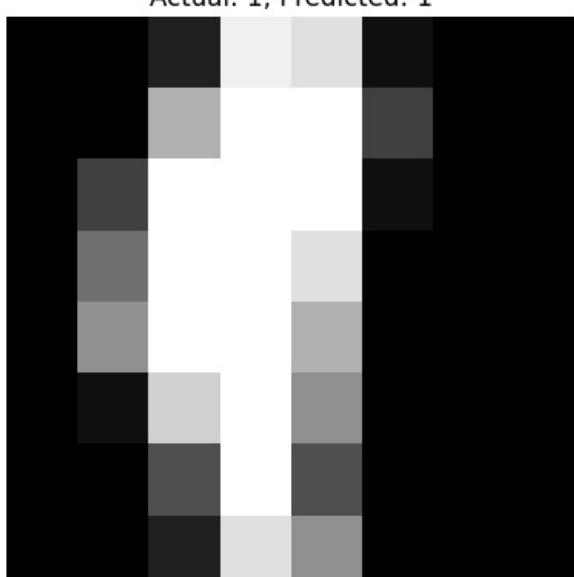
Actual: 7, Predicted: 7



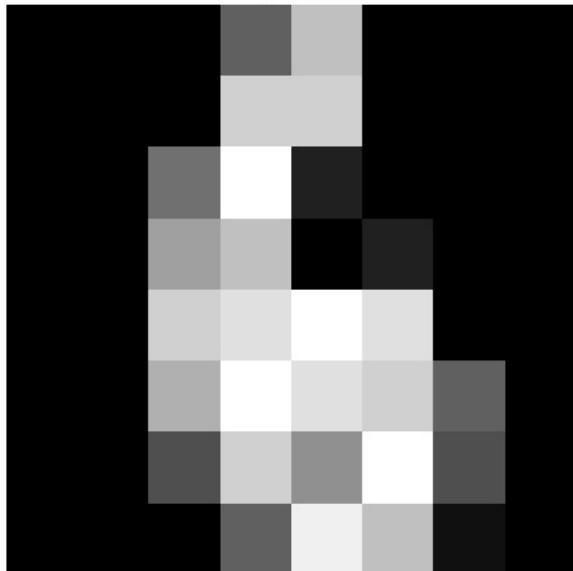
Actual: 4, Predicted: 4



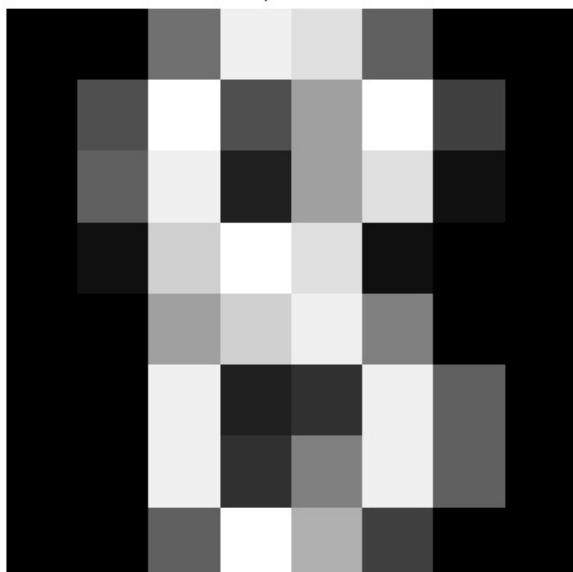
Actual: 1, Predicted: 1



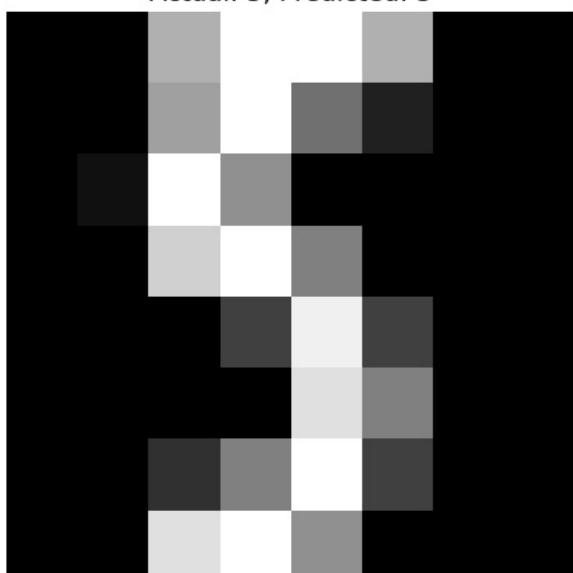
Actual: 6, Predicted: 6



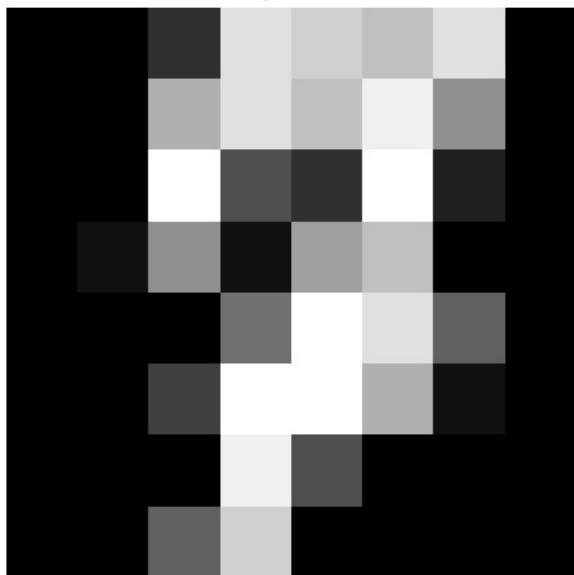
Actual: 8, Predicted: 8



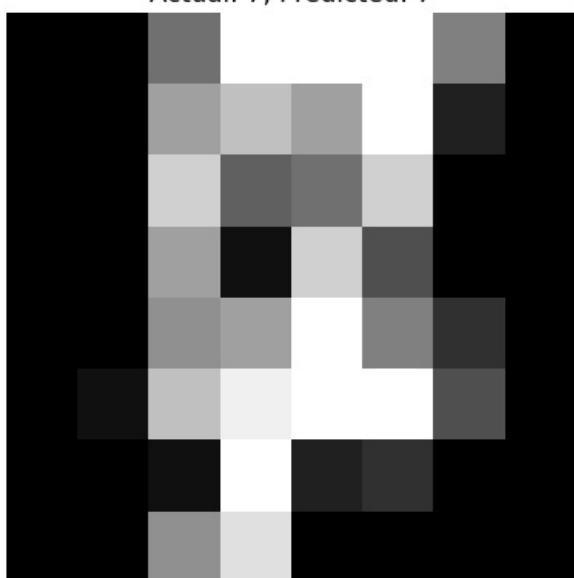
Actual: 5, Predicted: 5



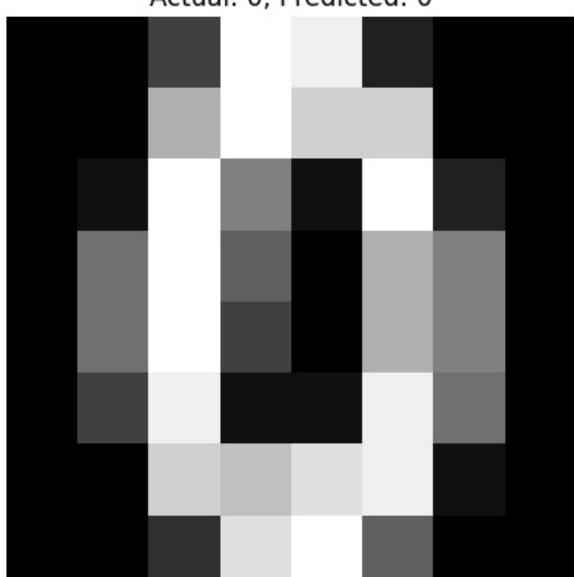
Actual: 7, Predicted: 7



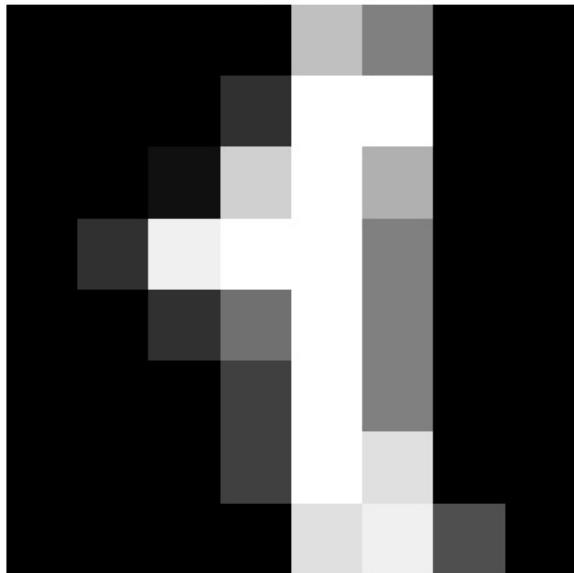
Actual: 7, Predicted: 7



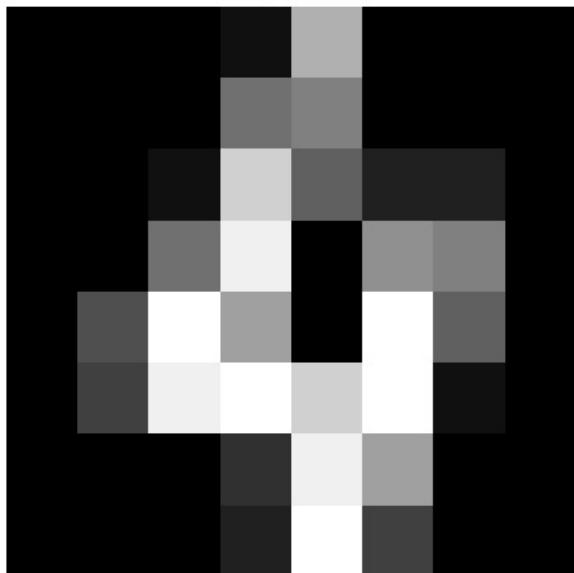
Actual: 0, Predicted: 0



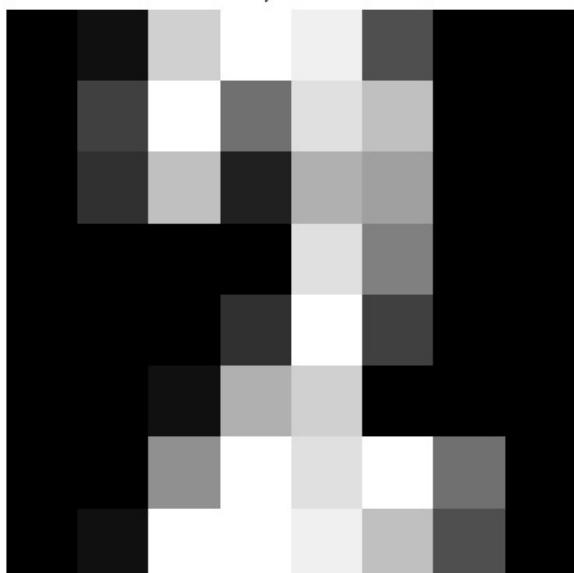
Actual: 1, Predicted: 1



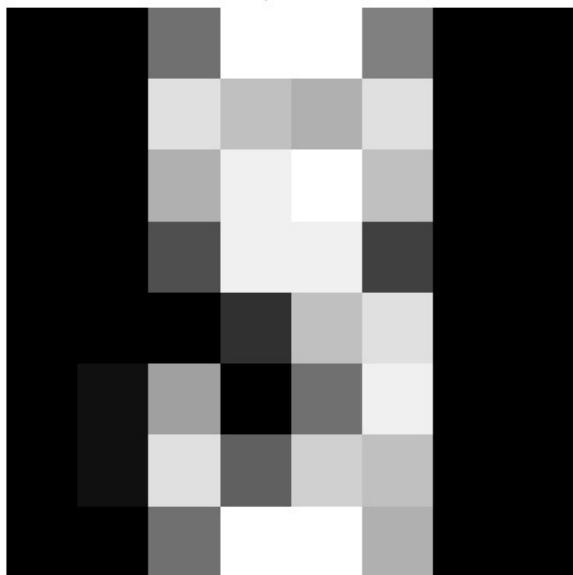
Actual: 4, Predicted: 4



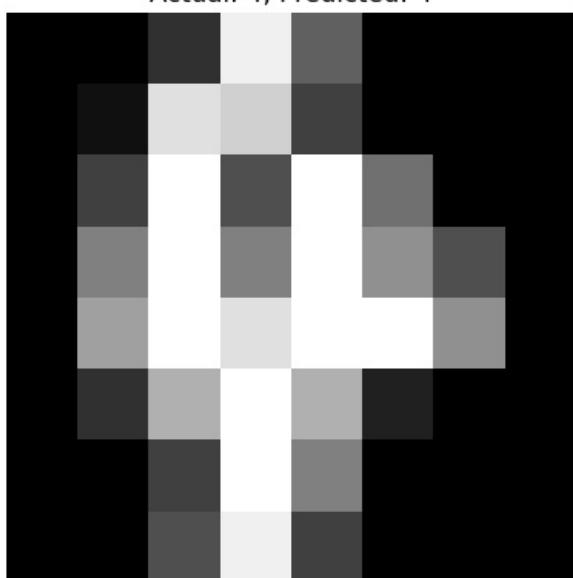
Actual: 2, Predicted: 2



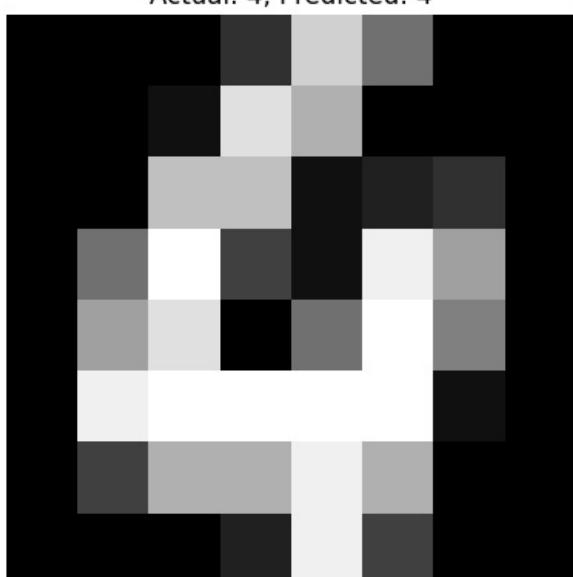
Actual: 9, Predicted: 3



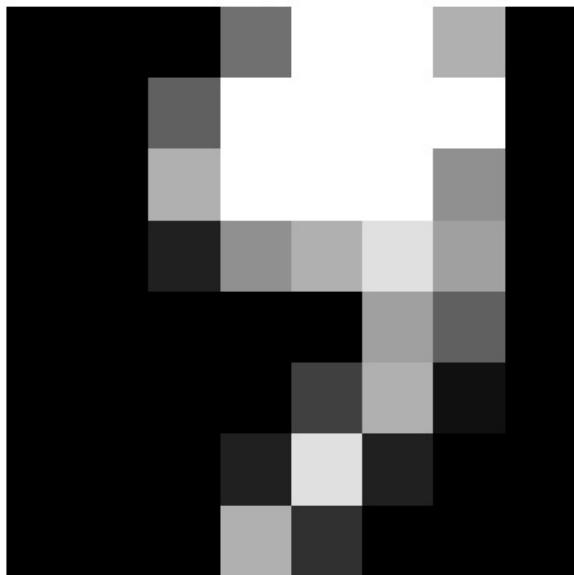
Actual: 4, Predicted: 4



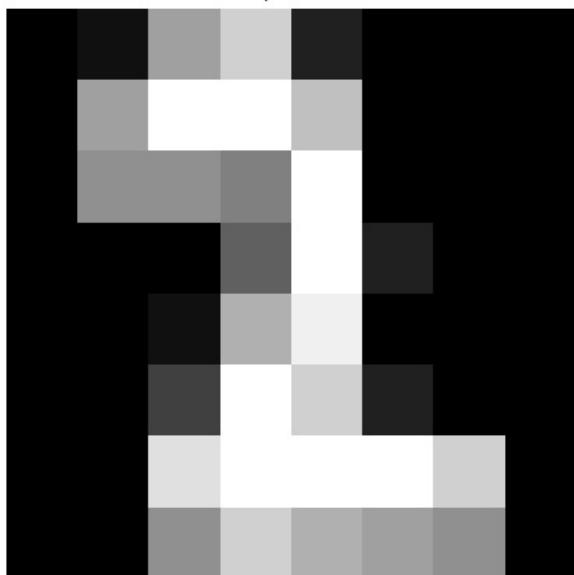
Actual: 4, Predicted: 4



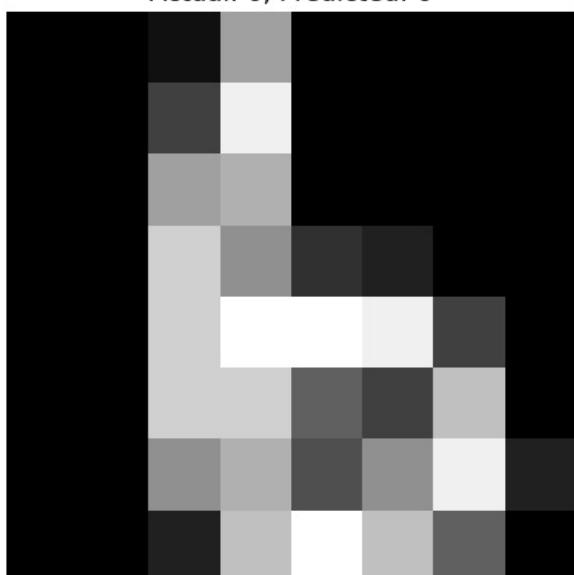
Actual: 9, Predicted: 9



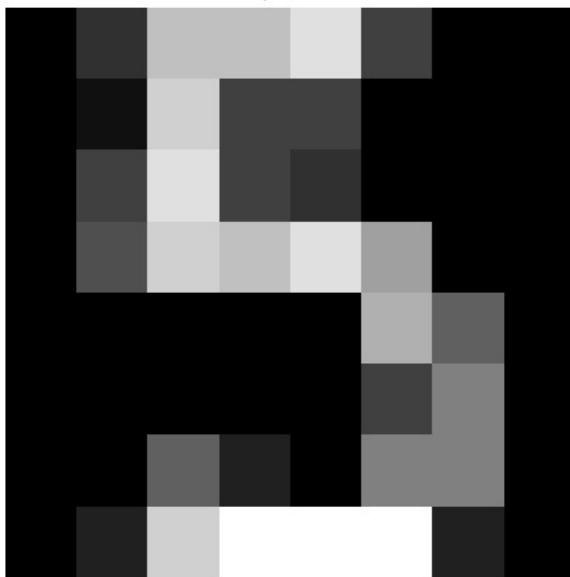
Actual: 2, Predicted: 2



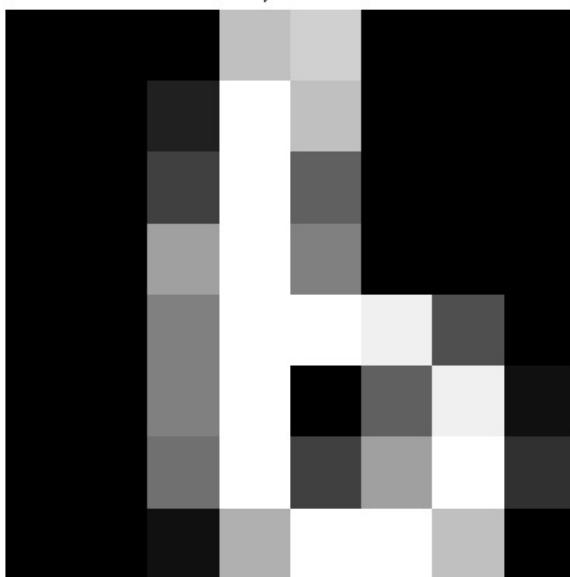
Actual: 6, Predicted: 6



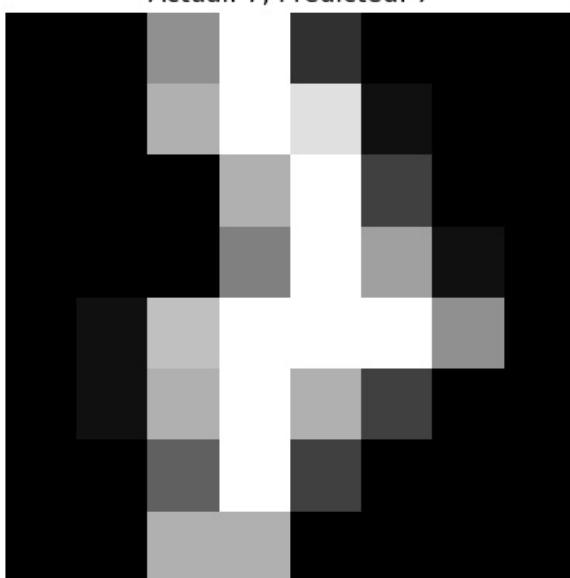
Actual: 5, Predicted: 5



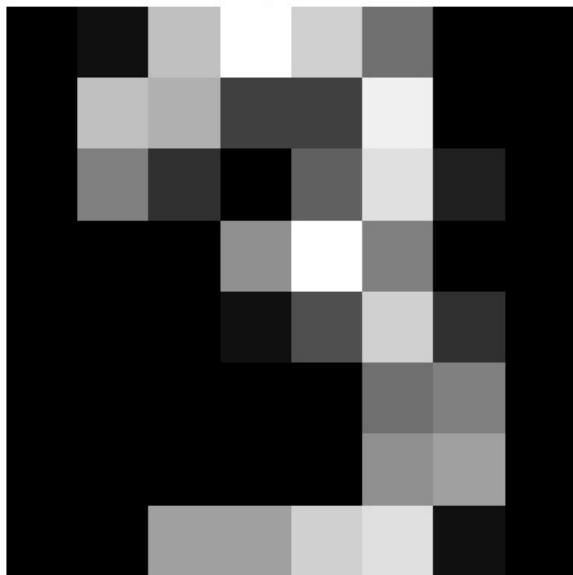
Actual: 6, Predicted: 6



Actual: 7, Predicted: 7



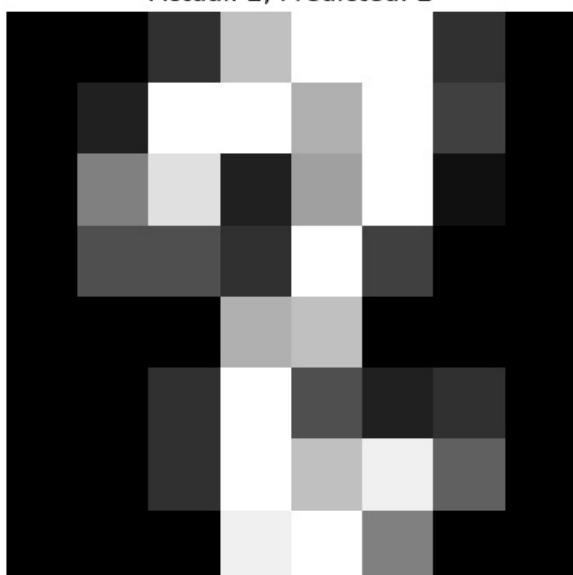
Actual: 3, Predicted: 3



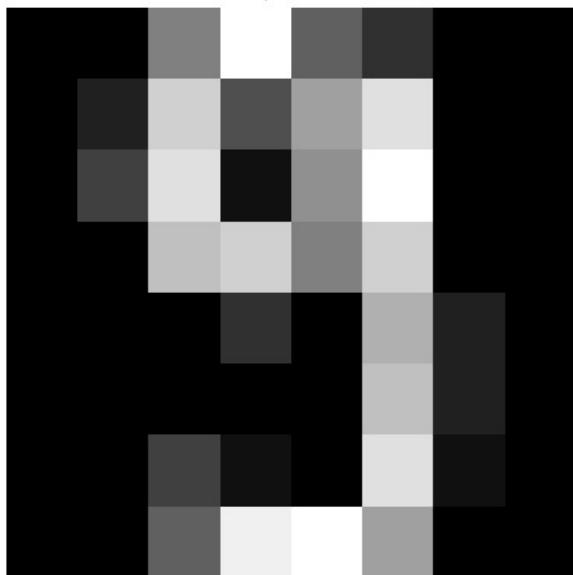
Actual: 2, Predicted: 2



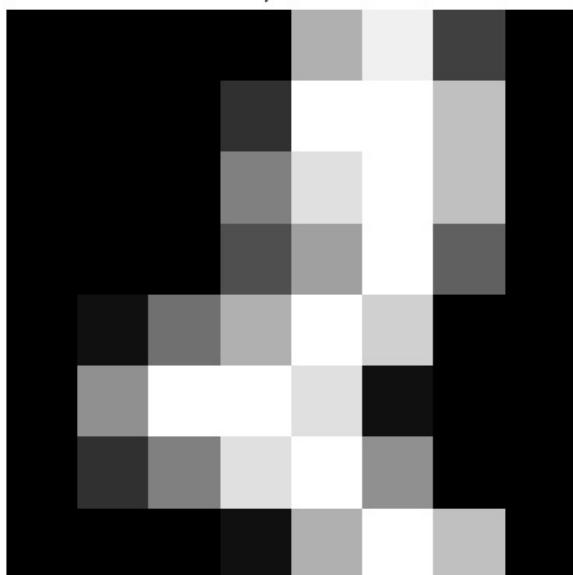
Actual: 2, Predicted: 2



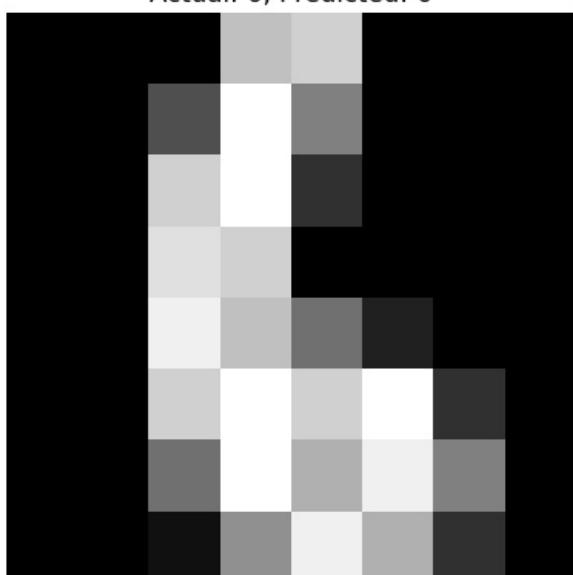
Actual: 9, Predicted: 9



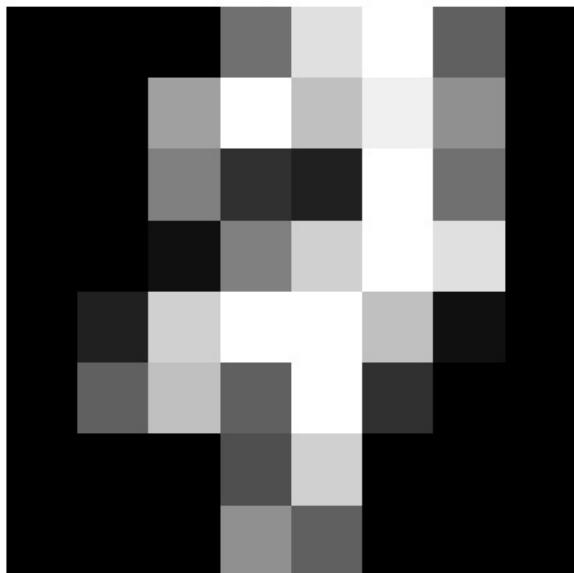
Actual: 2, Predicted: 2



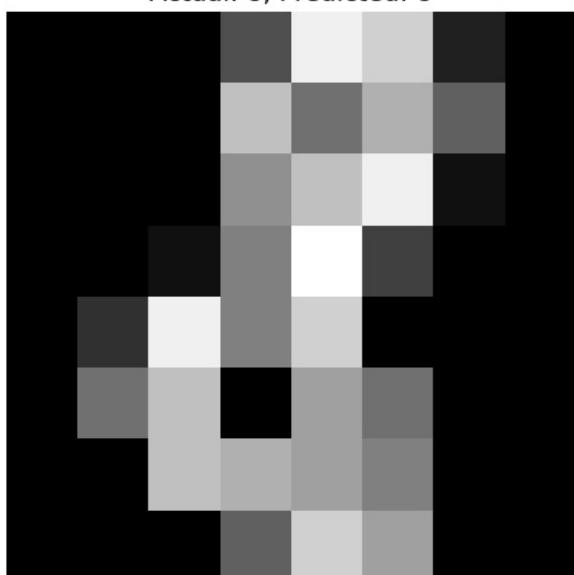
Actual: 6, Predicted: 6



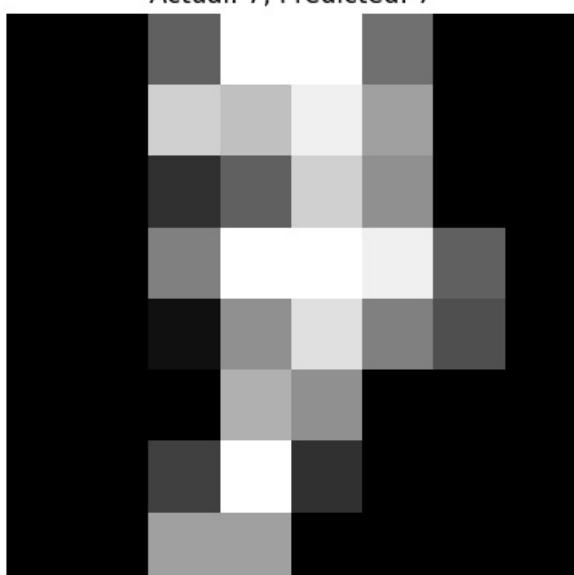
Actual: 7, Predicted: 7



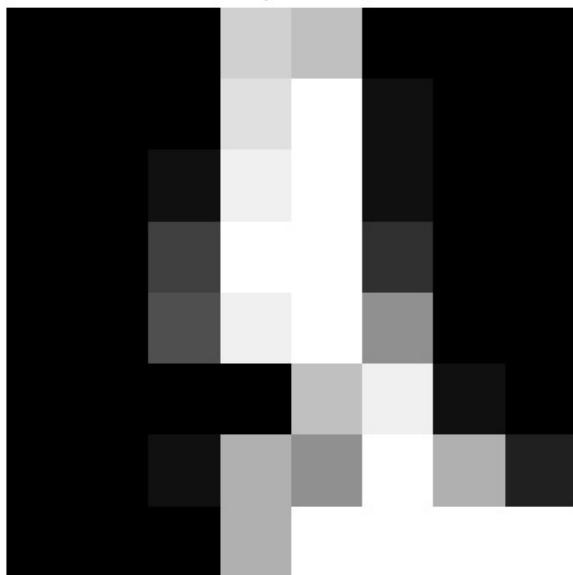
Actual: 8, Predicted: 8



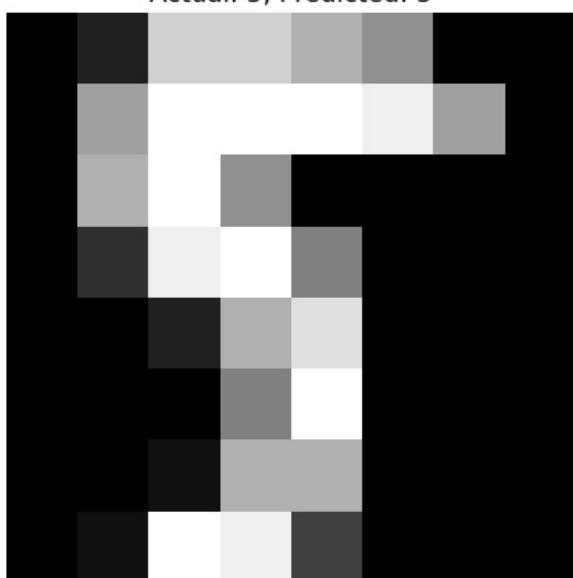
Actual: 7, Predicted: 7



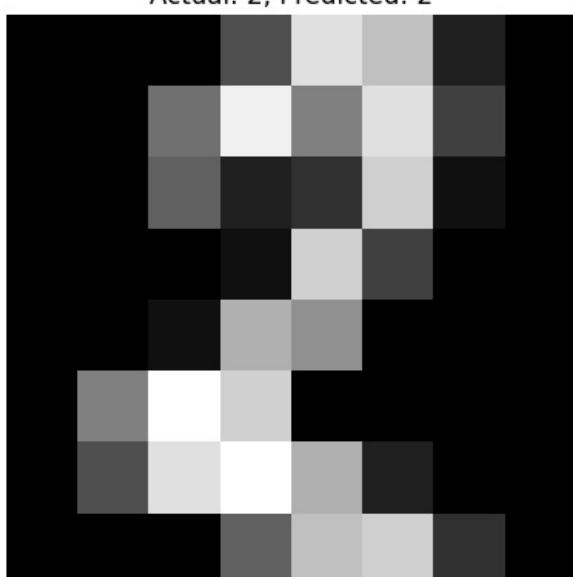
Actual: 1, Predicted: 1



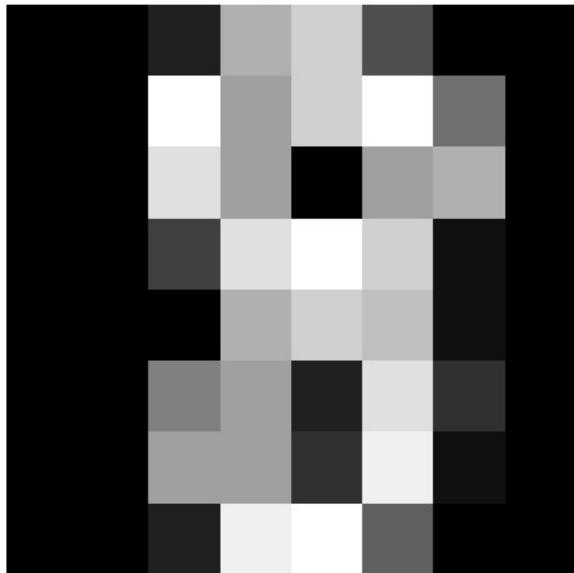
Actual: 5, Predicted: 5



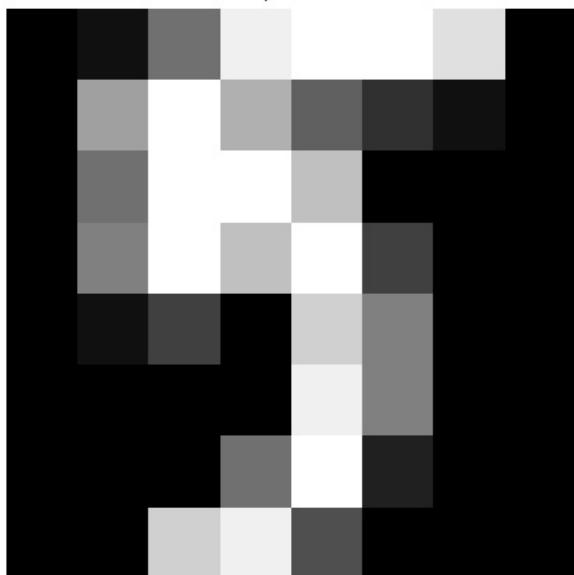
Actual: 2, Predicted: 2



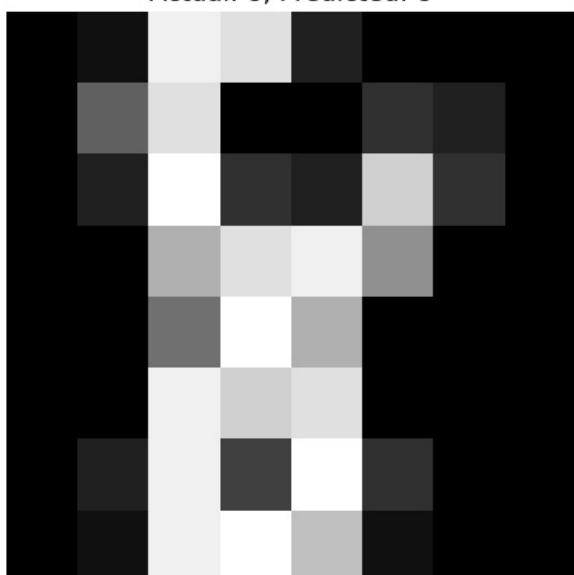
Actual: 8, Predicted: 8



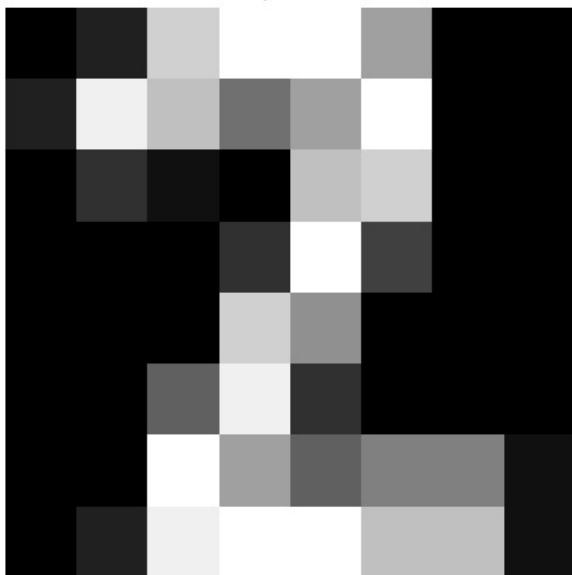
Actual: 5, Predicted: 5



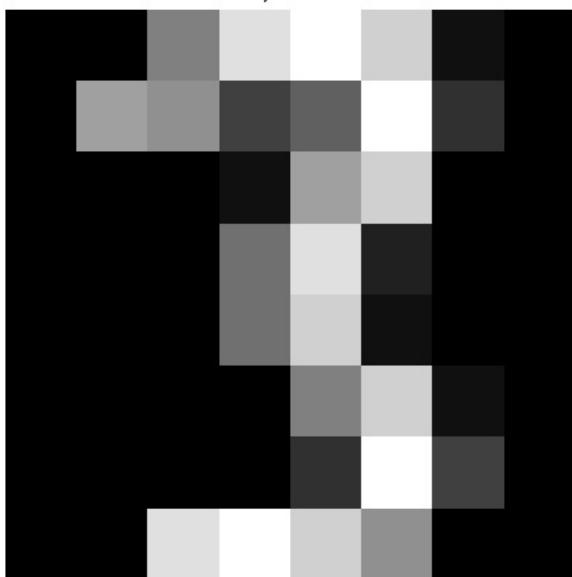
Actual: 8, Predicted: 8



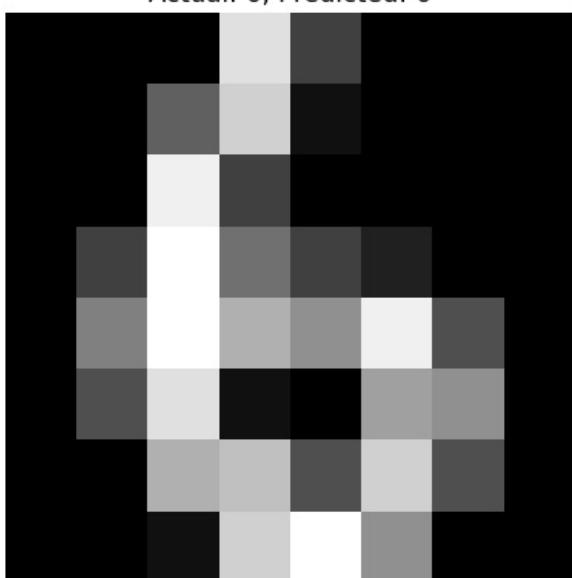
Actual: 2, Predicted: 2



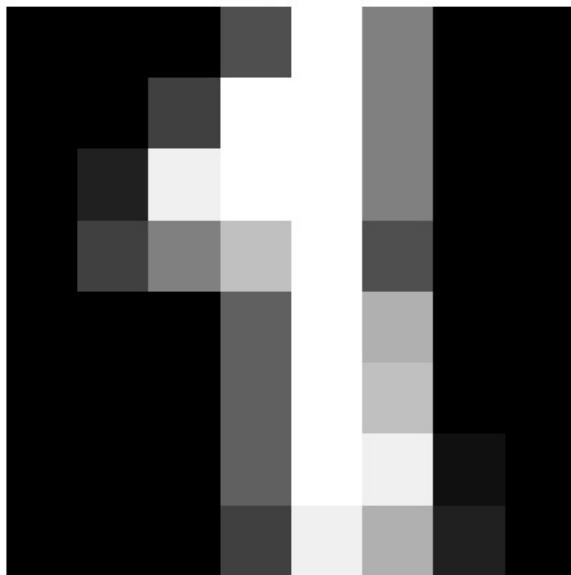
Actual: 3, Predicted: 3



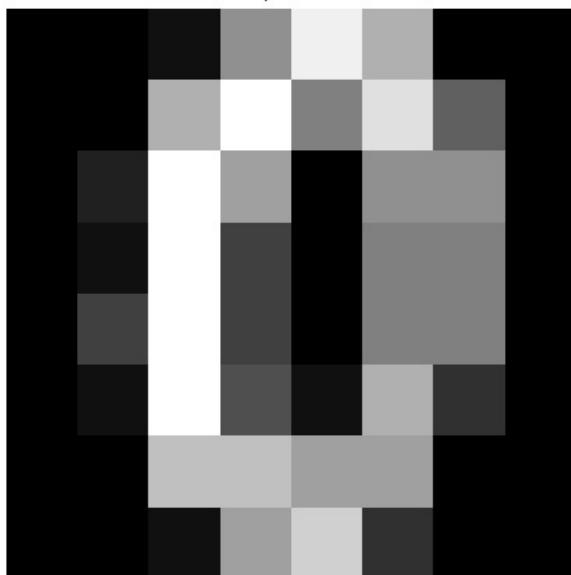
Actual: 6, Predicted: 6



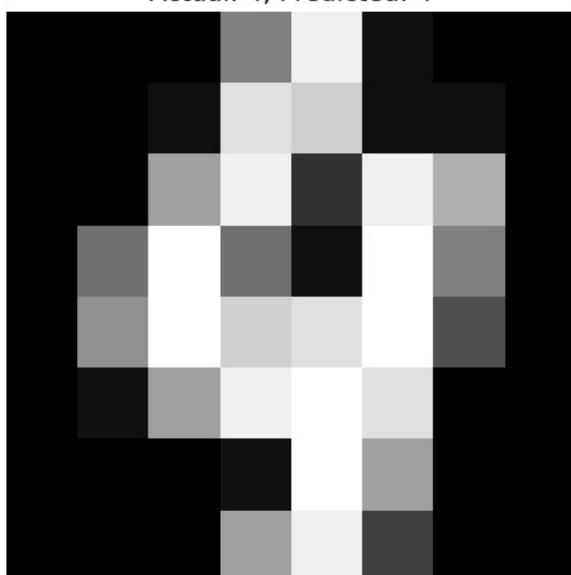
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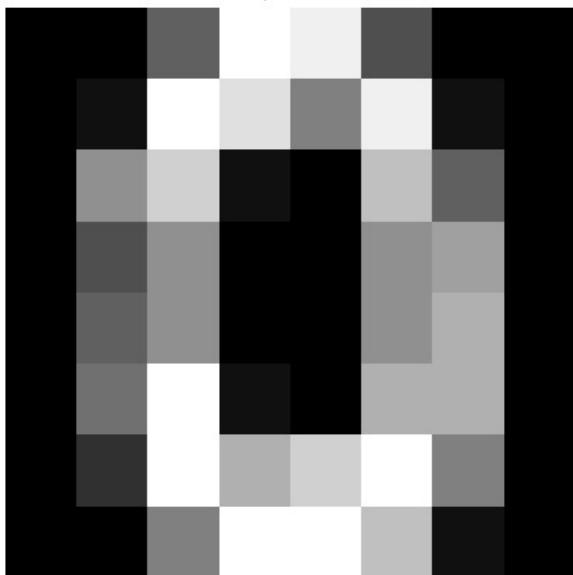
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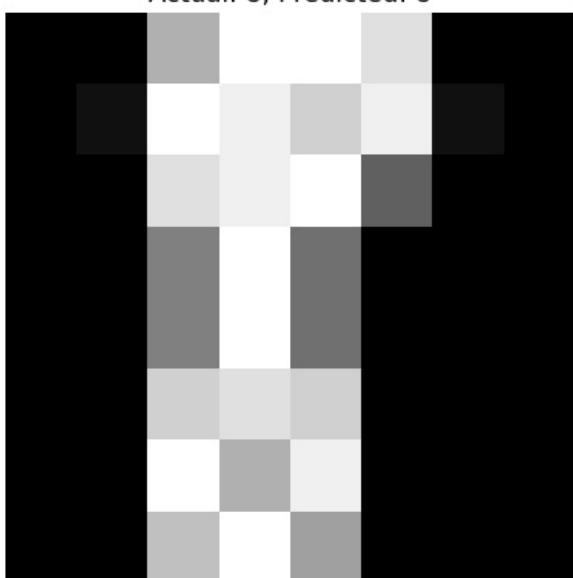
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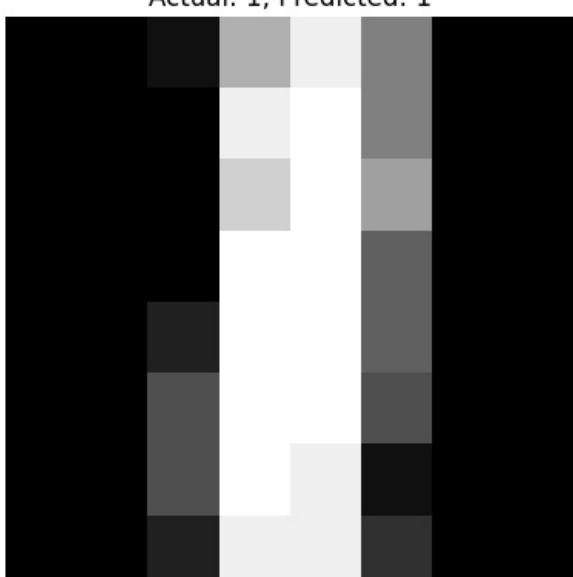
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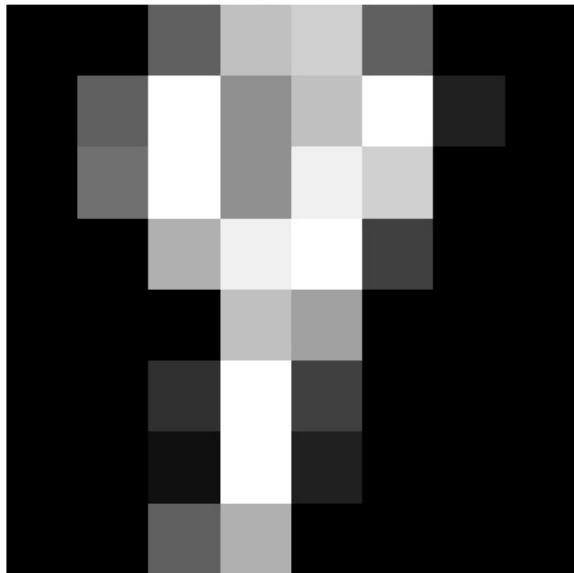
Actual: 8, Predicted: 8



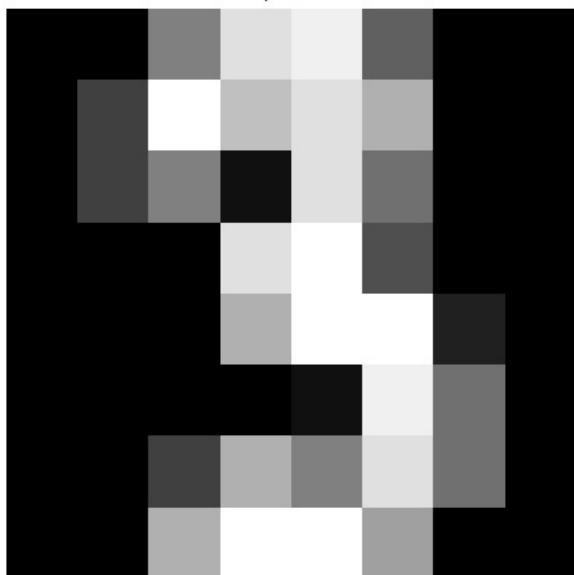
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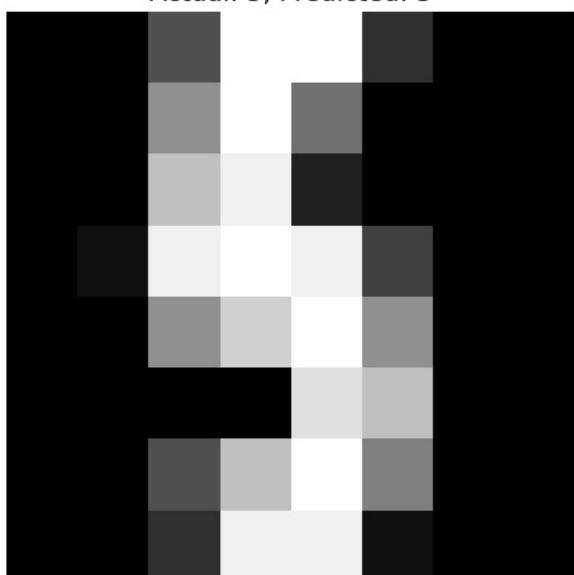
Actual: 9, Predicted: 7



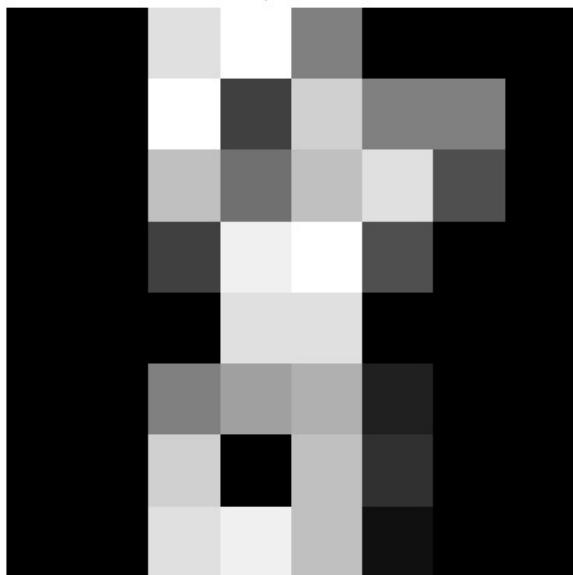
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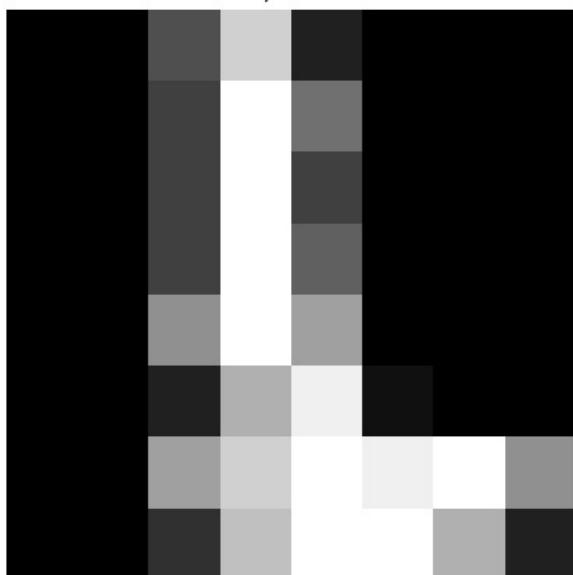
Actual: 5, Predicted: 5



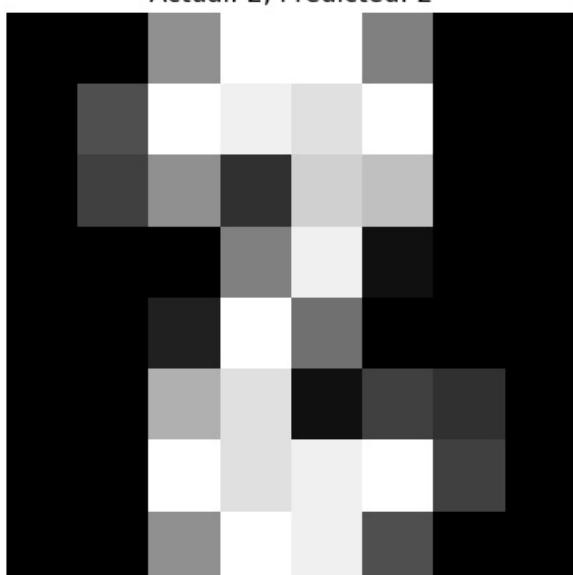
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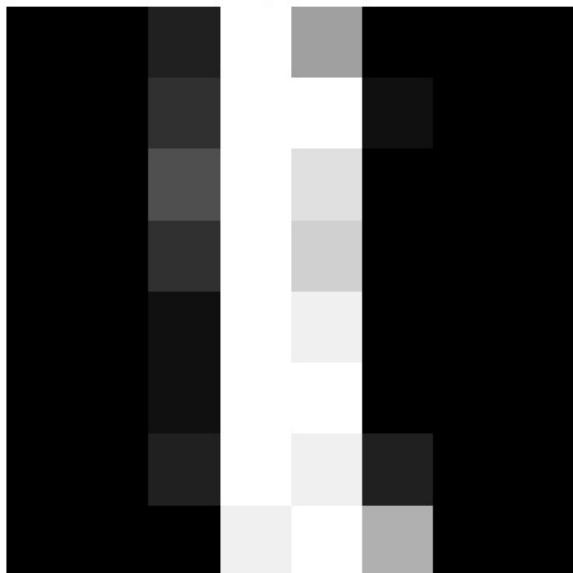
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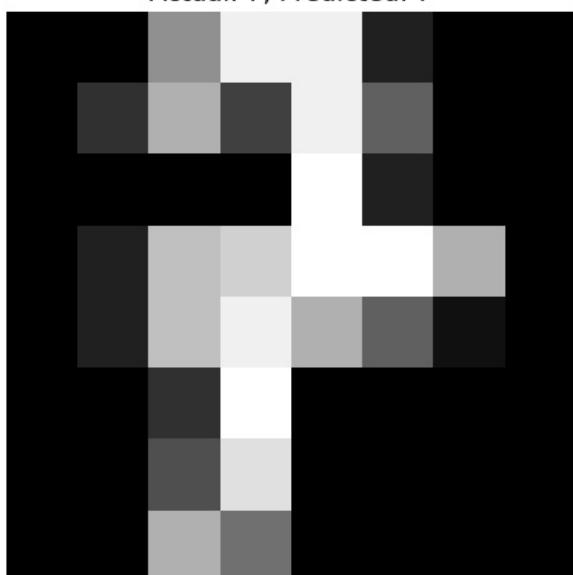
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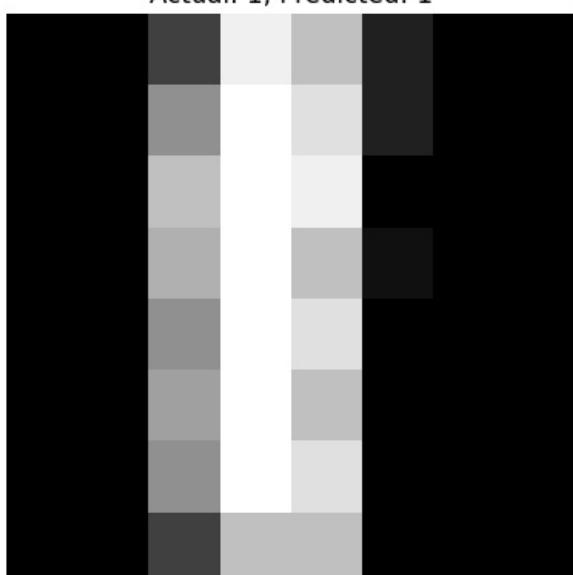
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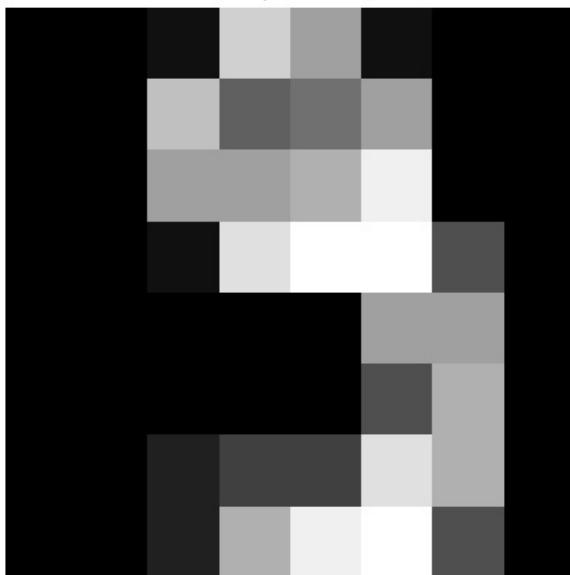
Actual: 7, Predicted: 7



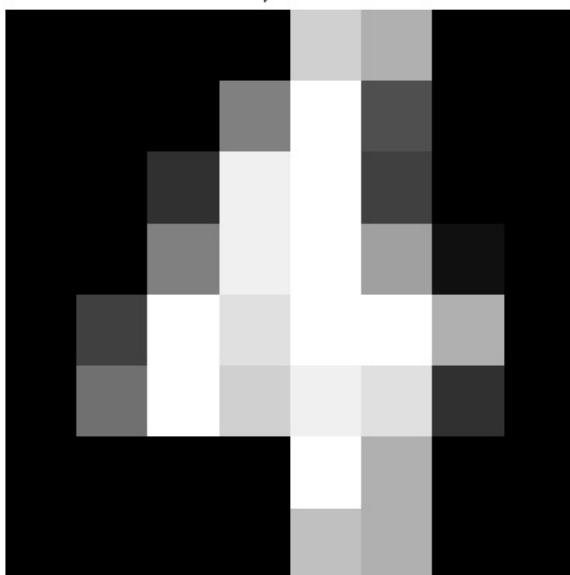
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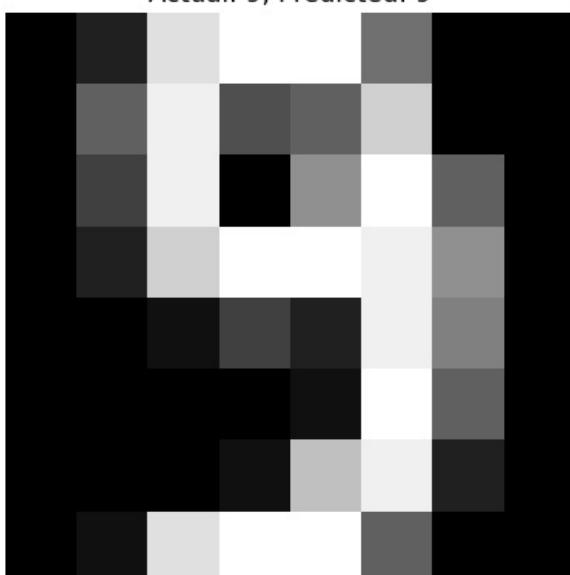
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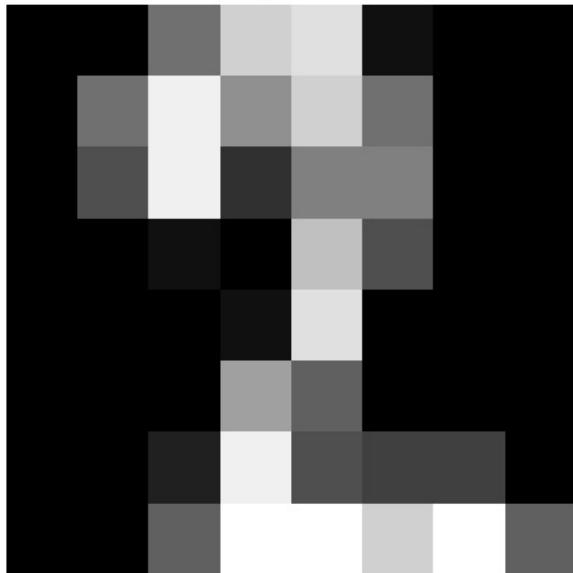
Actual: 4, Predicted: 4



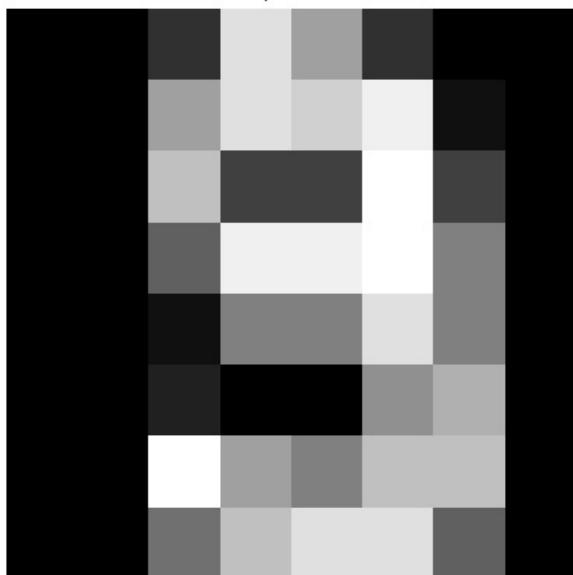
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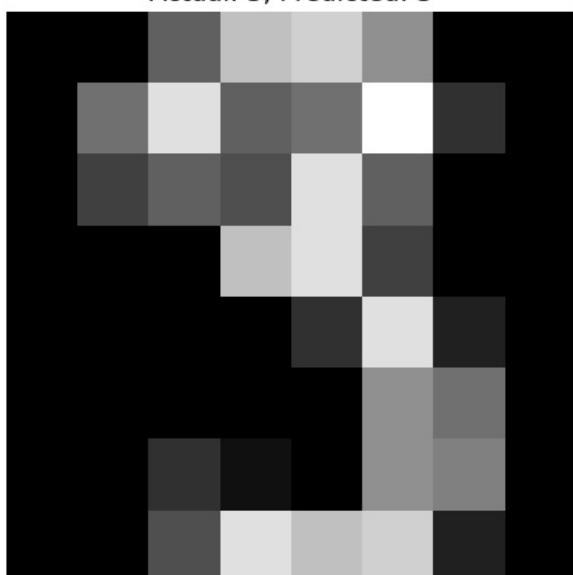
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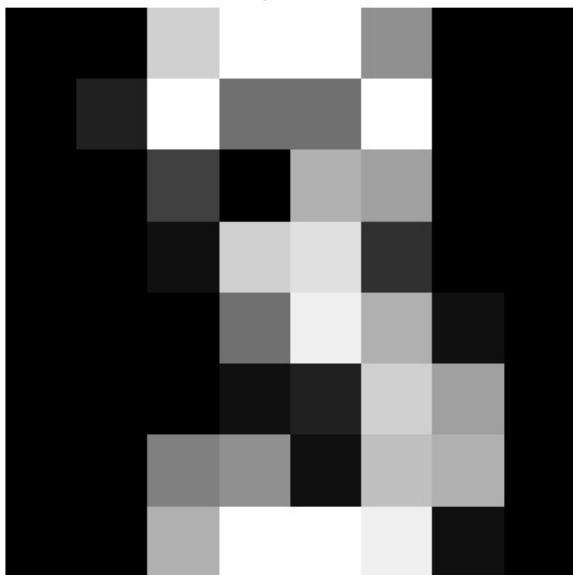
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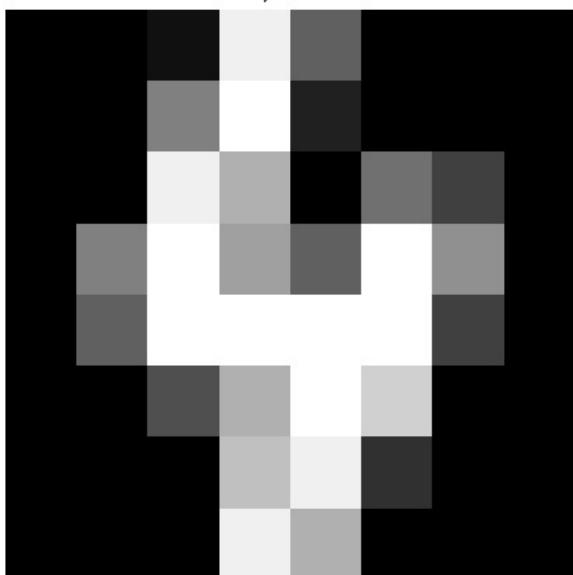
Actual: 3, Predicted: 3



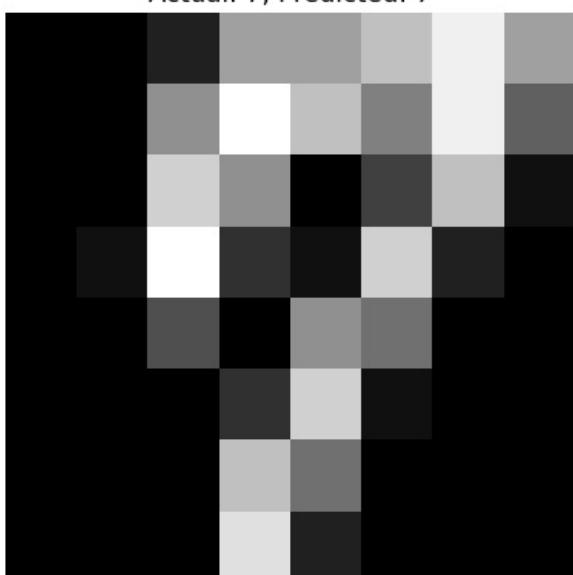
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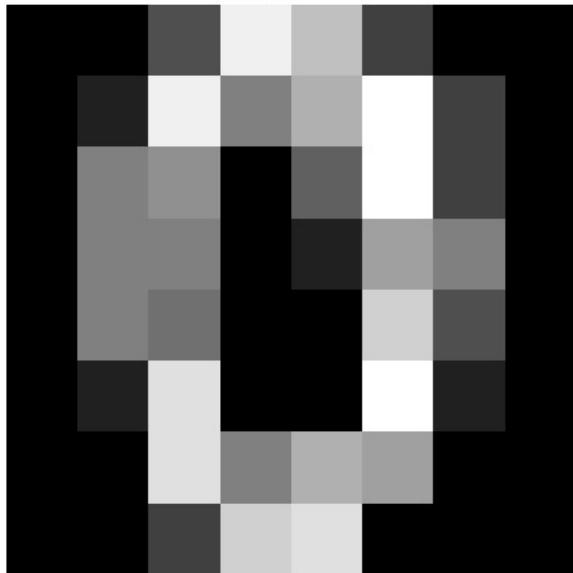
Actual: 4, Predicted: 4



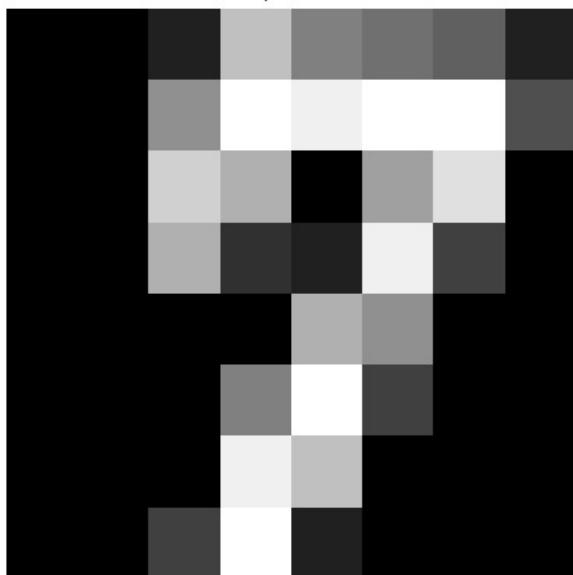
Actual: 7, Predicted: 7



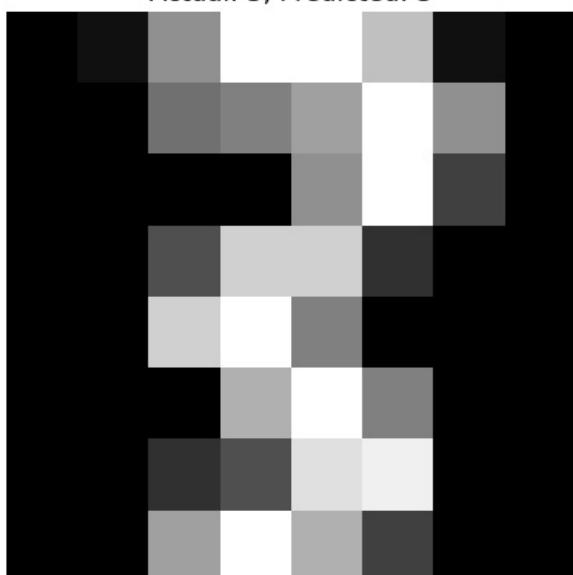
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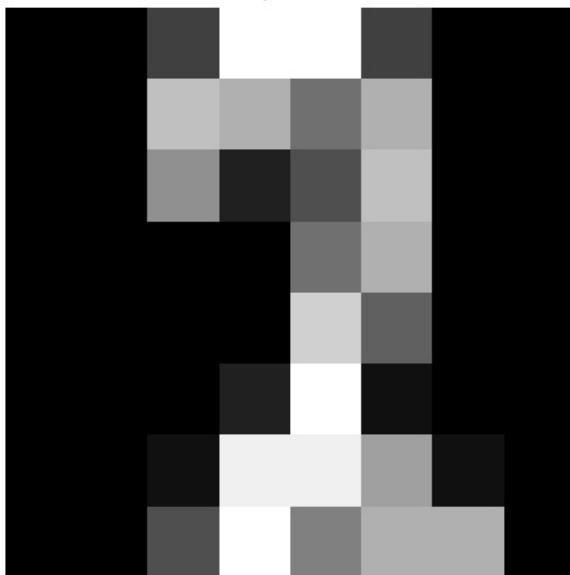
Actual: 7, Predicted: 7



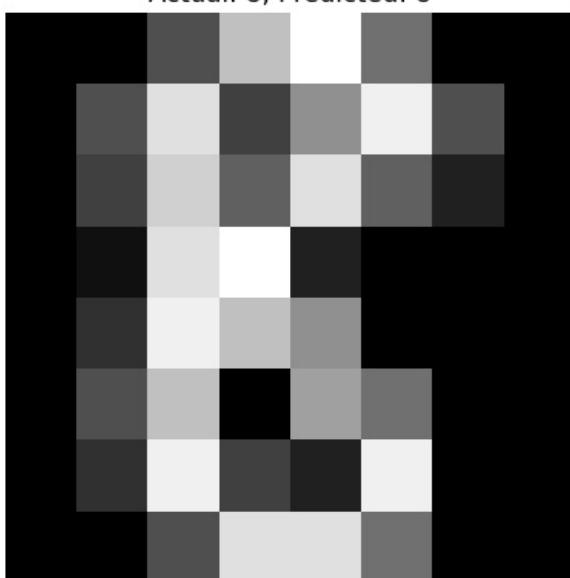
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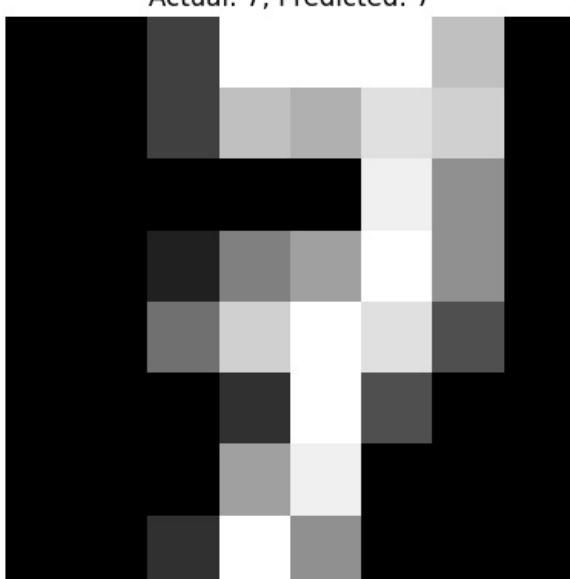
Actual: 2, Predicted: 2



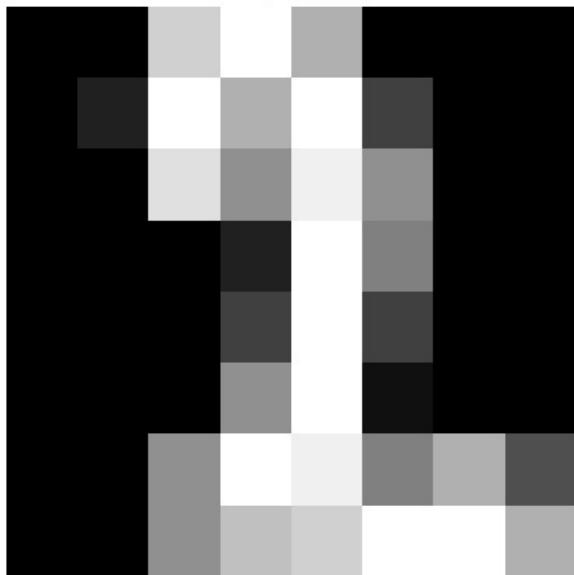
Actual: 8, Predicted: 8



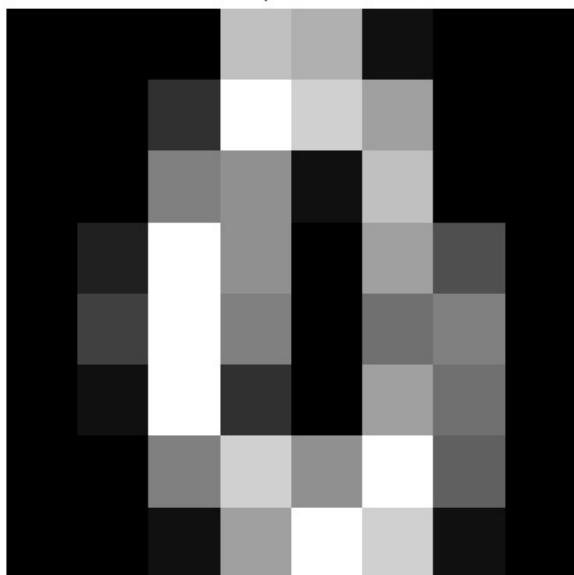
Actual: 7, Predicted: 7



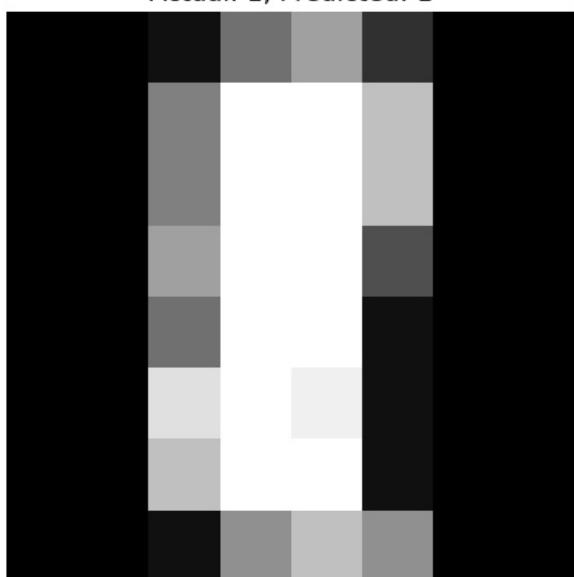
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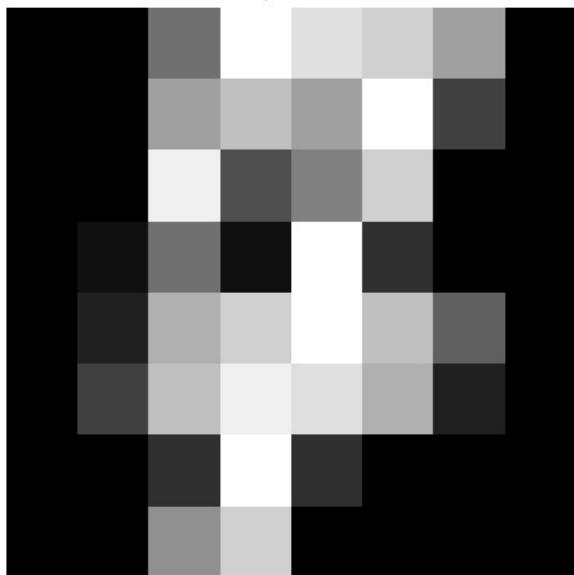
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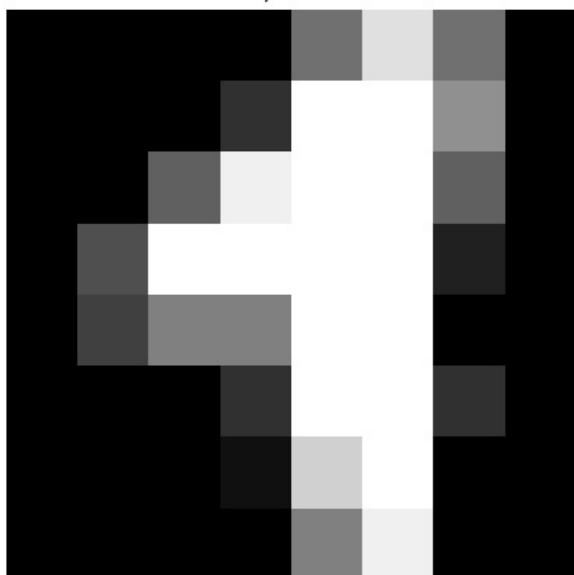
Actual: 1, Predicted: 1



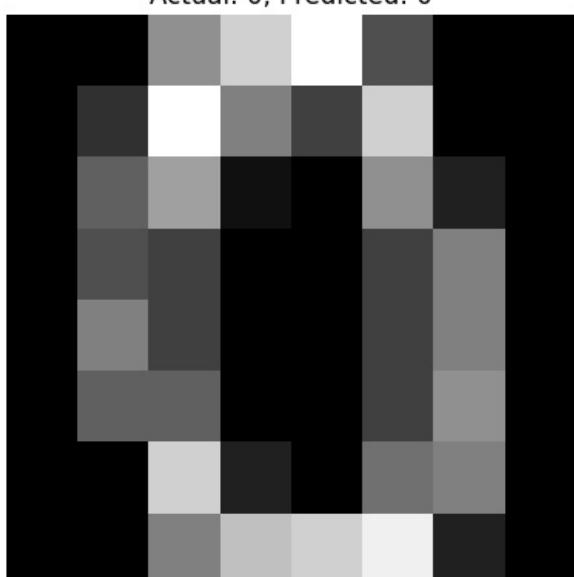
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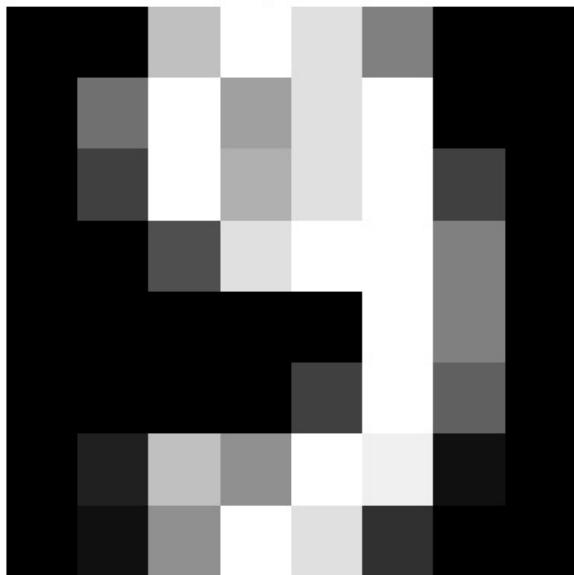
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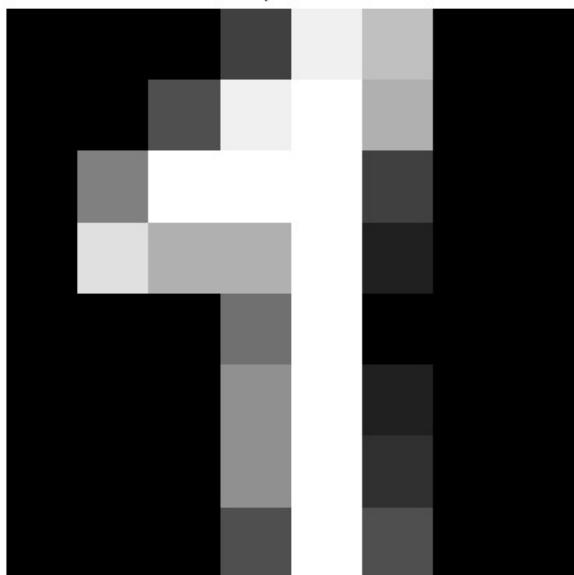
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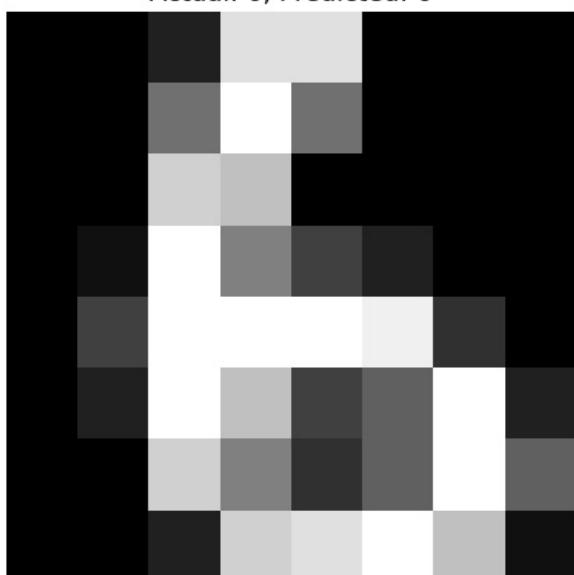
Actual: 9, Predicted: 9



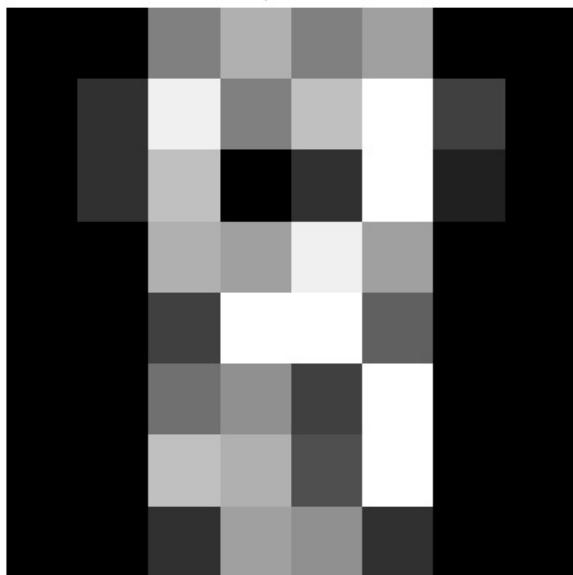
Actual: 1, Predicted: 1



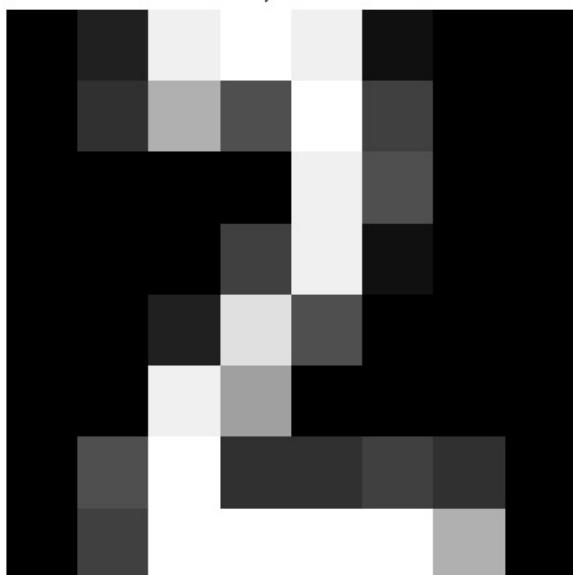
Actual: 6, Predicted: 6



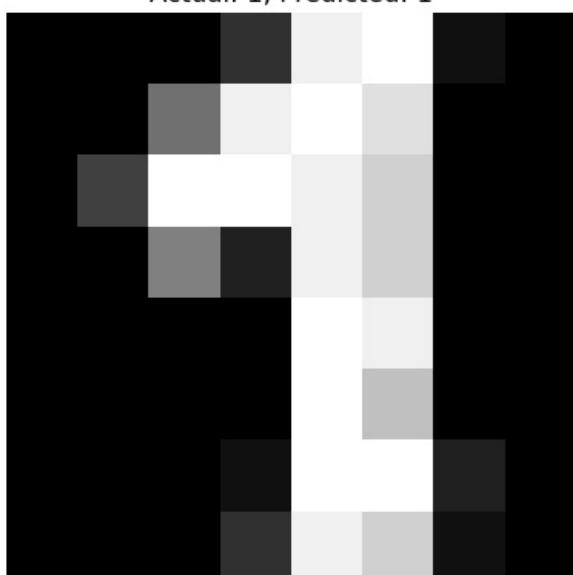
Actual: 8, Predicted: 8



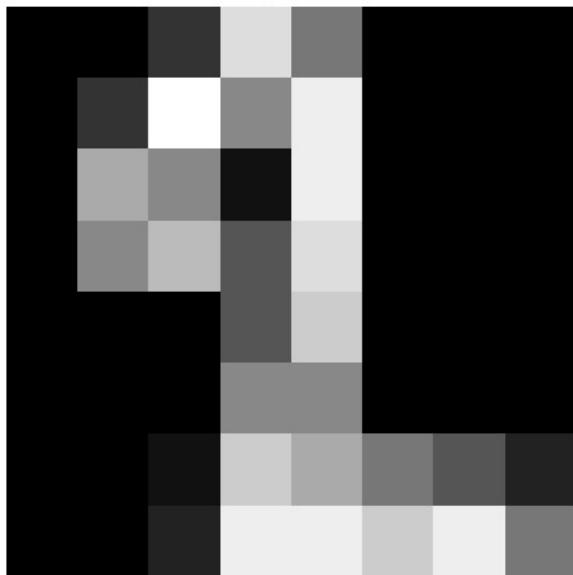
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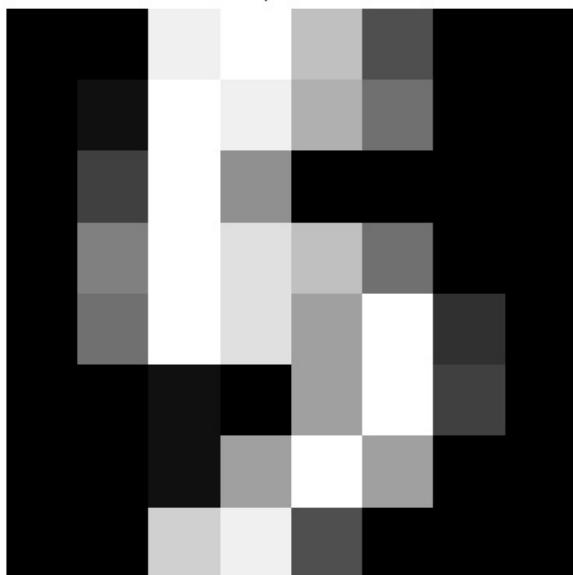
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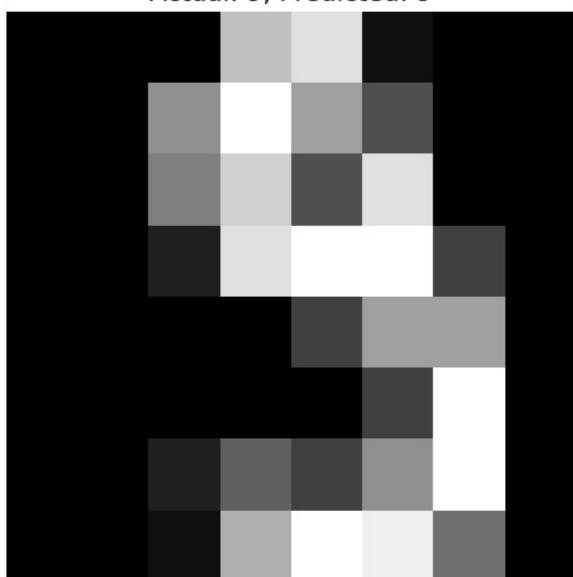
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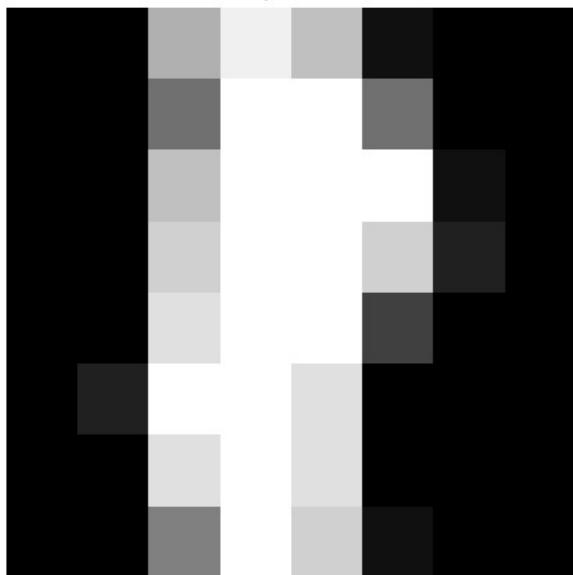
Actual: 5, Predicted: 5



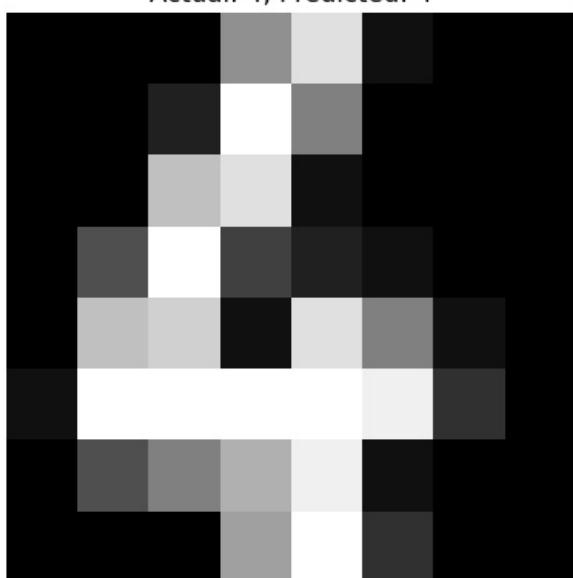
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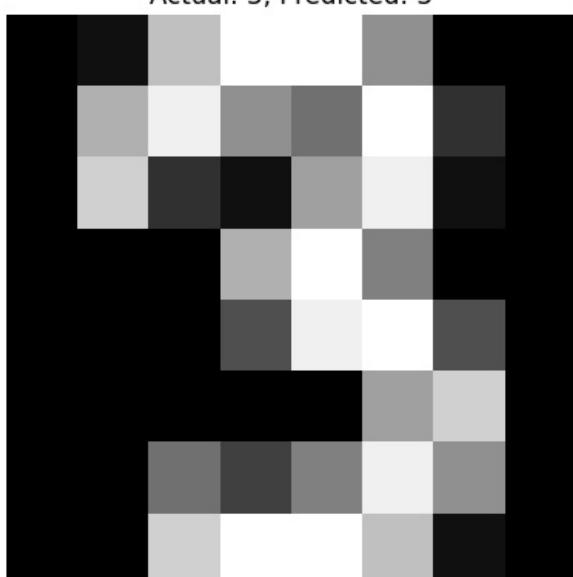
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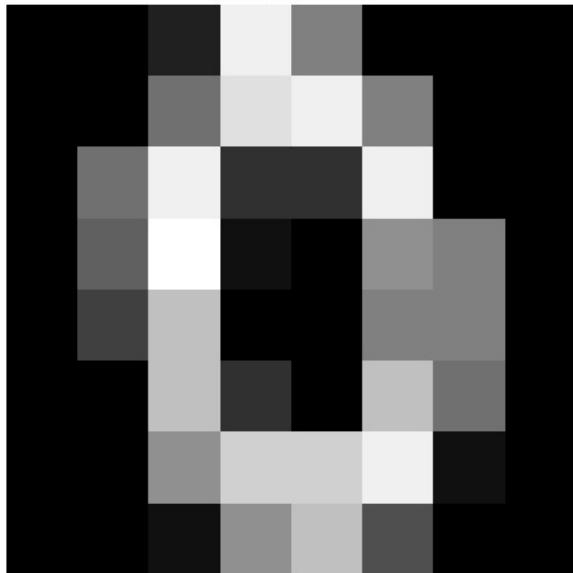
Actual: 4, Predicted: 4



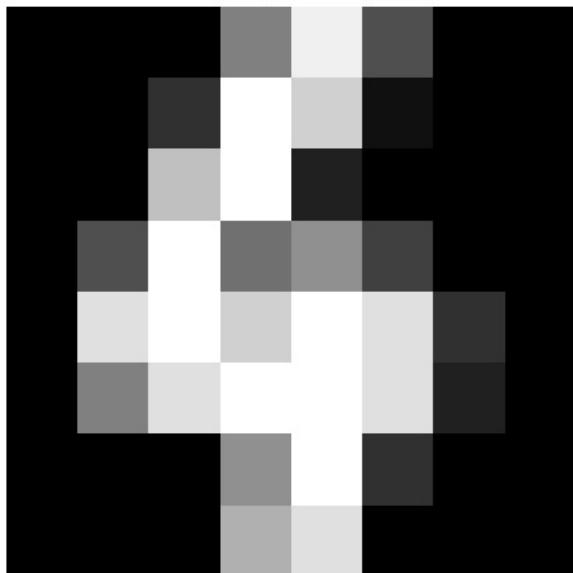
Actual: 3, Predicted: 3



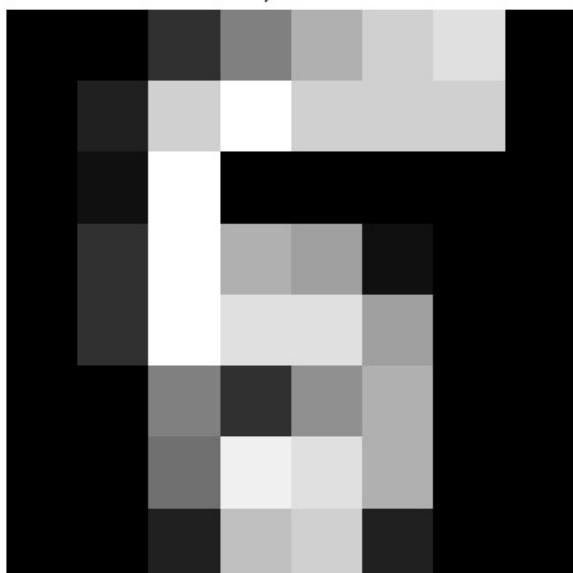
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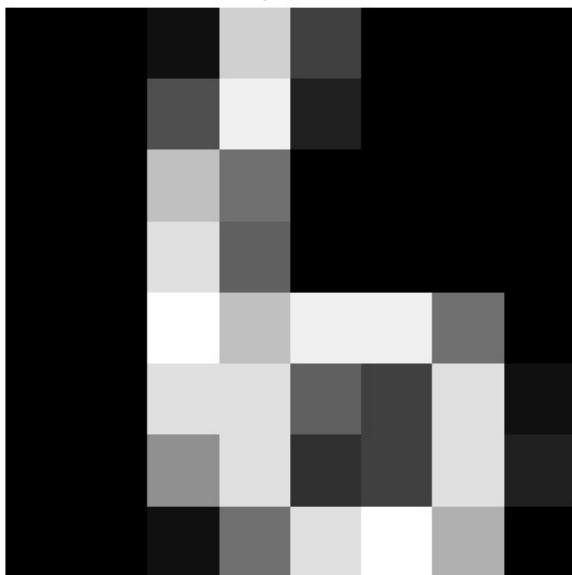
Actual: 4, Predicted: 4



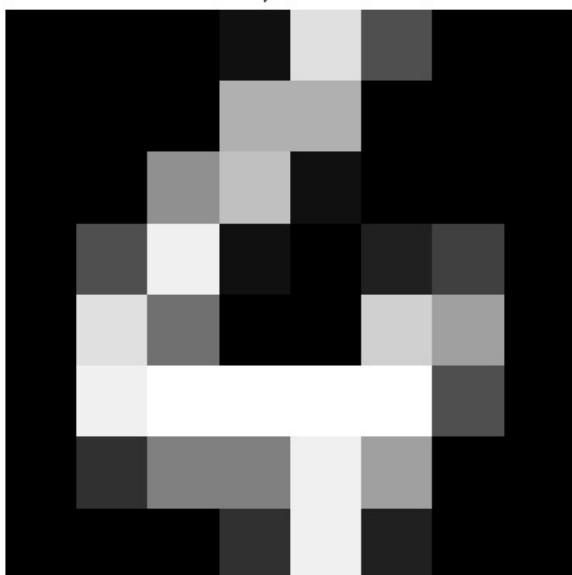
Actual: 5, Predicted: 5



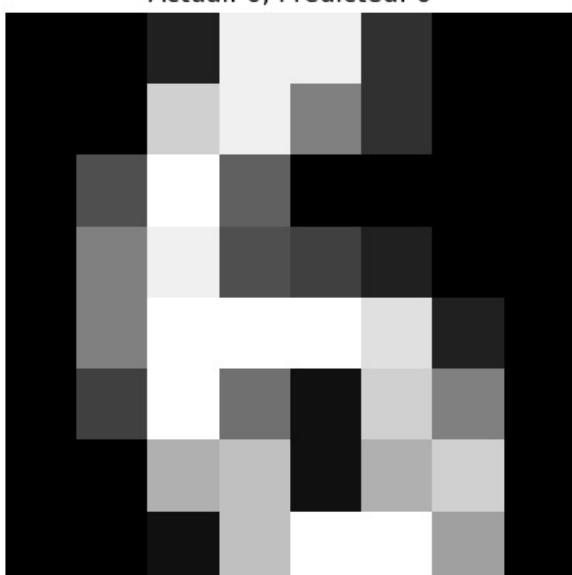
Actual: 6, Predicted: 6



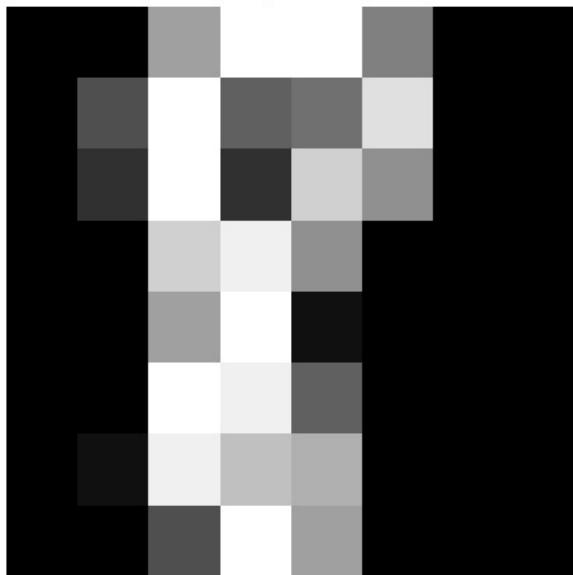
Actual: 4, Predicted: 4



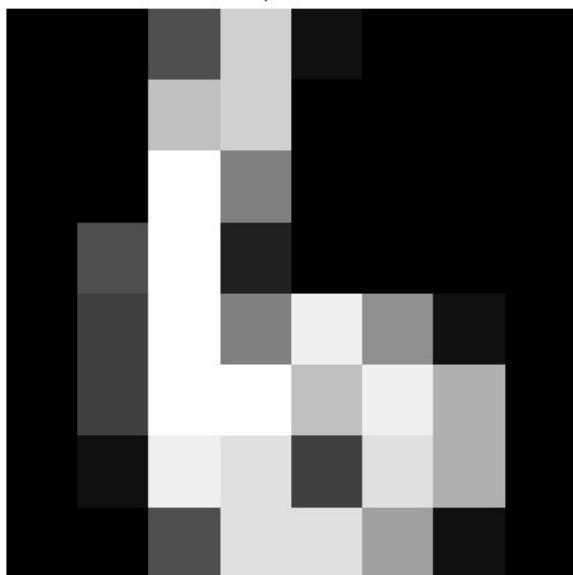
Actual: 6, Predicted: 6



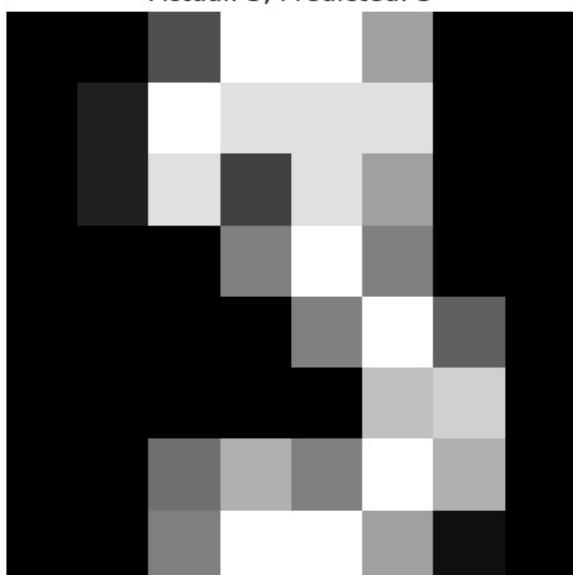
Actual: 8, Predicted: 8



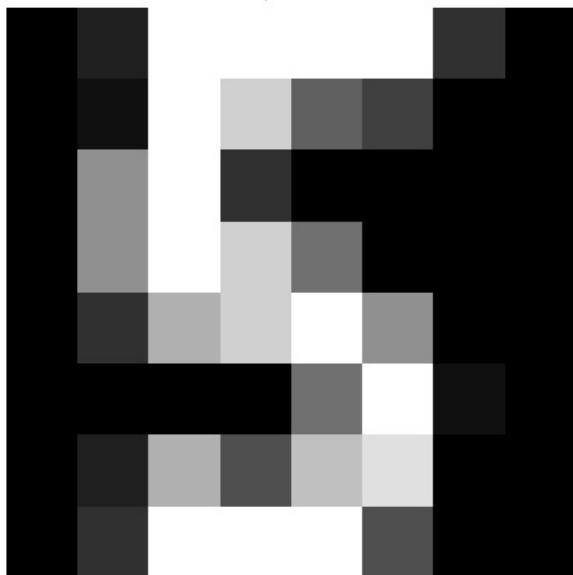
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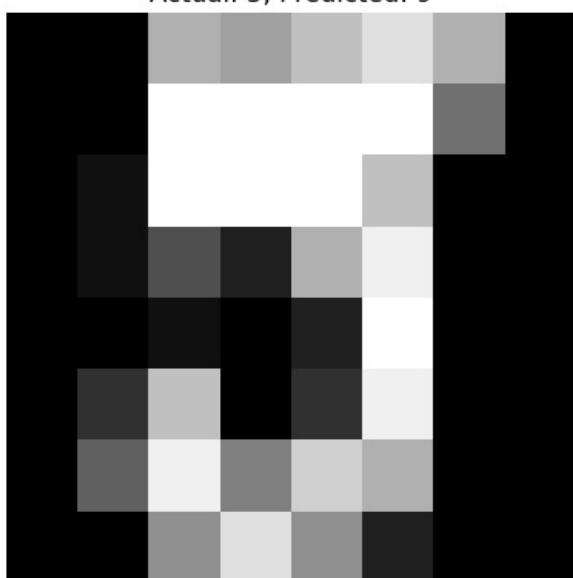
Actual: 3, Predicted: 3



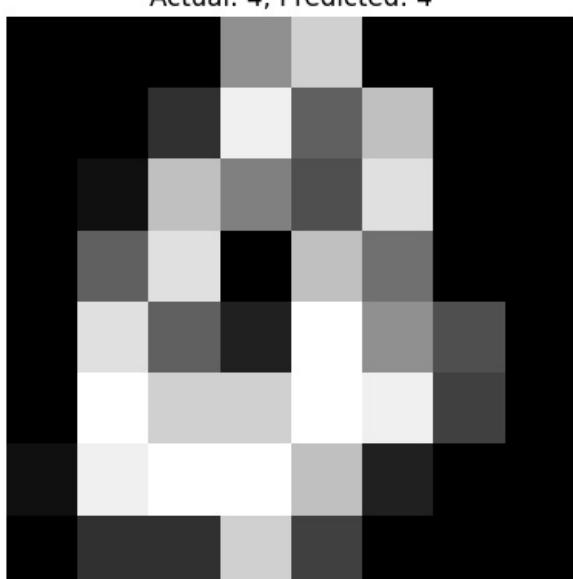
Actual: 5, Predicted: 5



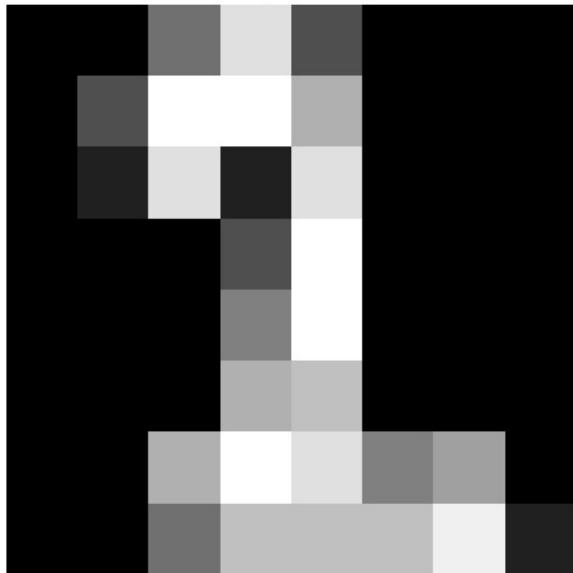
Actual: 5, Predicted: 9



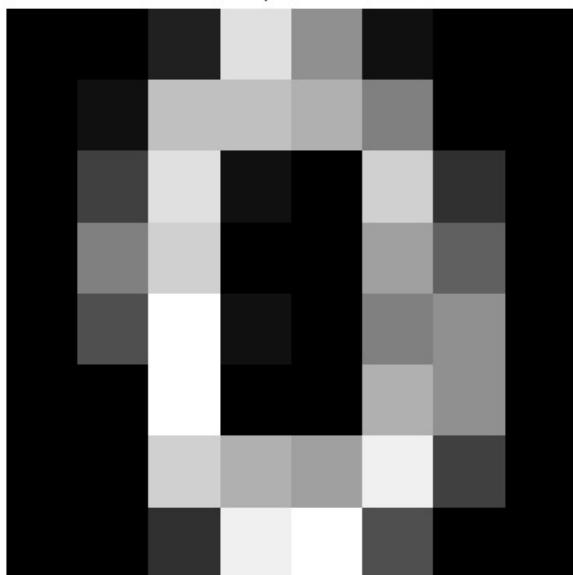
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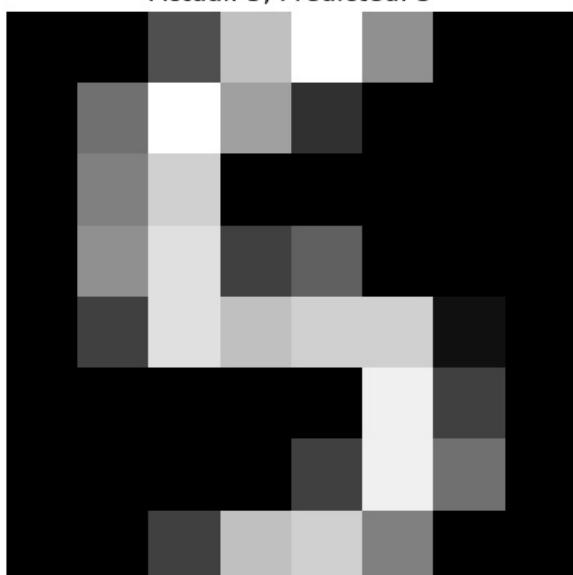
Actual: 2, Predicted: 2



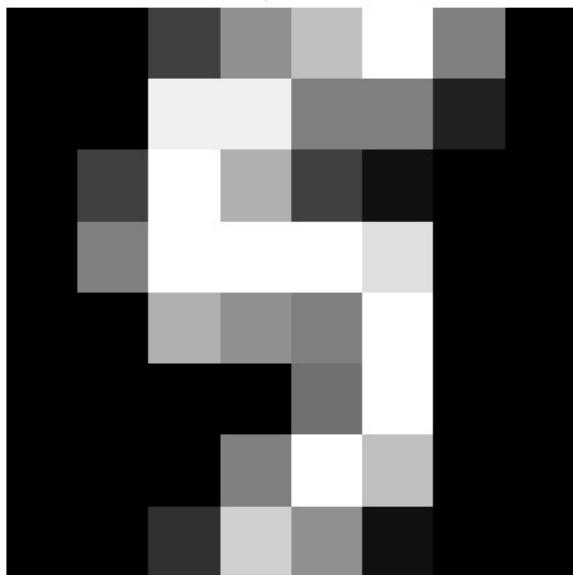
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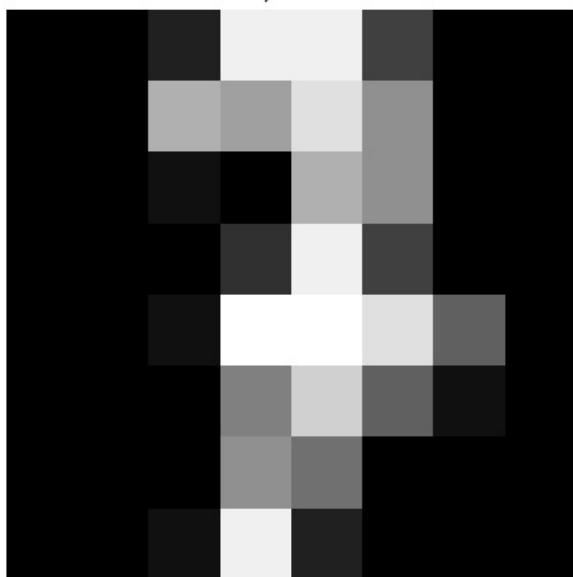
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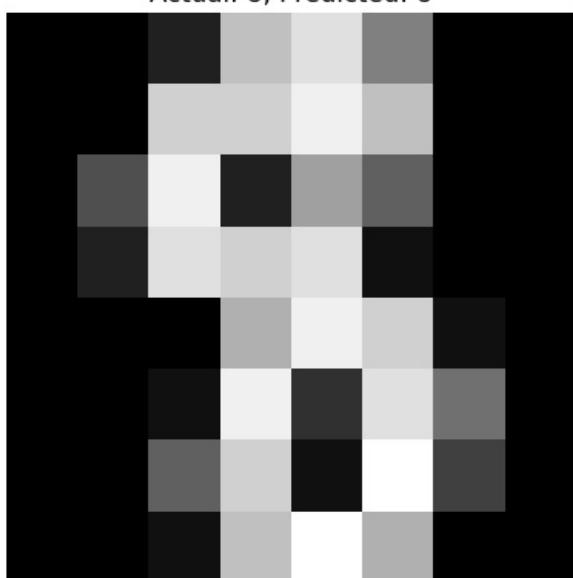
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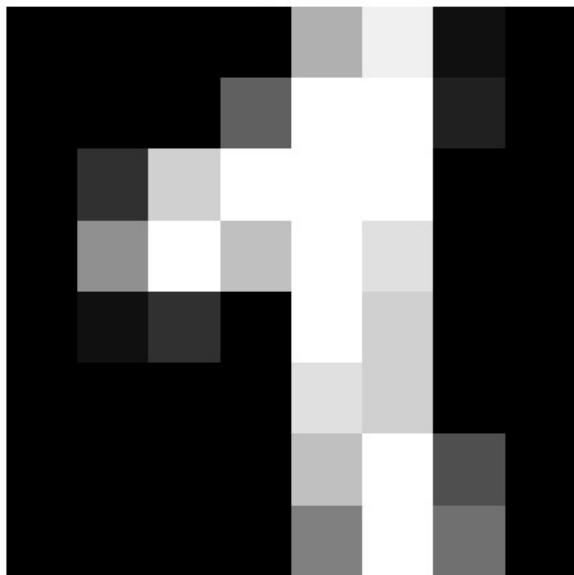
Actual: 7, Predicted: 7



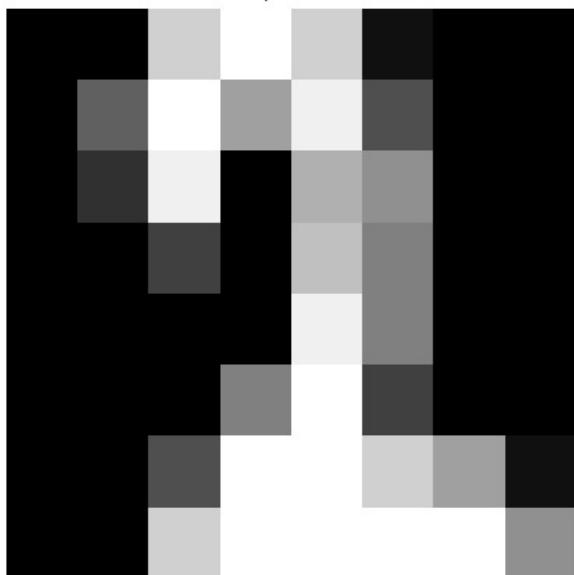
Actual: 8, Predicted: 8



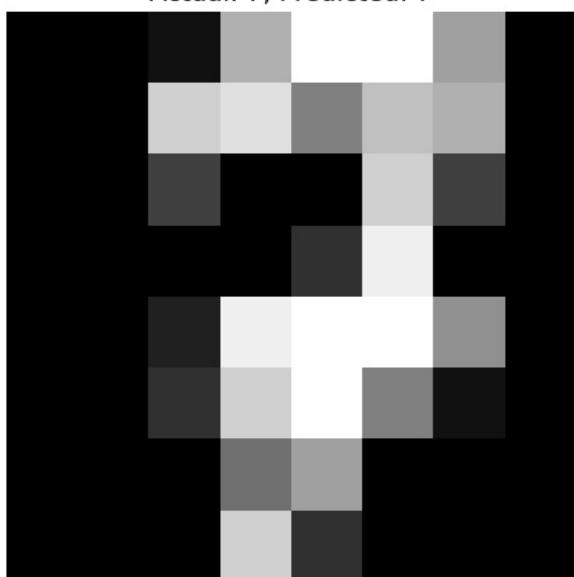
Actual: 1, Predicted: 1



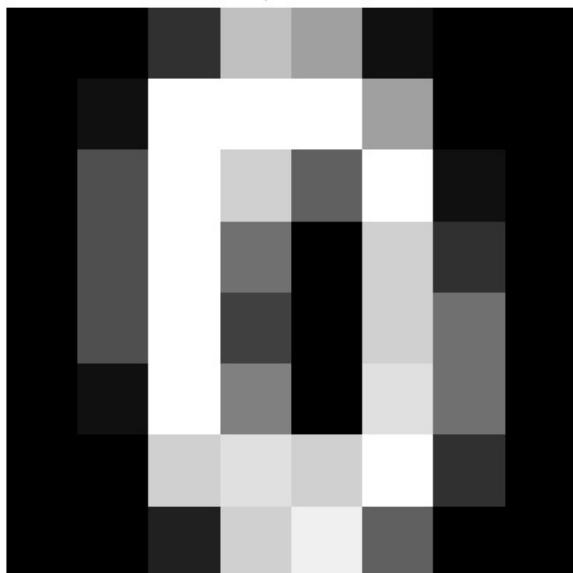
Actual: 2, Predicted: 2



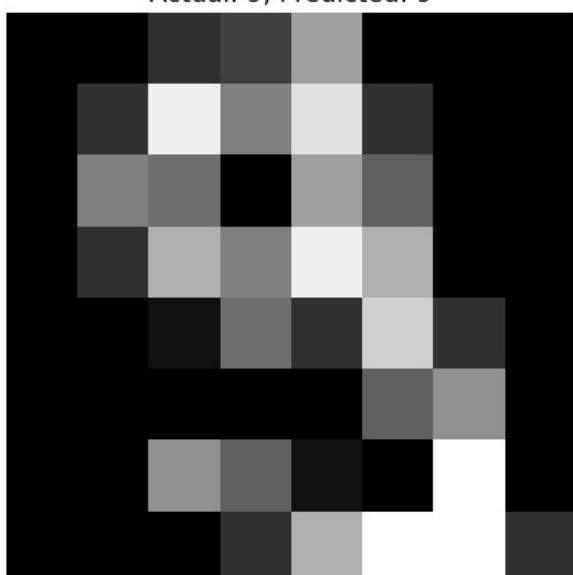
Actual: 7, Predicted: 7



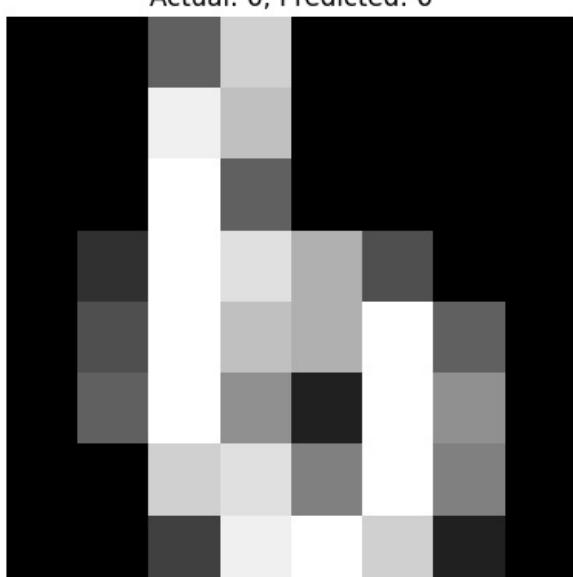
Actual: 0, Predicted: 0



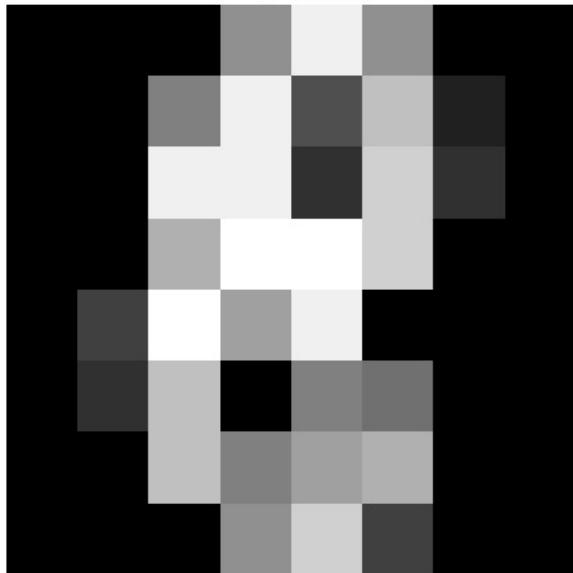
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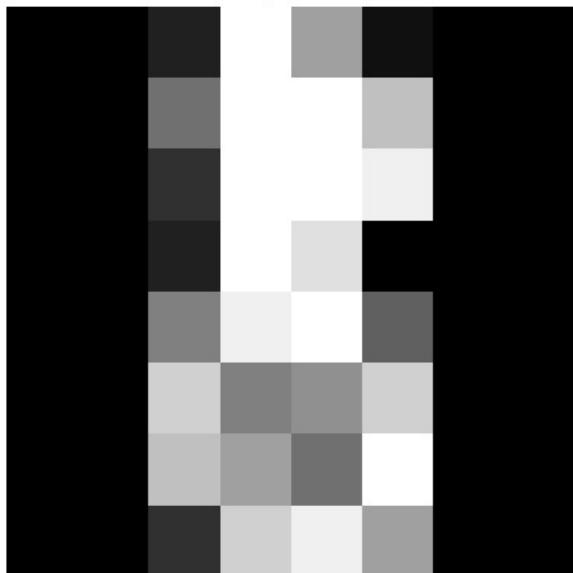
Actual: 6, Predicted: 6



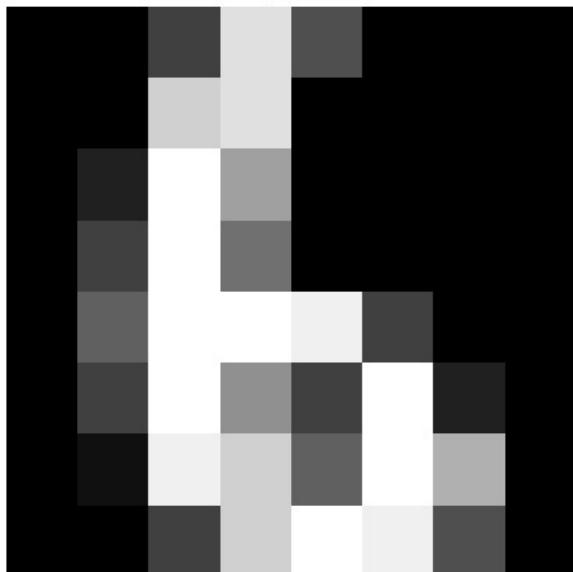
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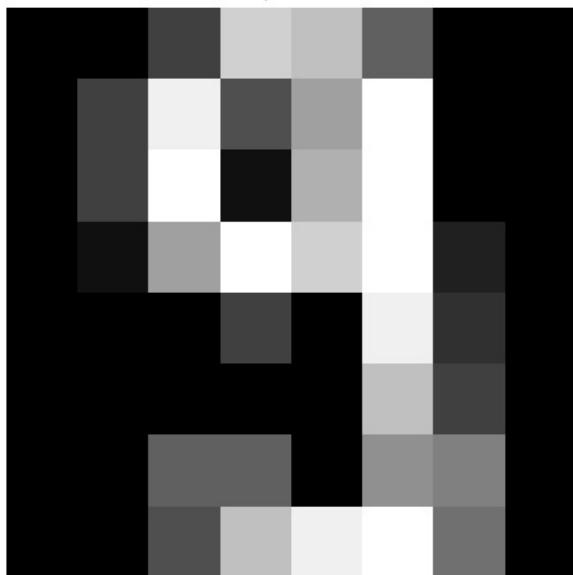
Actual: 8, Predicted: 8



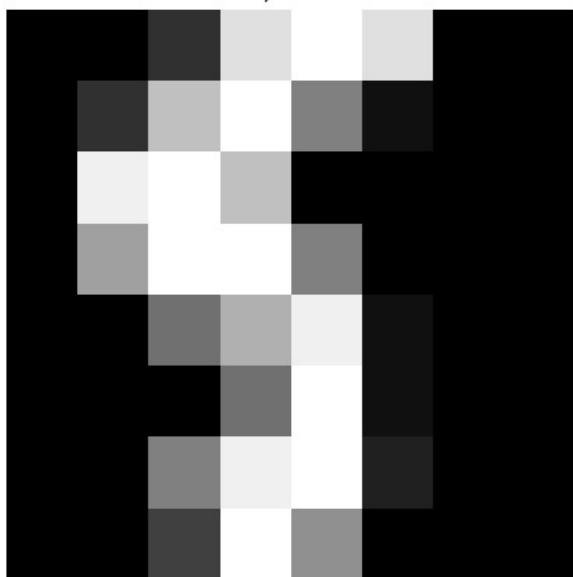
Actual: 6, Predicted: 6



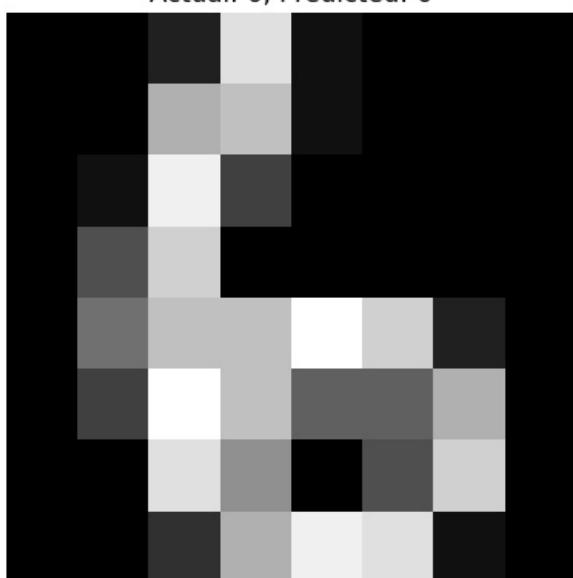
Actual: 9, Predicted: 9



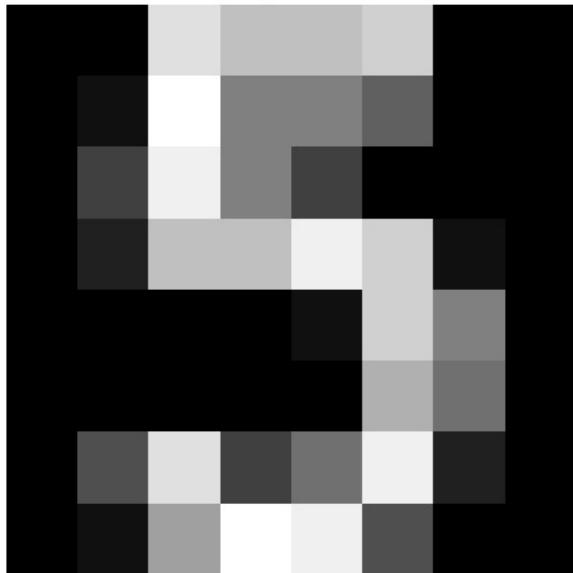
Actual: 5, Predicted: 5



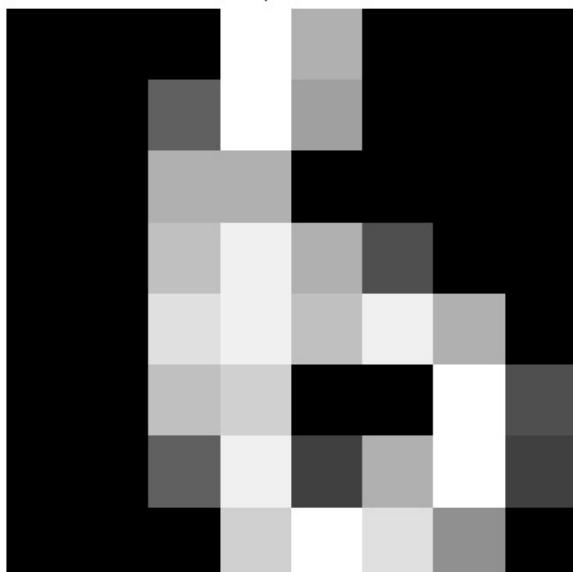
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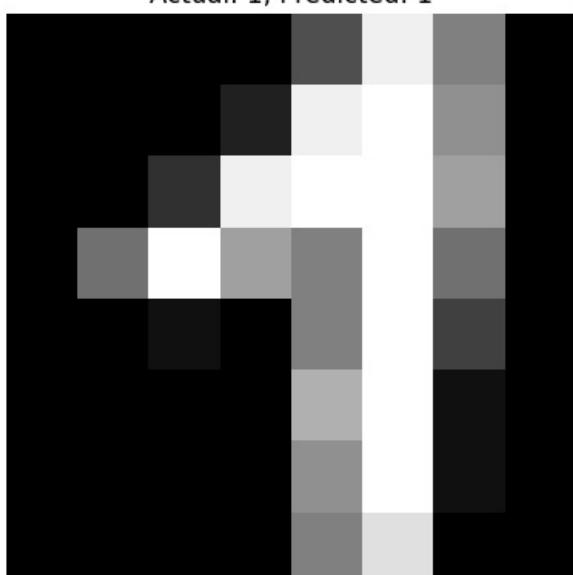
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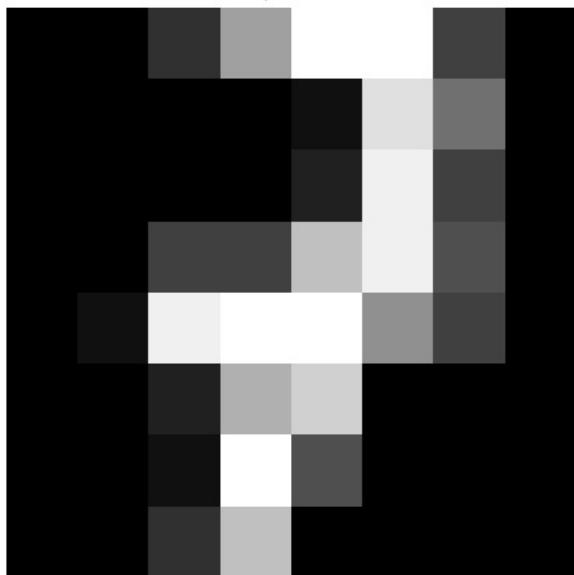
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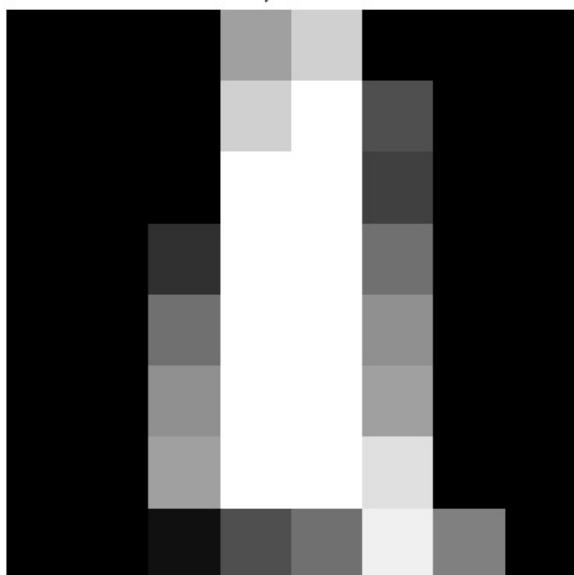
Actual: 1, Predicted: 1



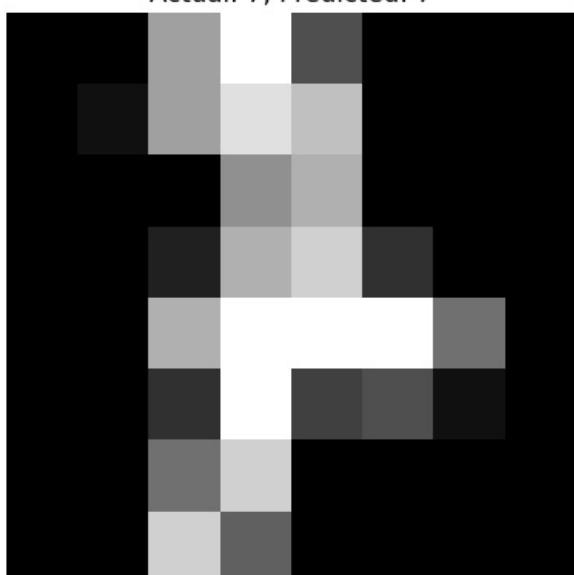
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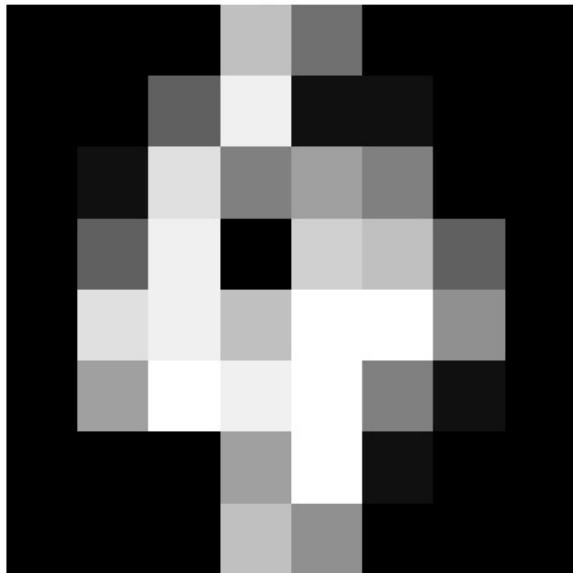
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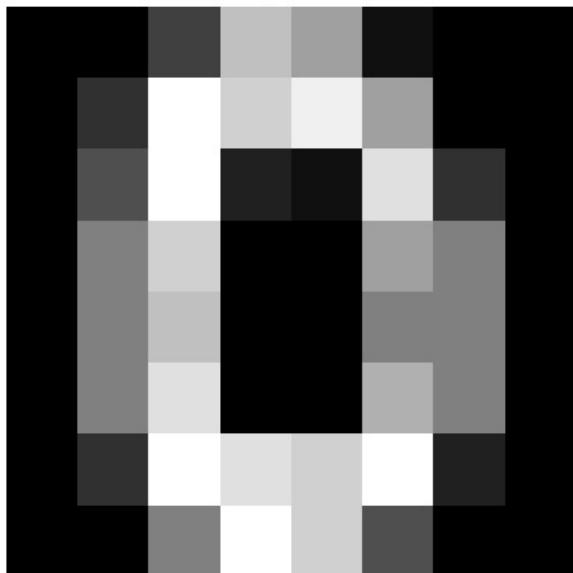
Actual: 7, Predicted: 7



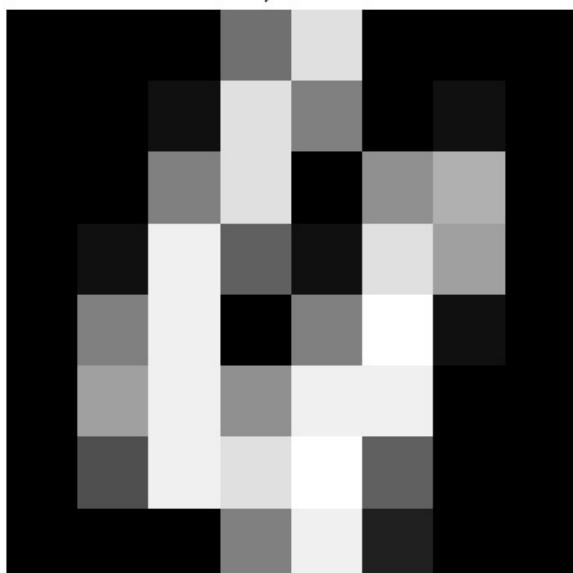
Actual: 4, Predicted: 4



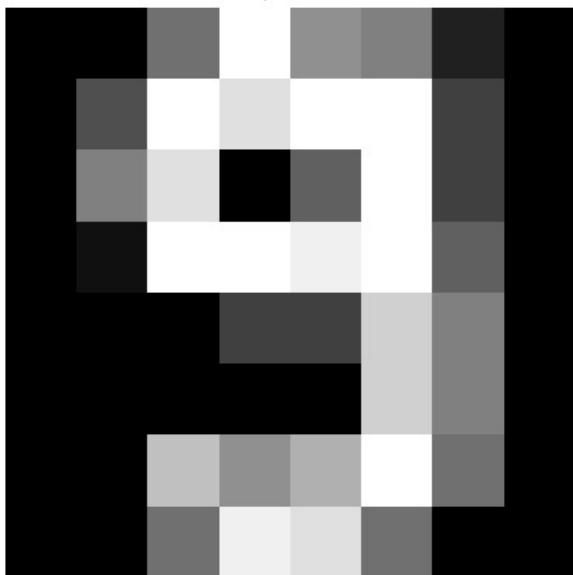
Actual: 0, Predicted: 0



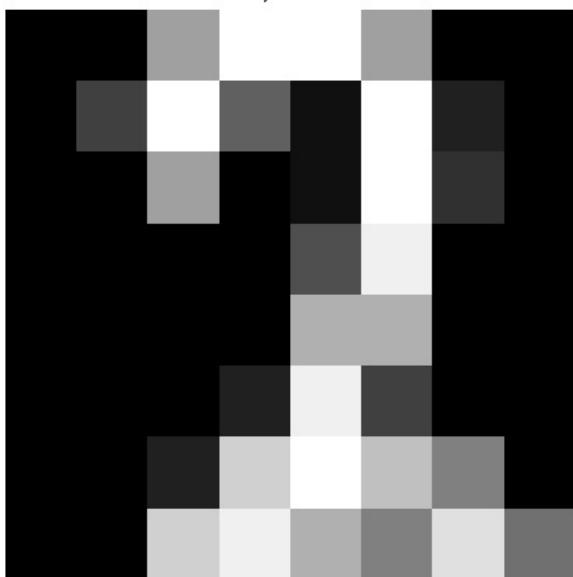
Actual: 4, Predicted: 4



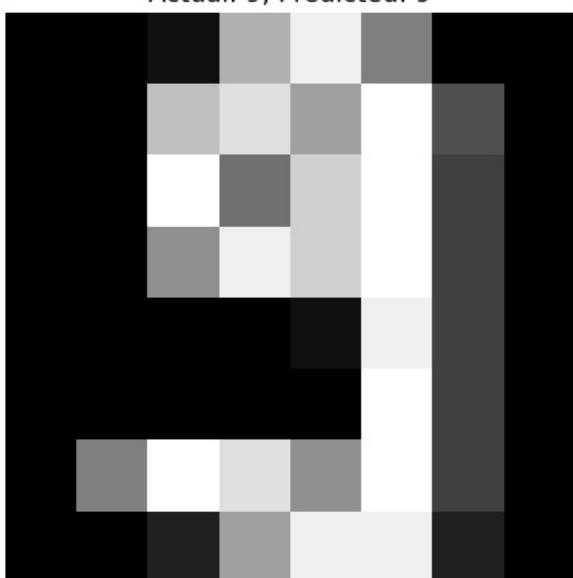
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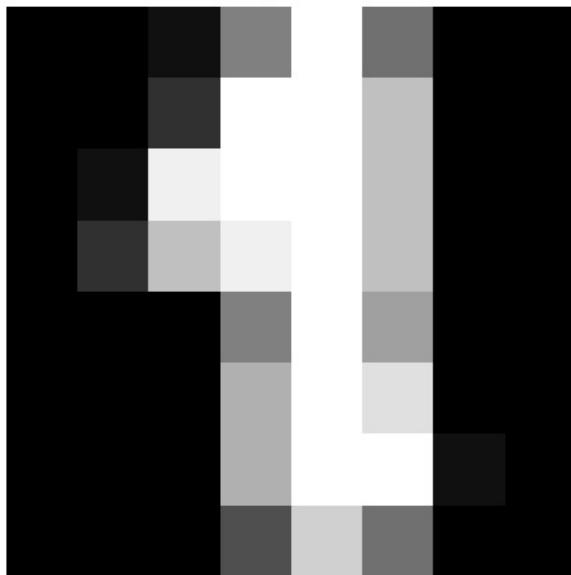
Actual: 2, Predicted: 2



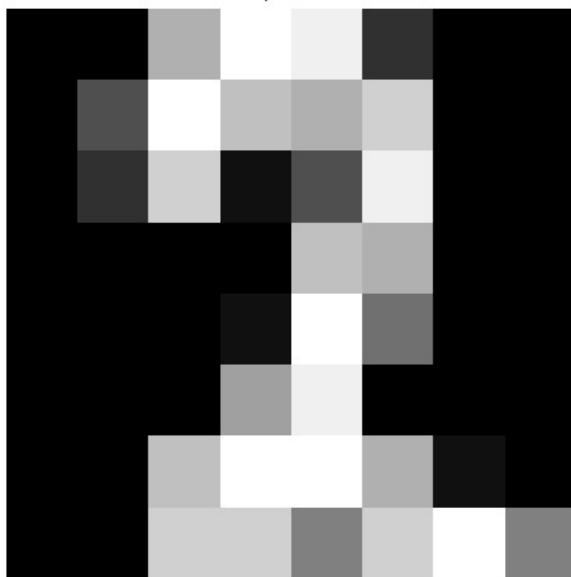
Actual: 9, Predicted: 9



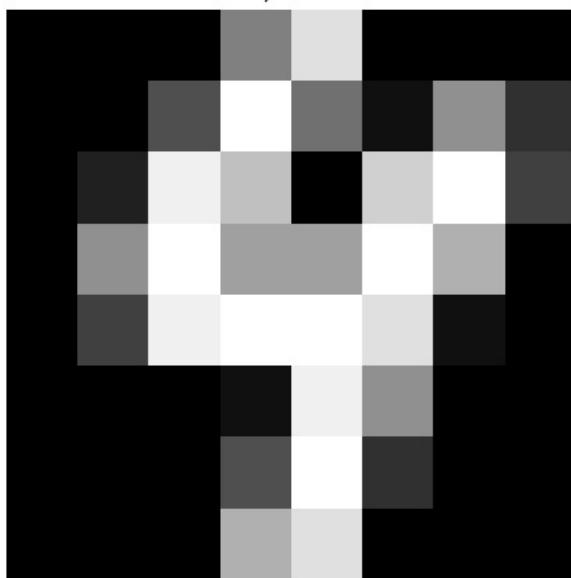
Actual: 1, Predicted: 1



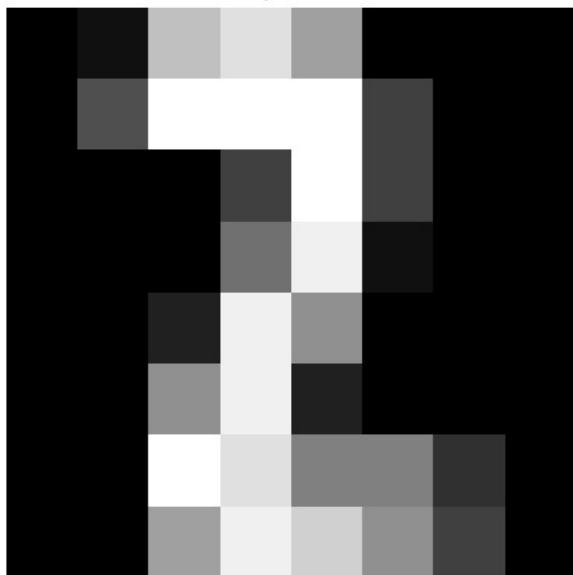
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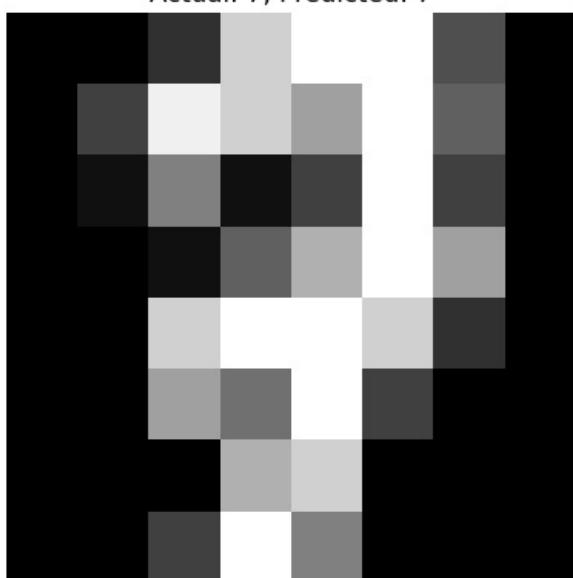
Actual: 4, Predicted: 4



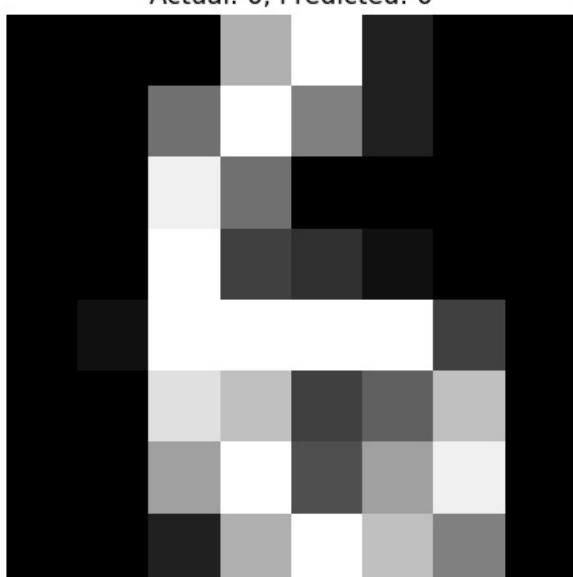
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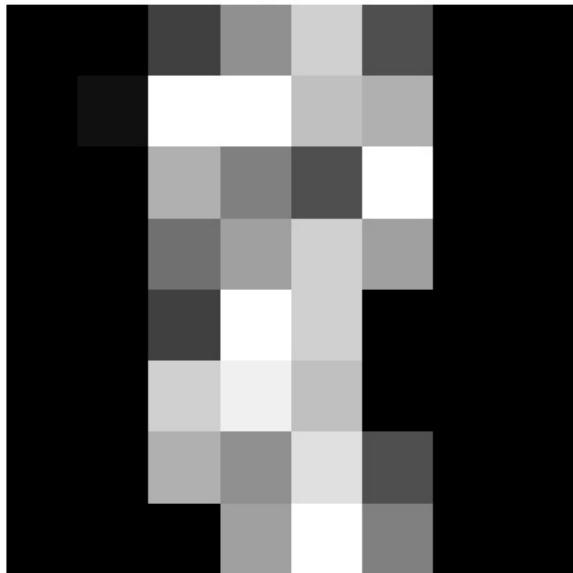
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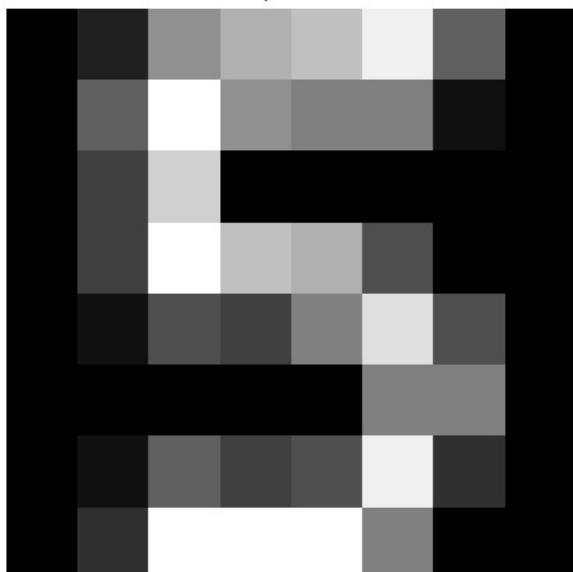
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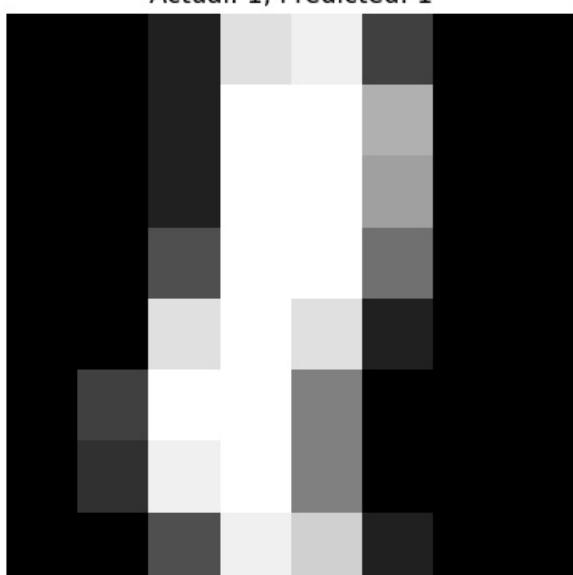
Actual: 8, Predicted: 8



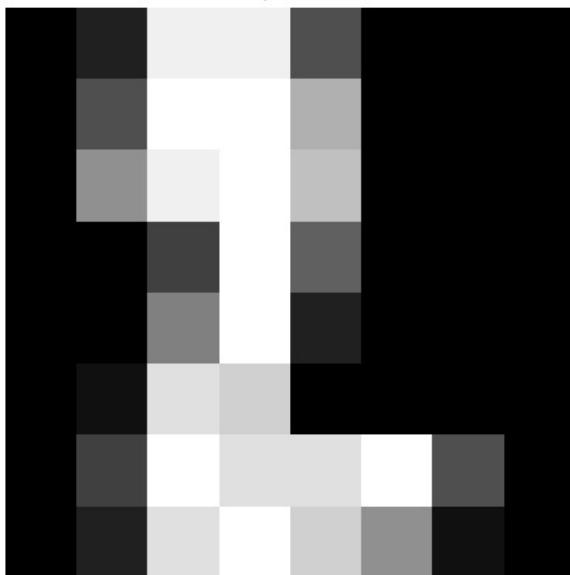
Actual: 5, Predicted: 5



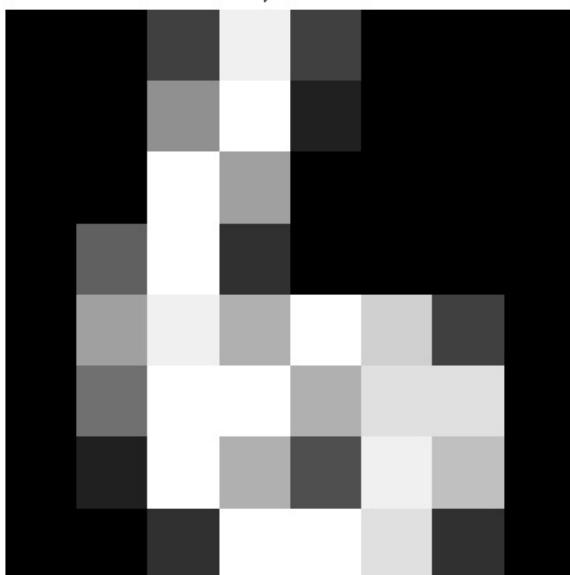
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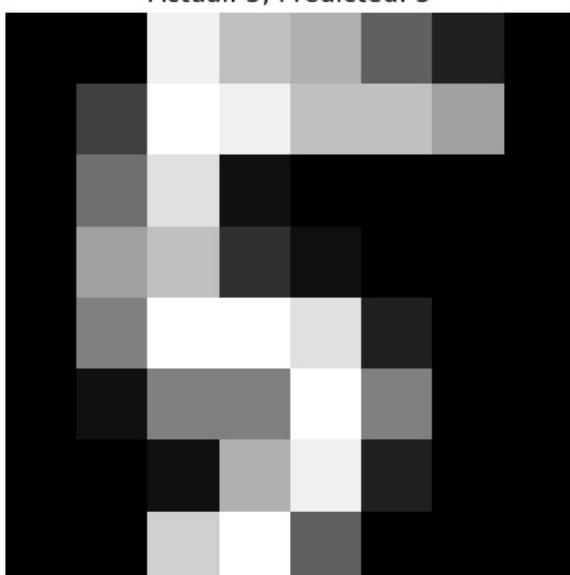
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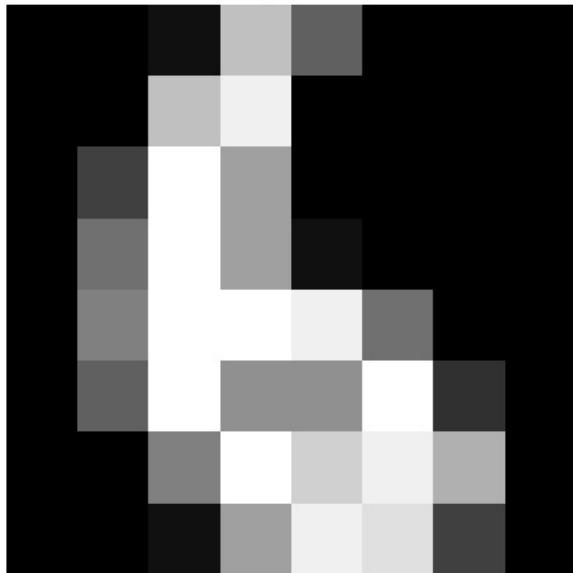
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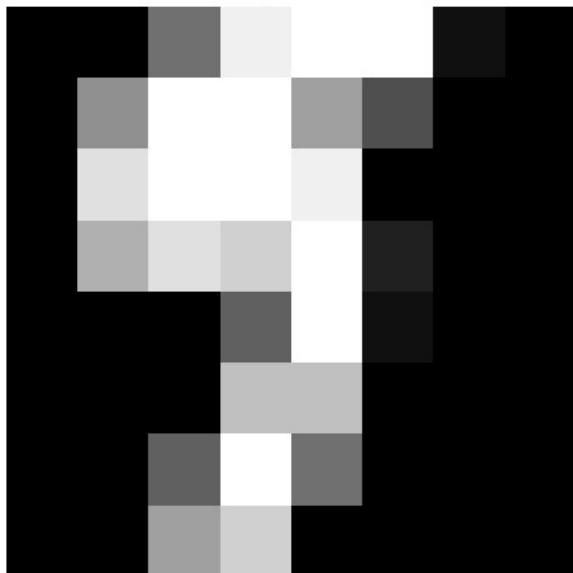
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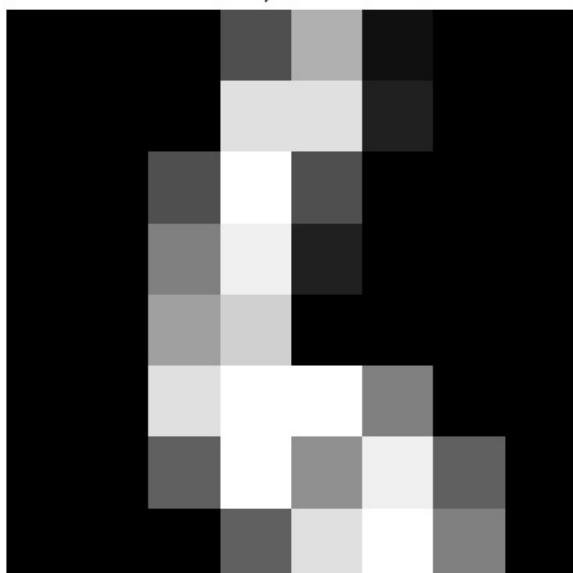
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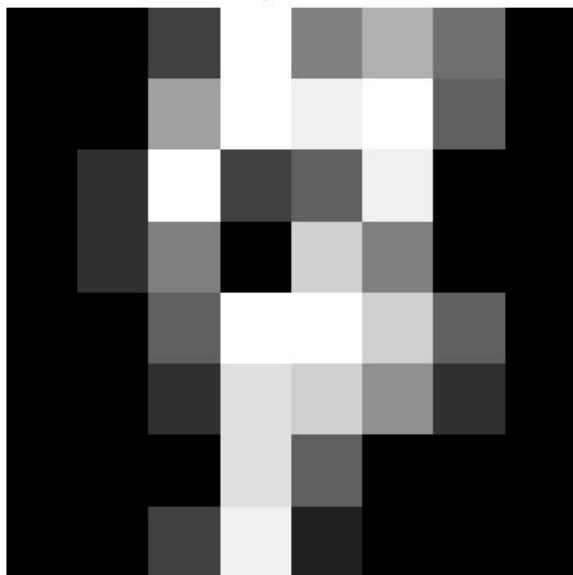
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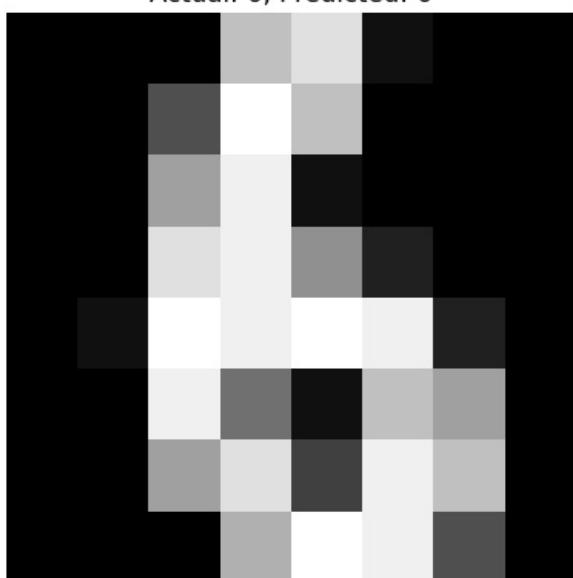
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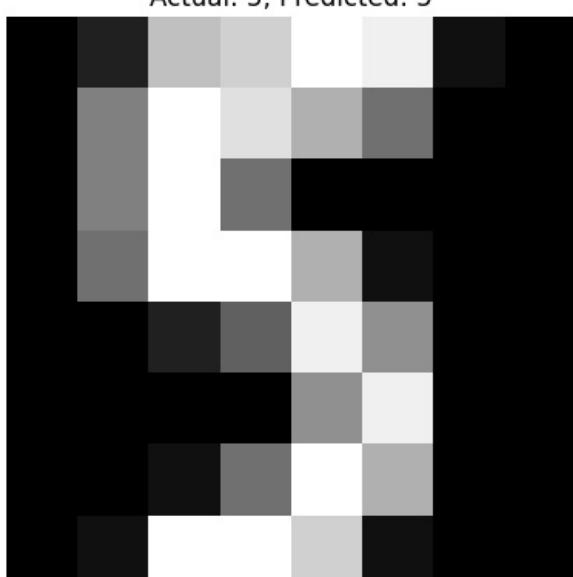
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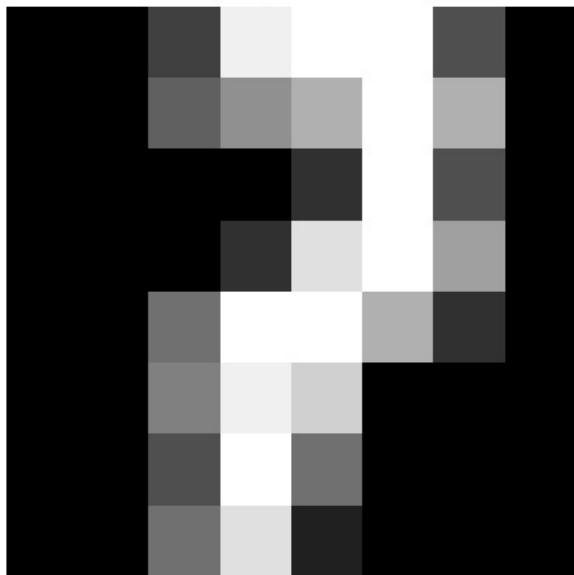
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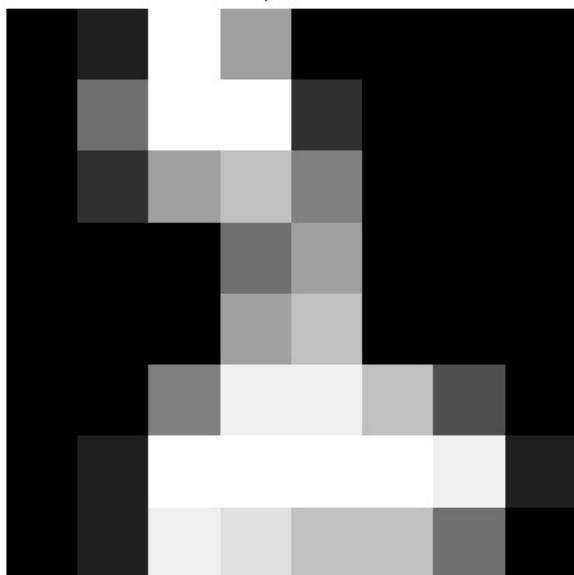
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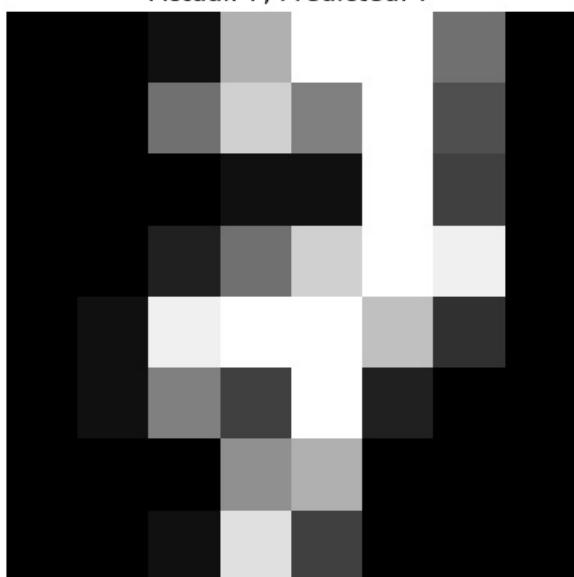
Actual: 7, Predicted: 7



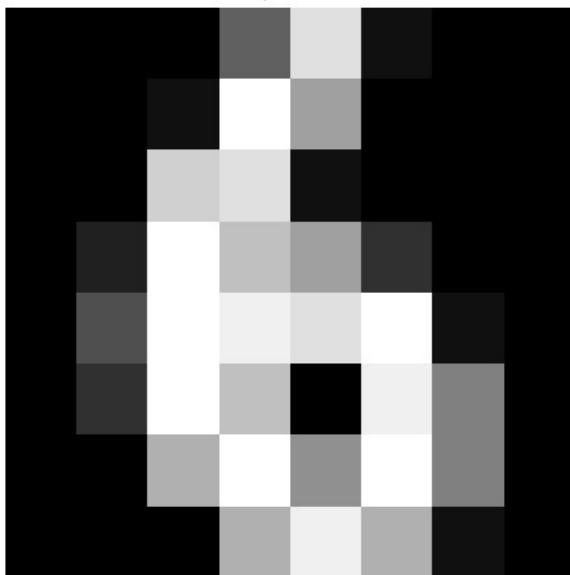
Actual: 2, Predicted: 2



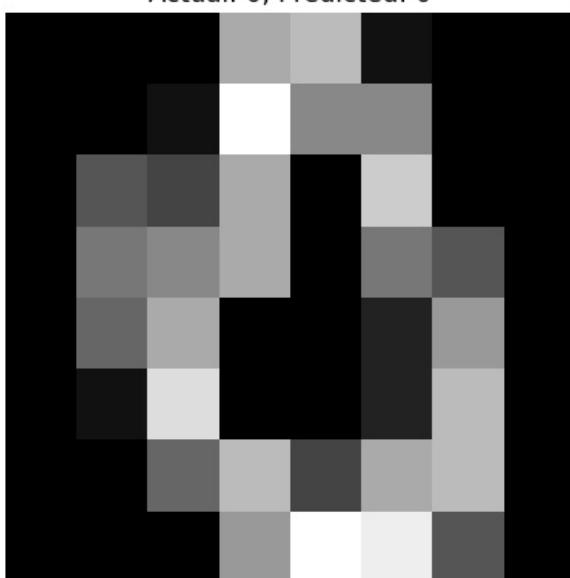
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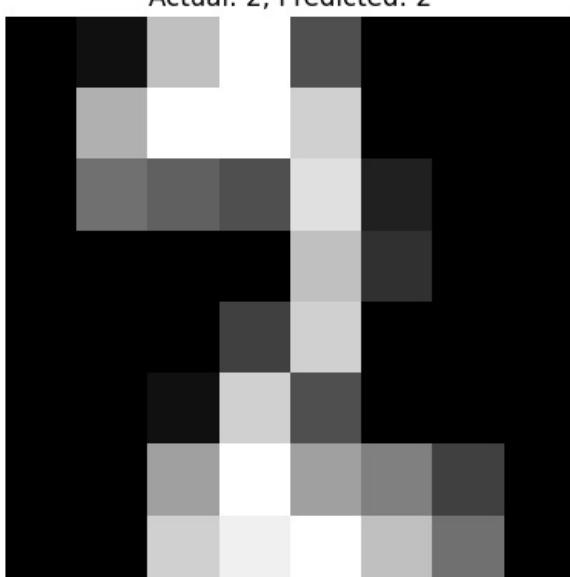
Actual: 6, Predicted: 6



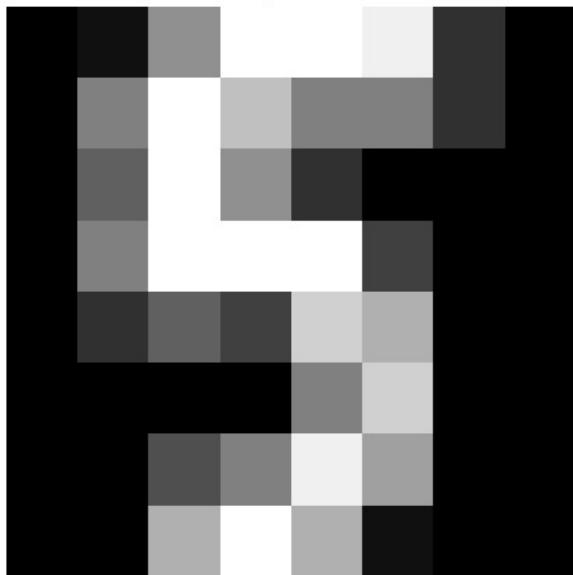
Actual: 0, Predicted: 0



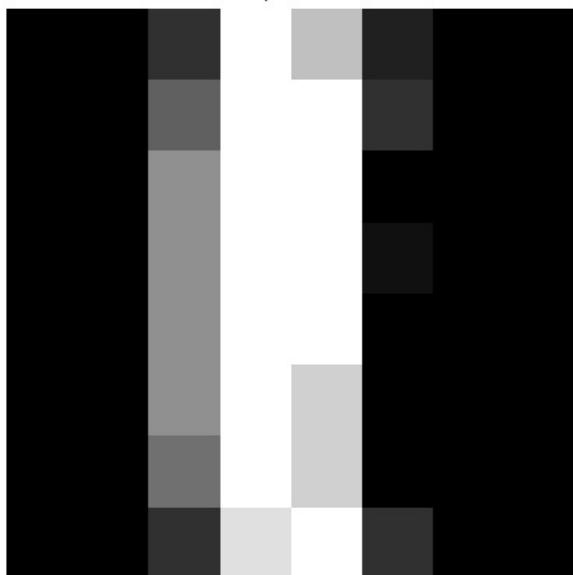
Actual: 2, Predicted: 2



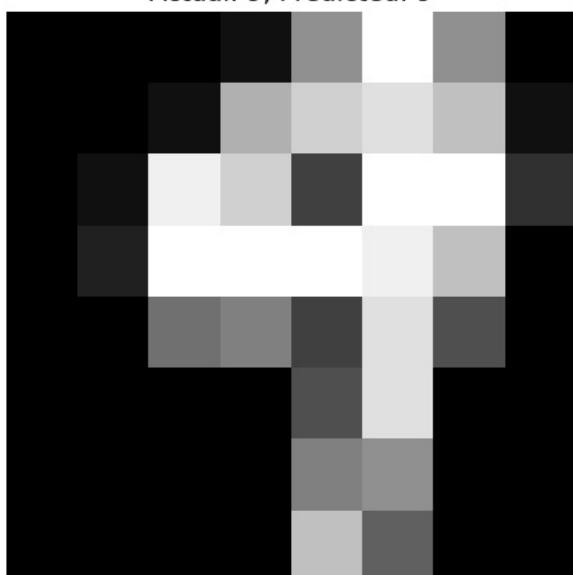
Actual: 5, Predicted: 5



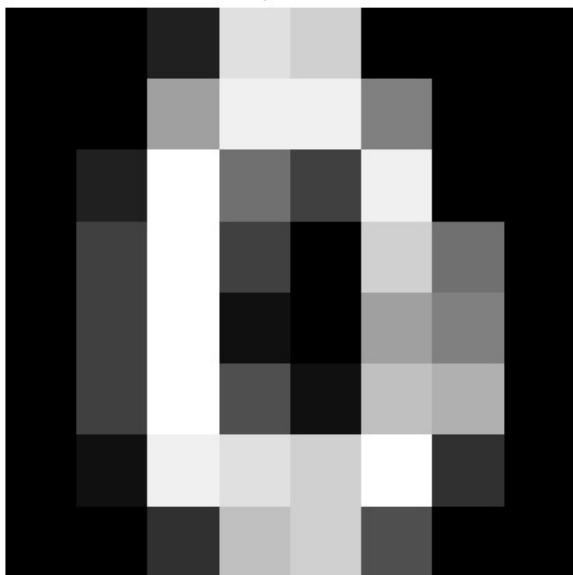
Actual: 1, Predicted: 1



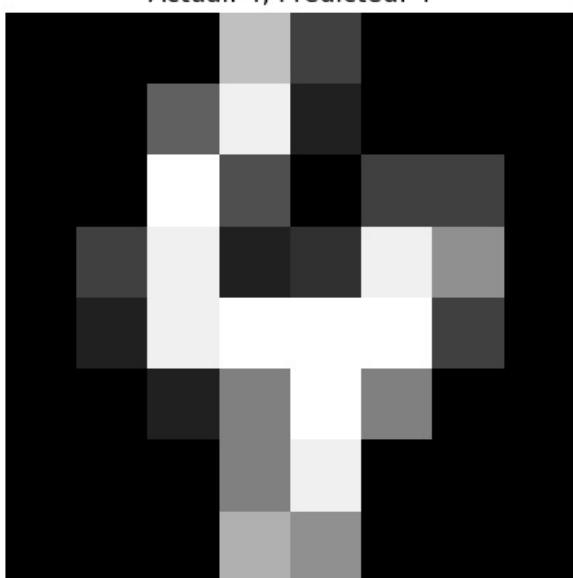
Actual: 9, Predicted: 9



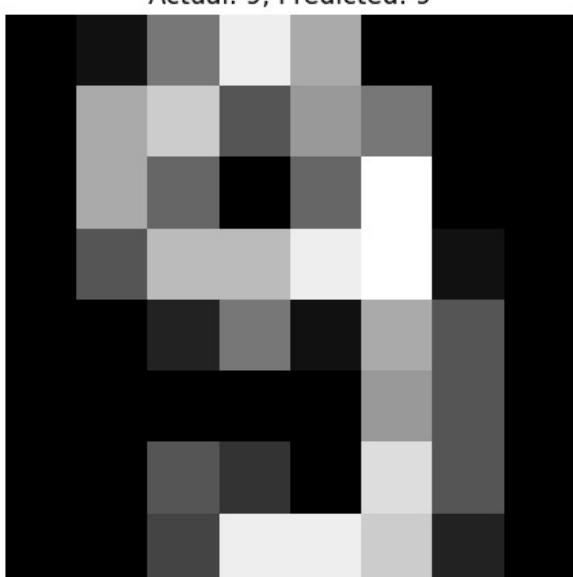
Actual: 0, Predicted: 0



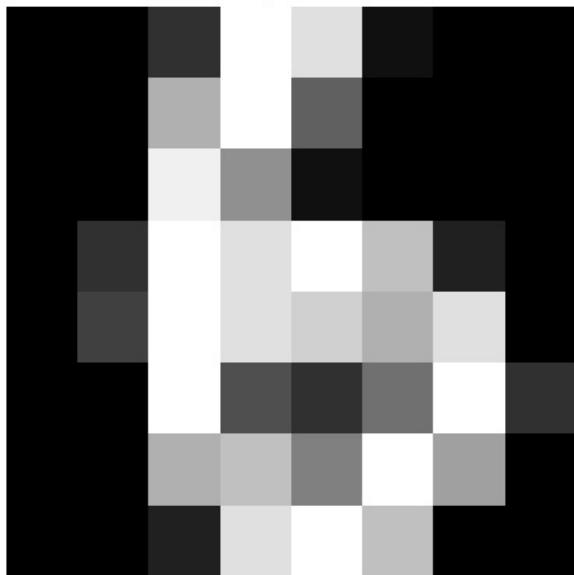
Actual: 4, Predicted: 4



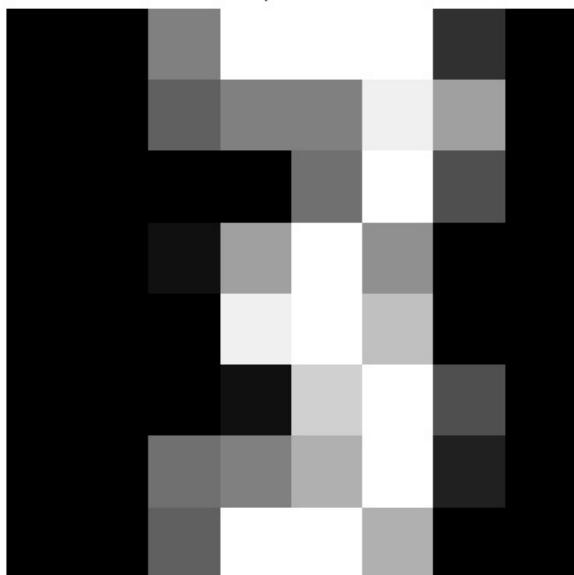
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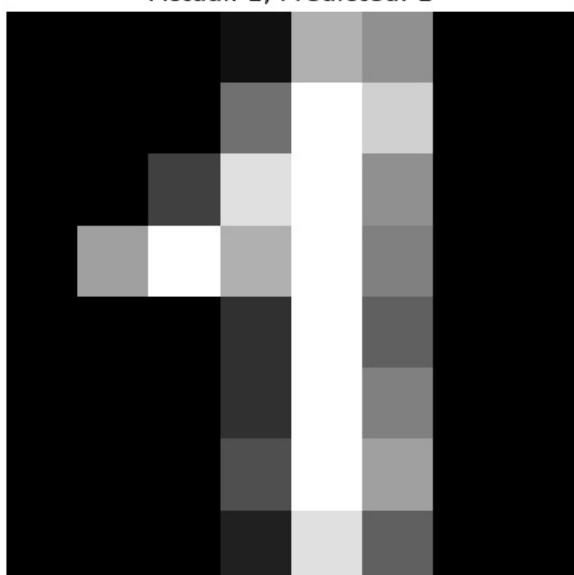
Actual: 6, Predicted: 6



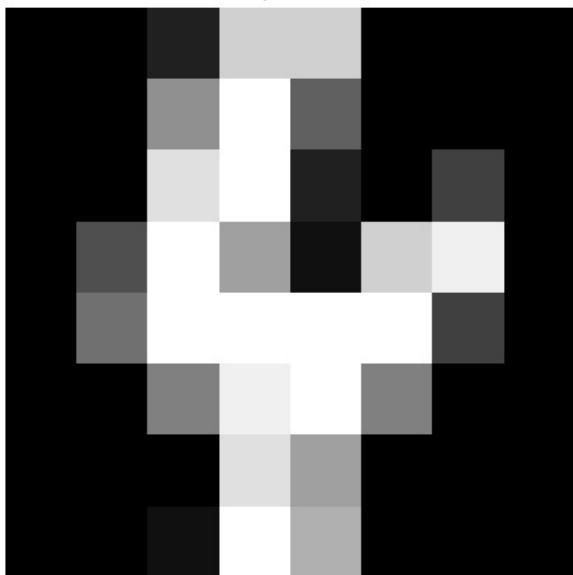
Actual: 3, Predicted: 3



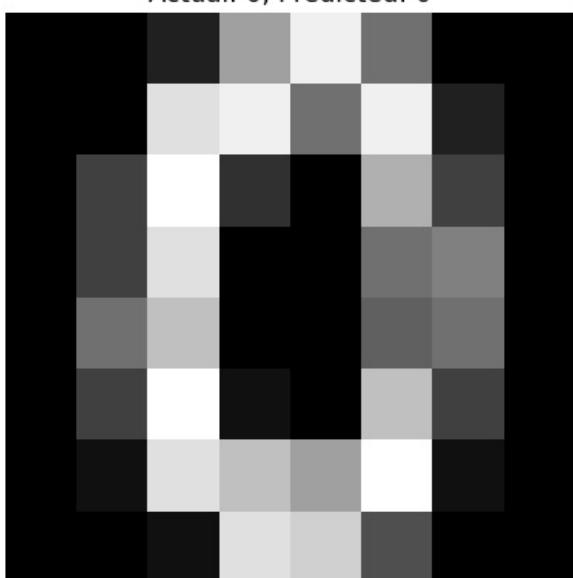
Actual: 1, Predicted: 1



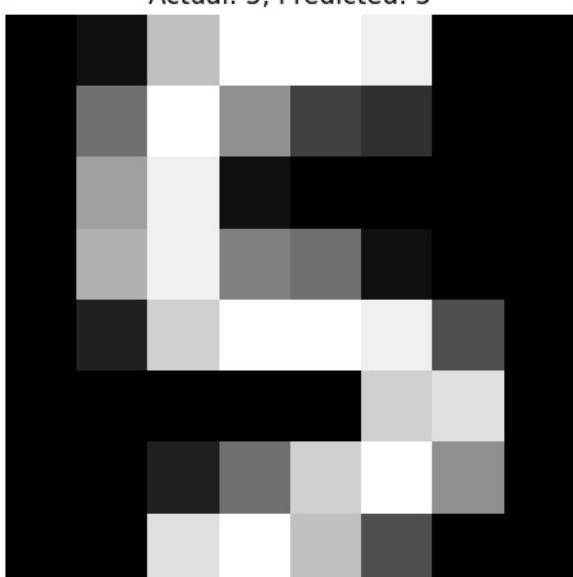
Actual: 4, Predicted: 4



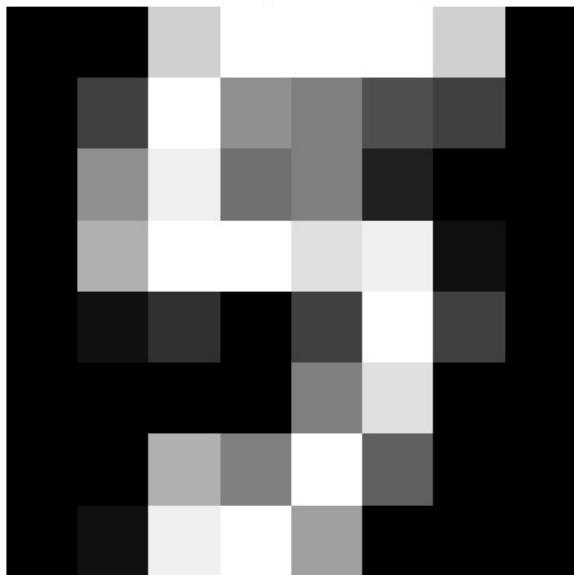
Actual: 0, Predicted: 0



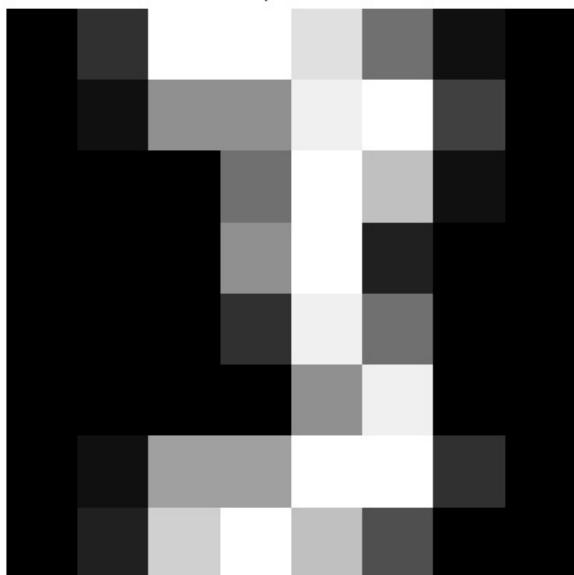
Actual: 5, Predicted: 5



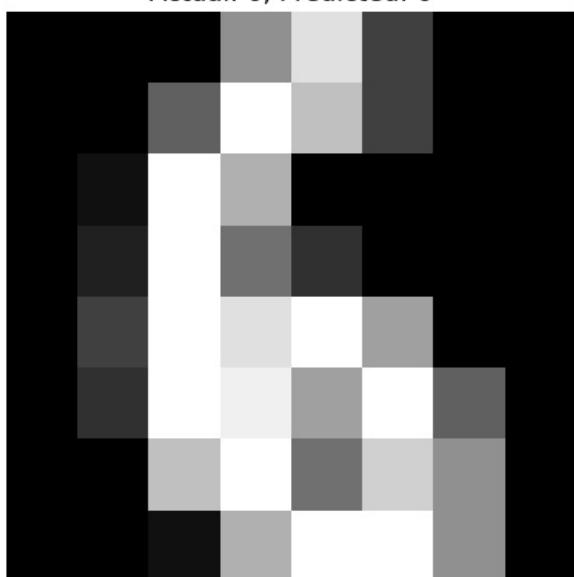
Actual: 5, Predicted: 5



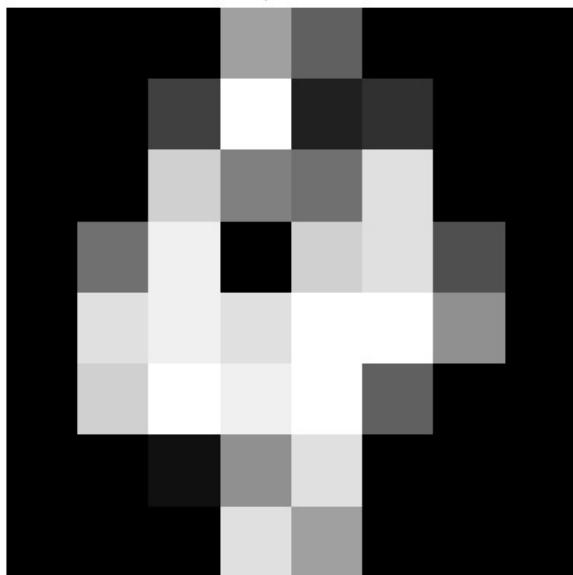
Actual: 3, Predicted: 3



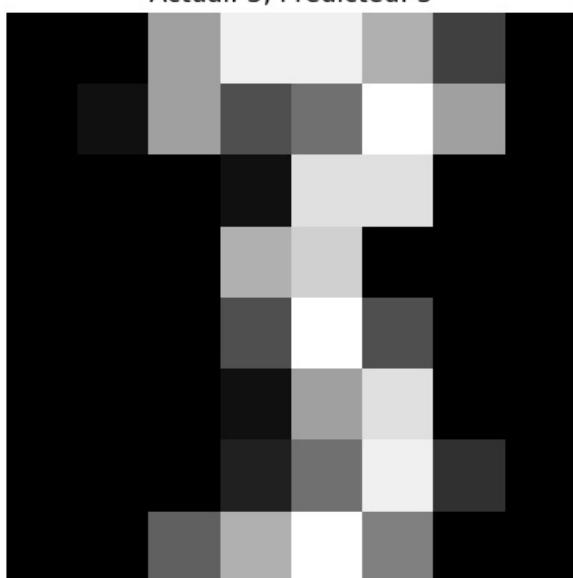
Actual: 6, Predicted: 6



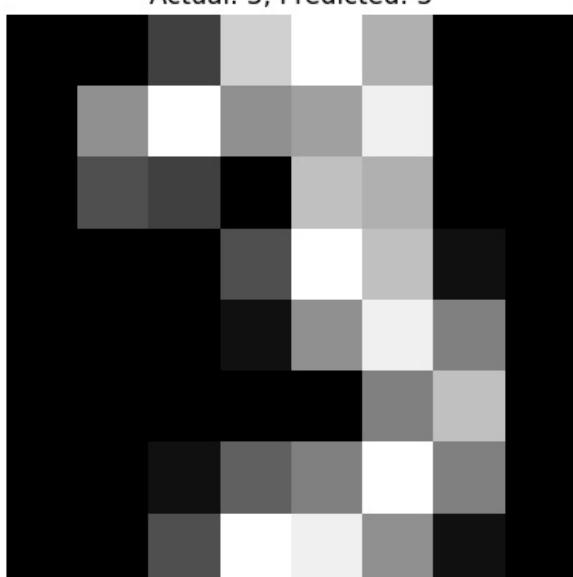
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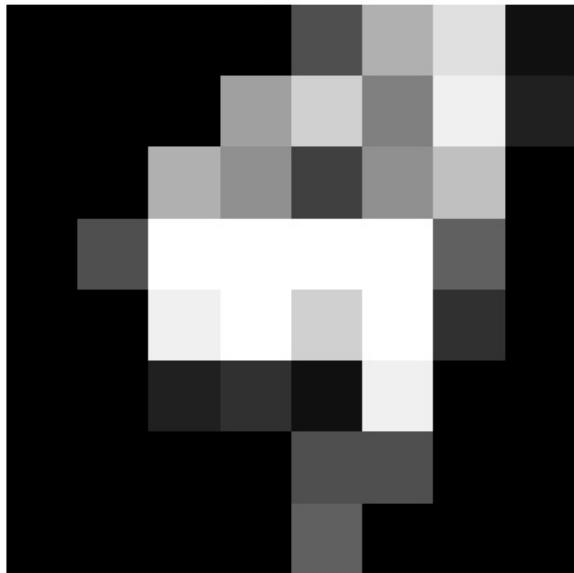
Actual: 3, Predicted: 3



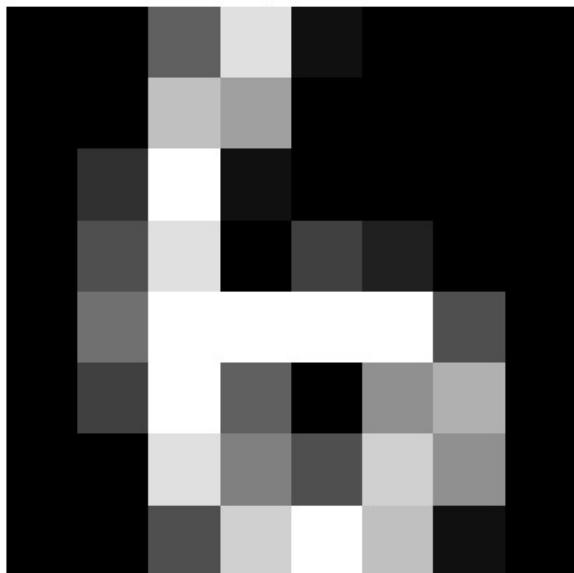
Actual: 3, Predicted: 3



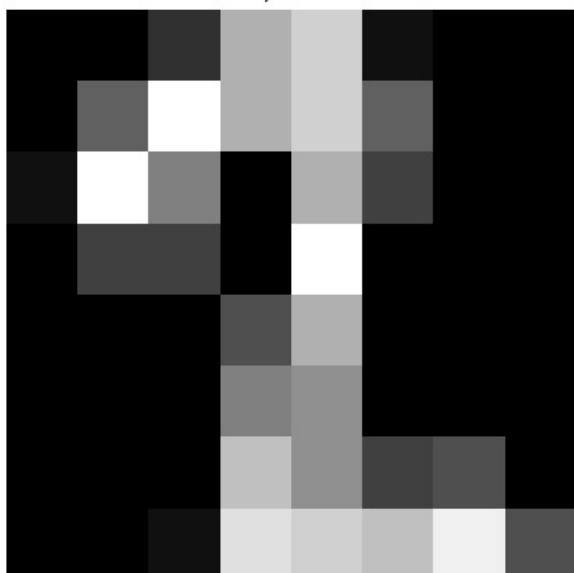
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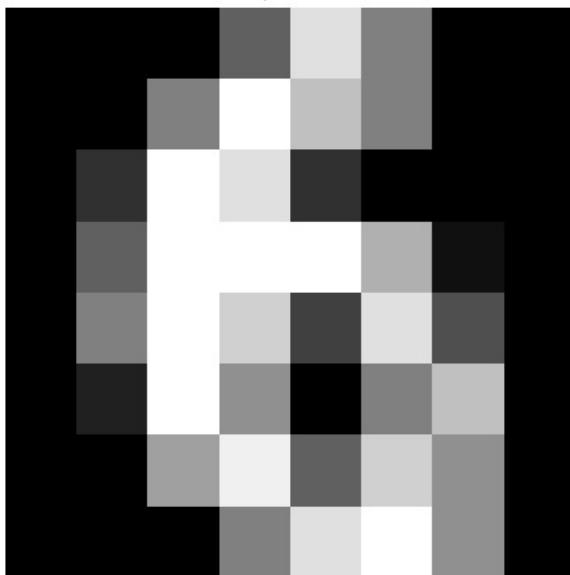
Actual: 6, Predicted: 6



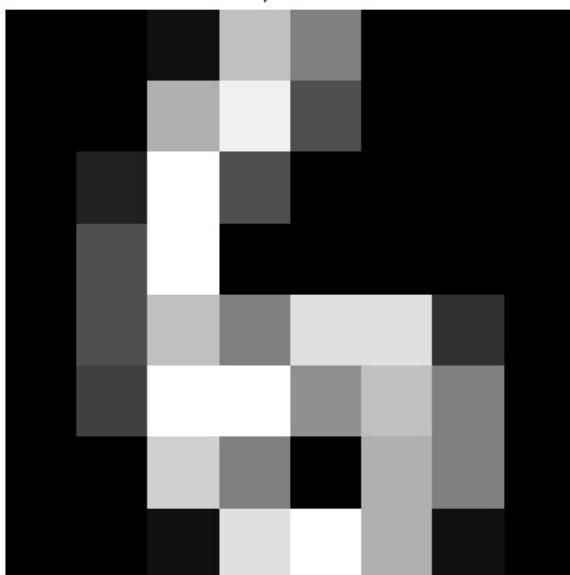
Actual: 2, Predicted: 2



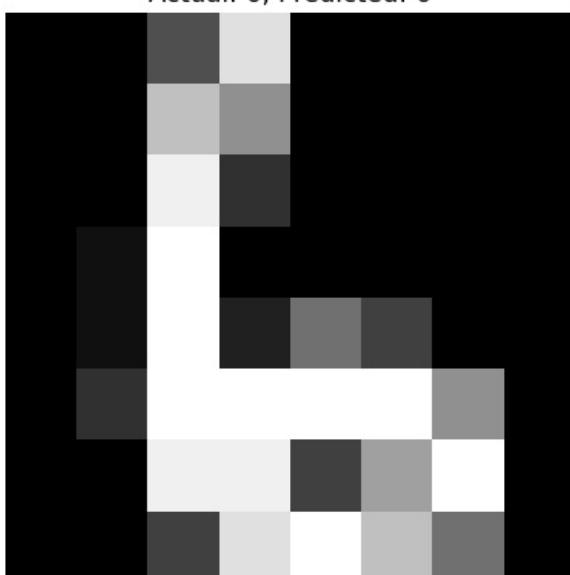
Actual: 6, Predicted: 6



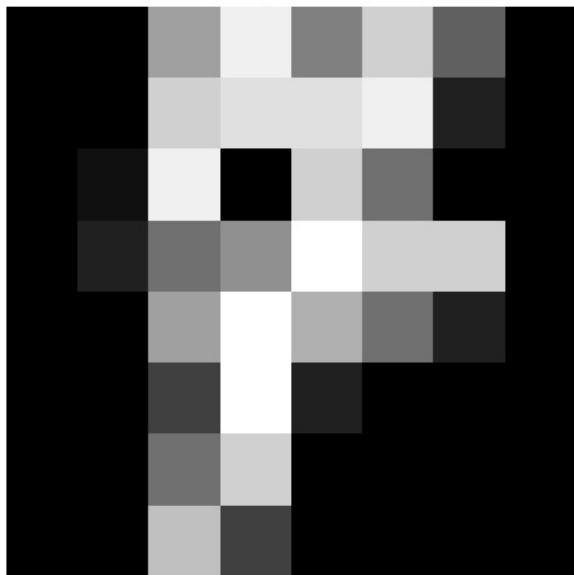
Actual: 6, Predicted: 6



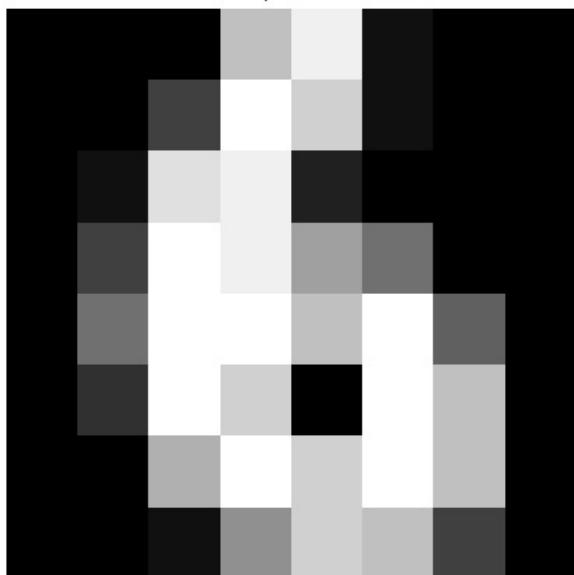
Actual: 6, Predicted: 6



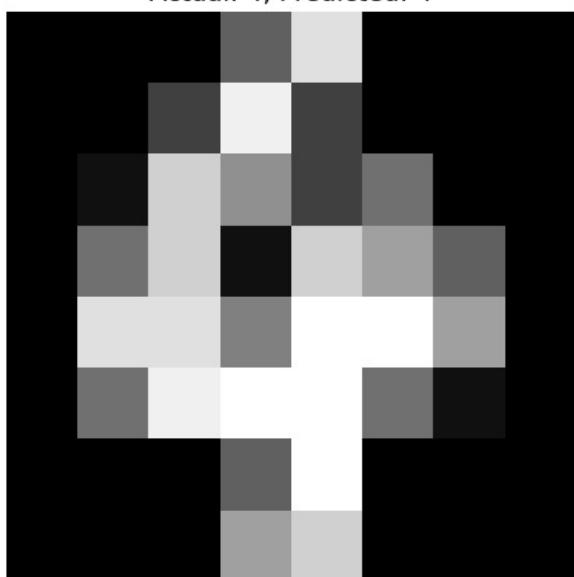
Actual: 7, Predicted: 7



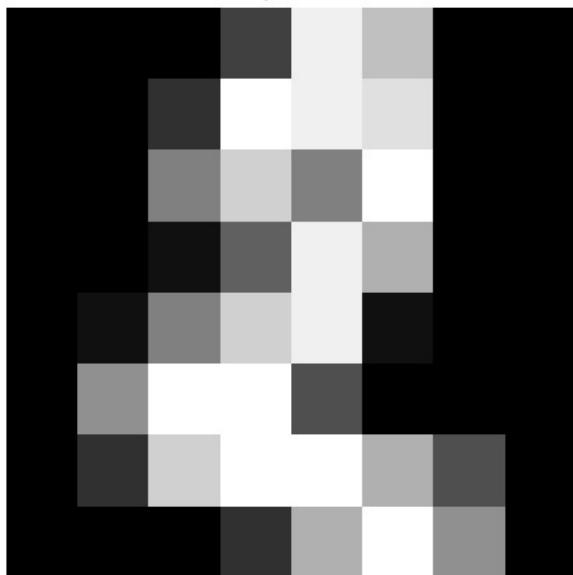
Actual: 6, Predicted: 6



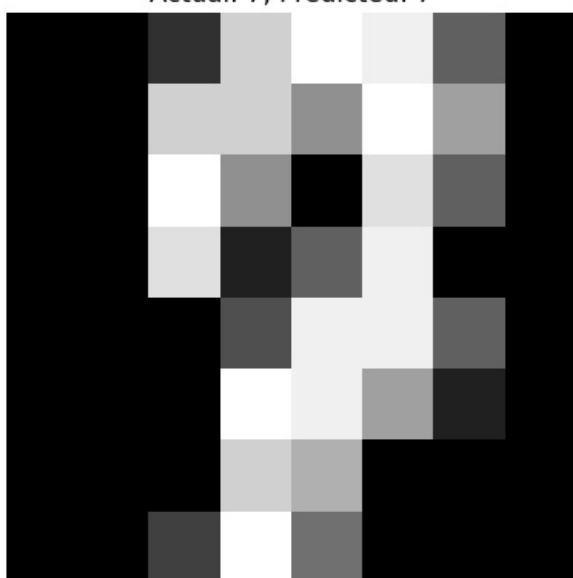
Actual: 4, Predicted: 4



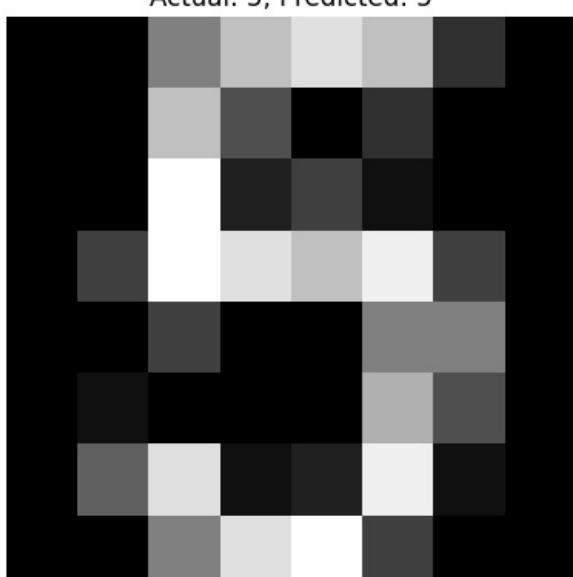
Actual: 2, Predicted: 2



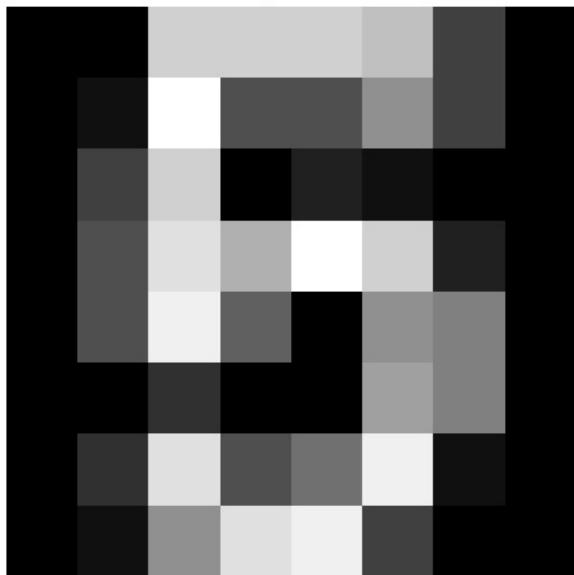
Actual: 7, Predicted: 7



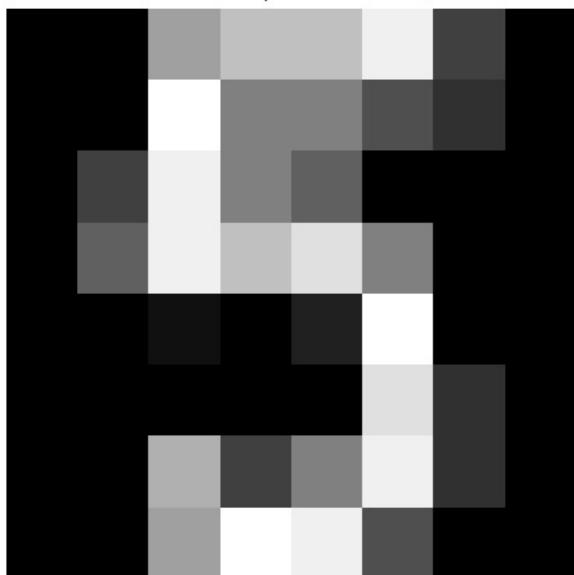
Actual: 5, Predicted: 5



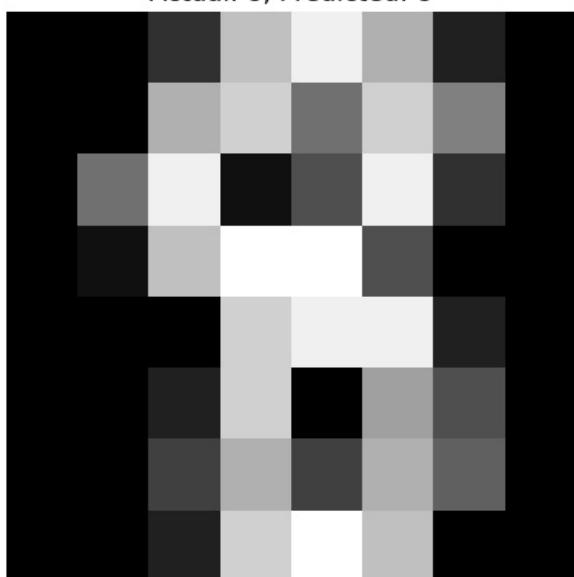
Actual: 5, Predicted: 5



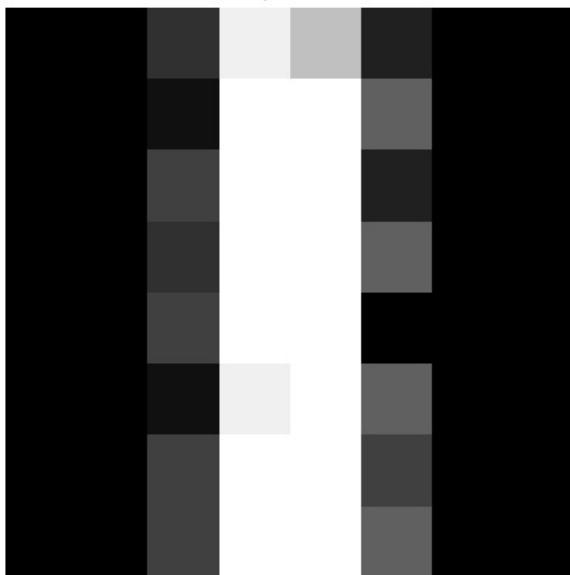
Actual: 5, Predicted: 5



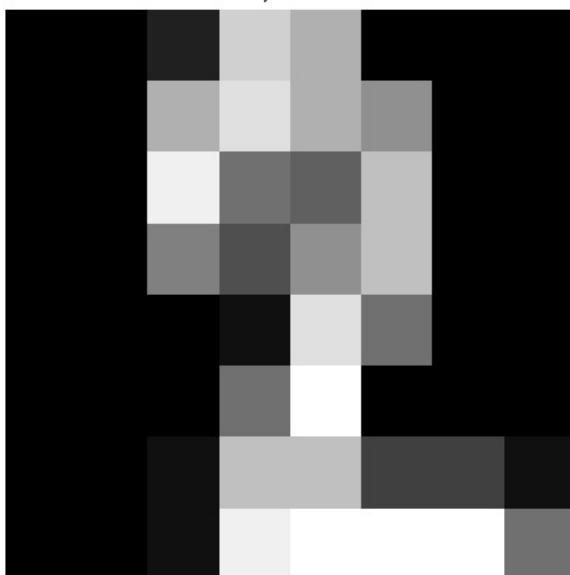
Actual: 8, Predicted: 8



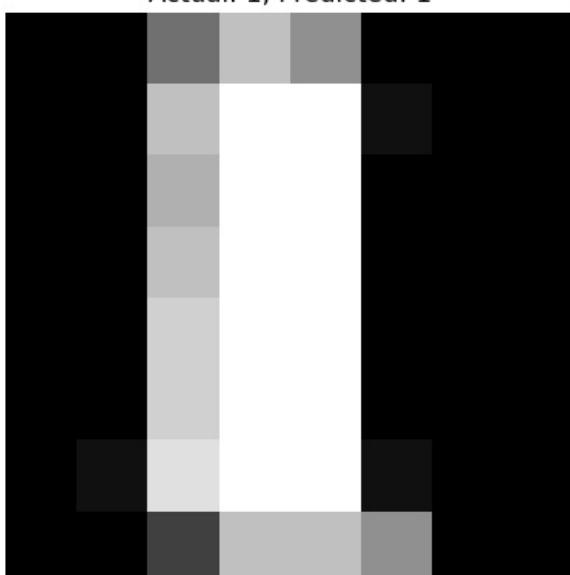
Actual: 1, Predicted: 1



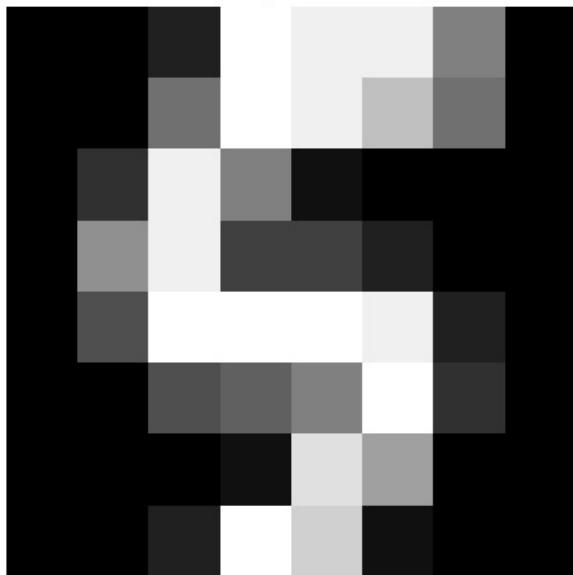
Actual: 2, Predicted: 2



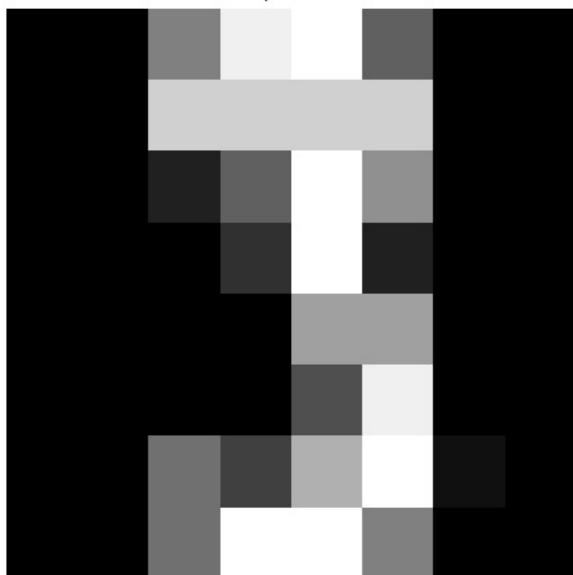
Actual: 1, Predicted: 1



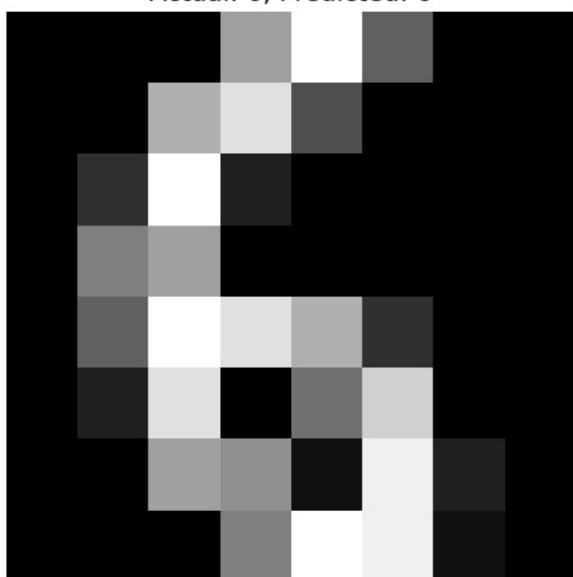
Actual: 5, Predicted: 5



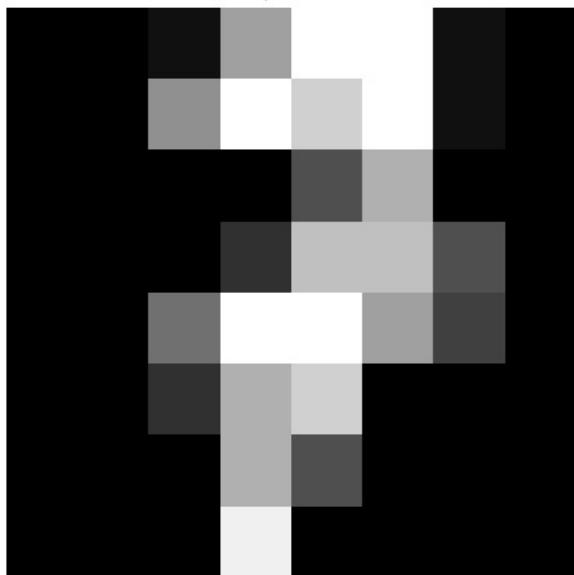
Actual: 3, Predicted: 3



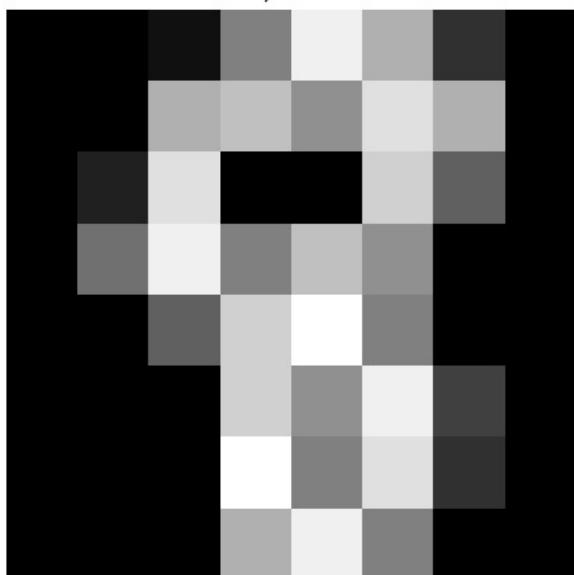
Actual: 6, Predicted: 6



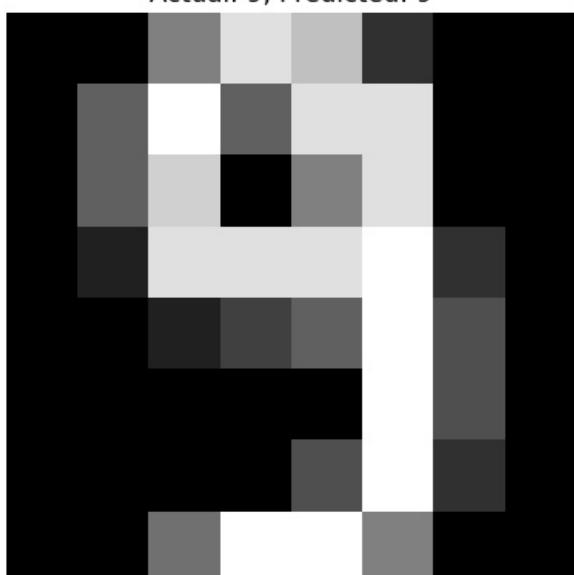
Actual: 7, Predicted: 7



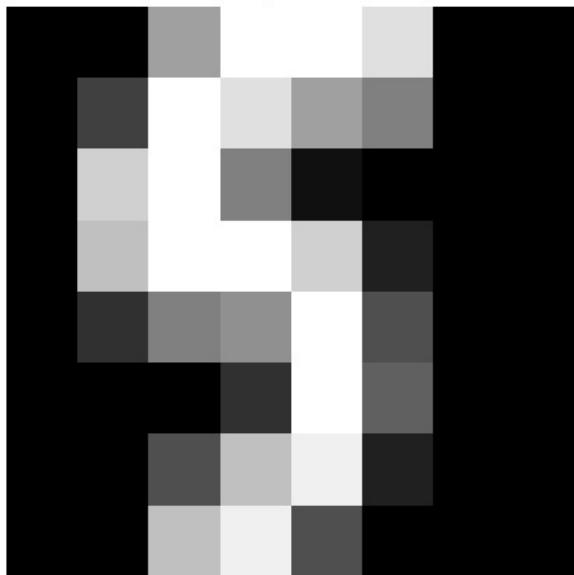
Actual: 8, Predicted: 8



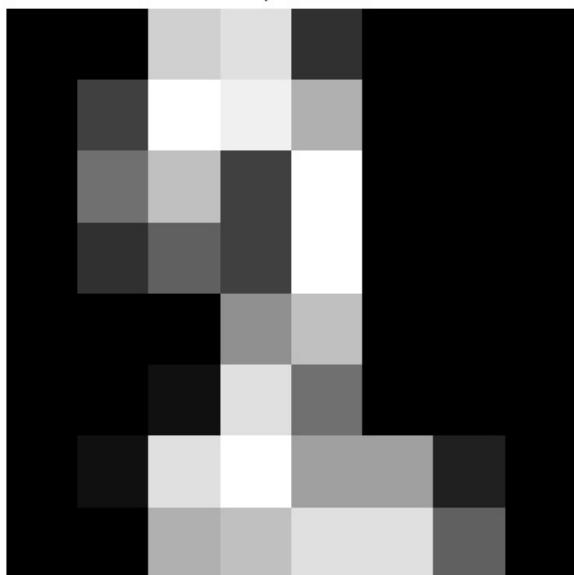
Actual: 9, Predicted: 9



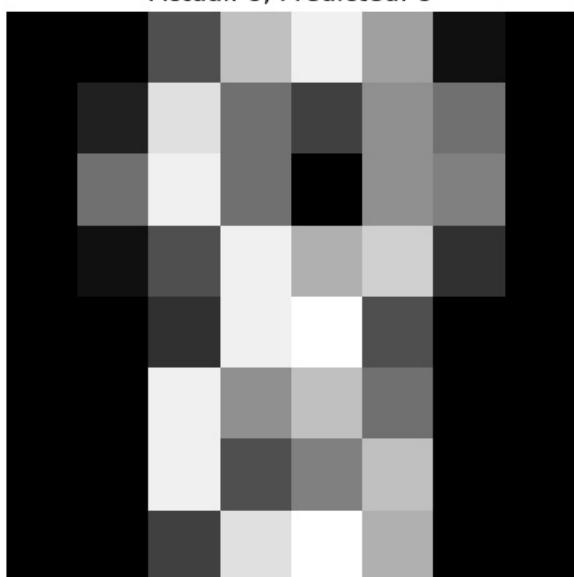
Actual: 5, Predicted: 5



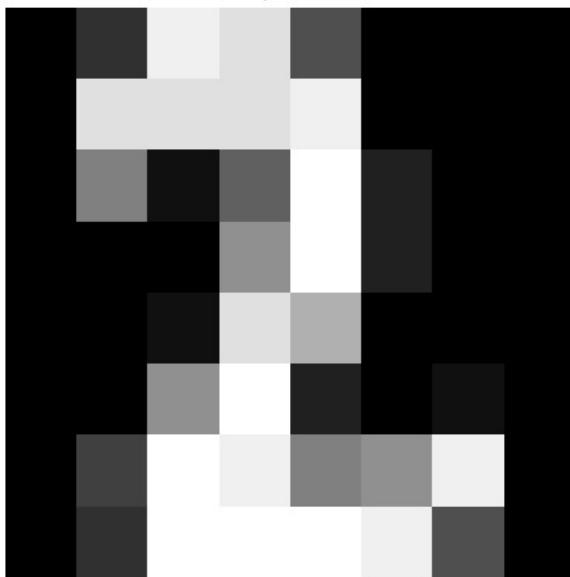
Actual: 2, Predicted: 2



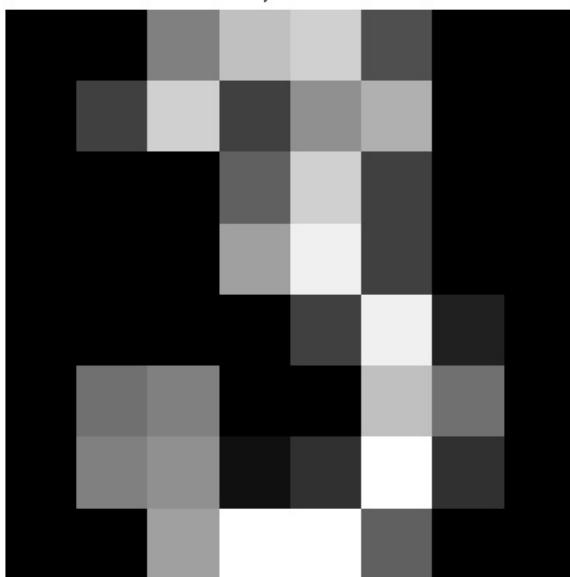
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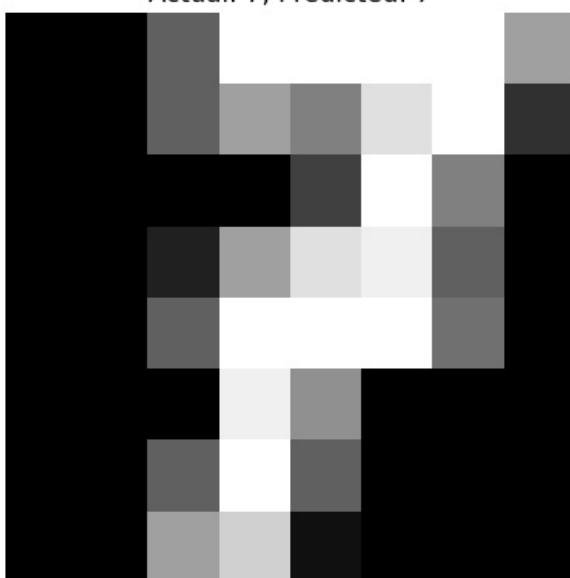
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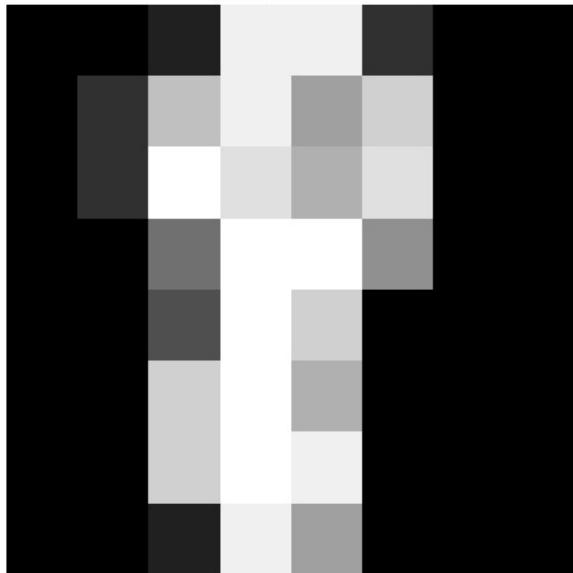
Actual: 3, Predicted: 3



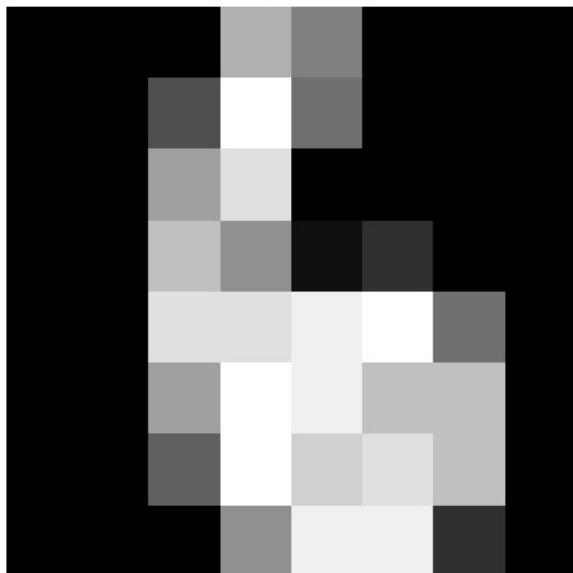
Actual: 7, Predicted: 7



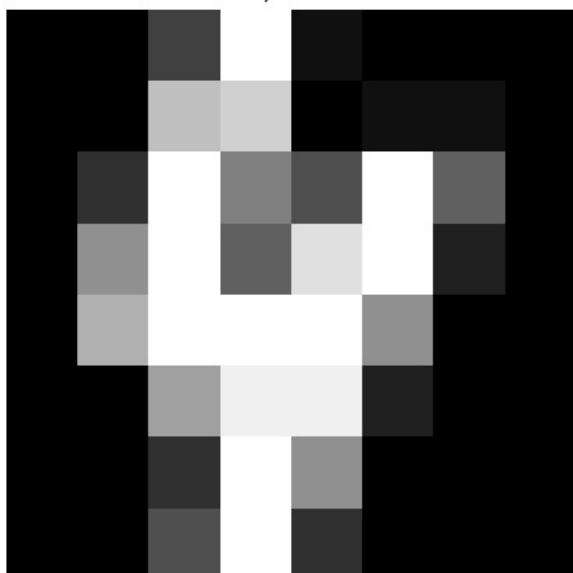
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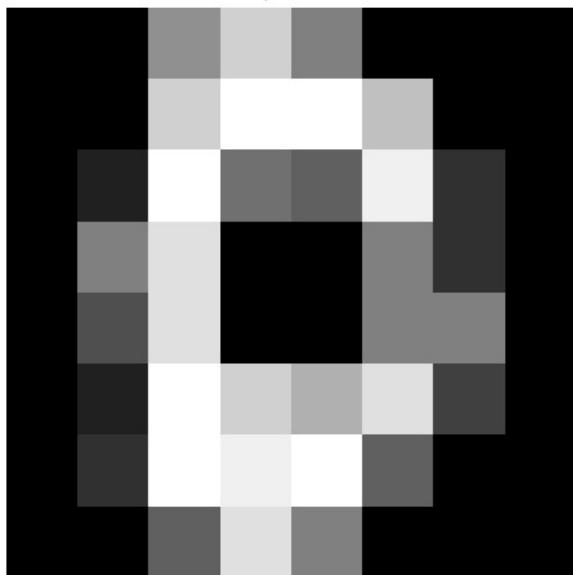
Actual: 6, Predicted: 6



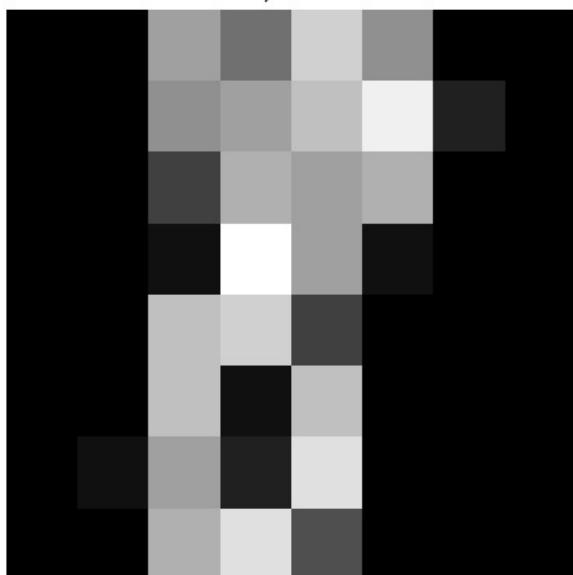
Actual: 4, Predicted: 4



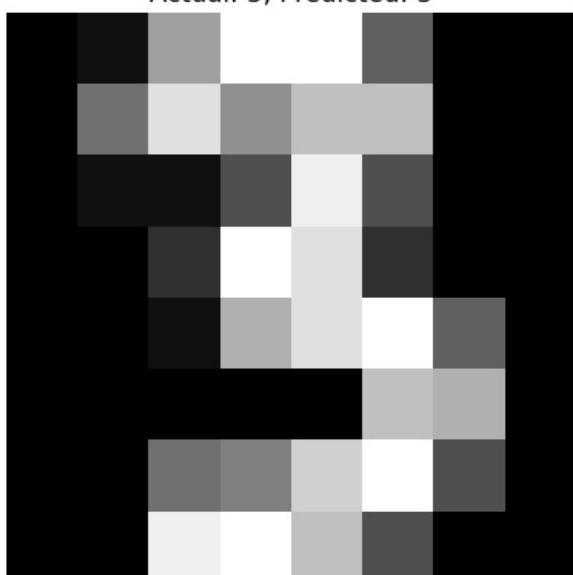
Actual: 0, Predicted: 0



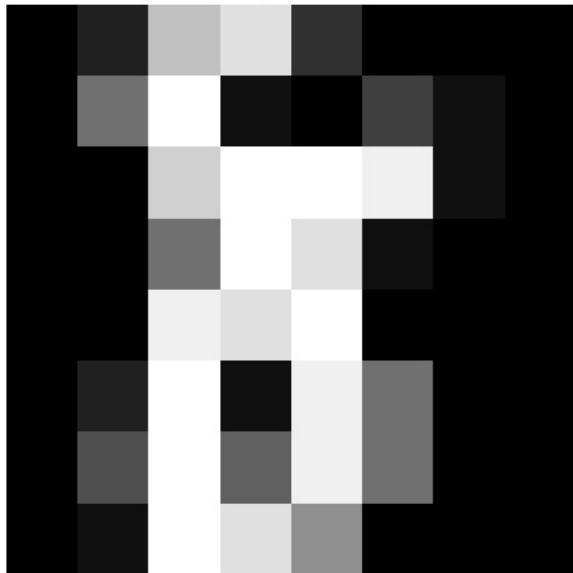
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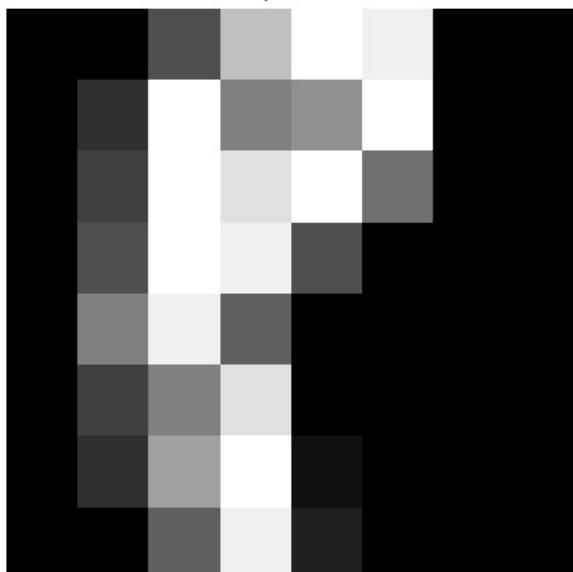
Actual: 3, Predicted: 3



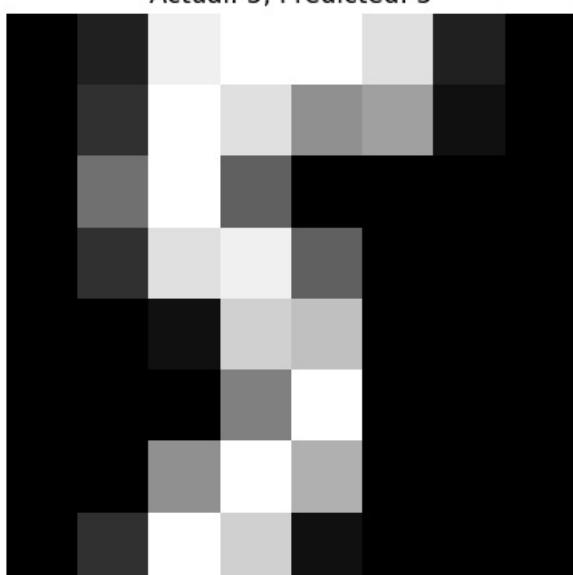
Actual: 8, Predicted: 8



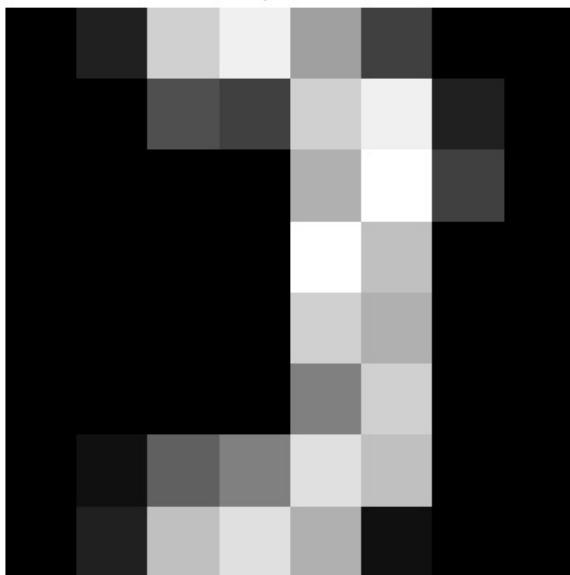
Actual: 8, Predicted: 8



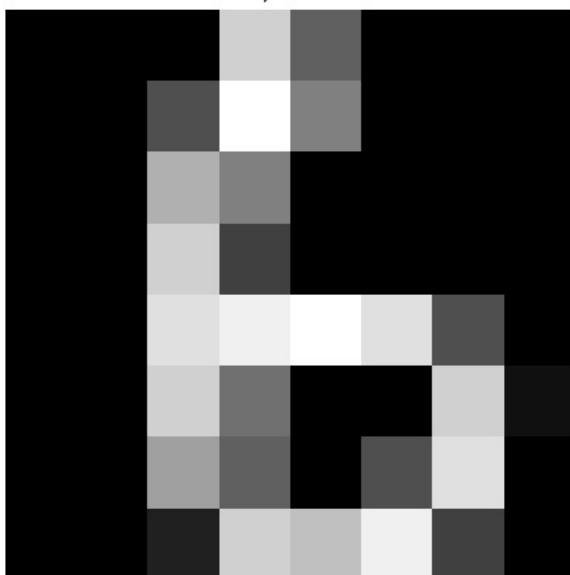
Actual: 5, Predicted: 5



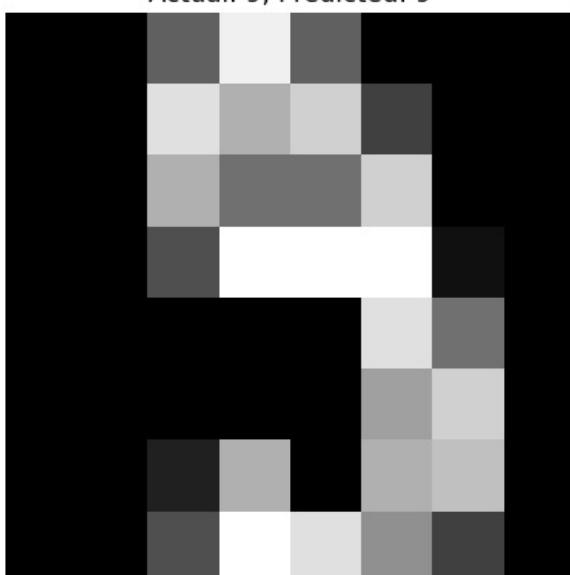
Actual: 3, Predicted: 3



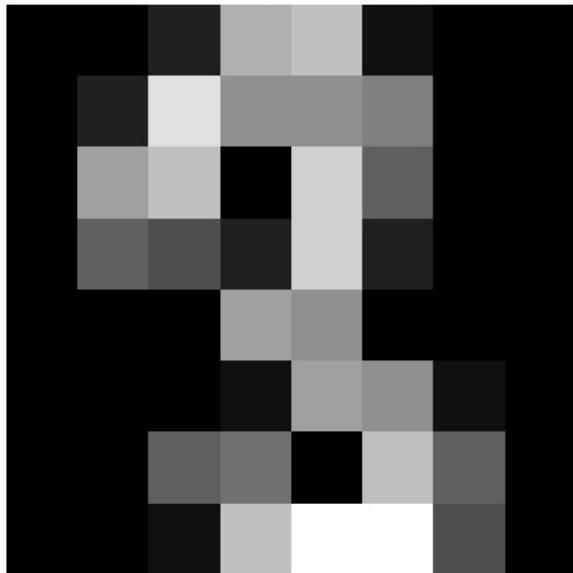
Actual: 6, Predicted: 6



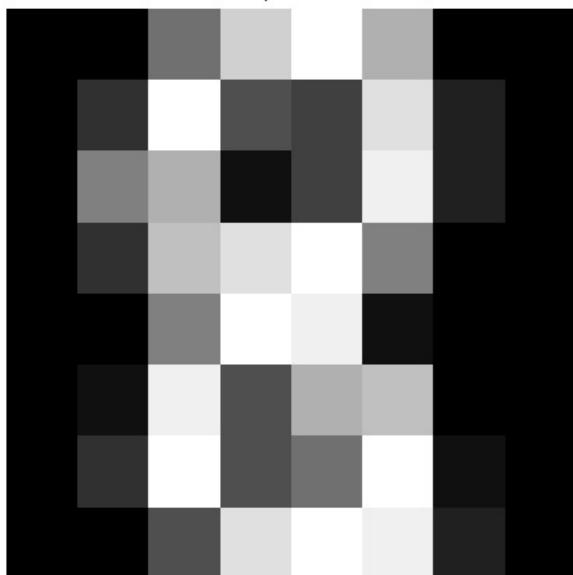
Actual: 9, Predicted: 9



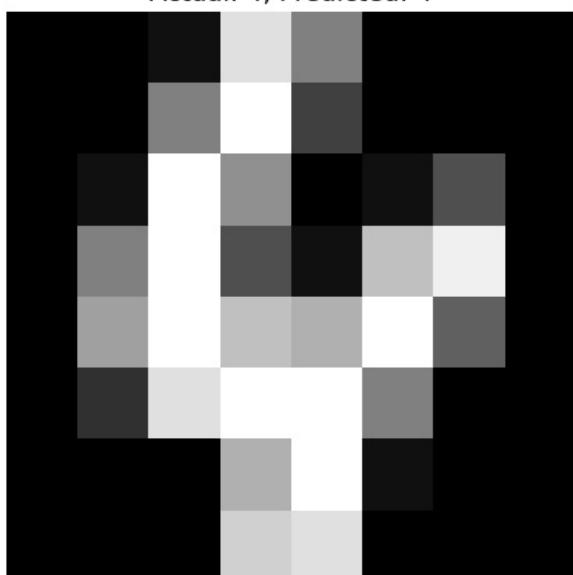
Actual: 3, Predicted: 3



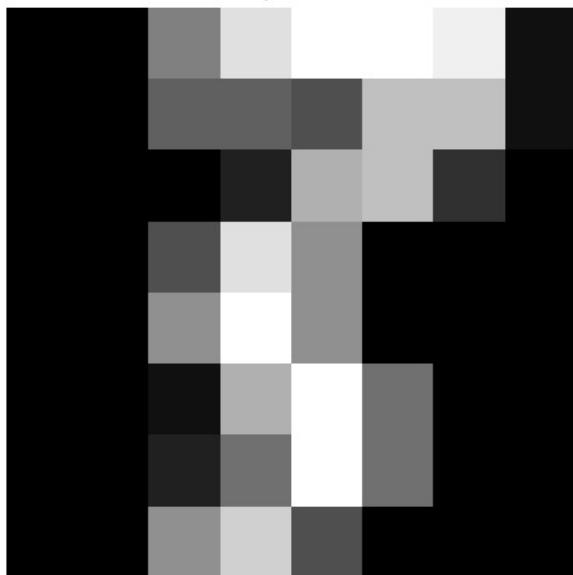
Actual: 8, Predicted: 8



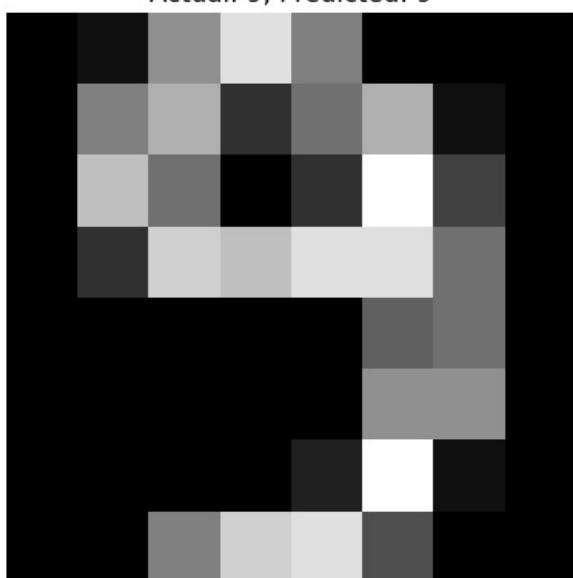
Actual: 4, Predicted: 4



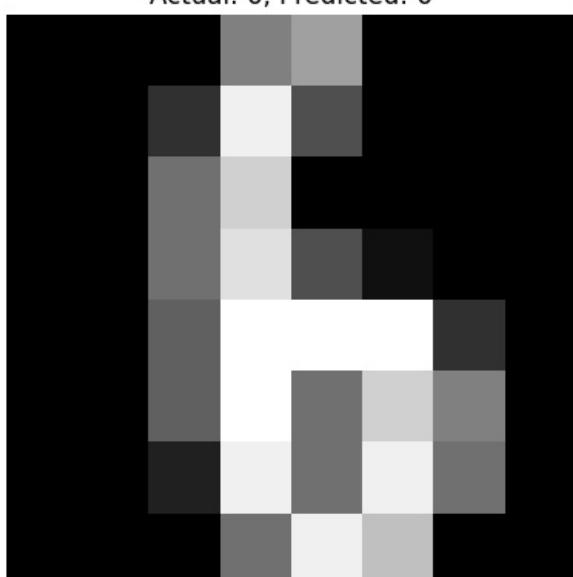
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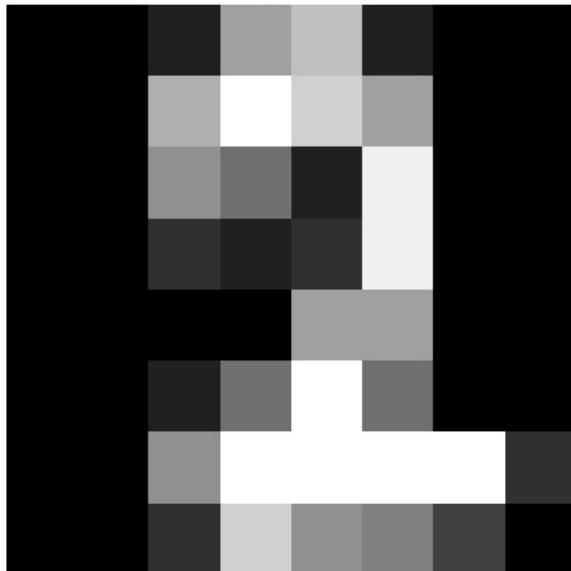
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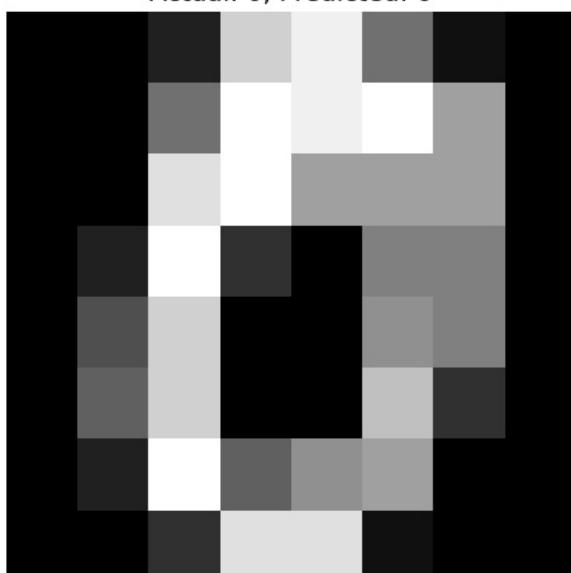
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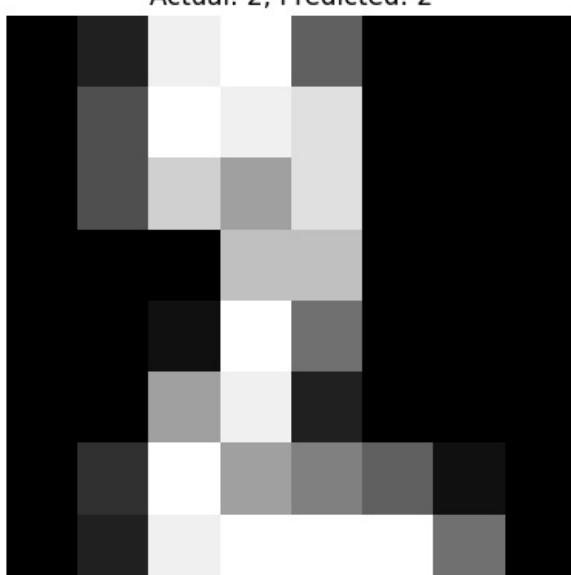
Actual: 2, Predicted: 2



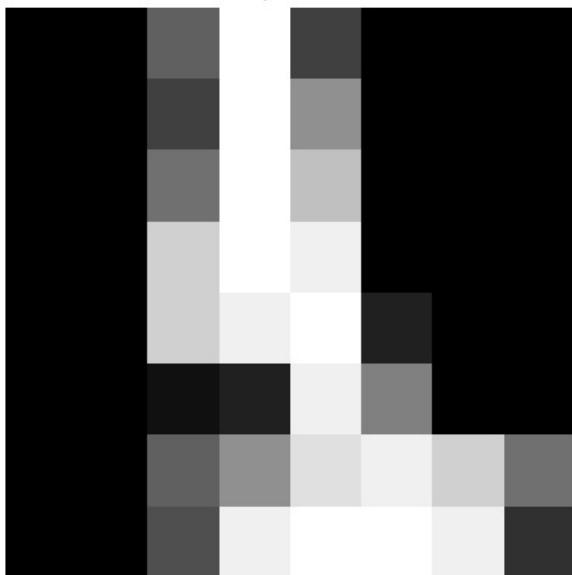
Actual: 0, Predicted: 0



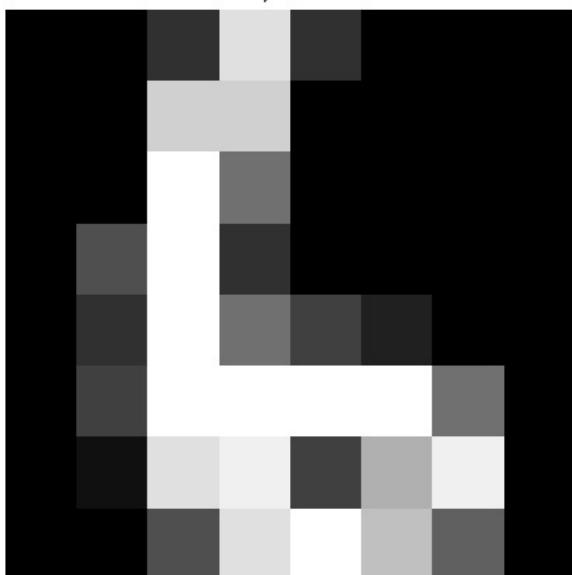
Actual: 2, Predicted: 2



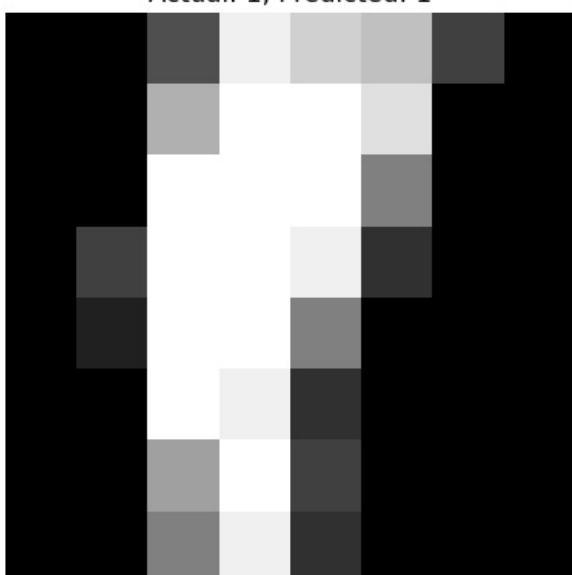
Actual: 1, Predicted: 1



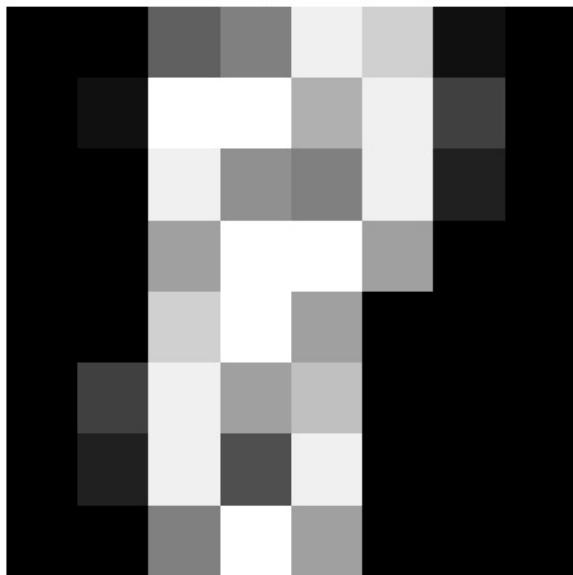
Actual: 6, Predicted: 6



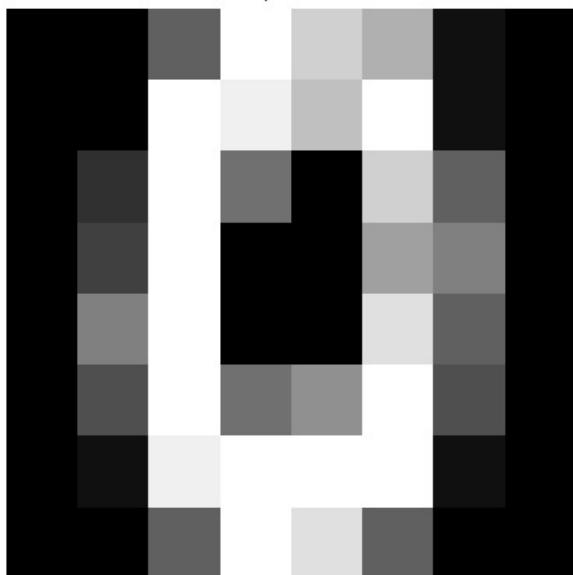
Actual: 1, Predicted: 1



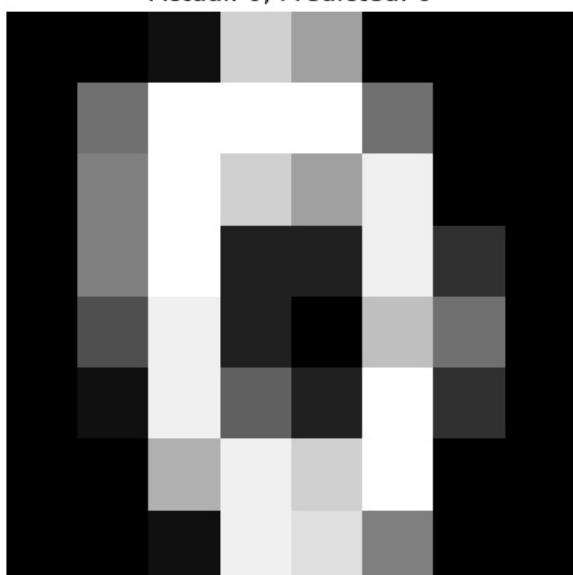
Actual: 8, Predicted: 8



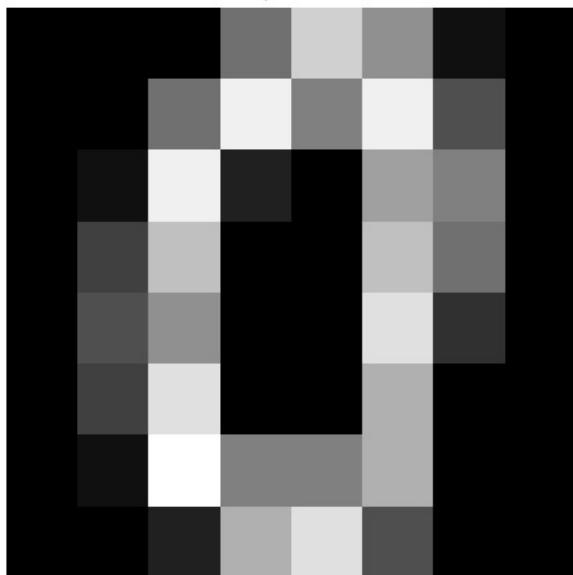
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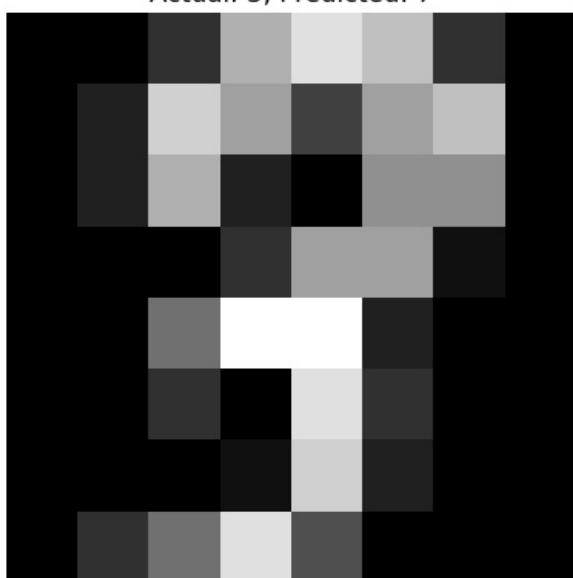
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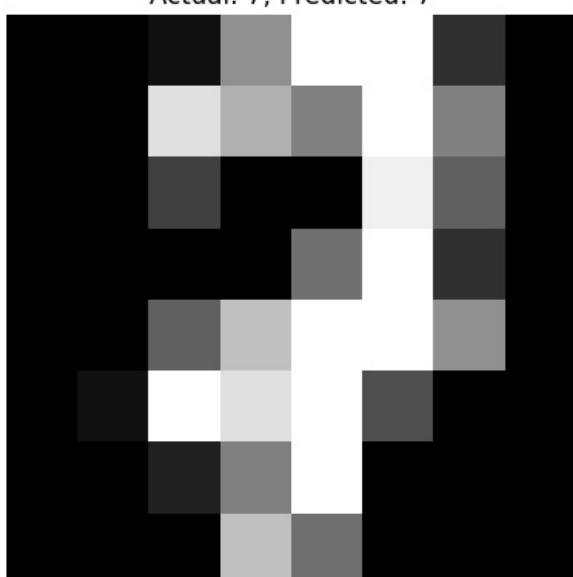
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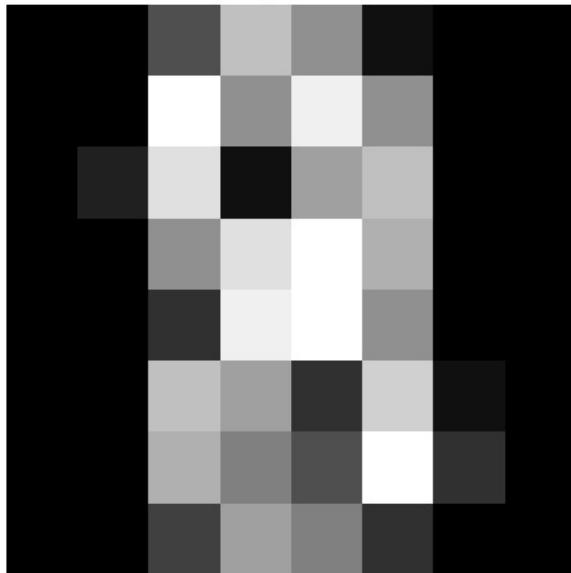
Actual: 3, Predicted: 7



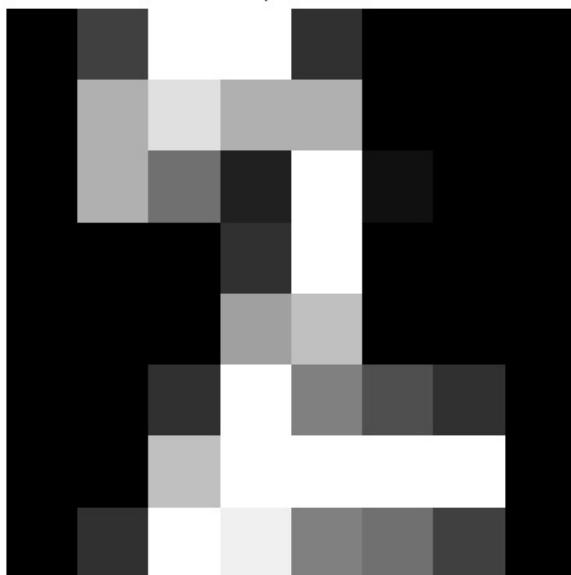
Actual: 7, Predicted: 7



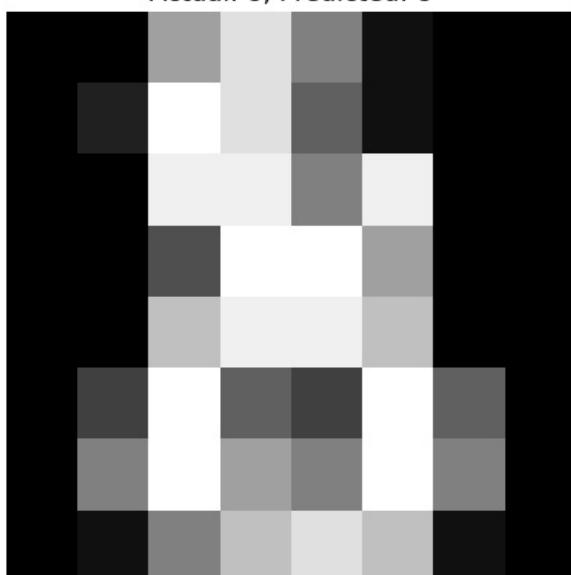
Actual: 8, Predicted: 8



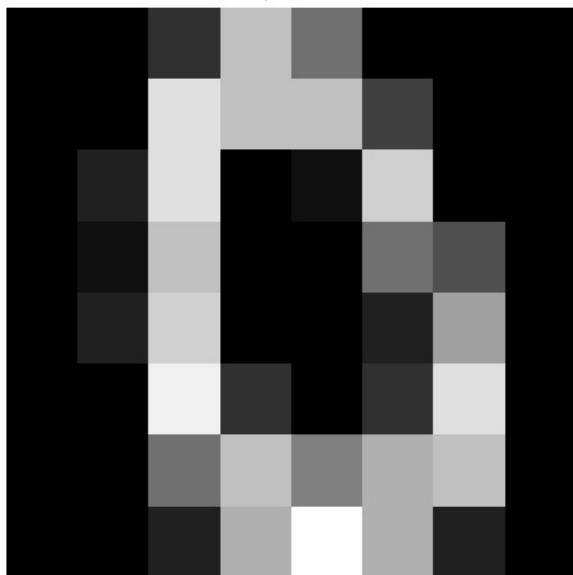
Actual: 2, Predicted: 2



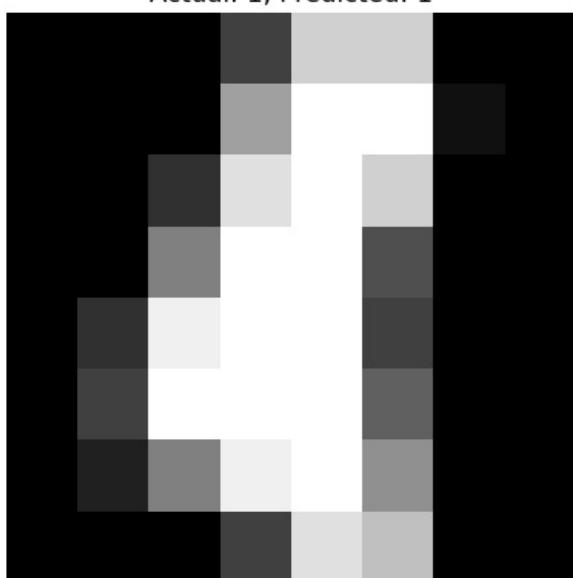
Actual: 8, Predicted: 8



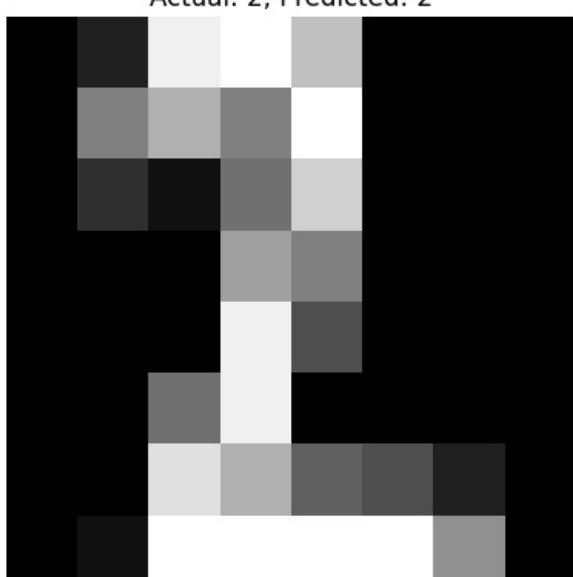
Actual: 0, Predicted: 0



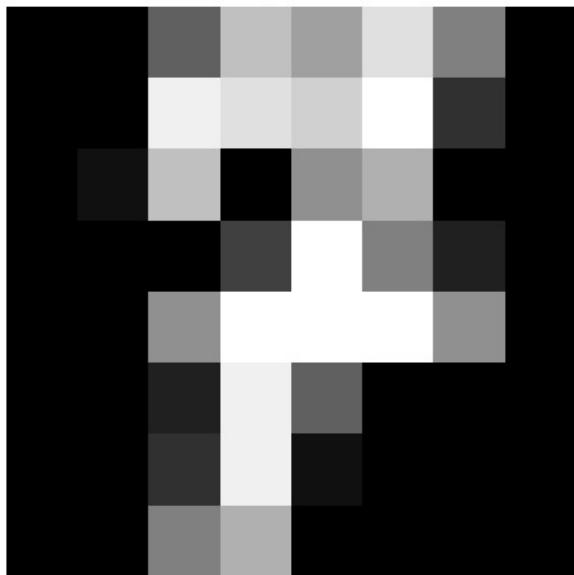
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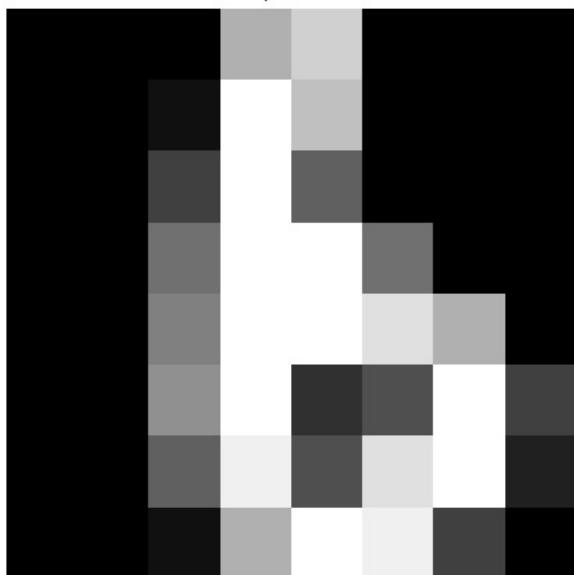
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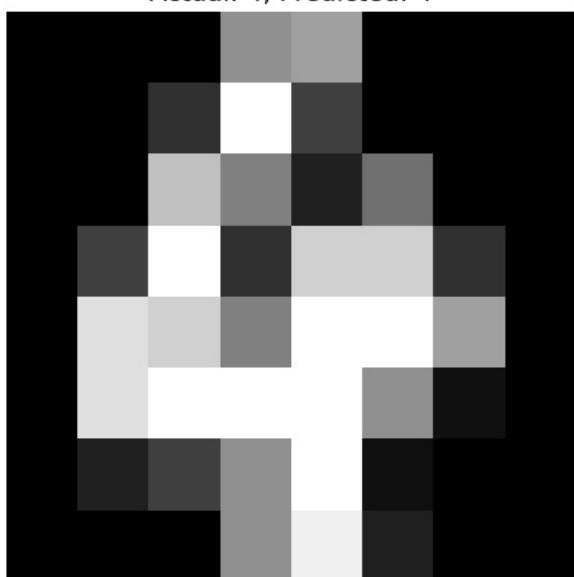
Actual: 7, Predicted: 7



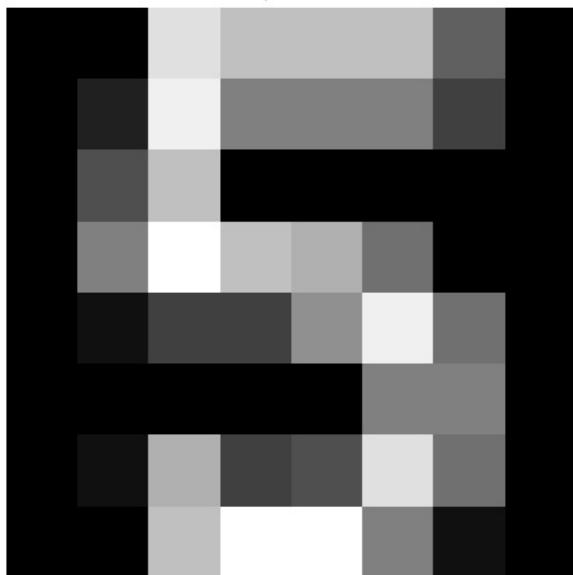
Actual: 6, Predicted: 6



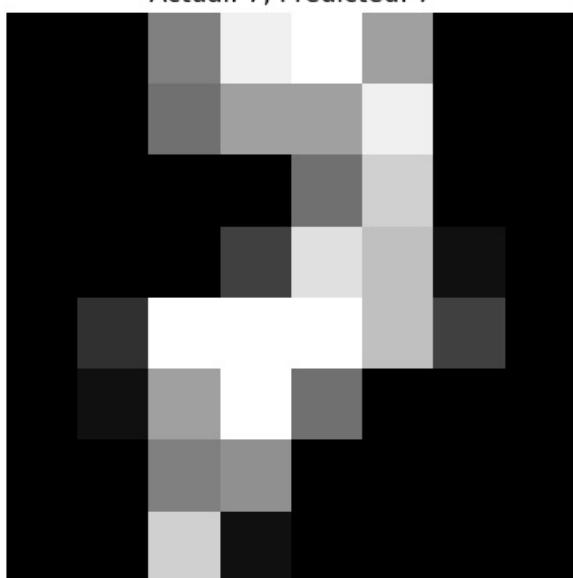
Actual: 4, Predicted: 4



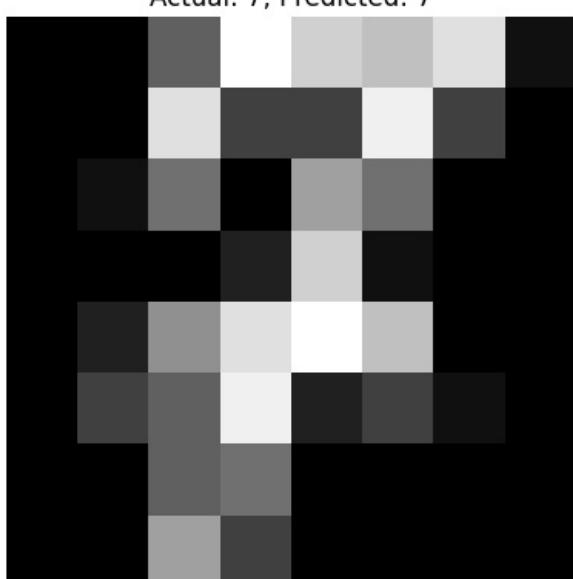
Actual: 5, Predicted: 5



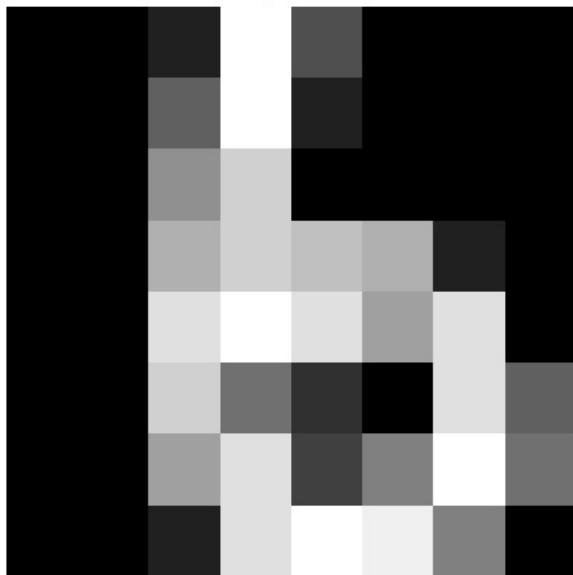
Actual: 7, Predicted: 7



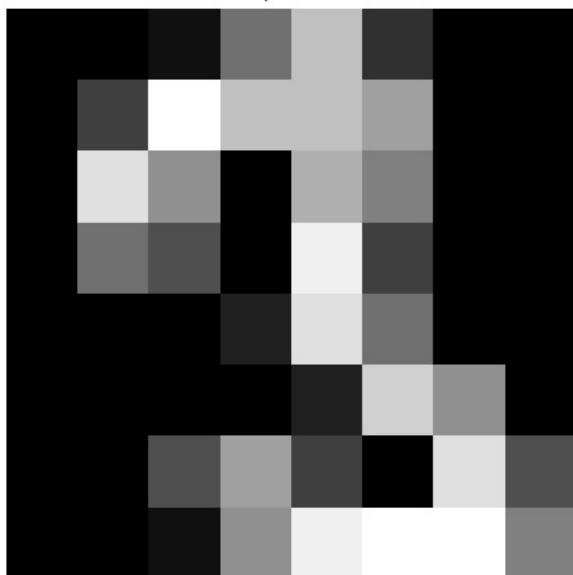
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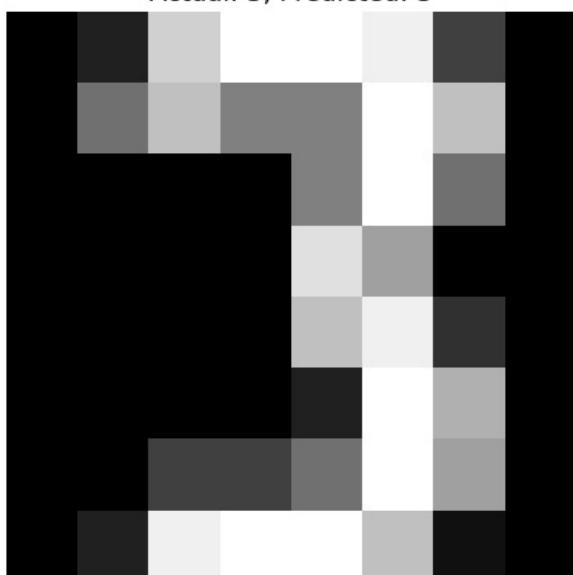
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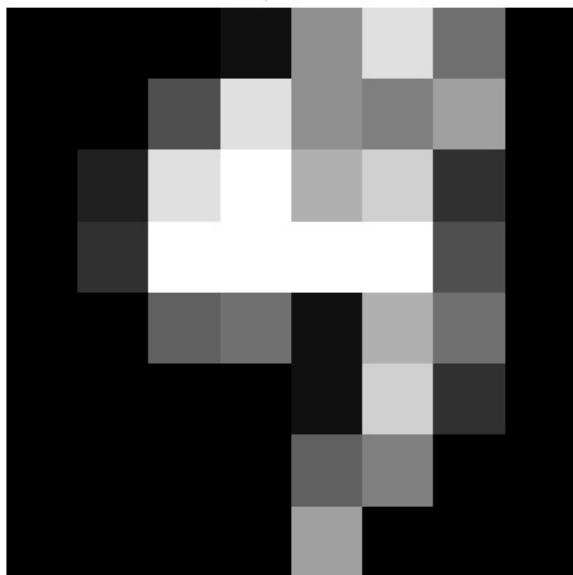
Actual: 3, Predicted: 3



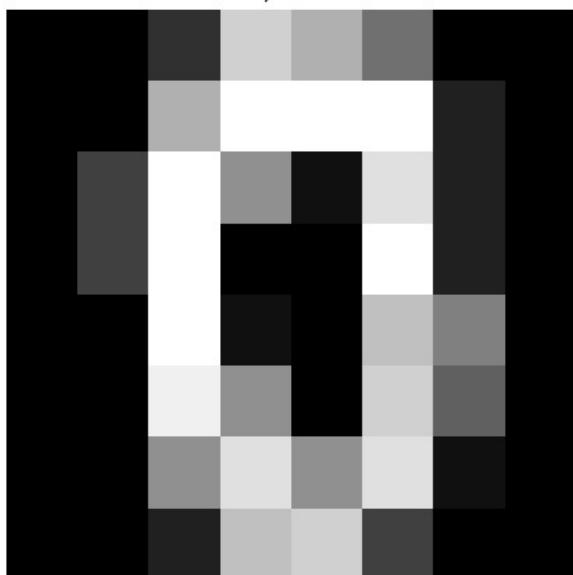
Actual: 3, Predicted: 3



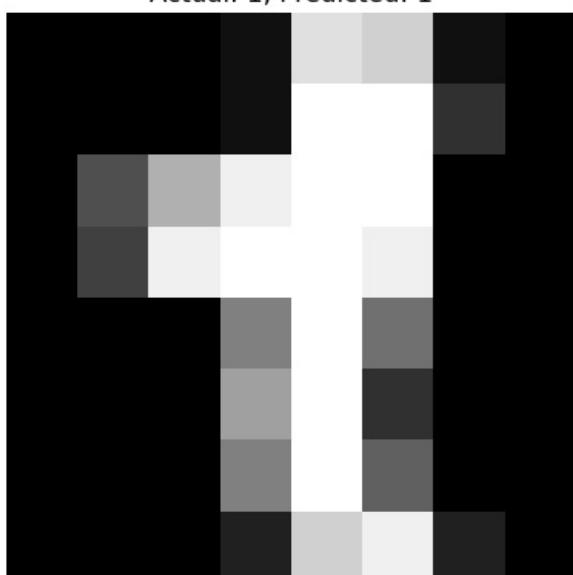
Actual: 9, Predicted: 9



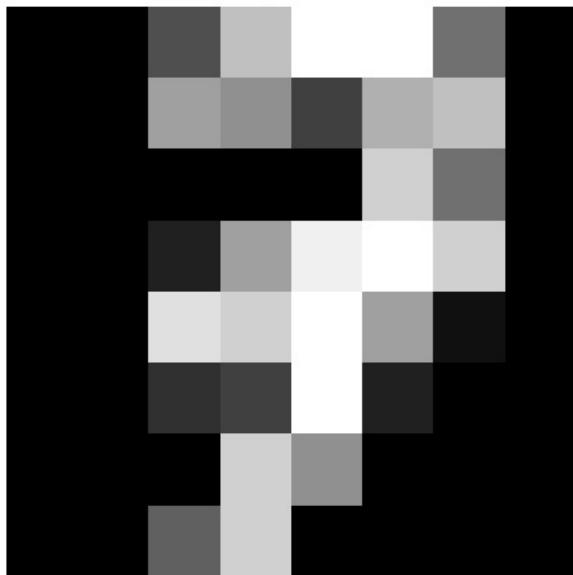
Actual: 0, Predicted: 0



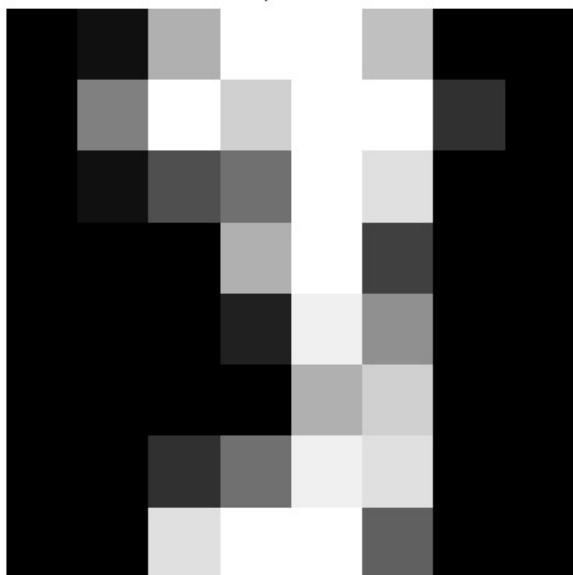
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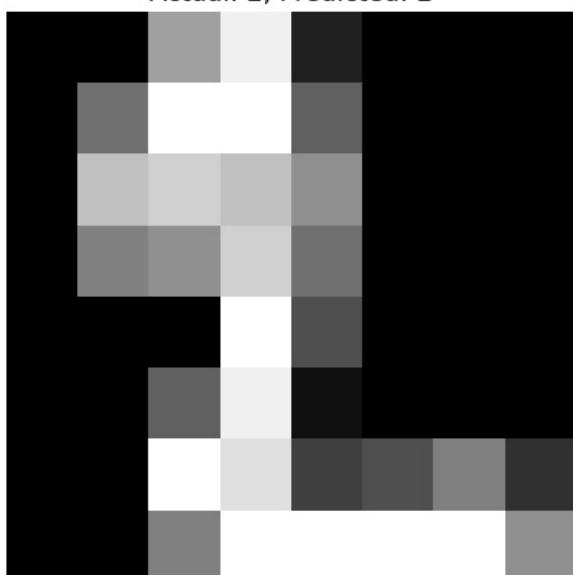
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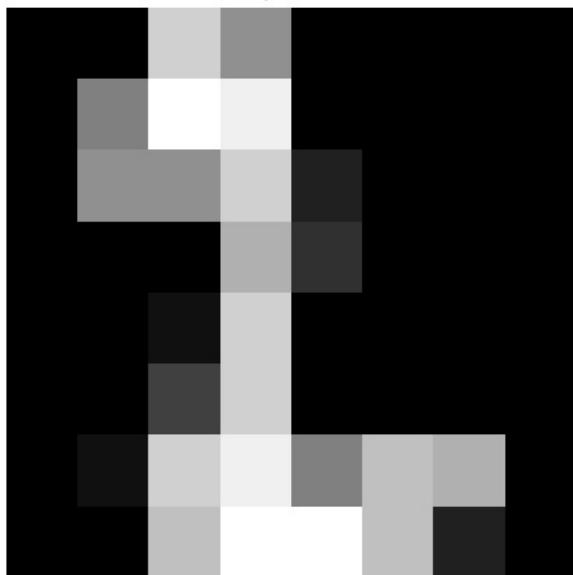
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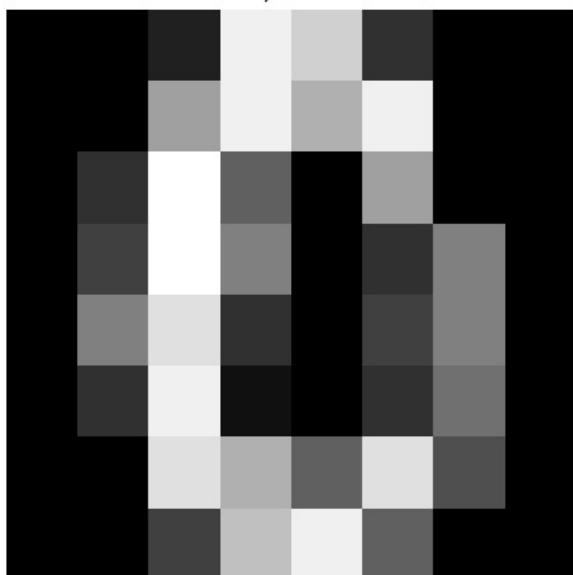
Actual: 2, Predicted: 2



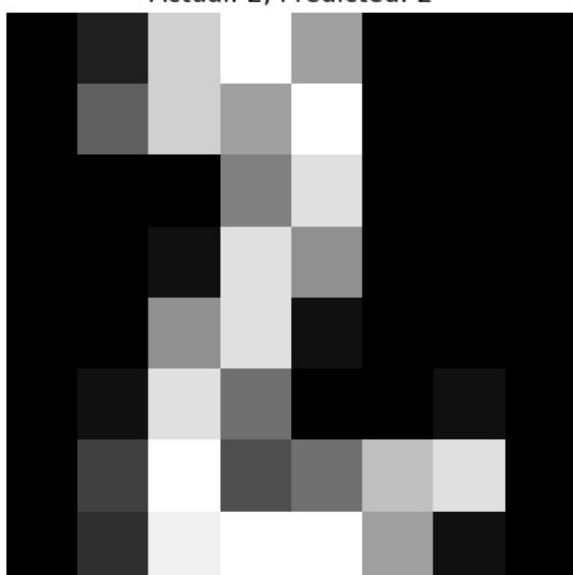
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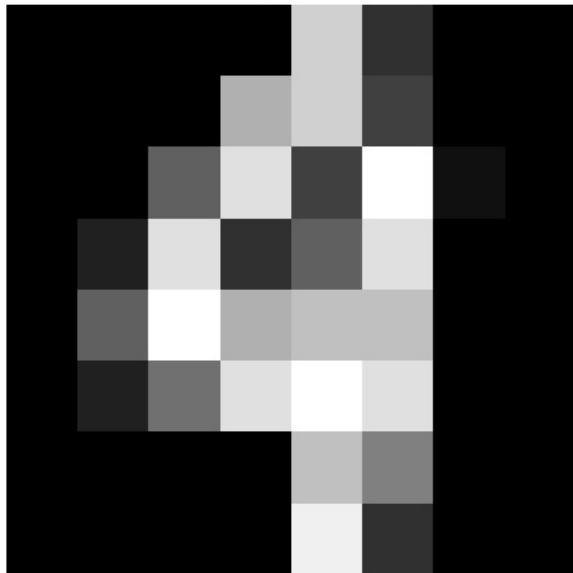
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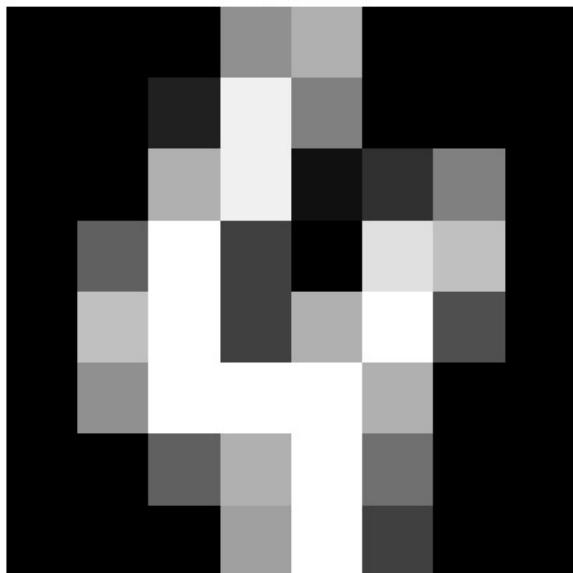
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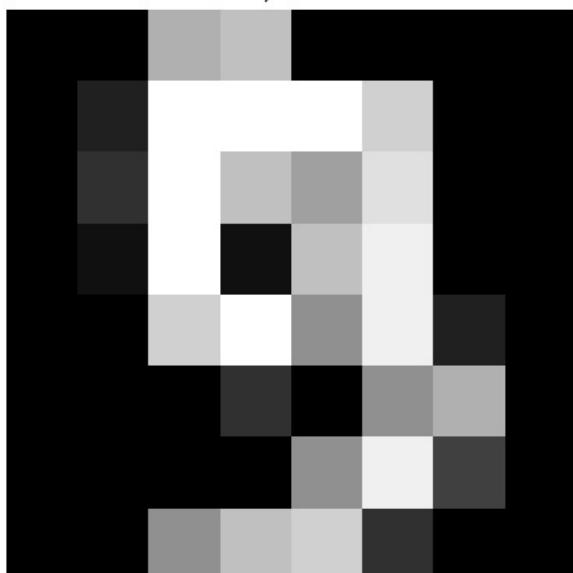
Actual: 4, Predicted: 4



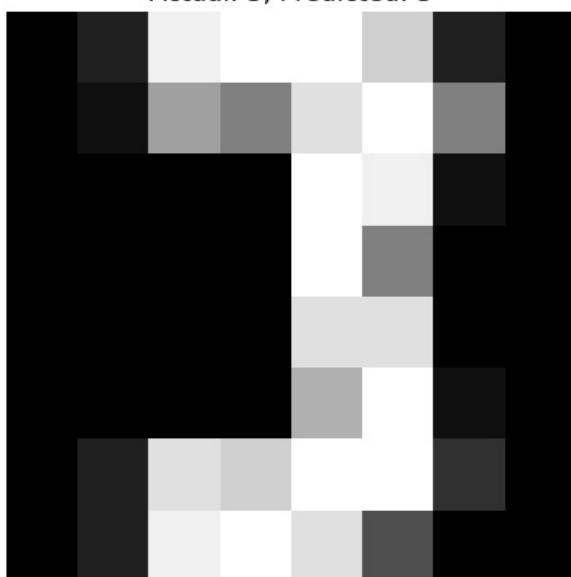
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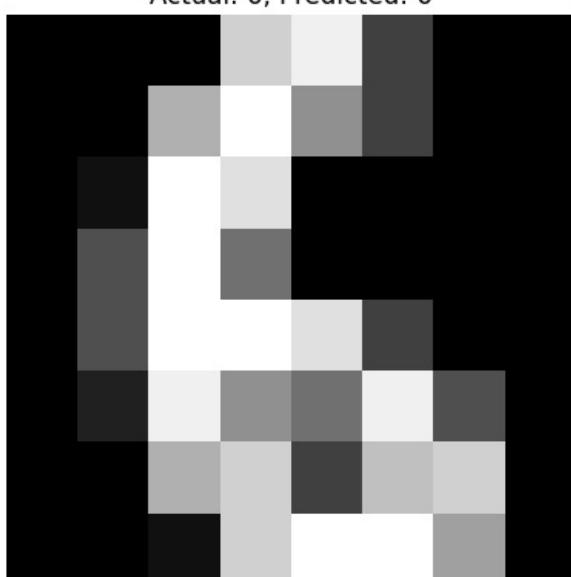
Actual: 9, Predicted: 9



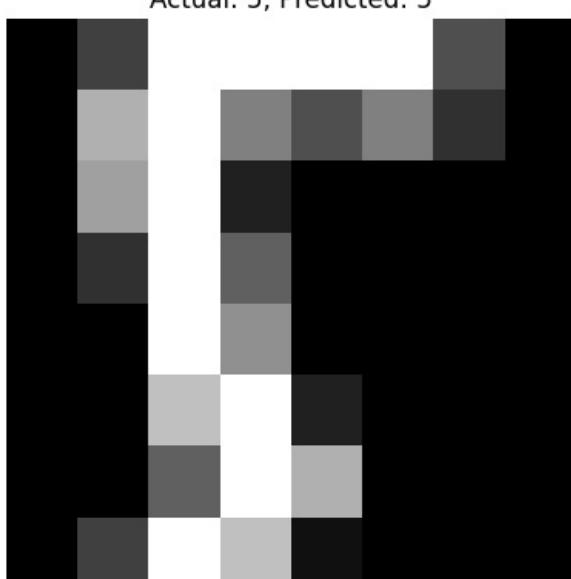
Actual: 3, Predicted: 3



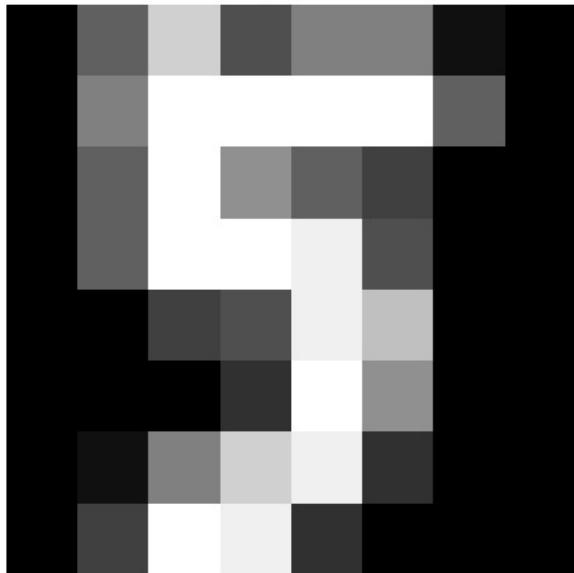
Actual: 6, Predicted: 6



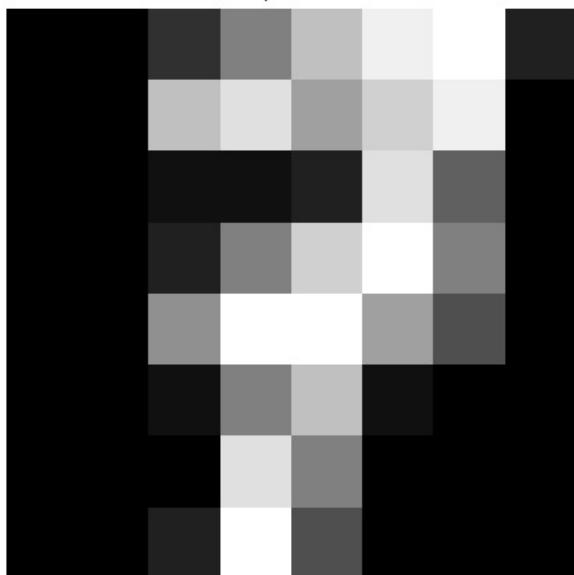
Actual: 5, Predicted: 5



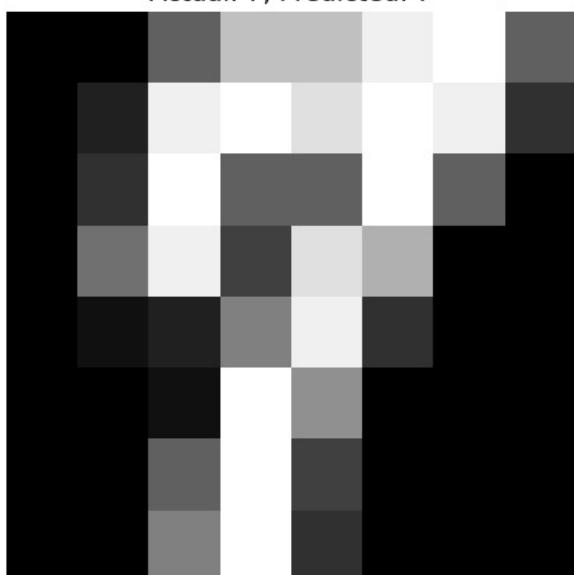
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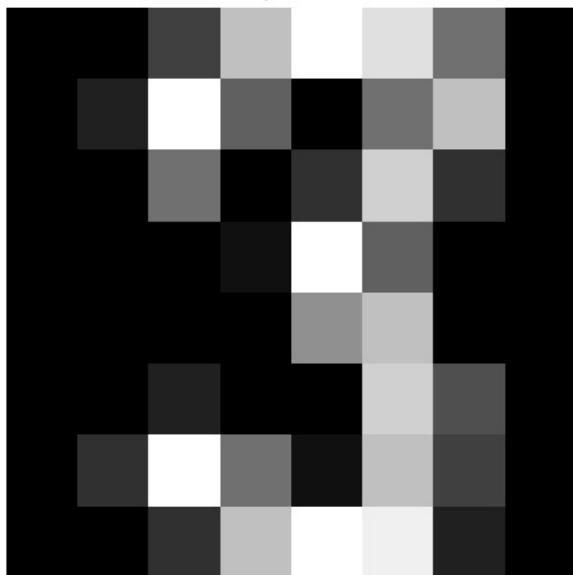
Actual: 7, Predicted: 7



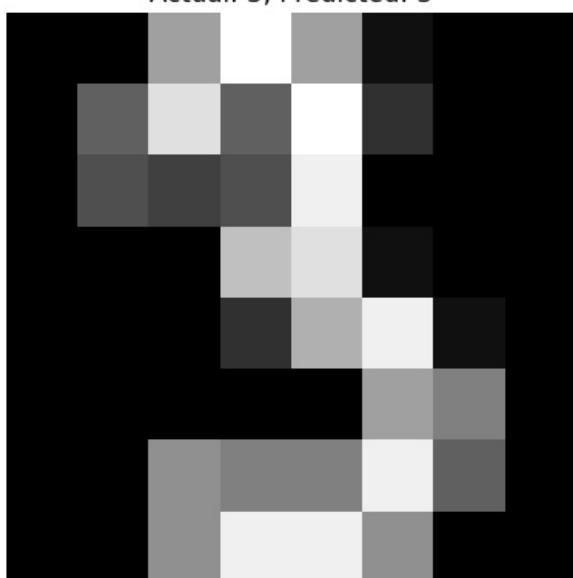
Actual: 7, Predicted: 7



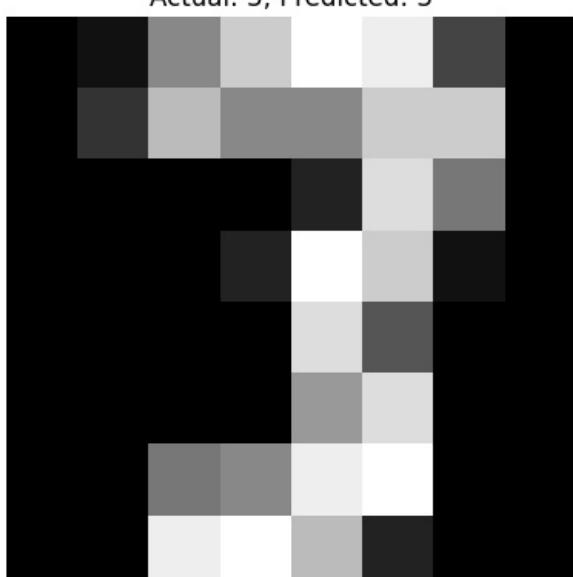
Actual: 3, Predicted: 3



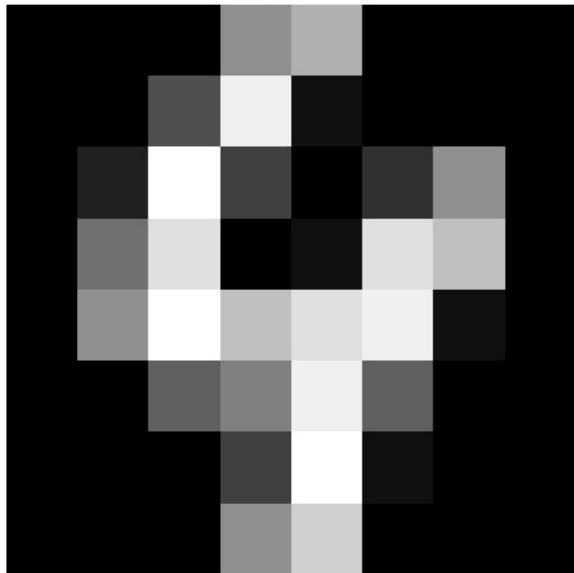
Actual: 3, Predicted: 3



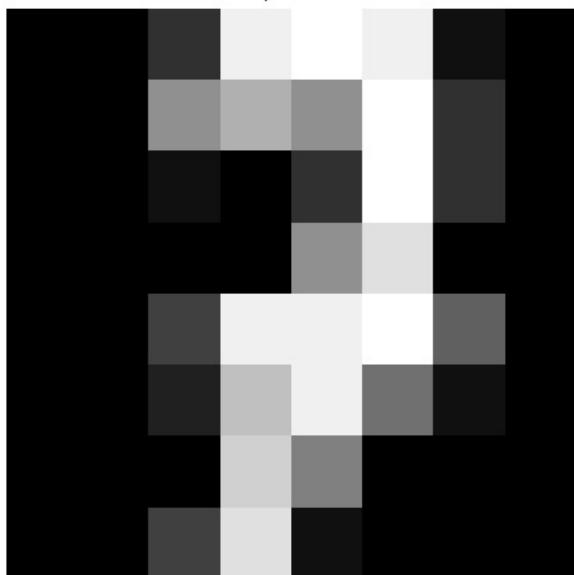
Actual: 3, Predicted: 3



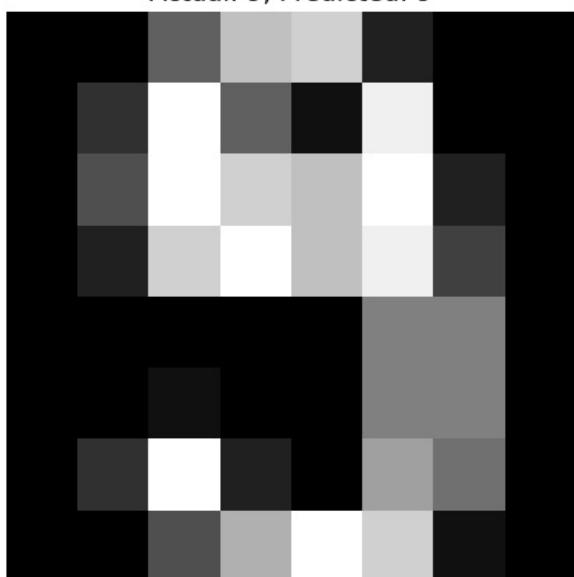
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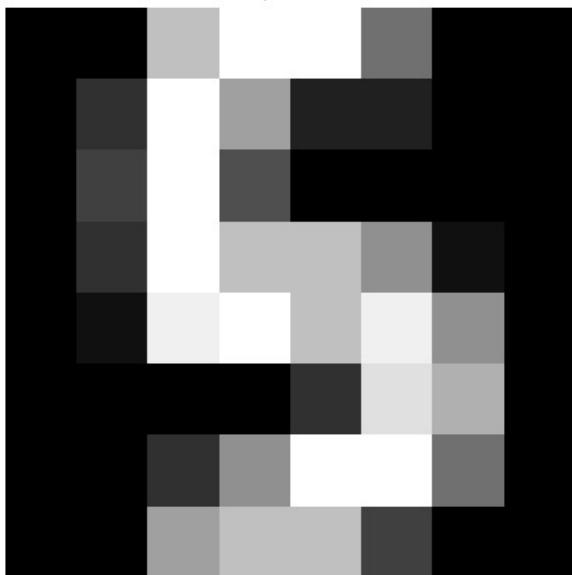
Actual: 7, Predicted: 7



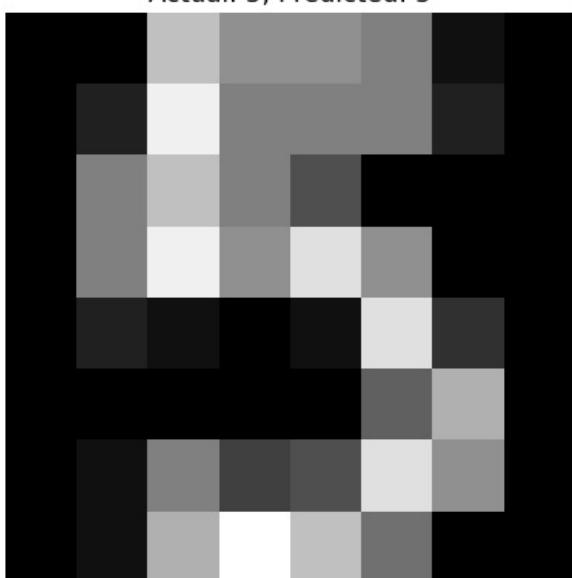
Actual: 9, Predicted: 9



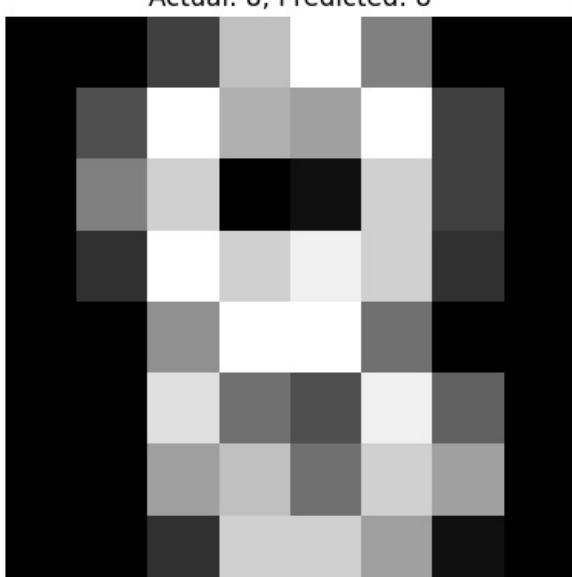
Actual: 5, Predicted: 5



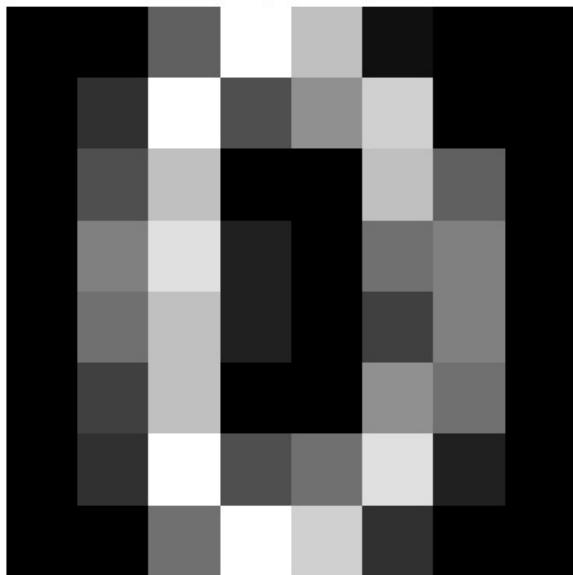
Actual: 5, Predicted: 5



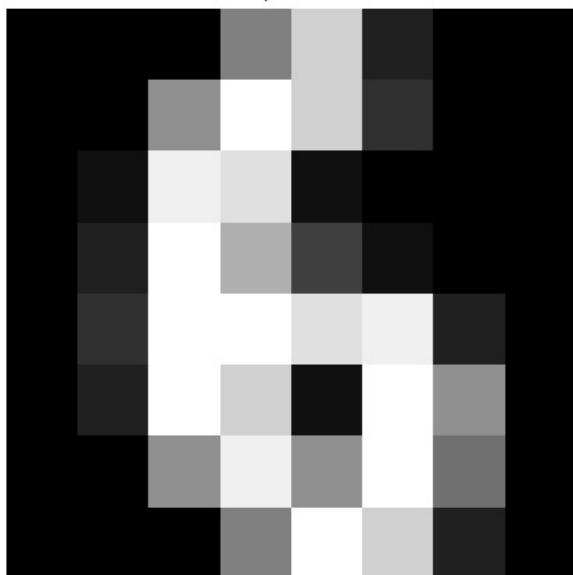
Actual: 8, Predicted: 8



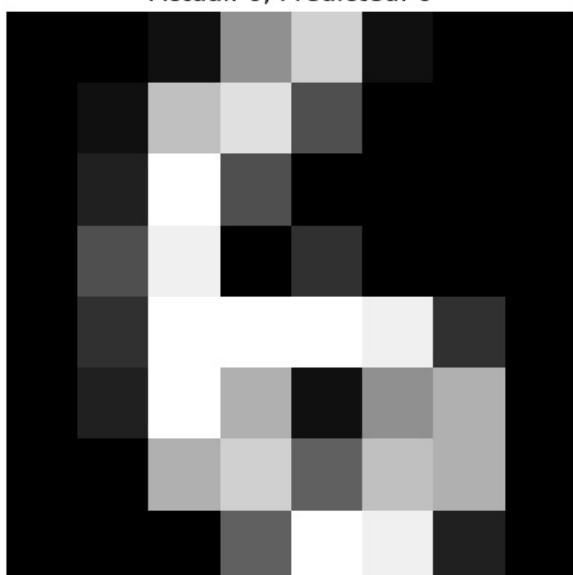
Actual: 0, Predicted: 0



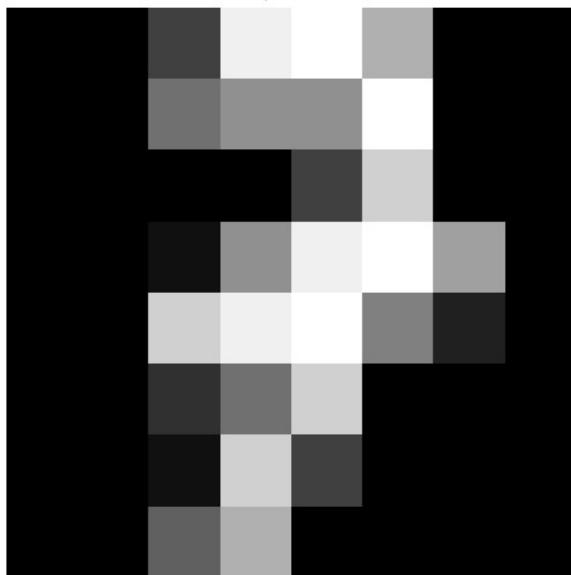
Actual: 6, Predicted: 6



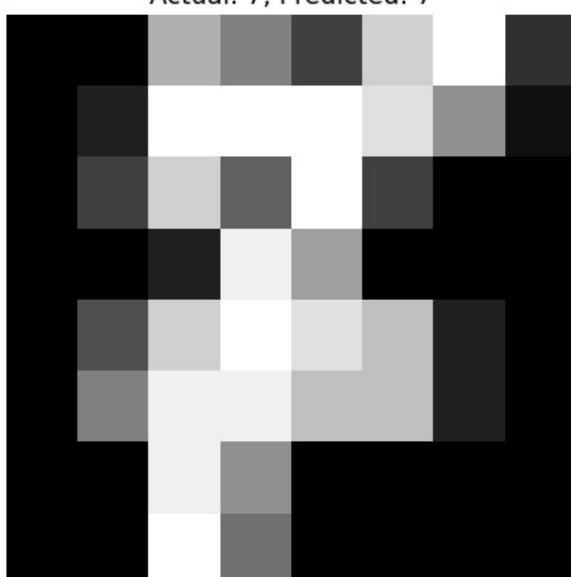
Actual: 6, Predicted: 6



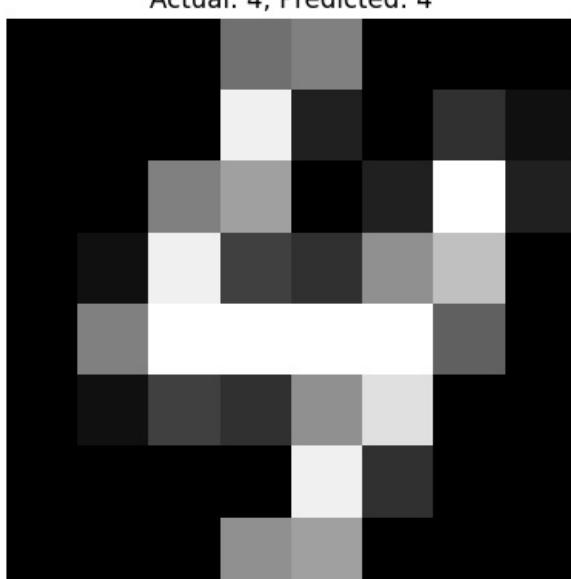
Actual: 7, Predicted: 7



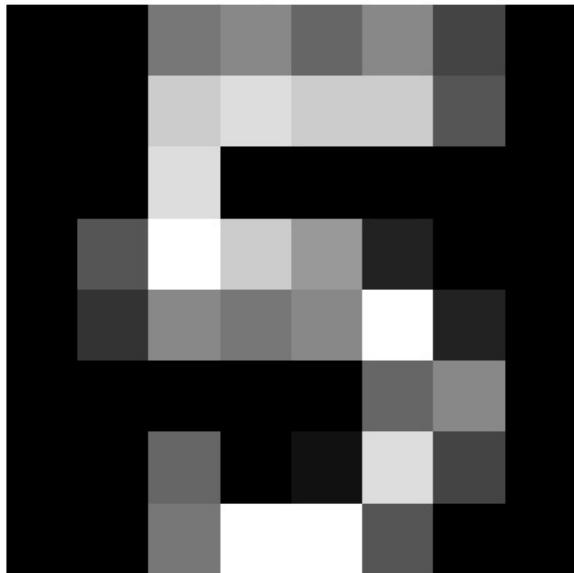
Actual: 7, Predicted: 7



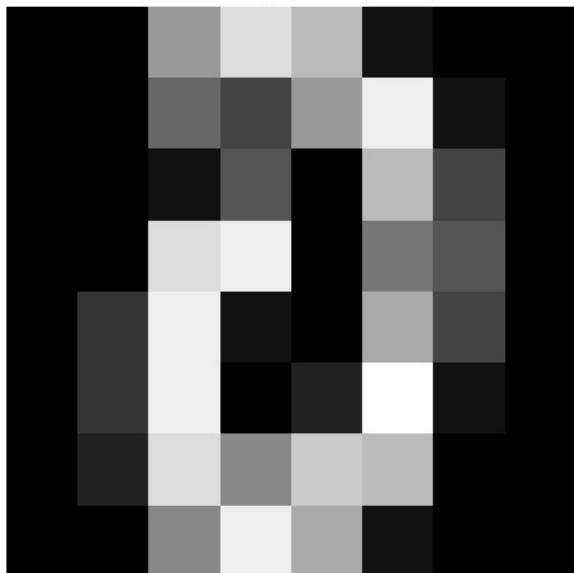
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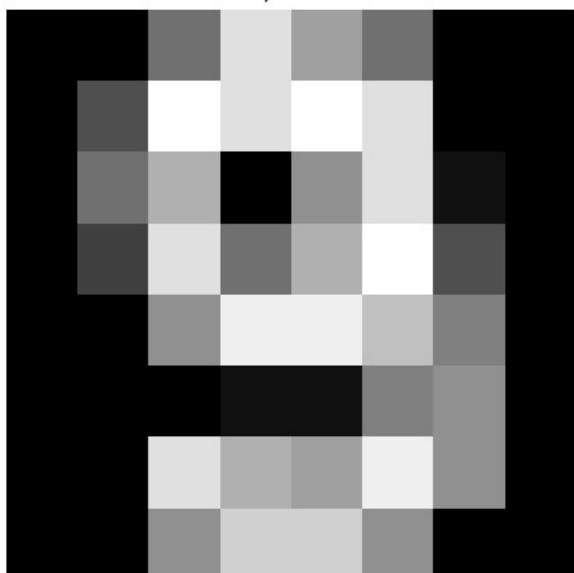
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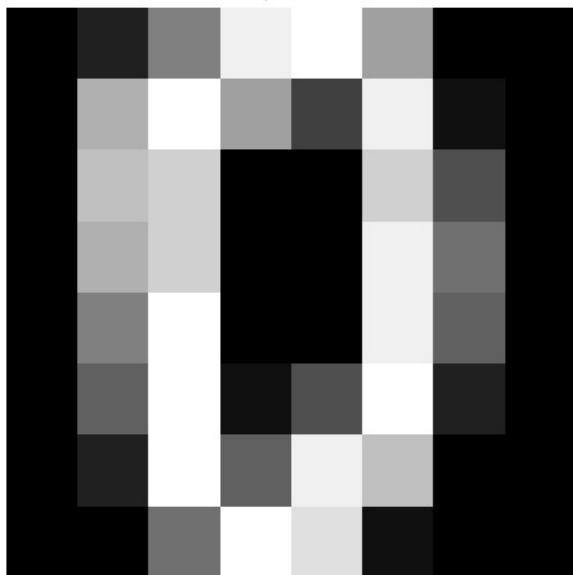
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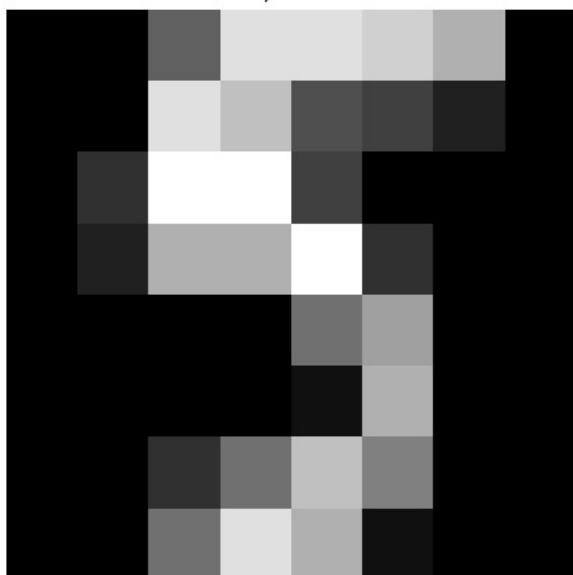
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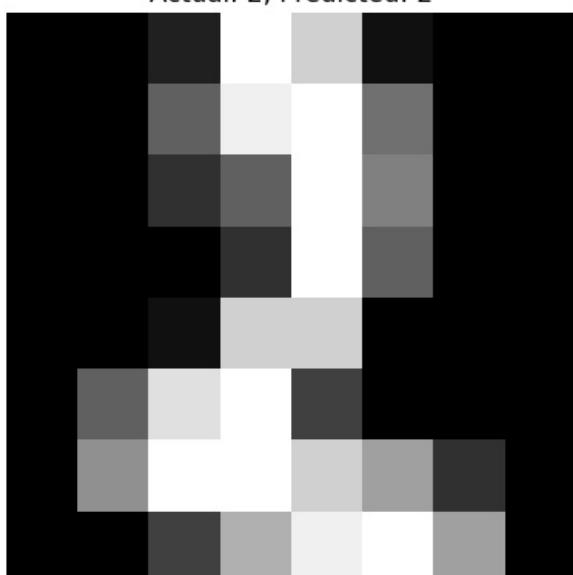
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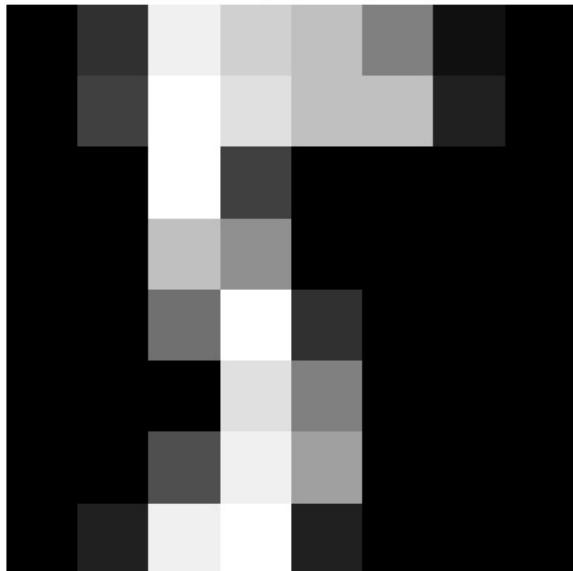
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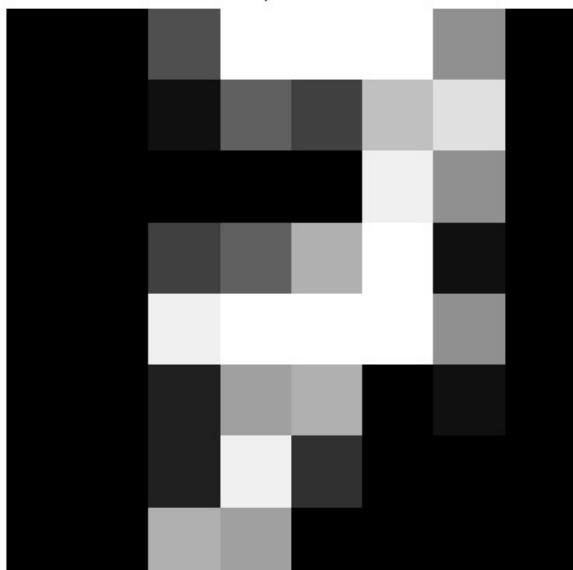
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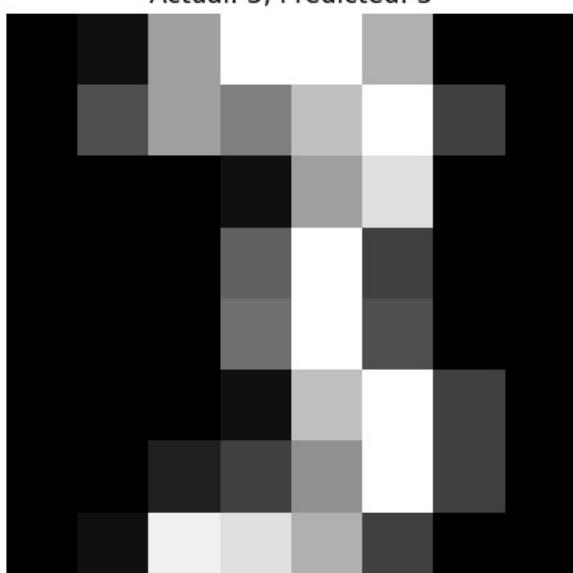
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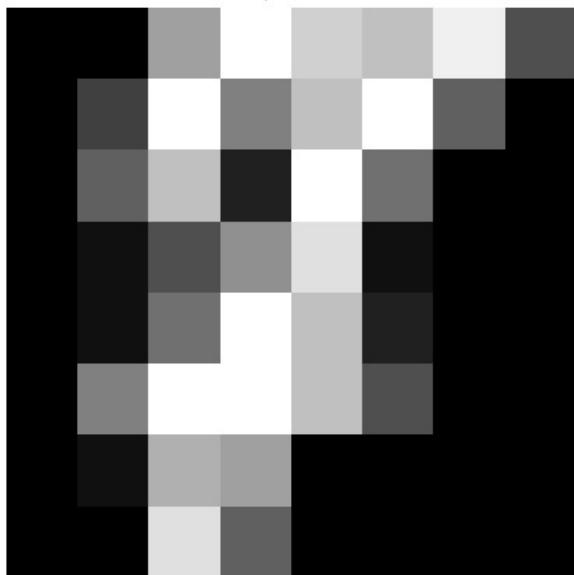
Actual: 7, Predicted: 7



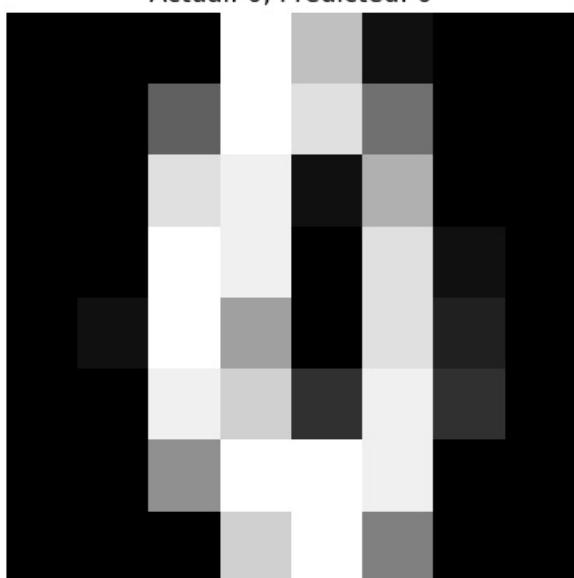
Actual: 3, Predicted: 3



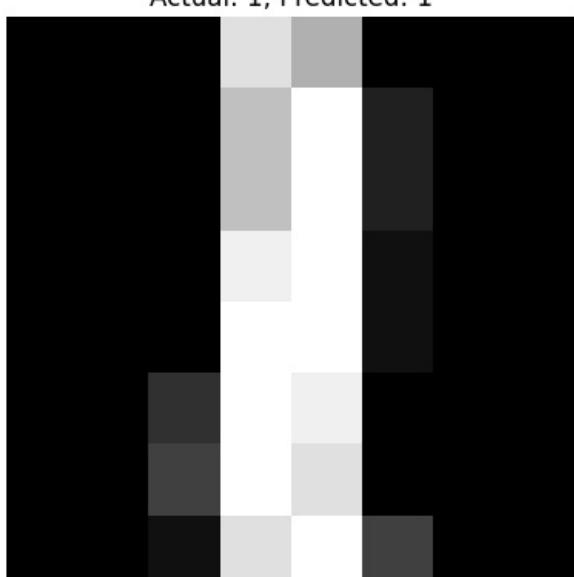
Actual: 7, Predicted: 7



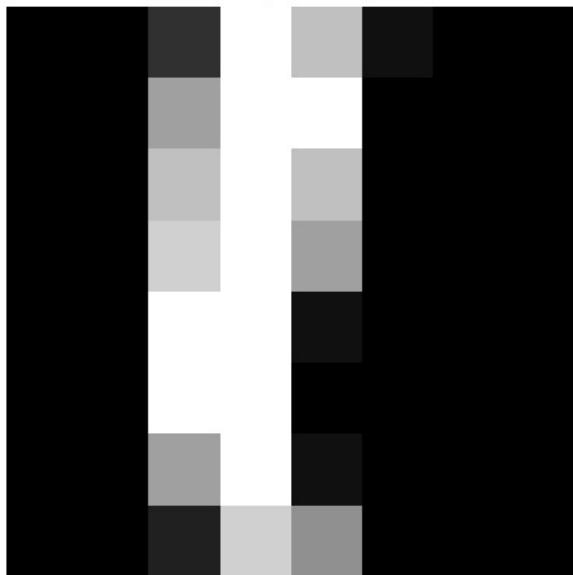
Actual: 0, Predicted: 0



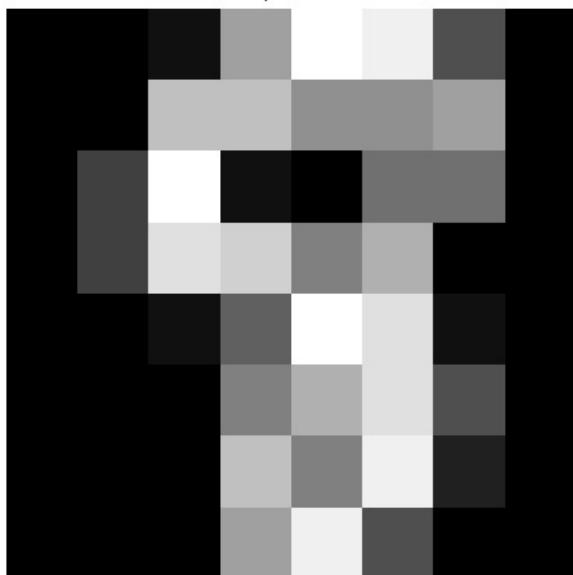
Actual: 1, Predicted: 1



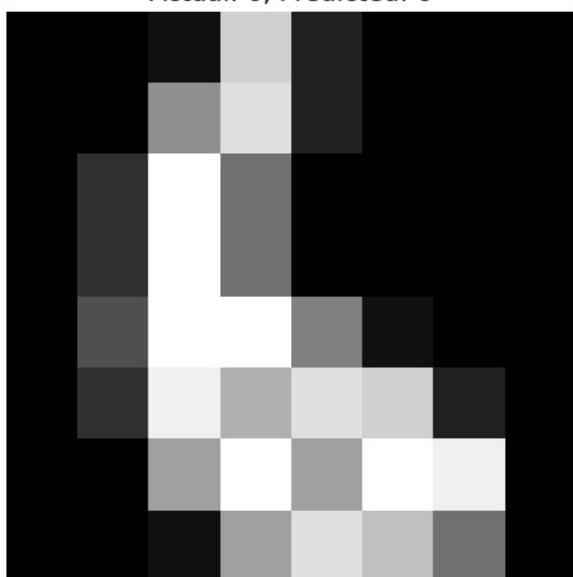
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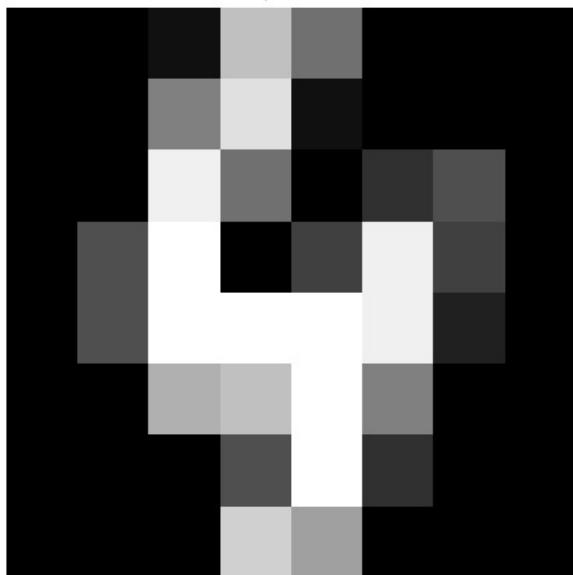
Actual: 8, Predicted: 8



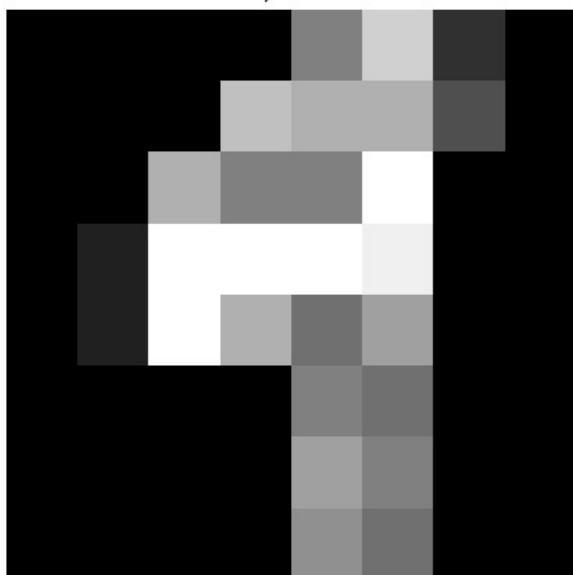
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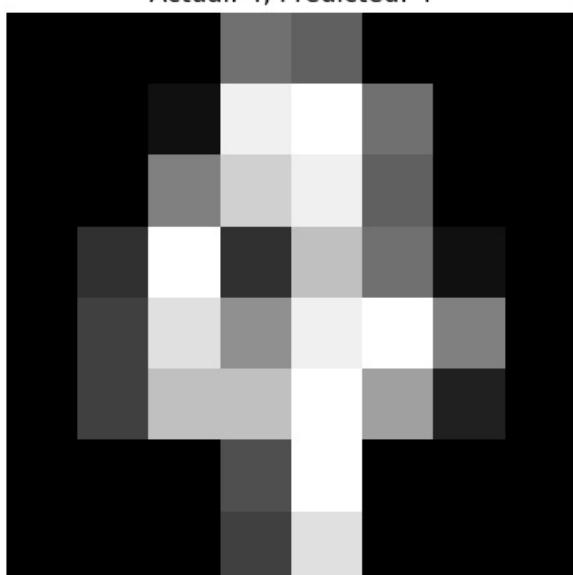
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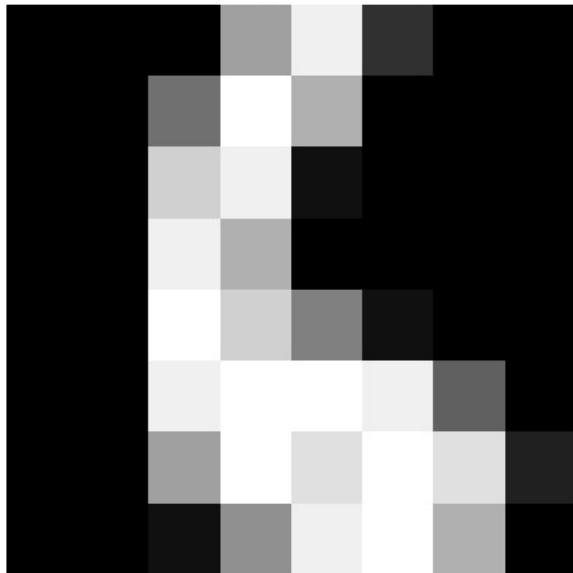
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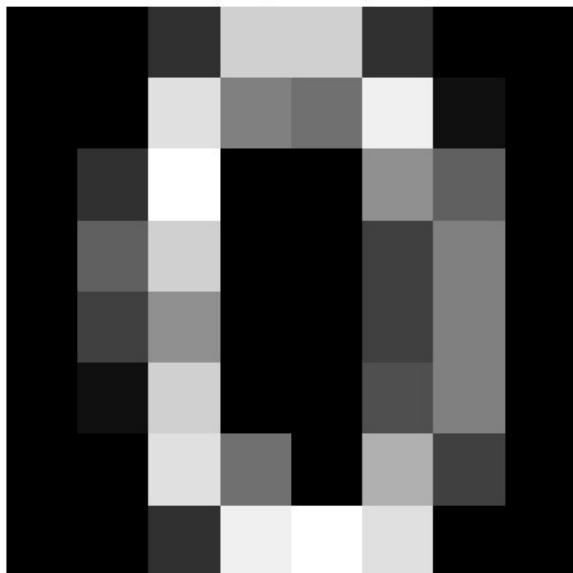
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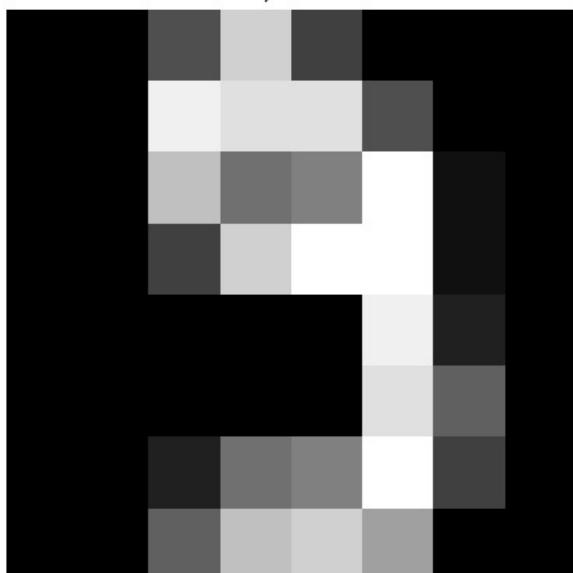
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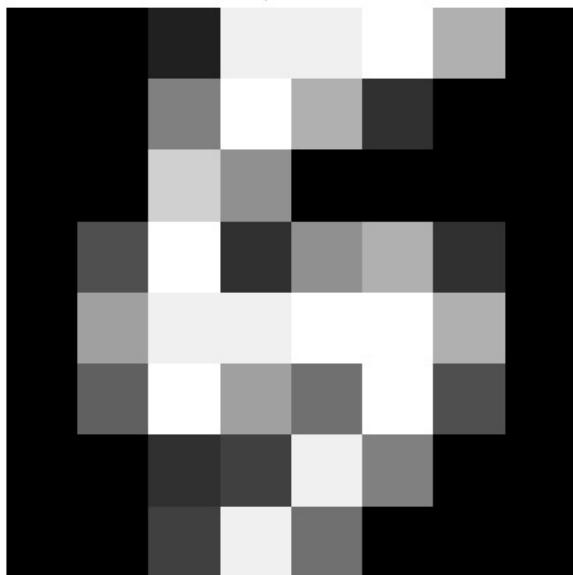
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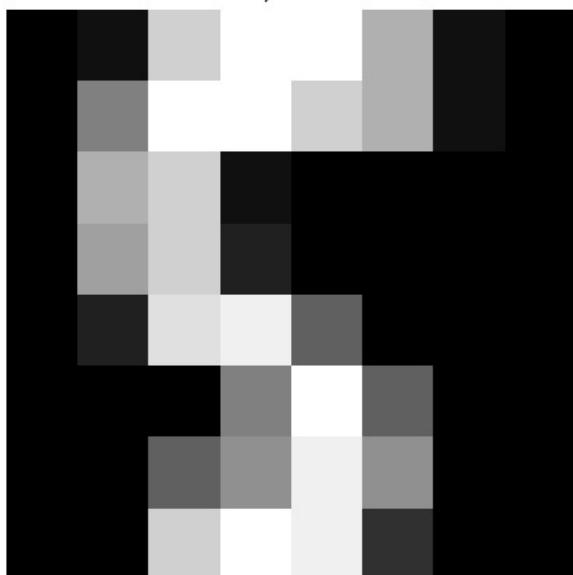
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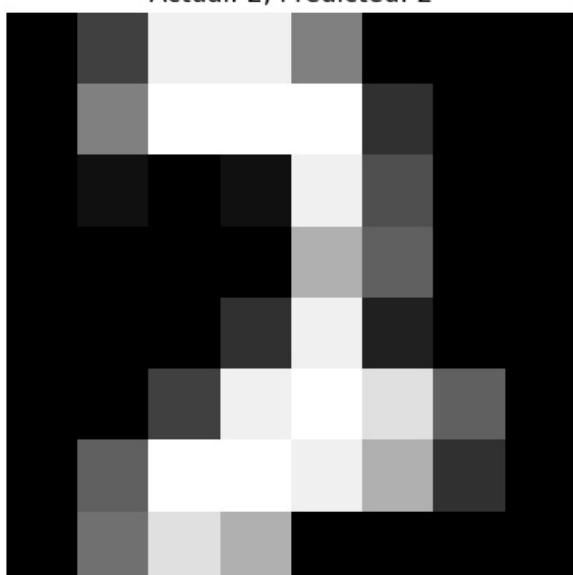
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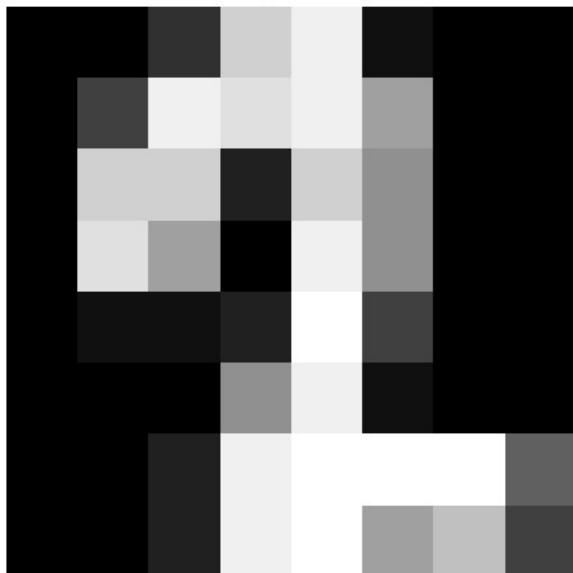
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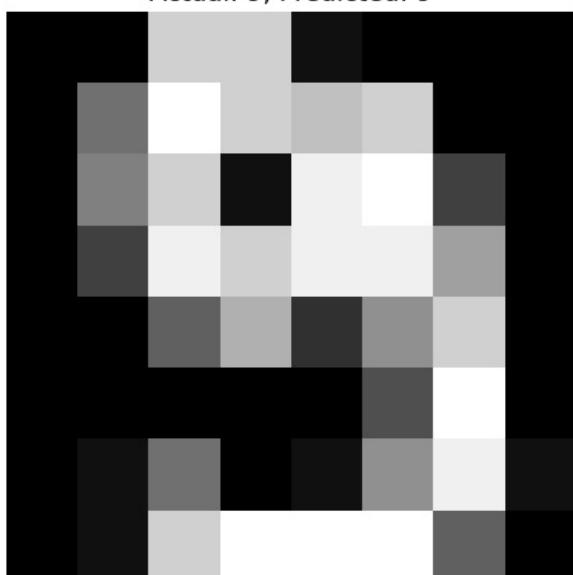
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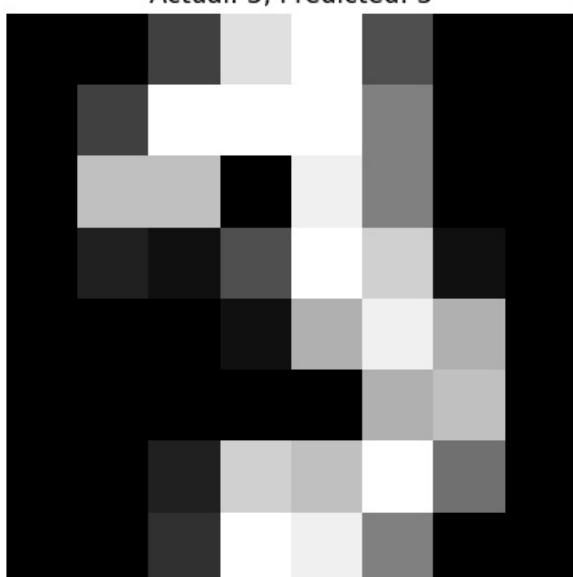
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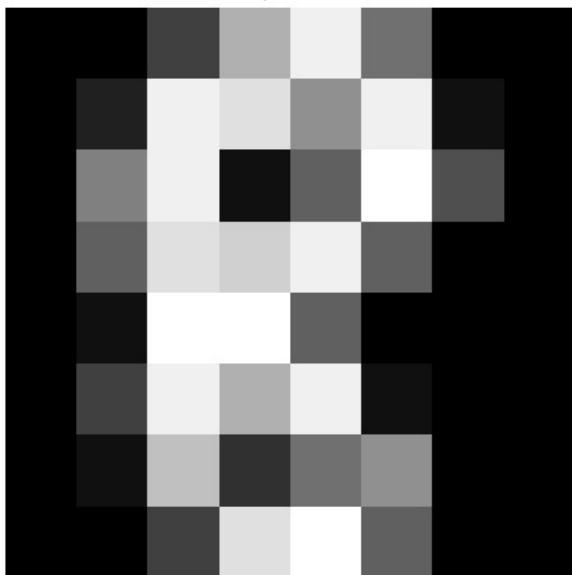
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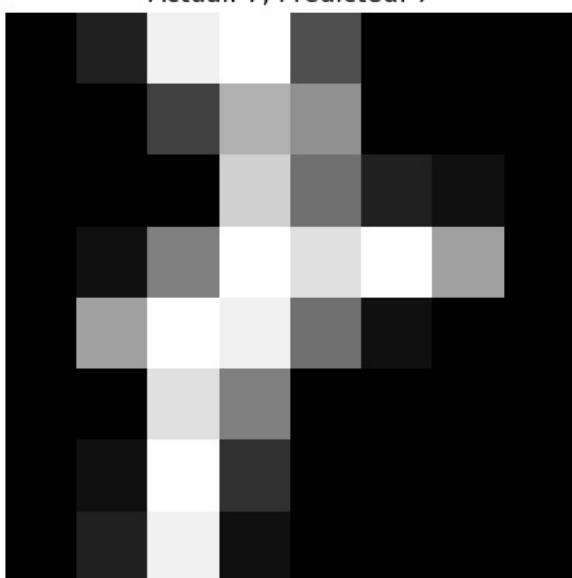
Actual: 3, Predicted: 3



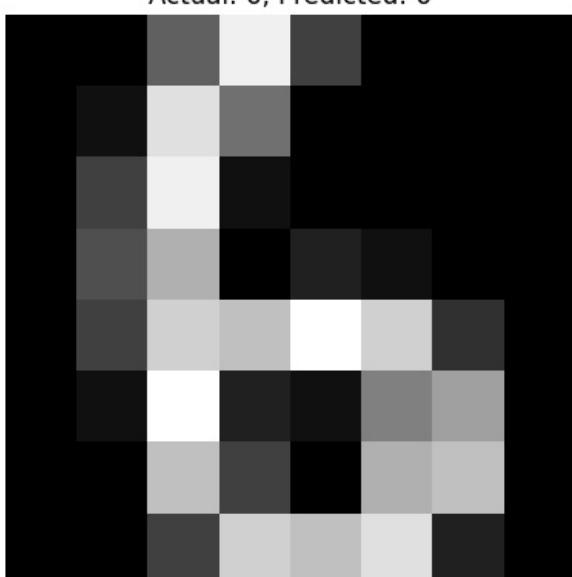
Actual: 8, Predicted: 8



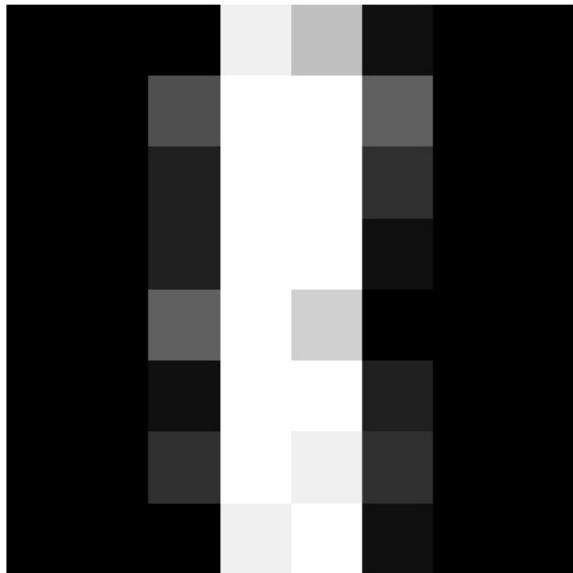
Actual: 7, Predicted: 7



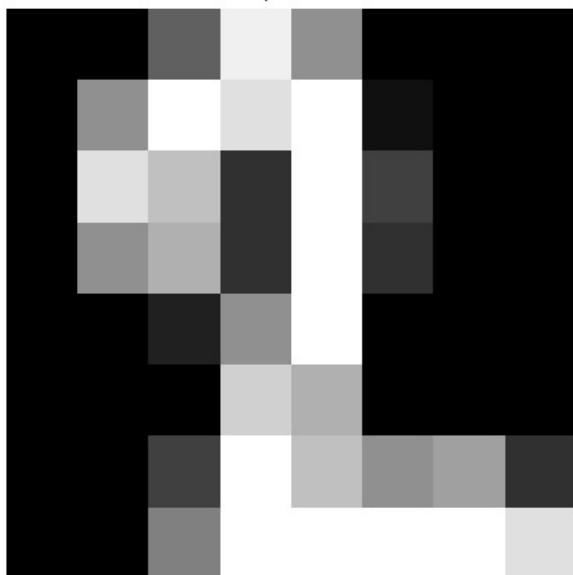
Actual: 6, Predicted: 6



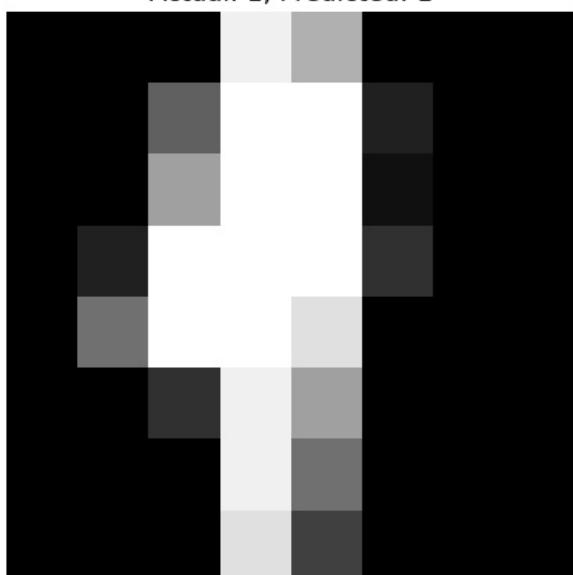
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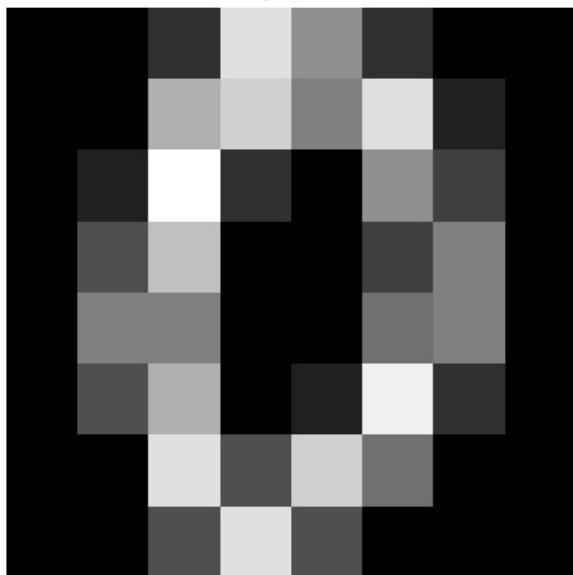
Actual: 2, Predicted: 2



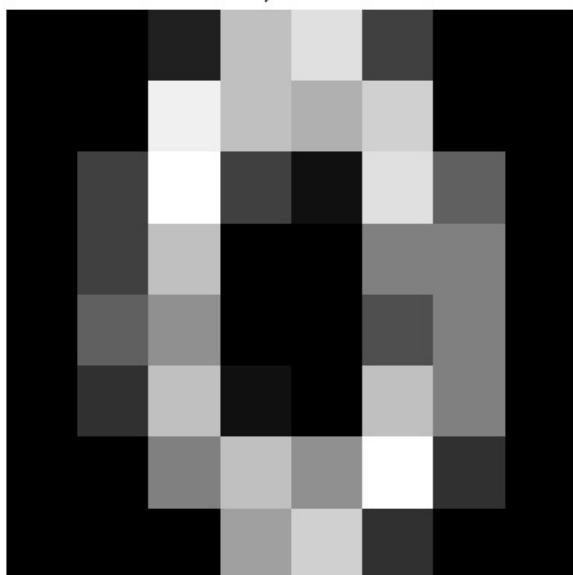
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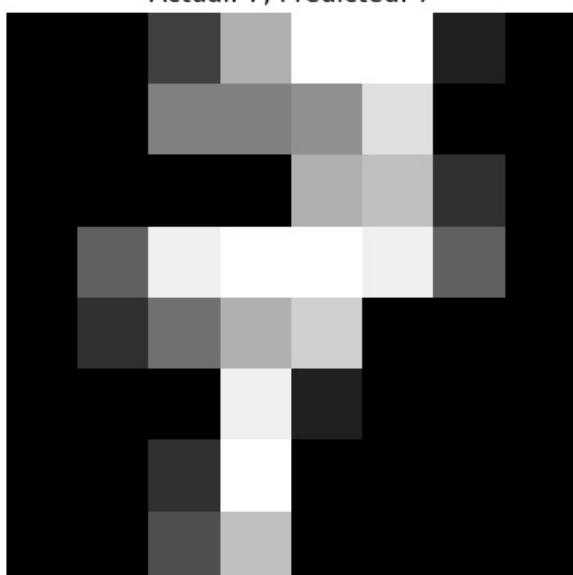
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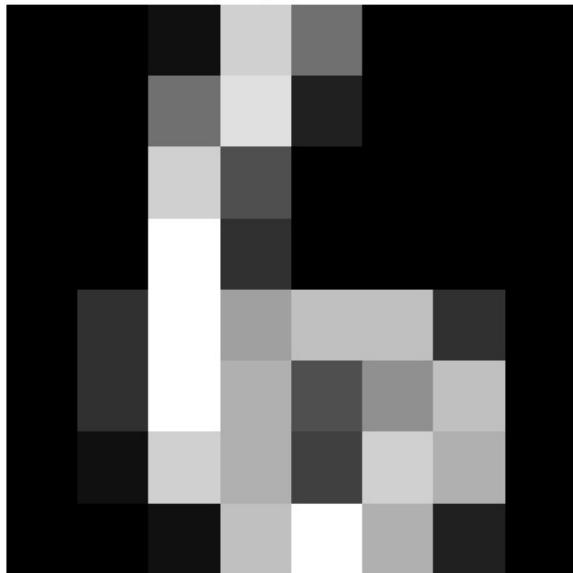
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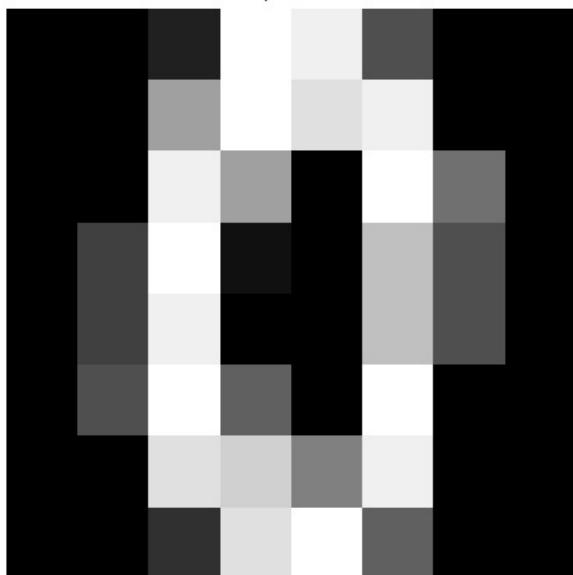
Actual: 7, Predicted: 7



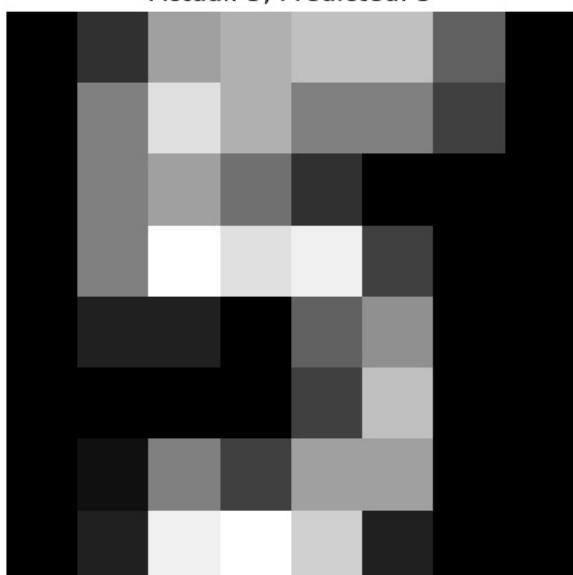
Actual: 6, Predicted: 6



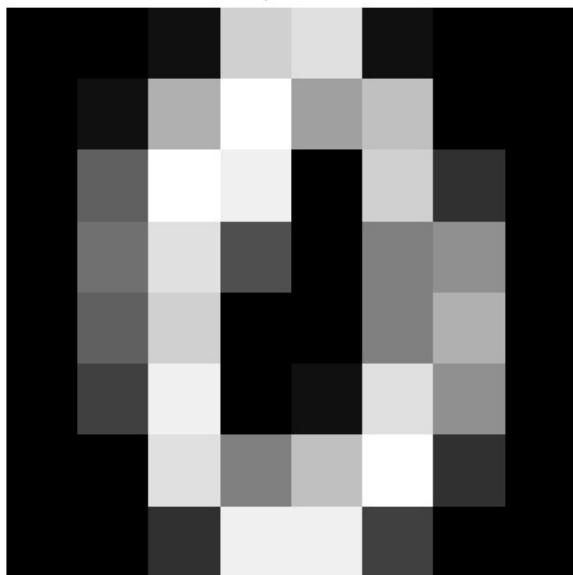
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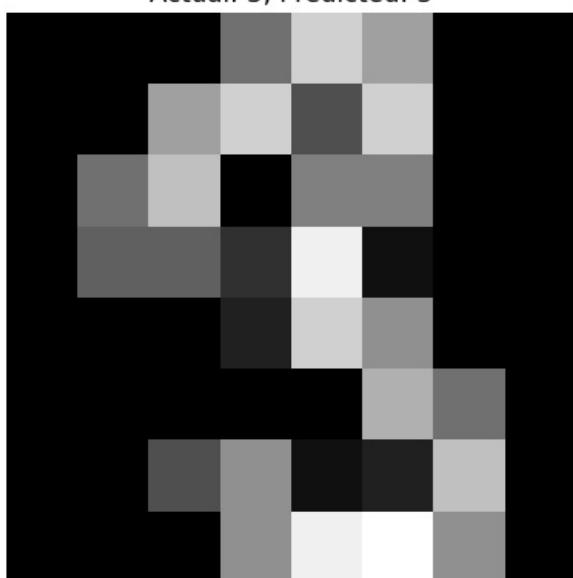
Actual: 5, Predicted: 5



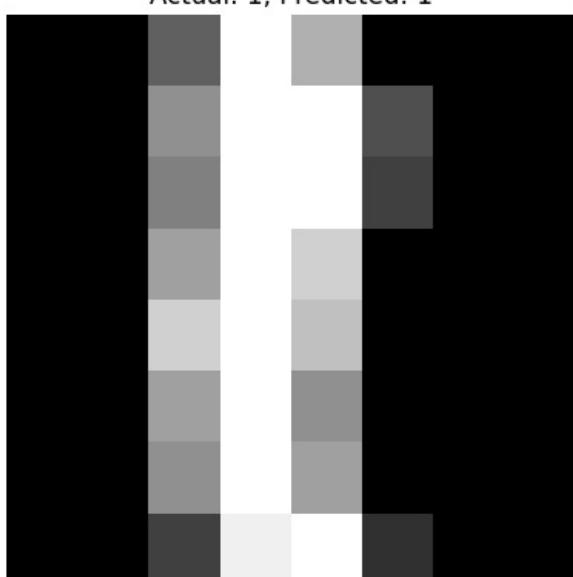
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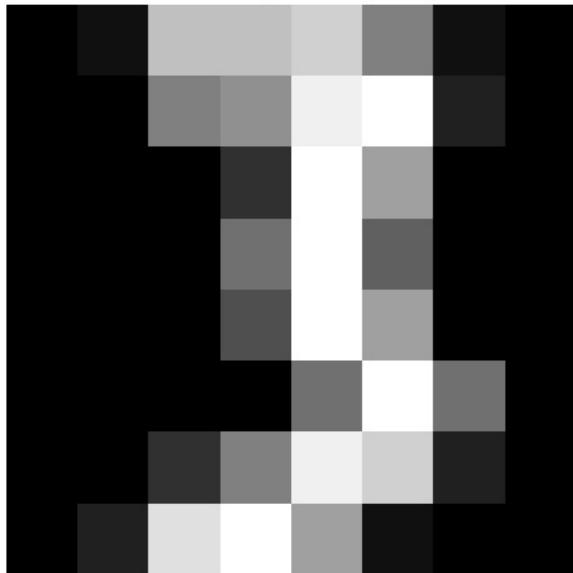
Actual: 3, Predicted: 3



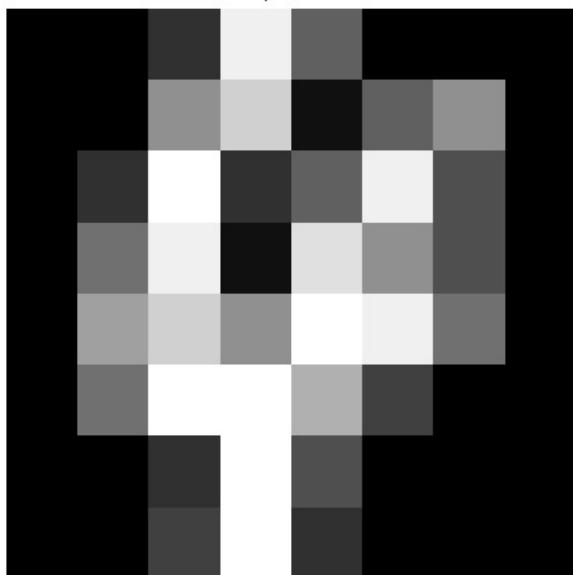
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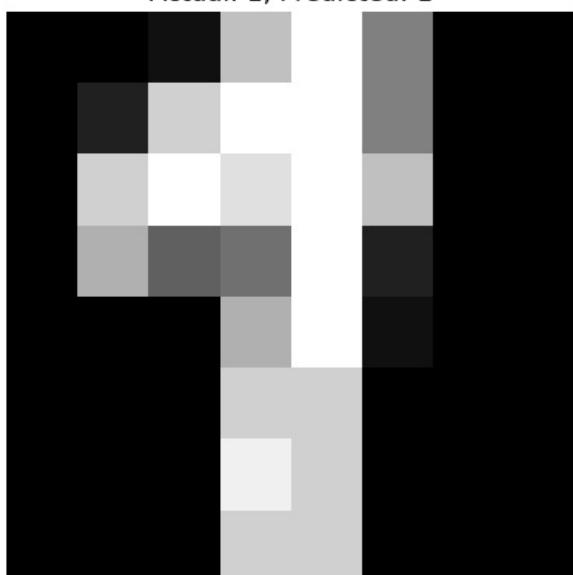
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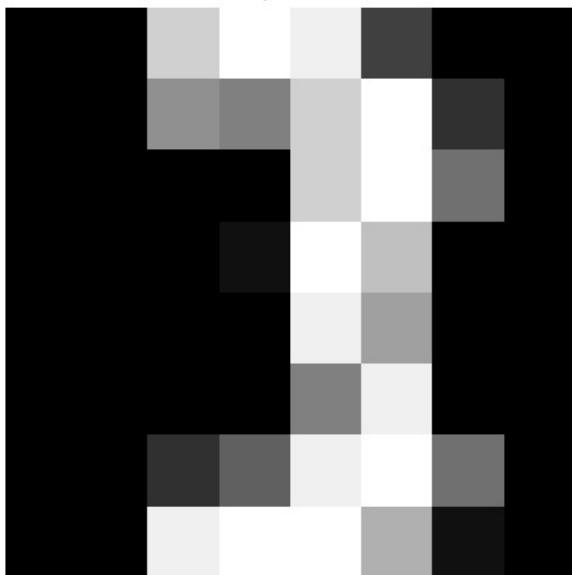
Actual: 4, Predicted: 4



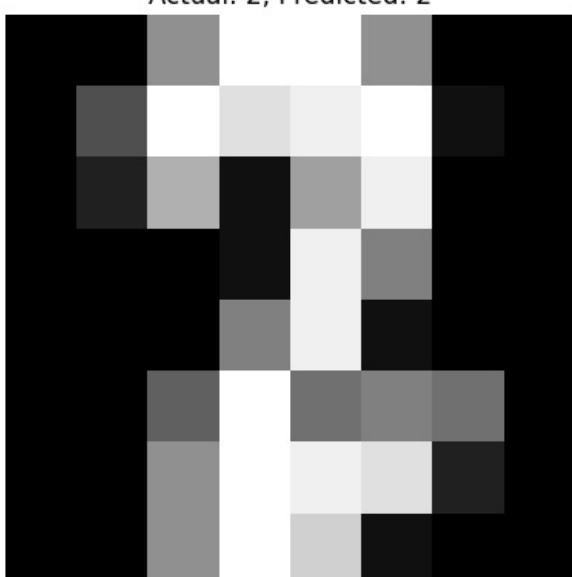
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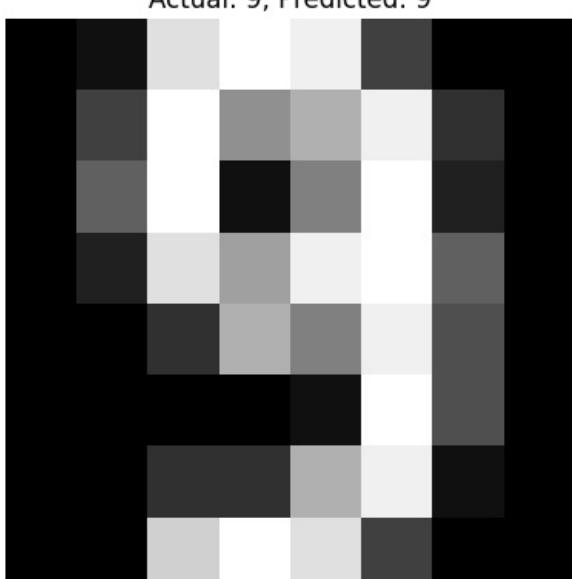
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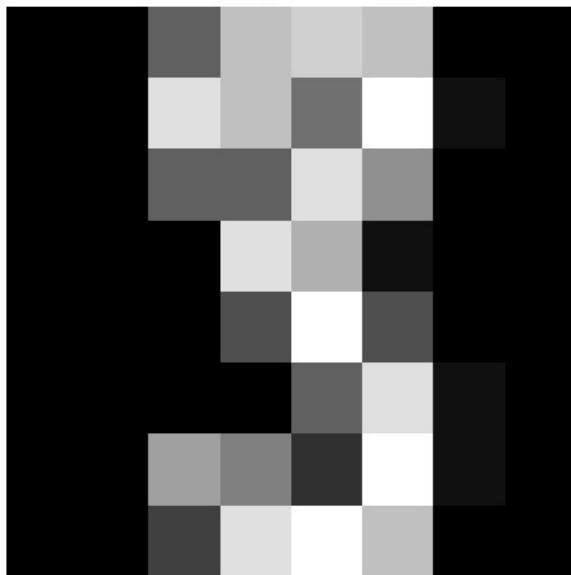
Actual: 2, Predicted: 2



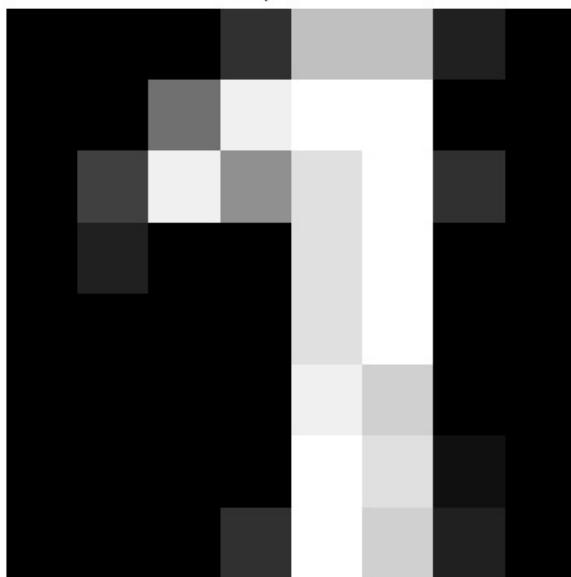
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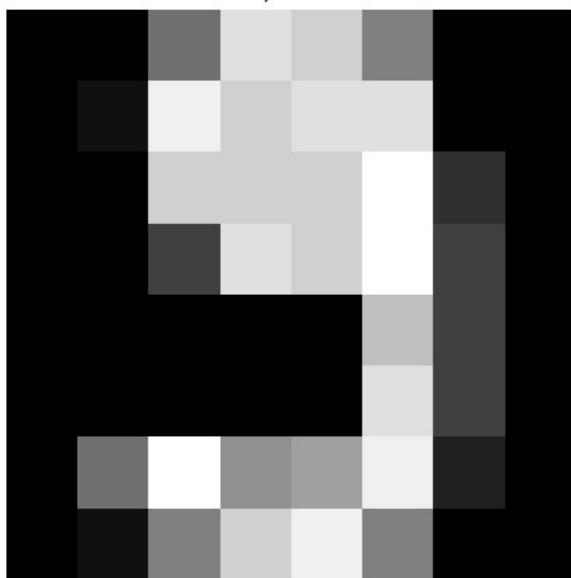
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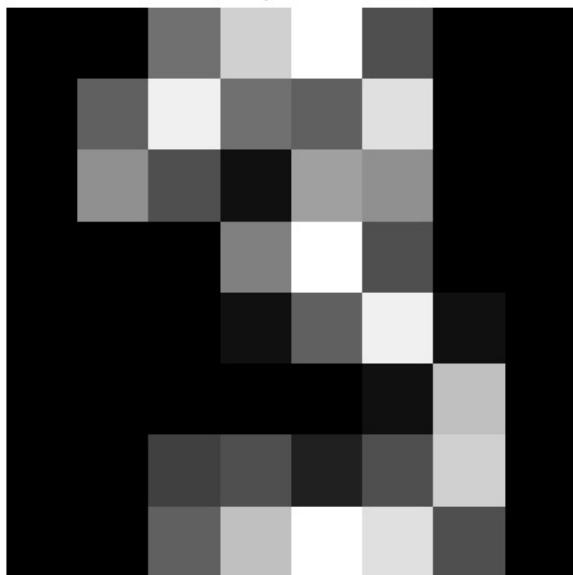
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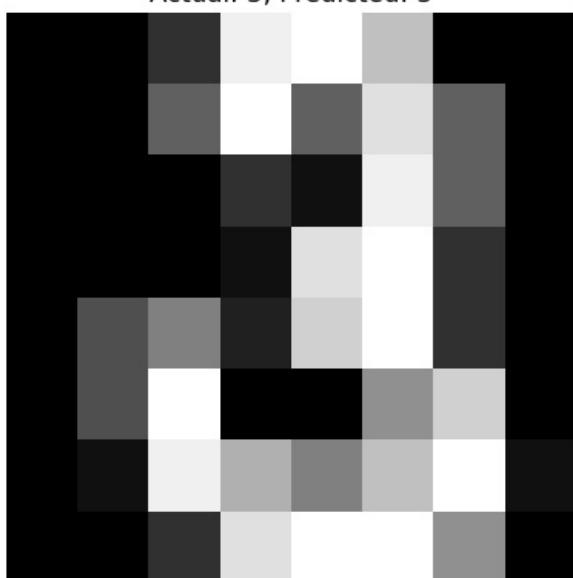
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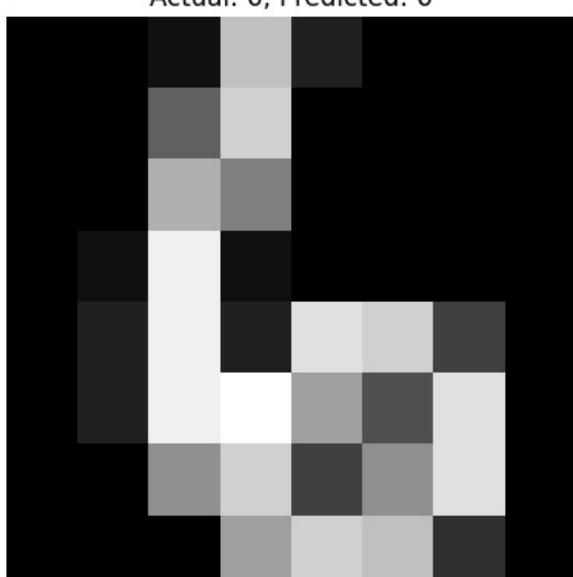
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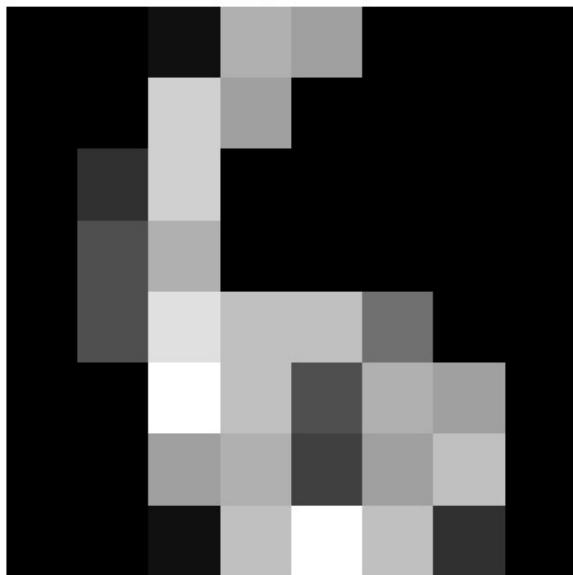
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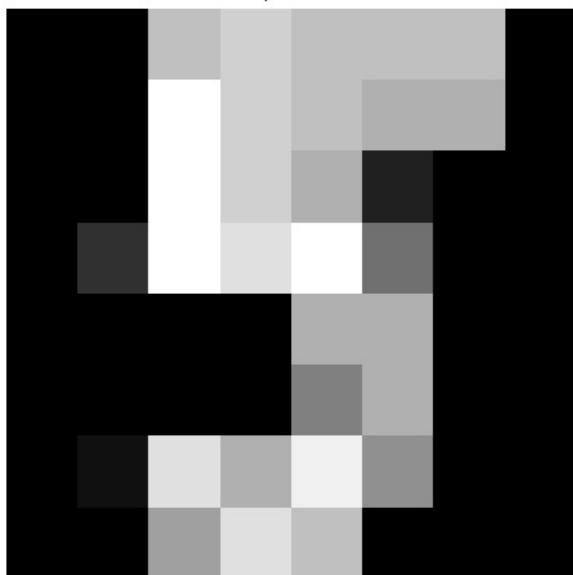
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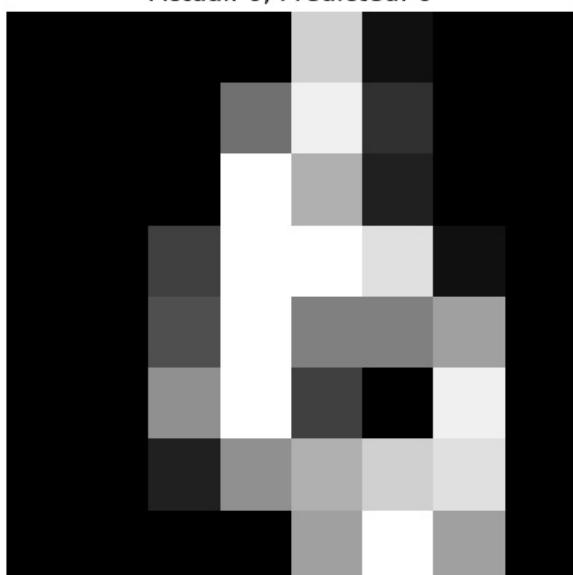
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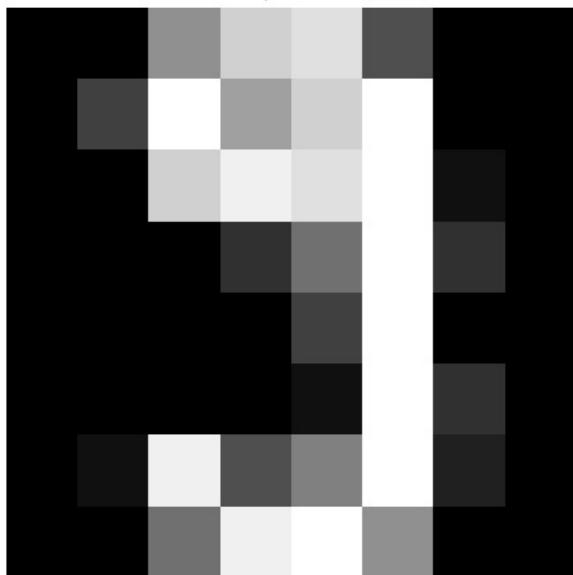
Actual: 5, Predicted: 5



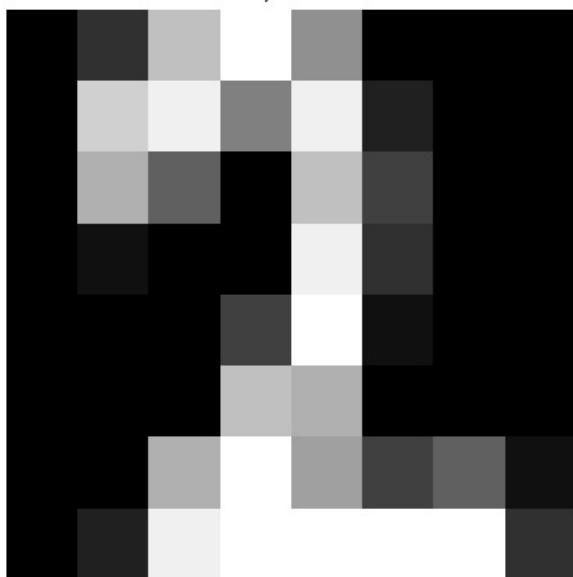
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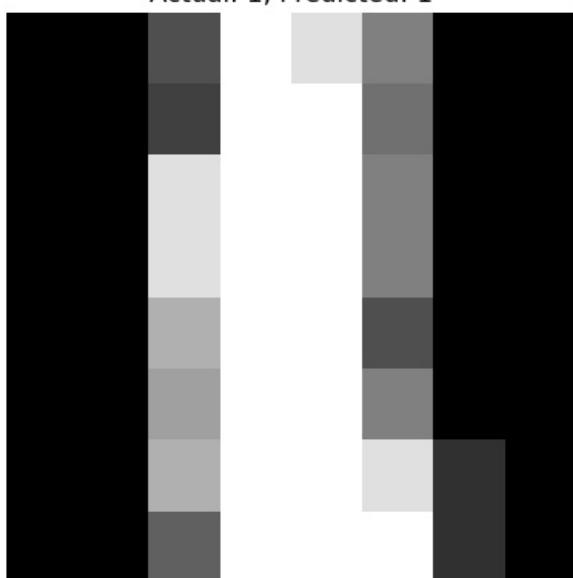
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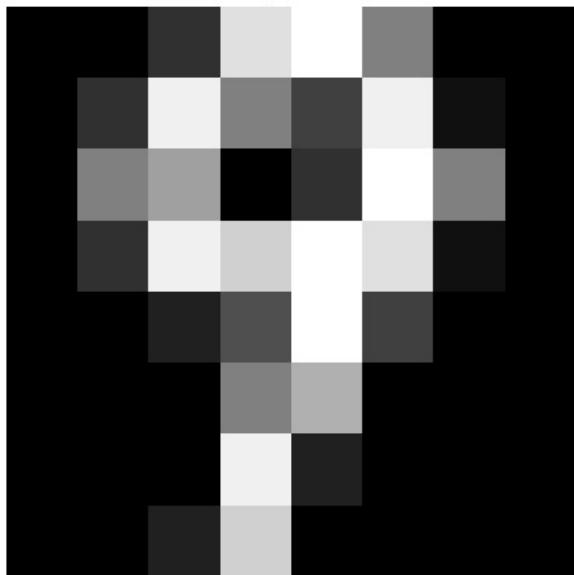
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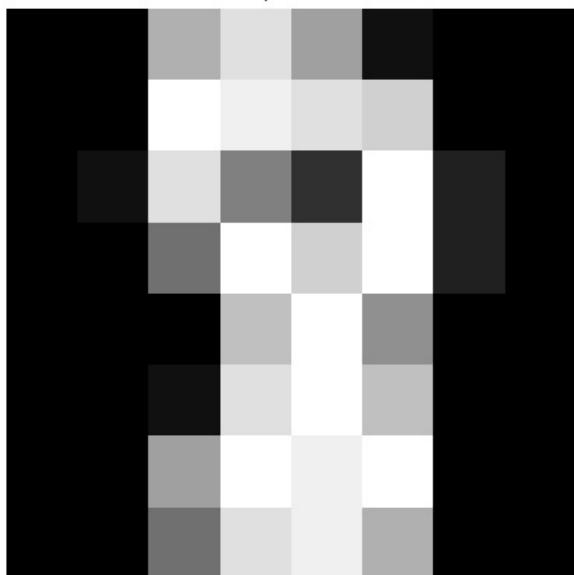
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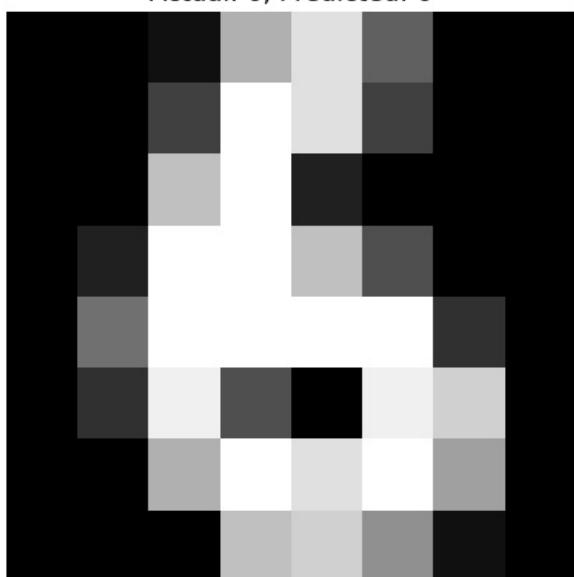
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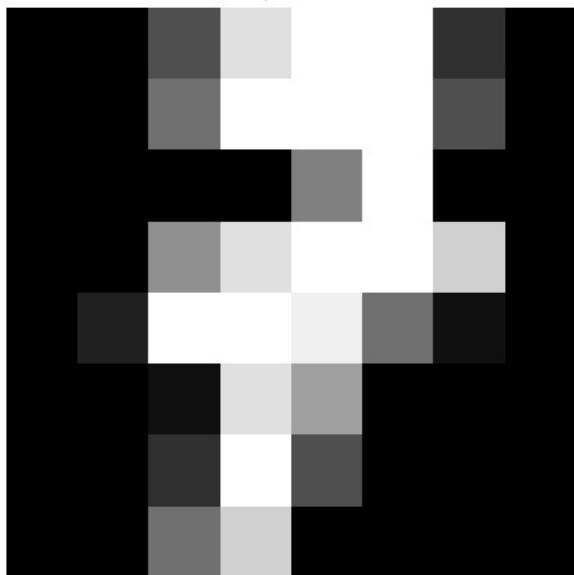
Actual: 8, Predicted: 8



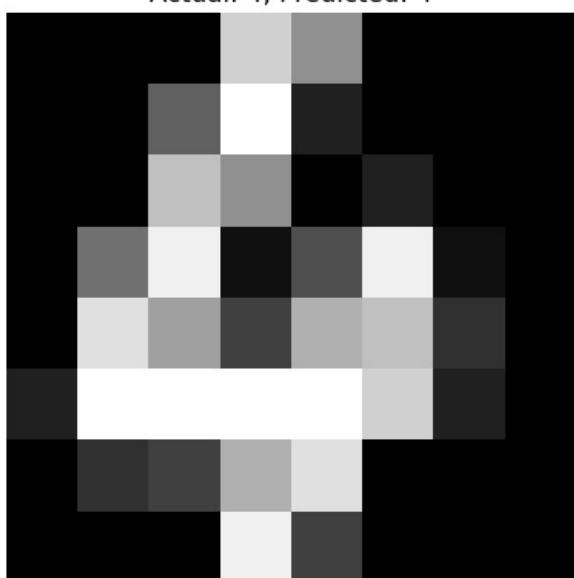
Actual: 6, Predicted: 6



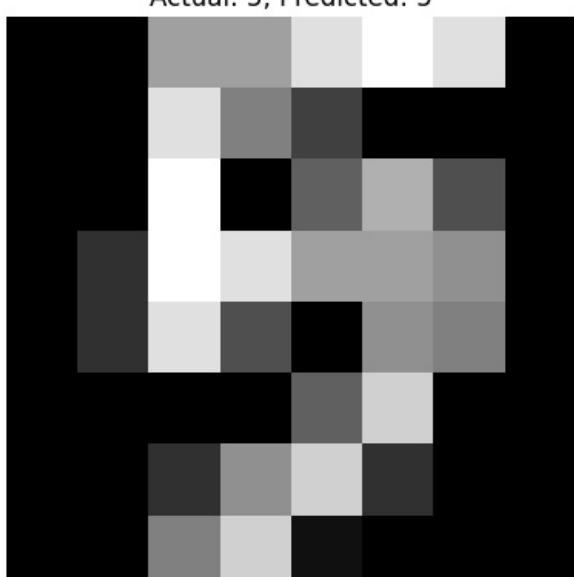
Actual: 7, Predicted: 7



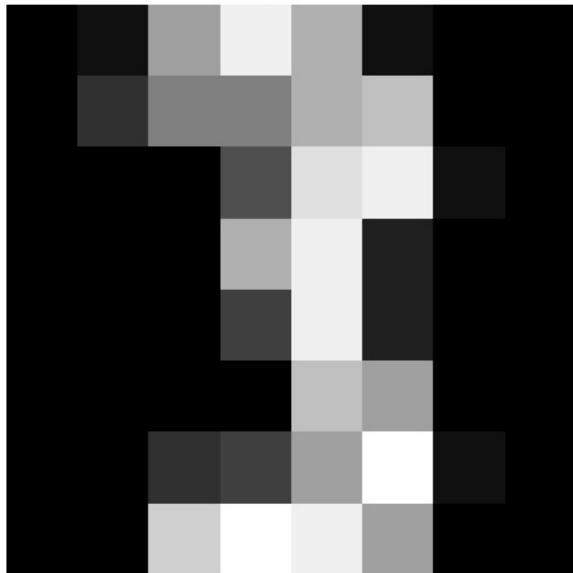
Actual: 4, Predicted: 4



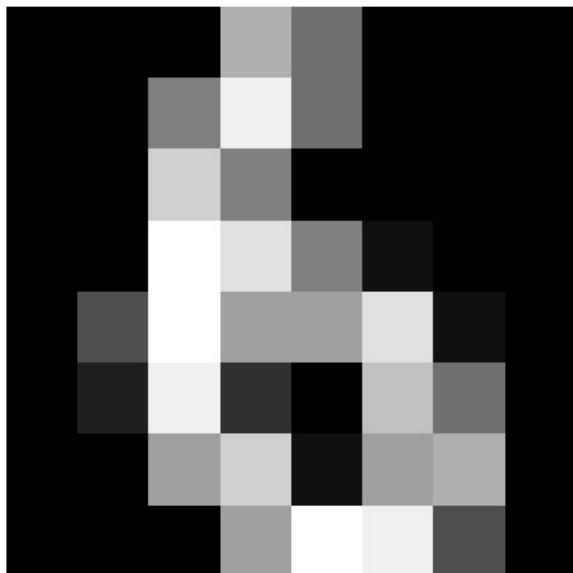
Actual: 5, Predicted: 5



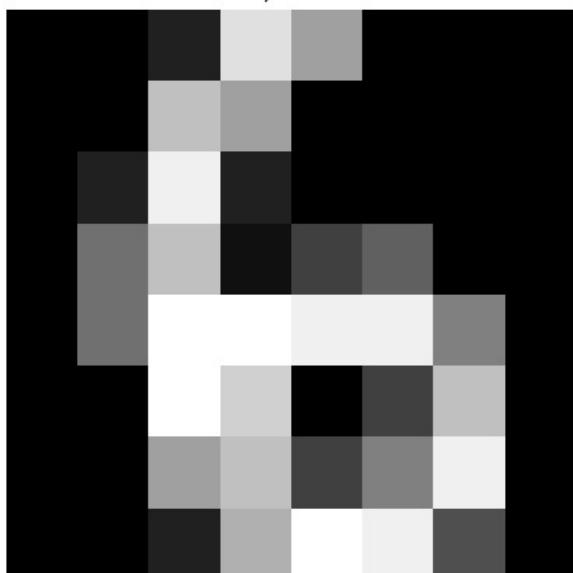
Actual: 3, Predicted: 3



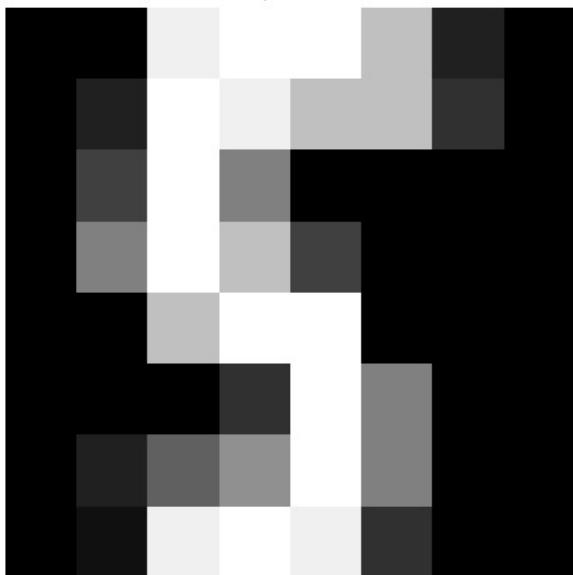
Actual: 6, Predicted: 6



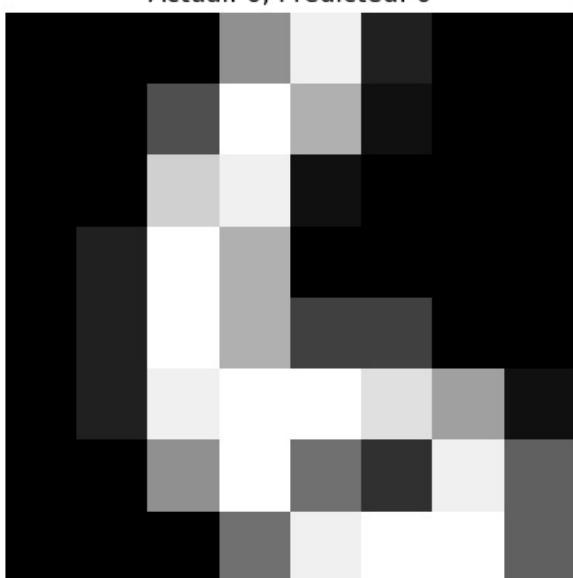
Actual: 6, Predicted: 6



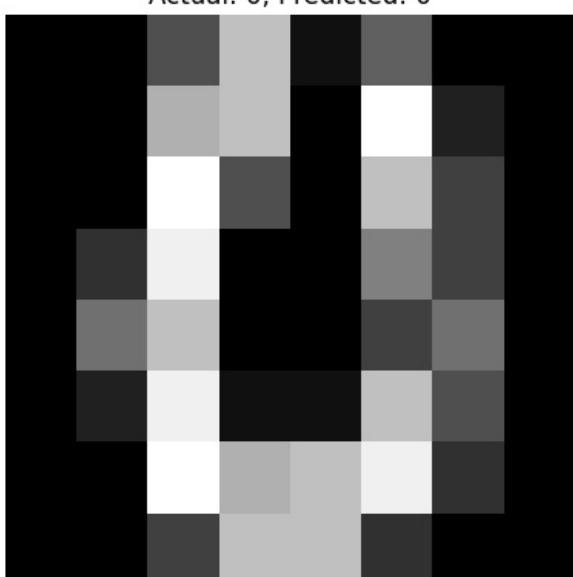
Actual: 5, Predicted: 5



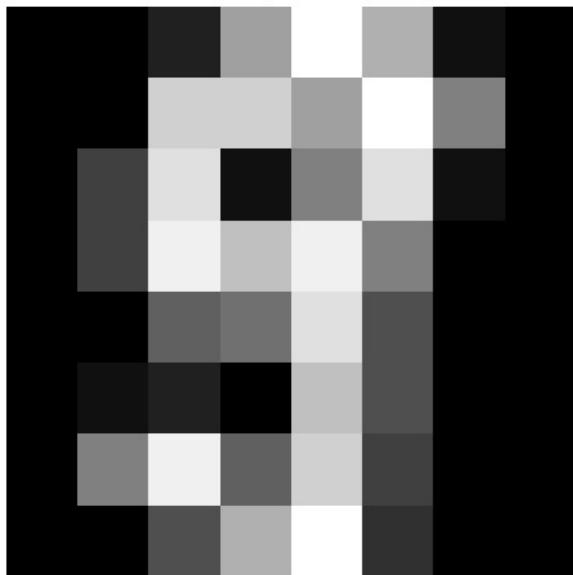
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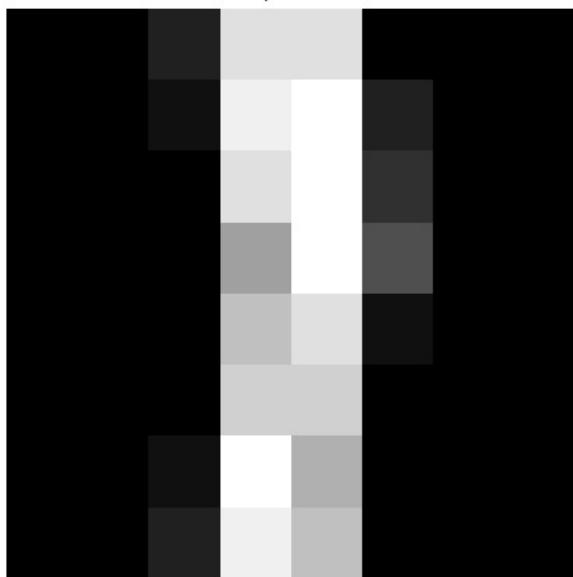
Actual: 0, Predicted: 0



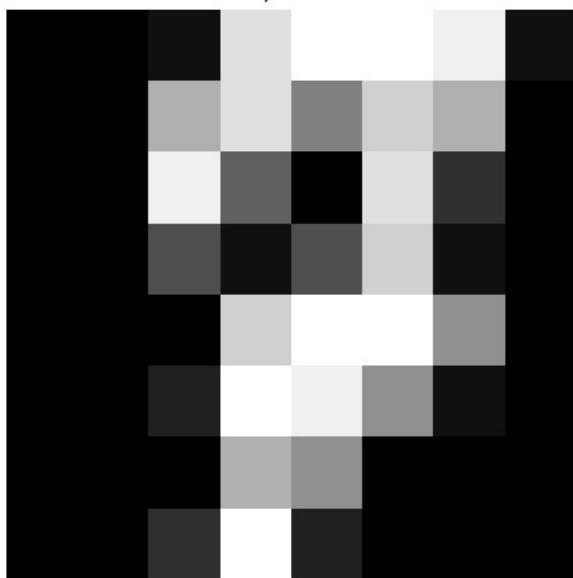
Actual: 9, Predicted: 8



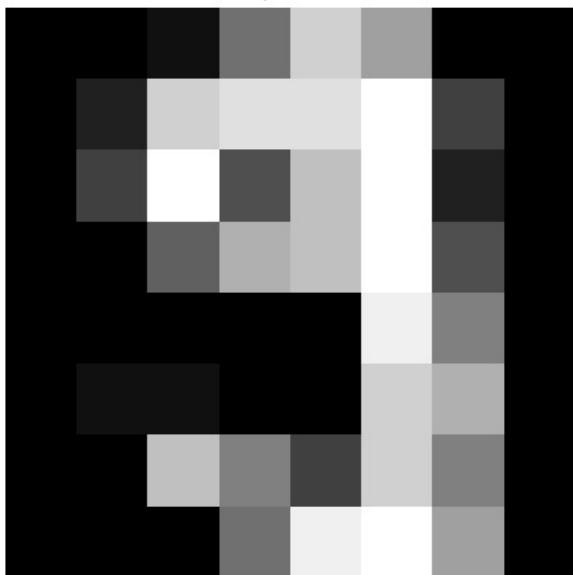
Actual: 1, Predicted: 1



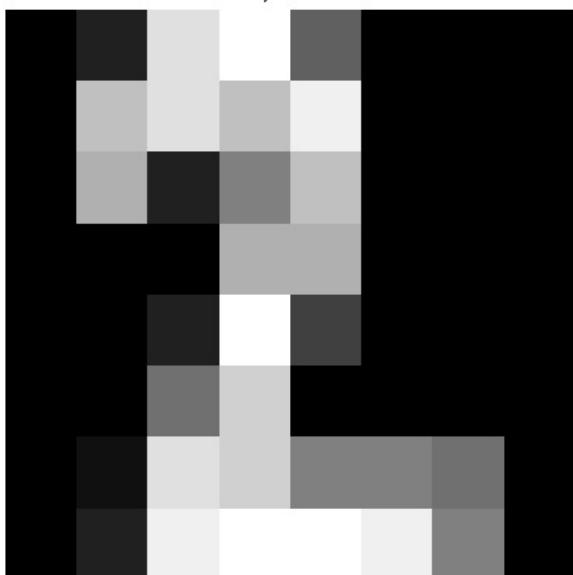
Actual: 7, Predicted: 7



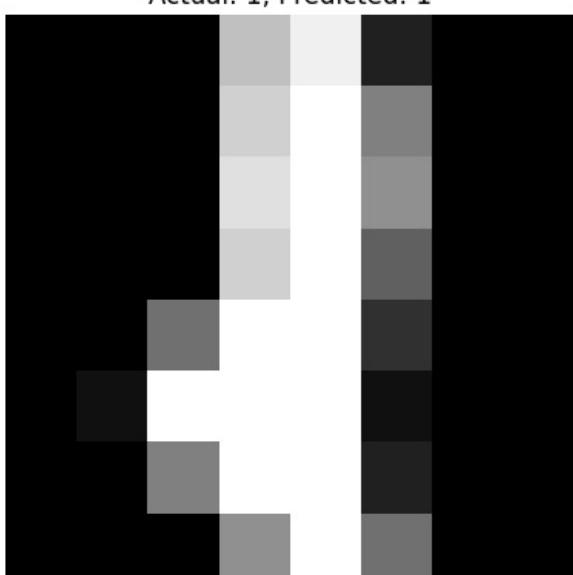
Actual: 9, Predicted: 9



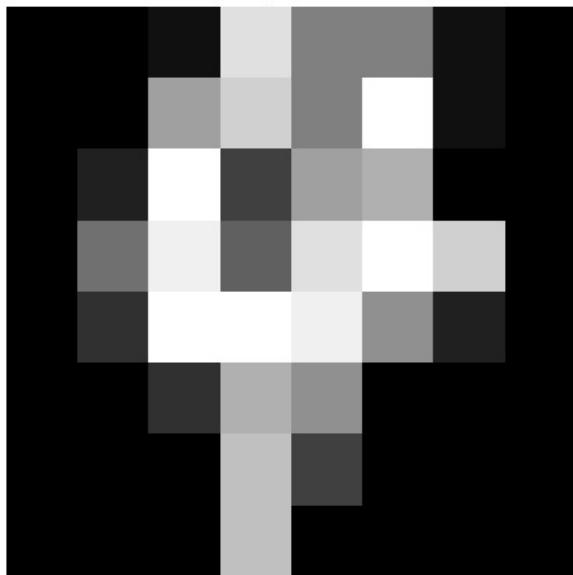
Actual: 2, Predicted: 2



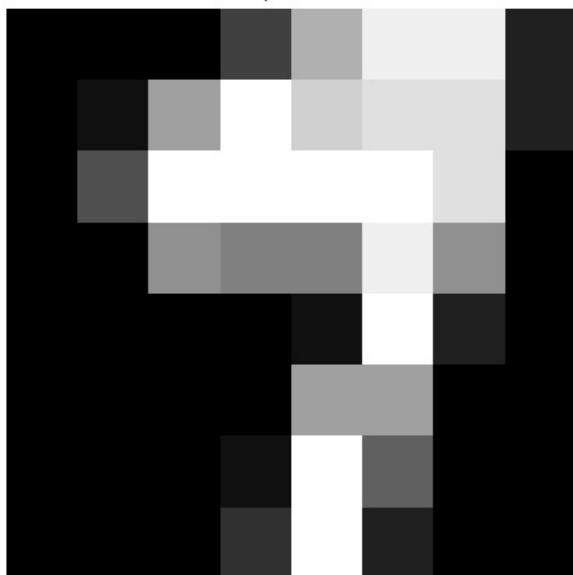
Actual: 1, Predicted: 1



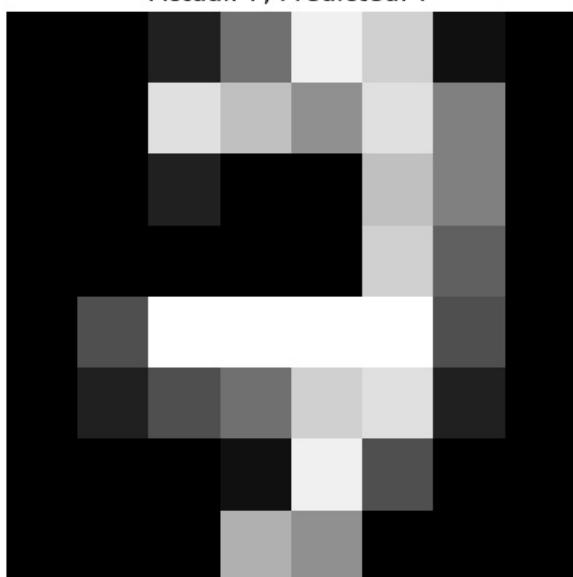
Actual: 4, Predicted: 4



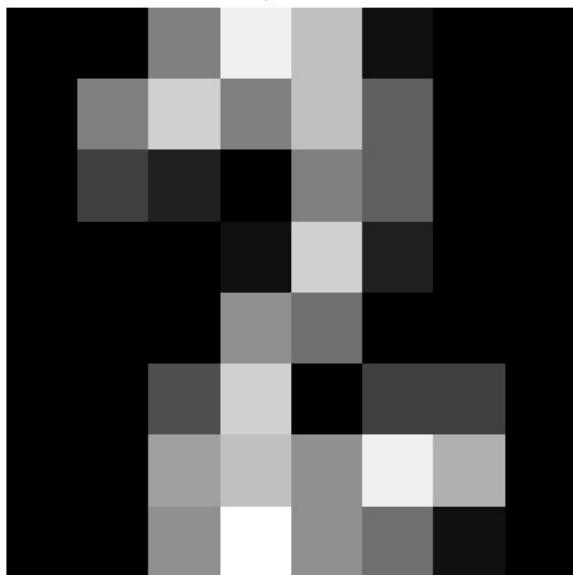
Actual: 9, Predicted: 9



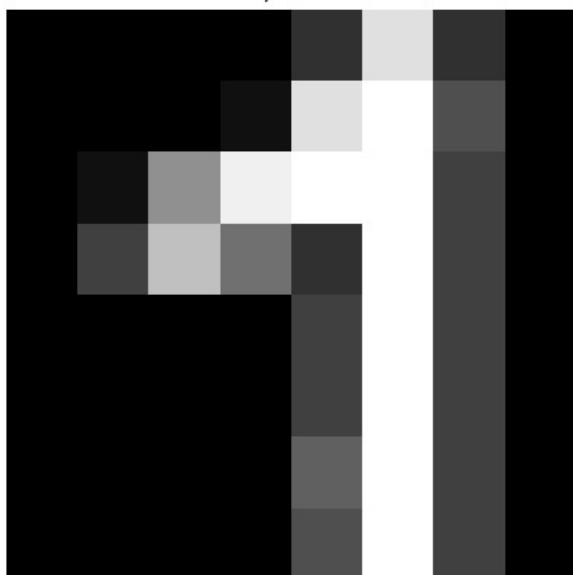
Actual: 7, Predicted: 7



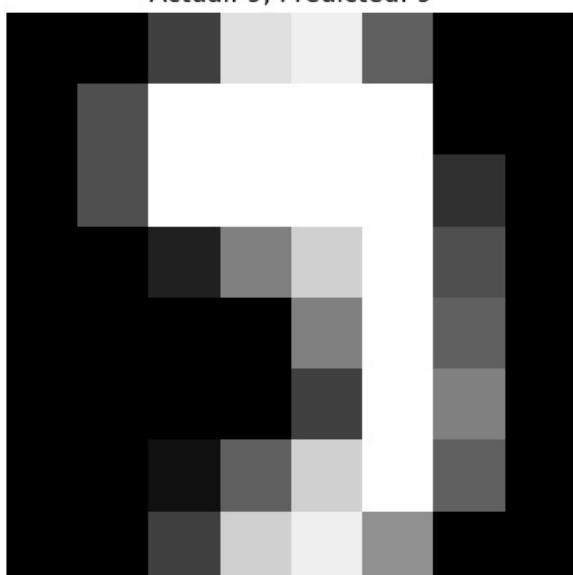
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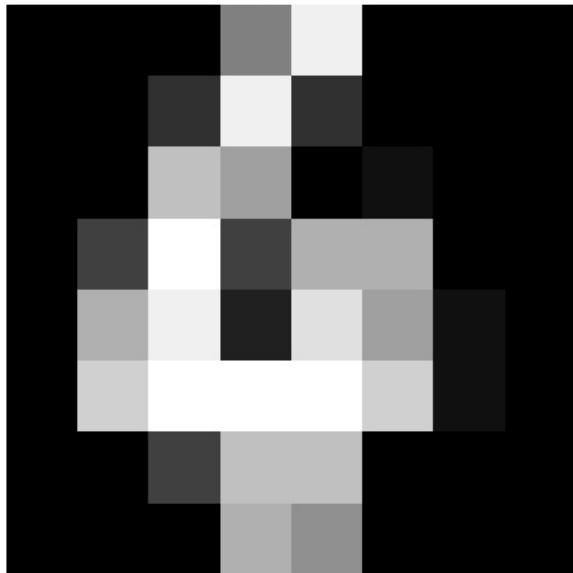
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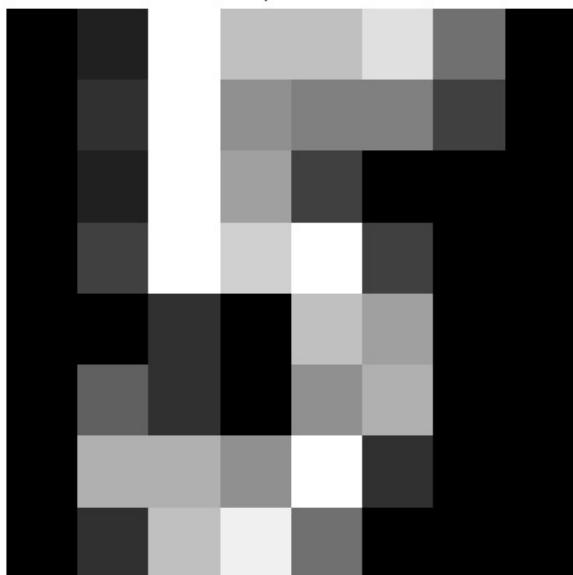
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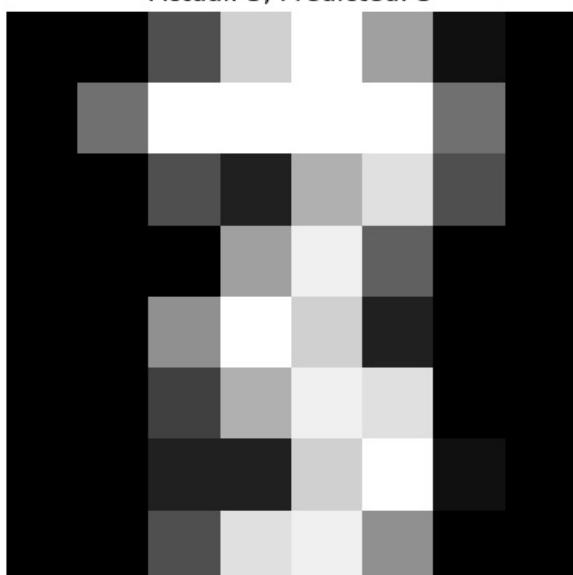
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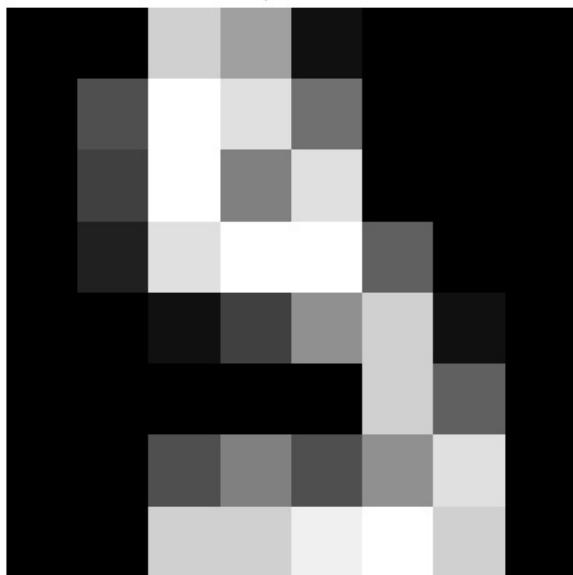
Actual: 5, Predicted: 5



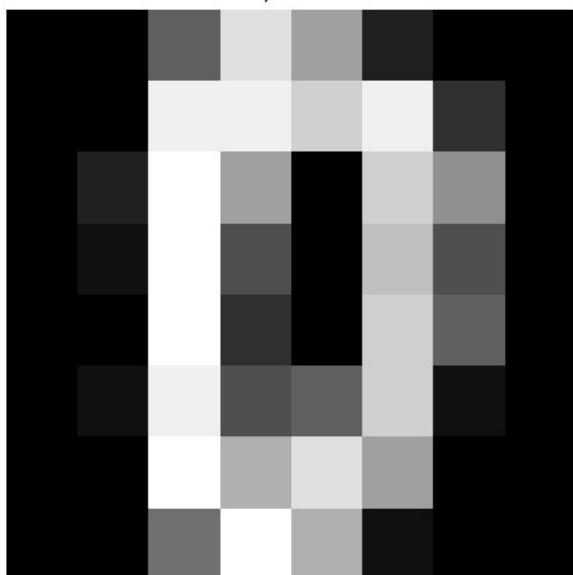
Actual: 3, Predicted: 3



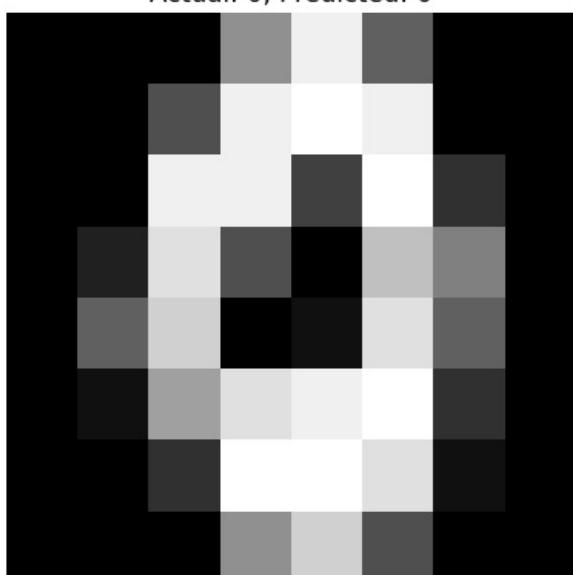
Actual: 9, Predicted: 5



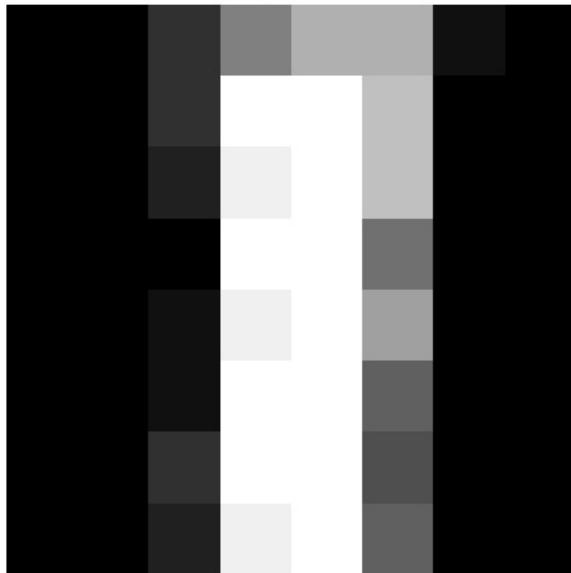
Actual: 0, Predicted: 0



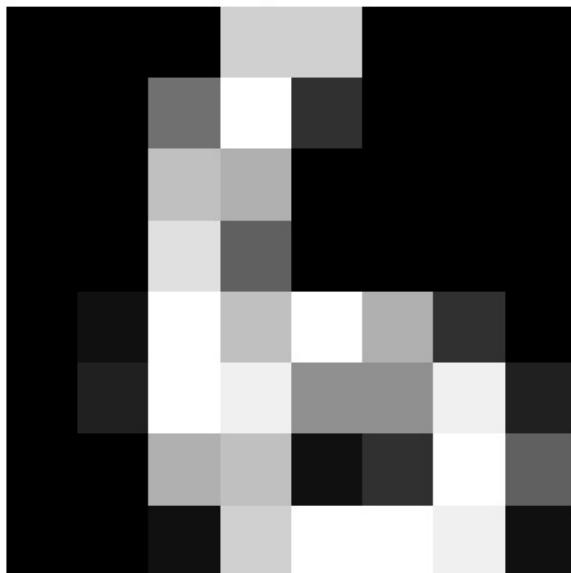
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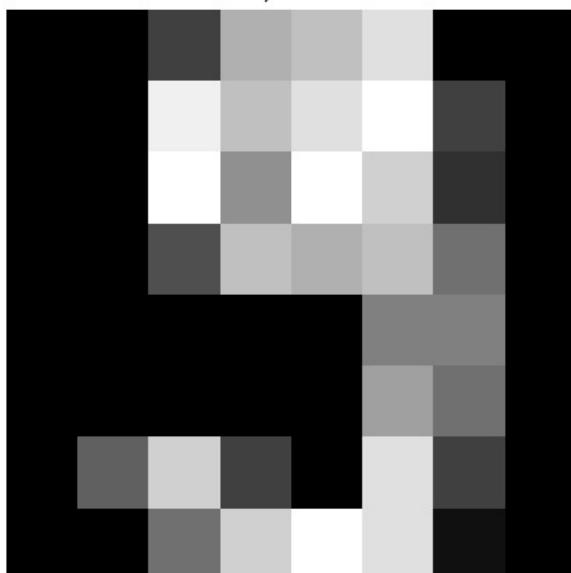
Actual: 1, Predicted: 1



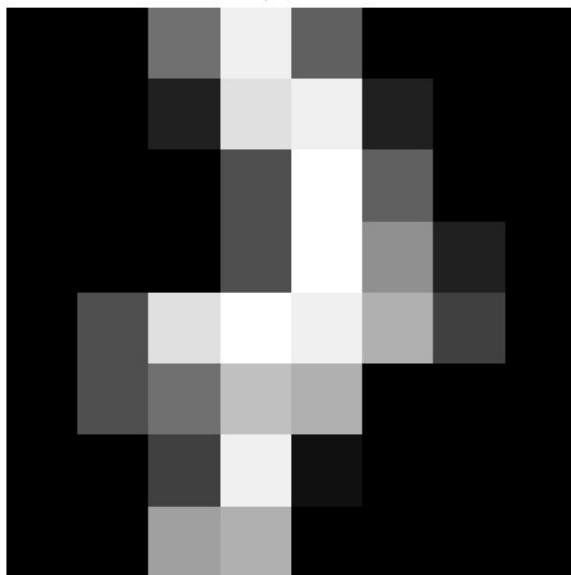
Actual: 6, Predicted: 6



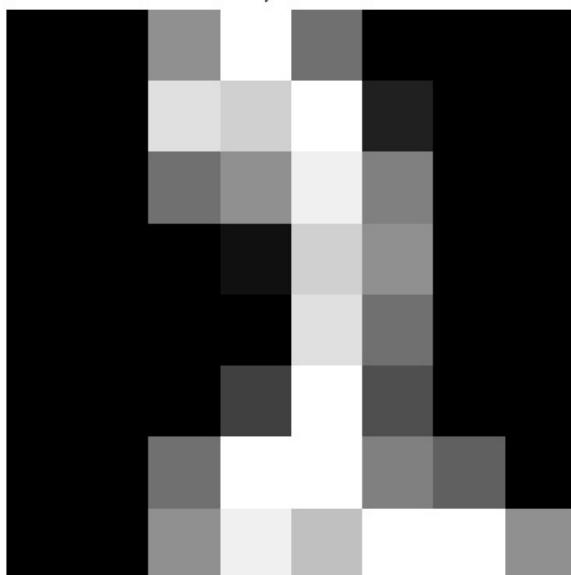
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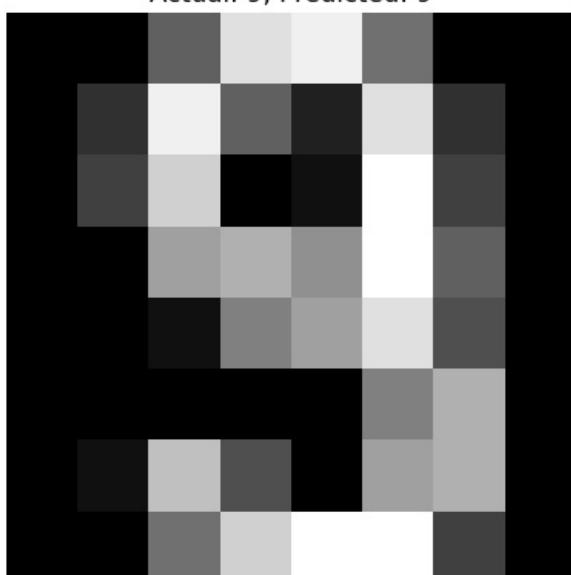
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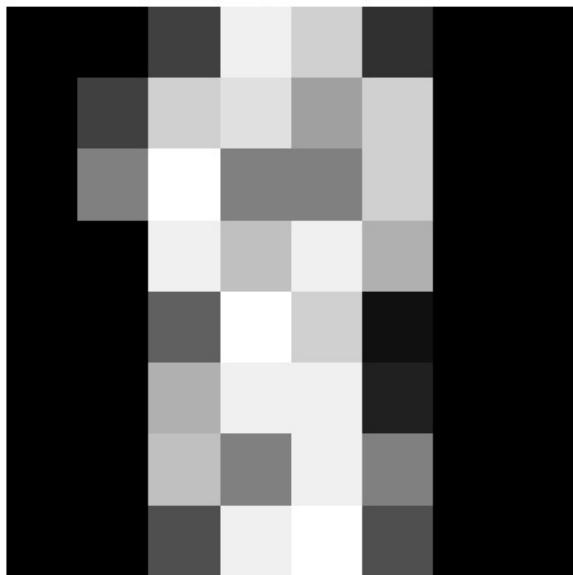
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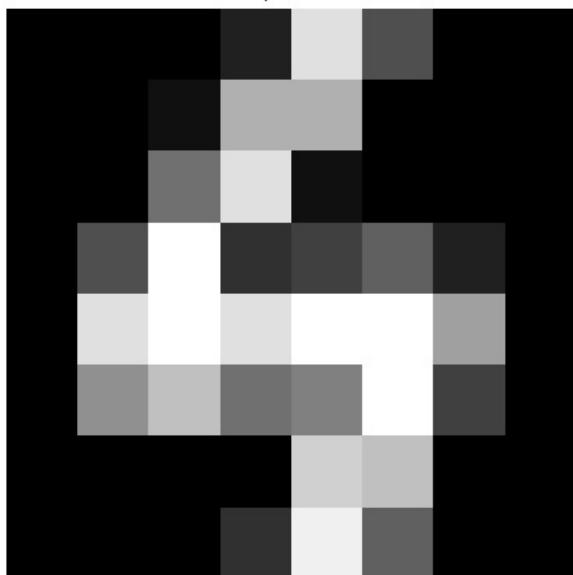
Actual: 9, Predicted: 9



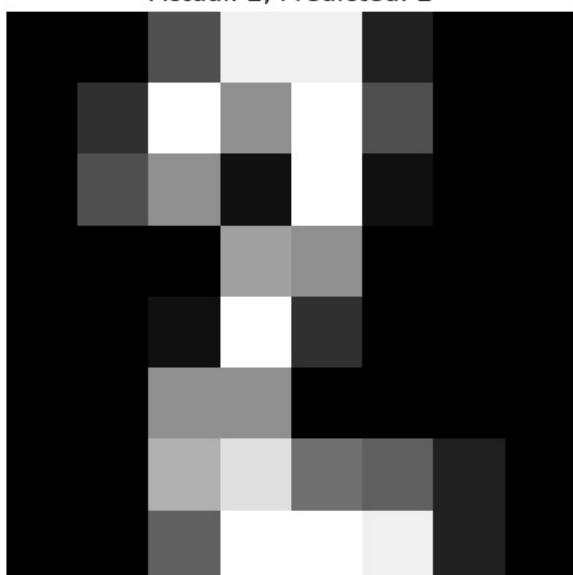
Actual: 8, Predicted: 8



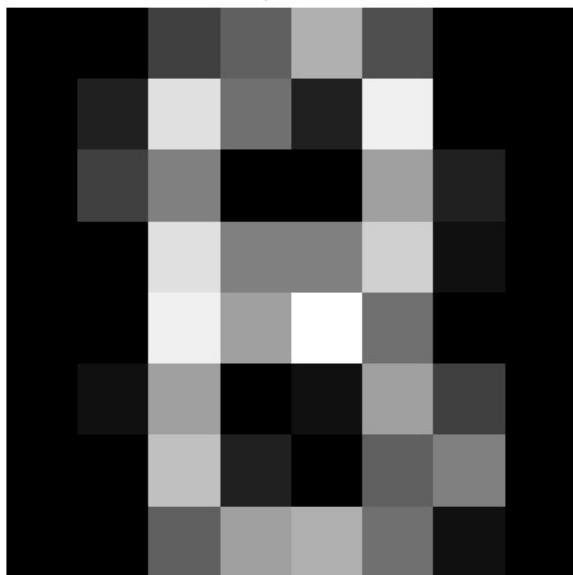
Actual: 4, Predicted: 4



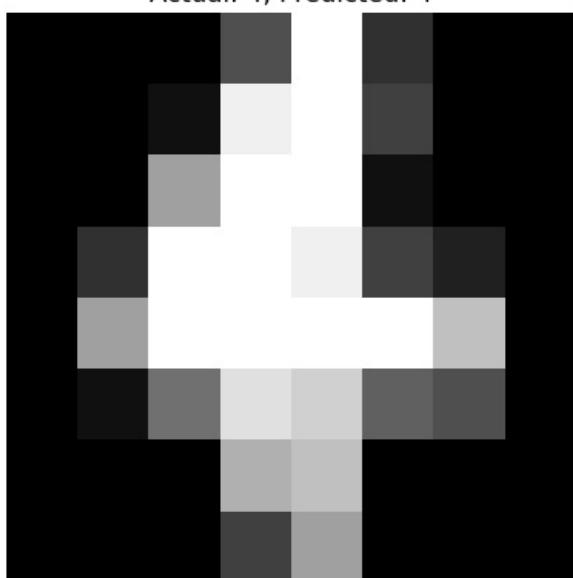
Actual: 2, Predicted: 2



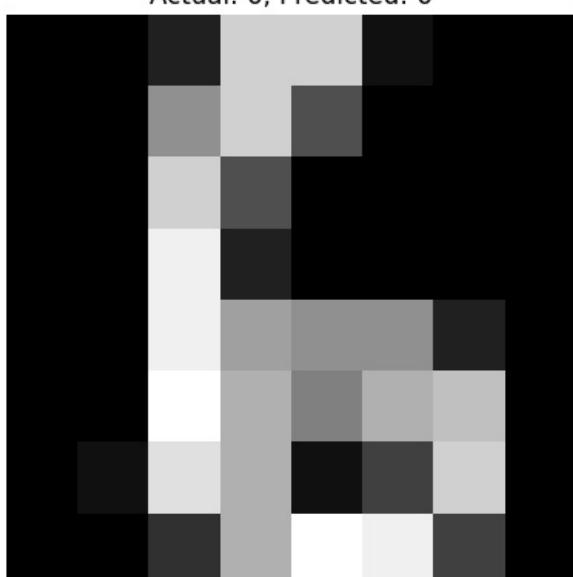
Actual: 8, Predicted: 8



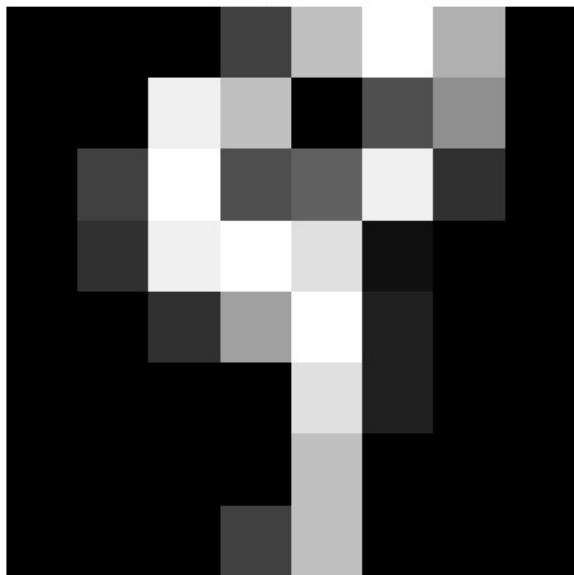
Actual: 4, Predicted: 4



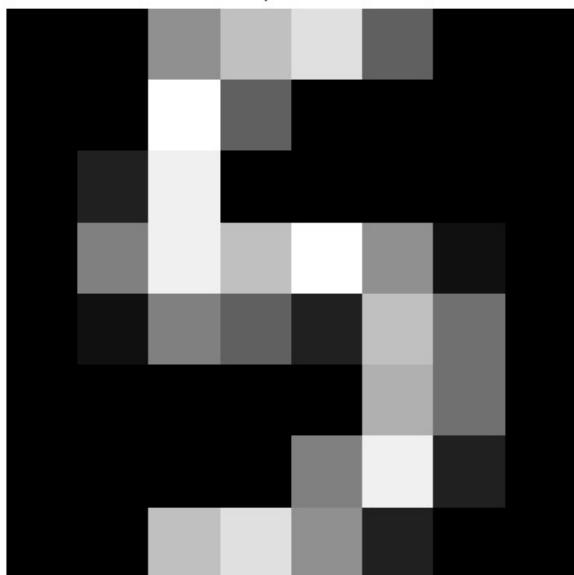
Actual: 6, Predicted: 6



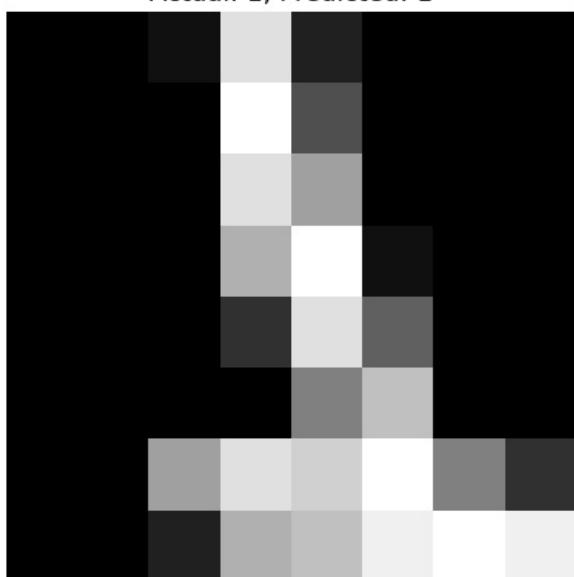
Actual: 9, Predicted: 9



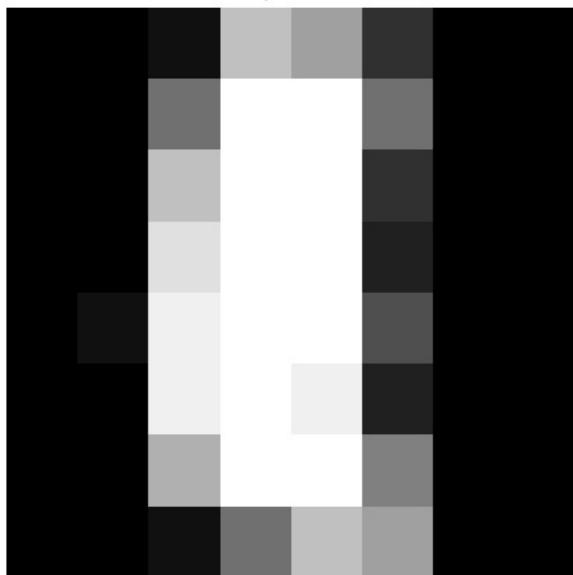
Actual: 5, Predicted: 5



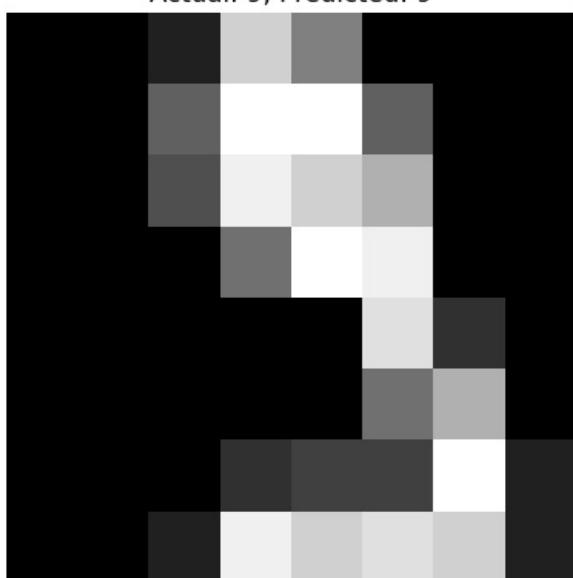
Actual: 1, Predicted: 1



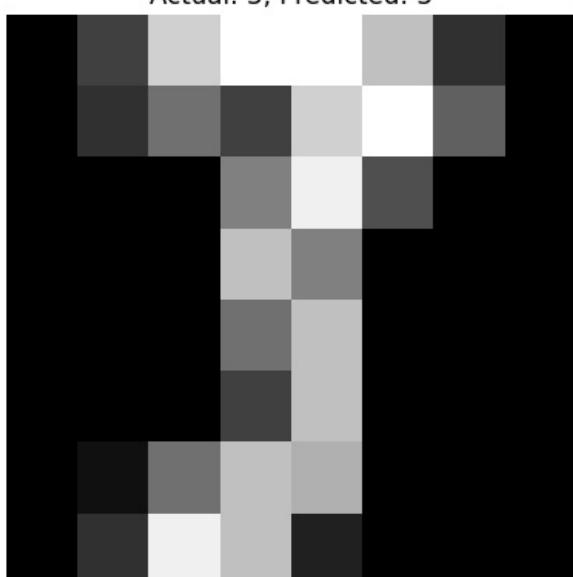
Actual: 1, Predicted: 1



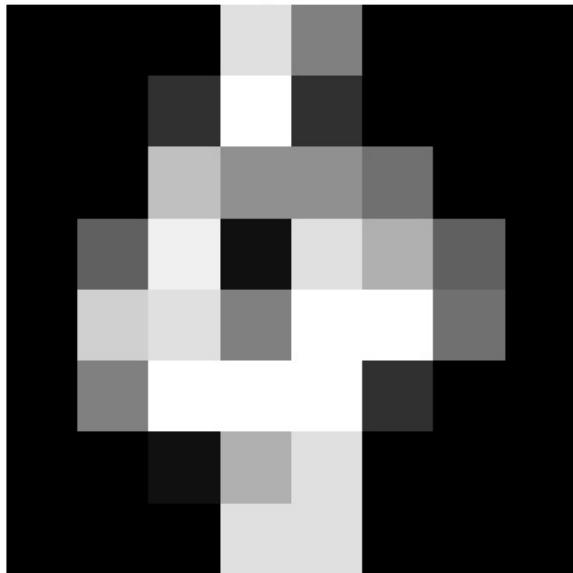
Actual: 9, Predicted: 9



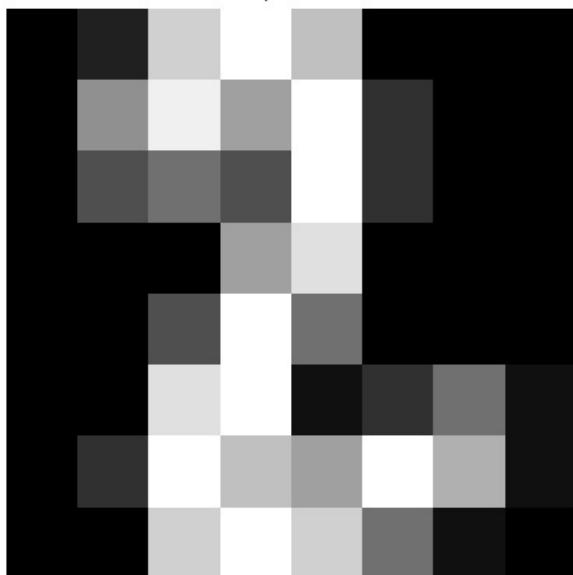
Actual: 3, Predicted: 3



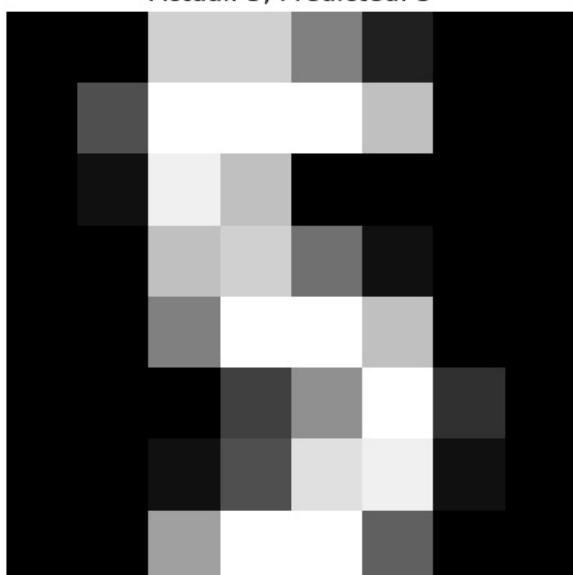
Actual: 4, Predicted: 4



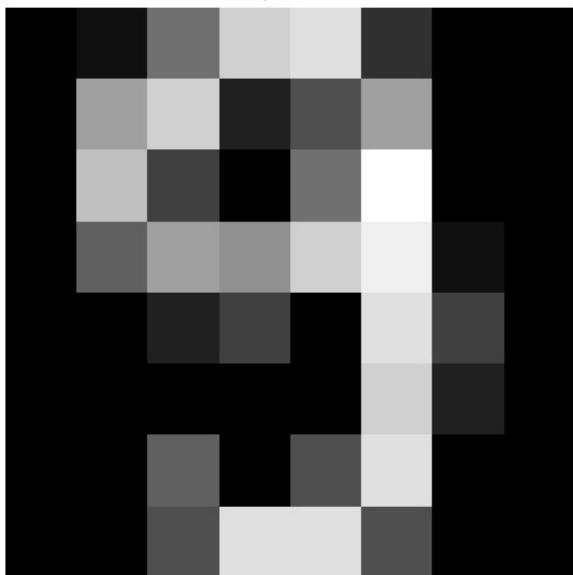
Actual: 2, Predicted: 2



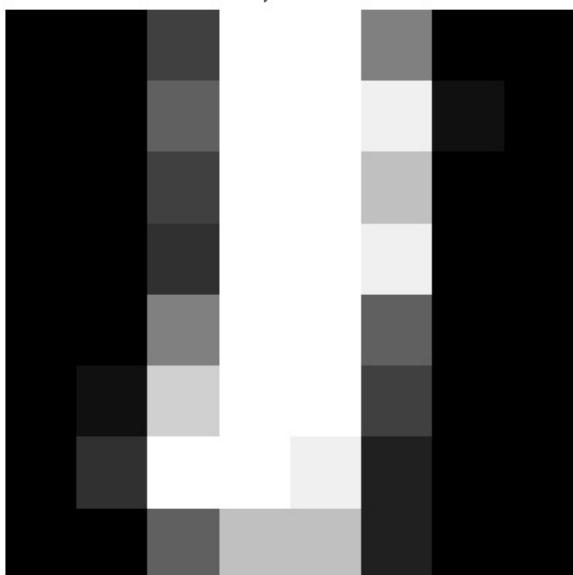
Actual: 5, Predicted: 5



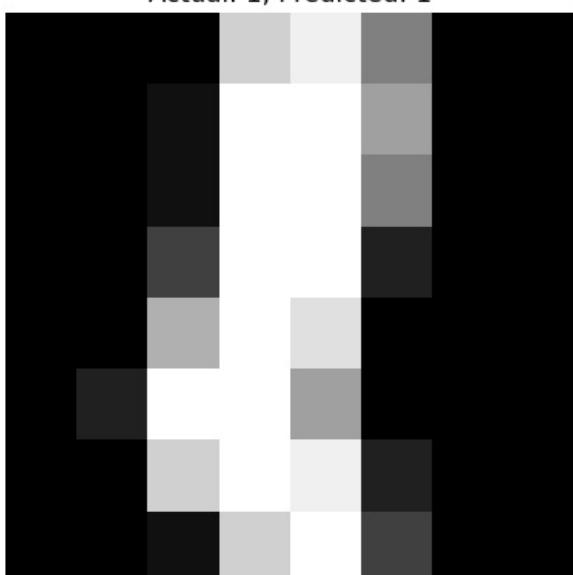
Actual: 9, Predicted: 9



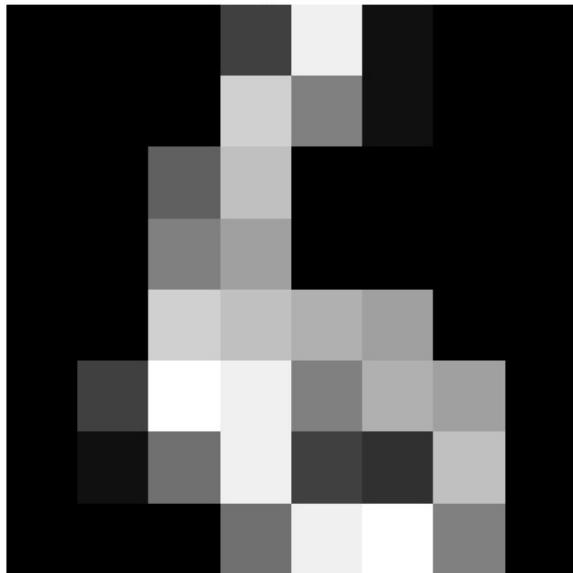
Actual: 1, Predicted: 1



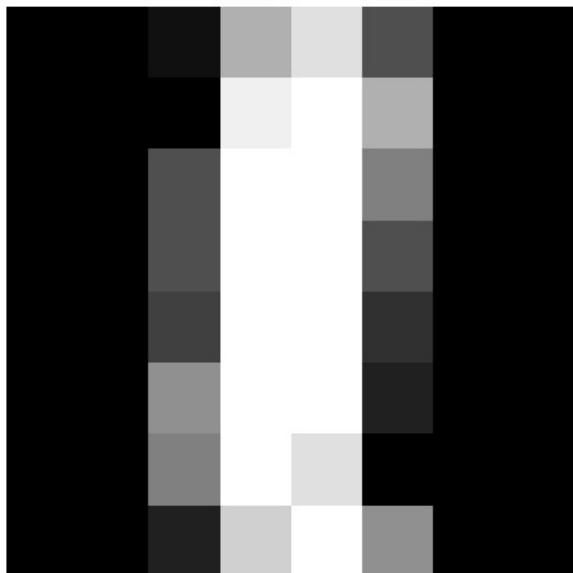
Actual: 1, Predicted: 1



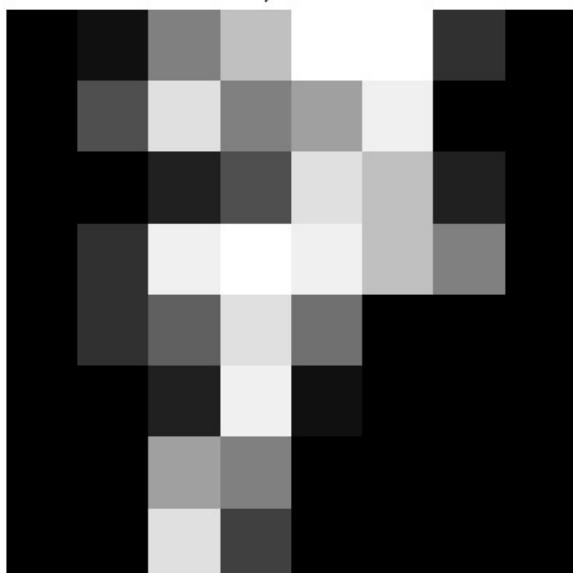
Actual: 6, Predicted: 6



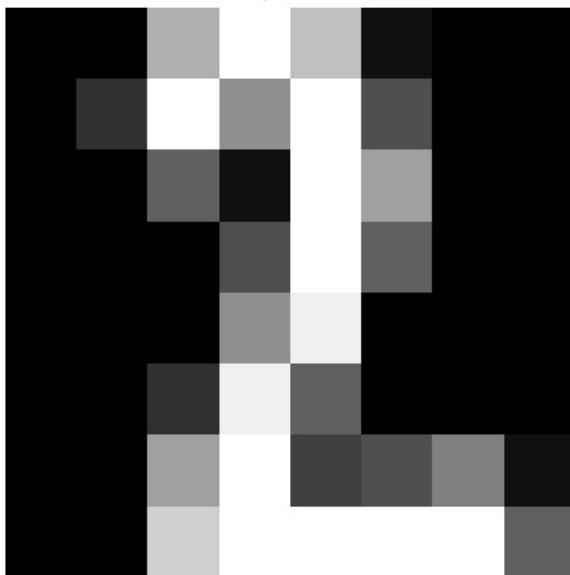
Actual: 1, Predicted: 1



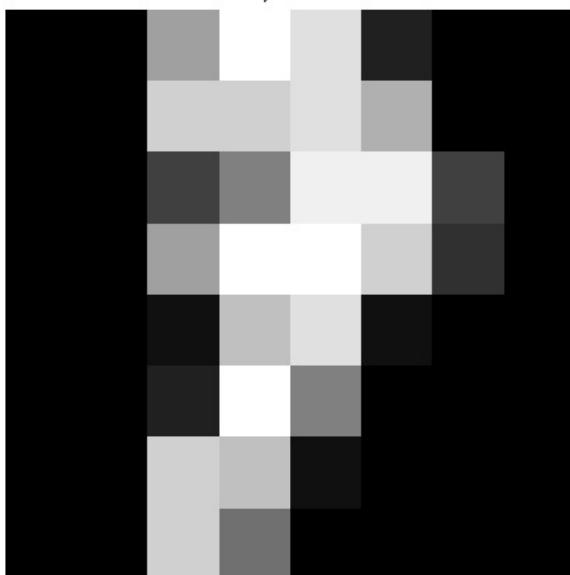
Actual: 7, Predicted: 7



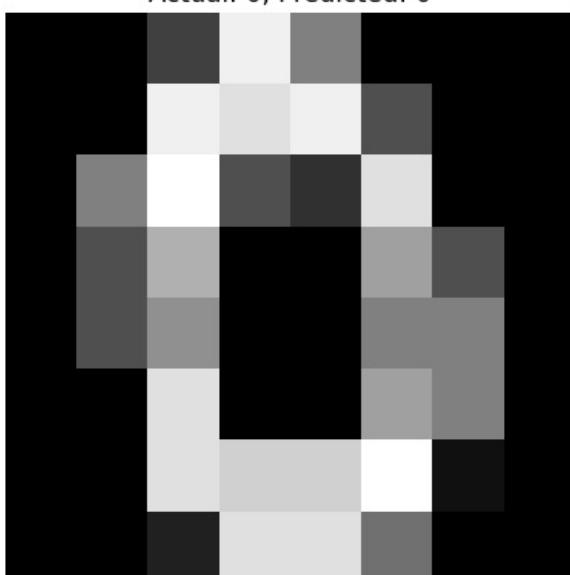
Actual: 2, Predicted: 2



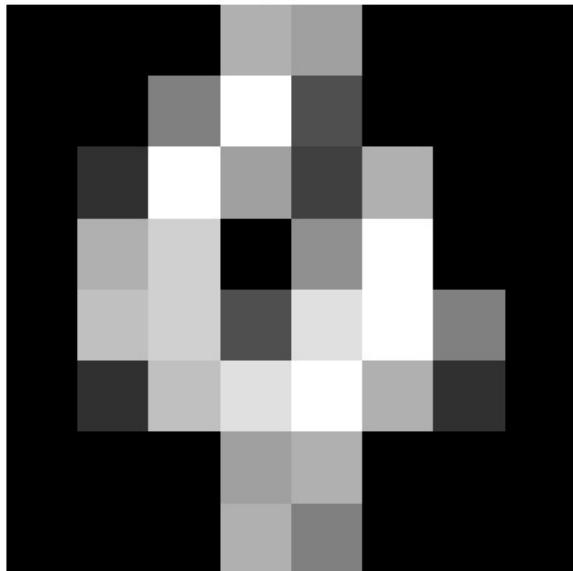
Actual: 7, Predicted: 7



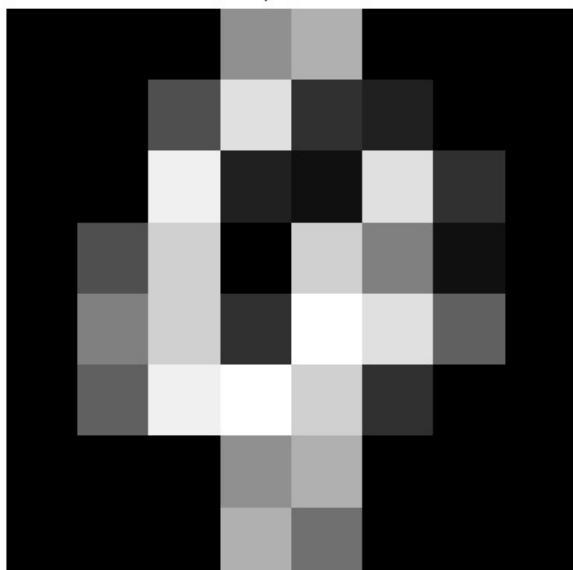
Actual: 0, Predicted: 0



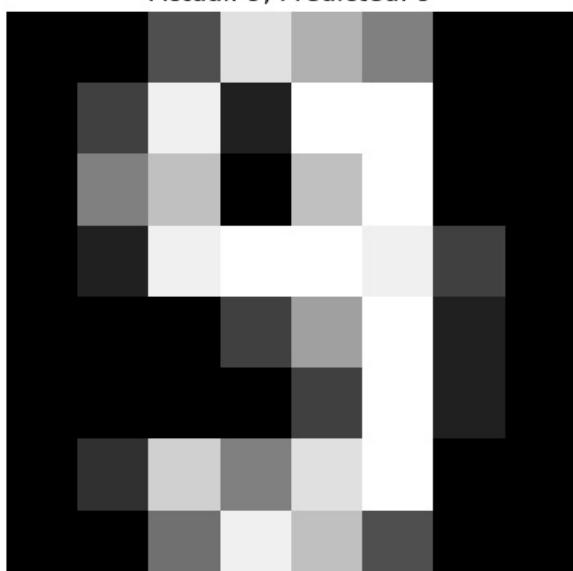
Actual: 4, Predicted: 4



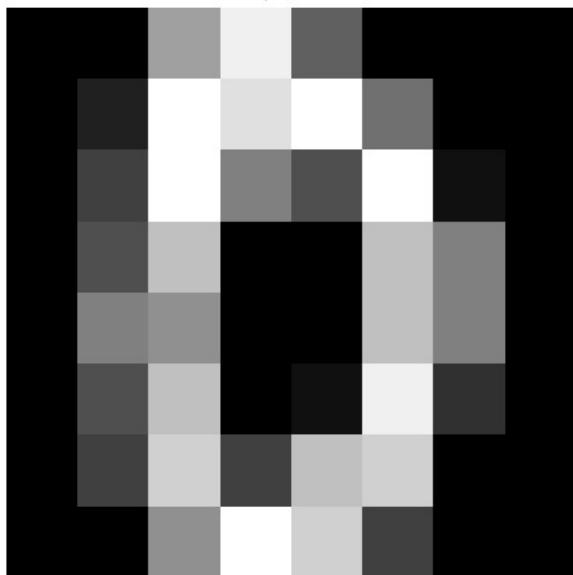
Actual: 4, Predicted: 4



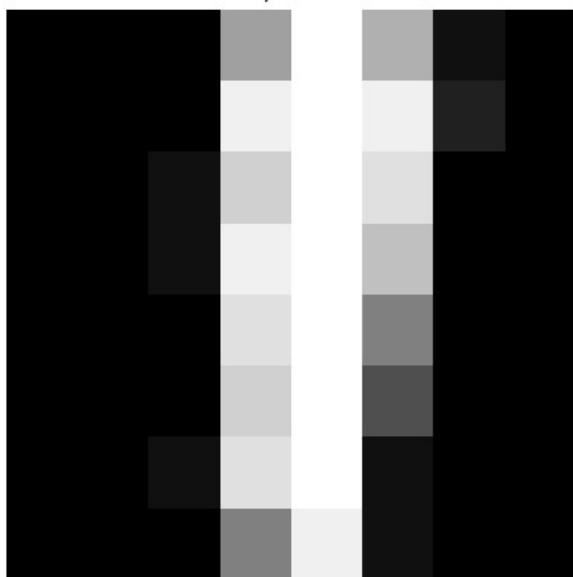
Actual: 9, Predicted: 9



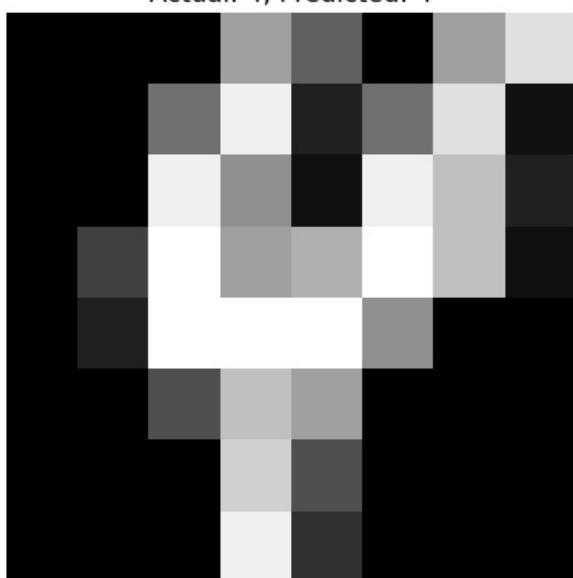
Actual: 0, Predicted: 0



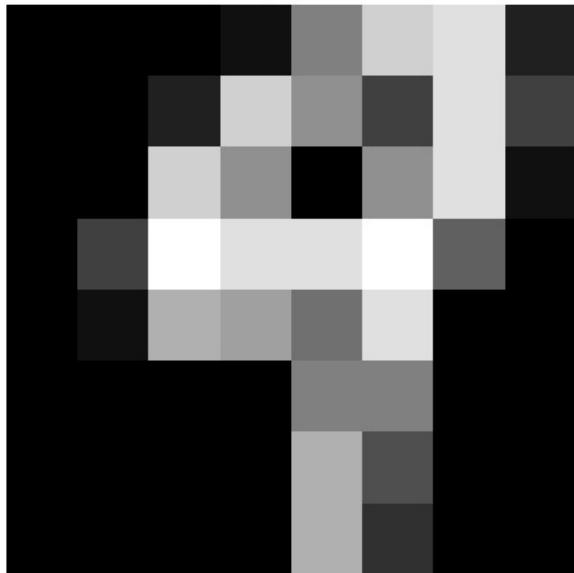
Actual: 1, Predicted: 1



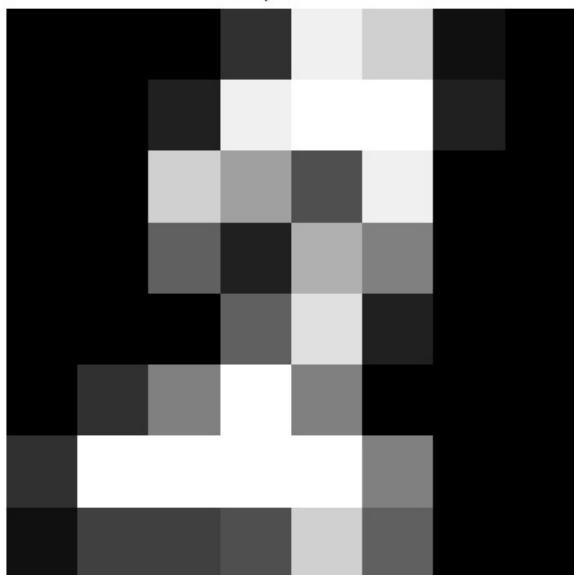
Actual: 4, Predicted: 4



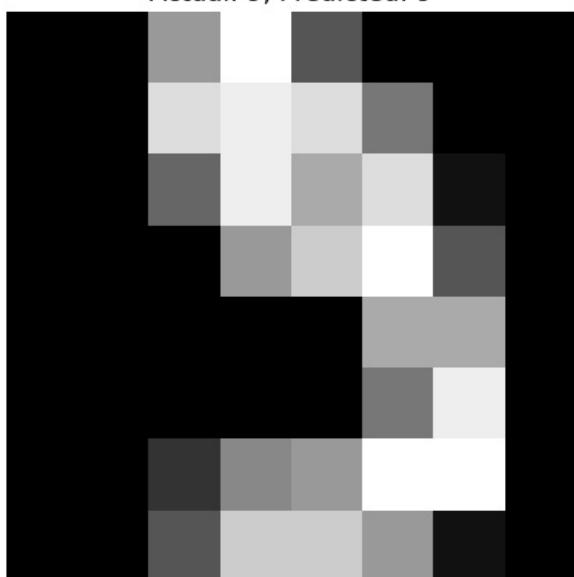
Actual: 9, Predicted: 9



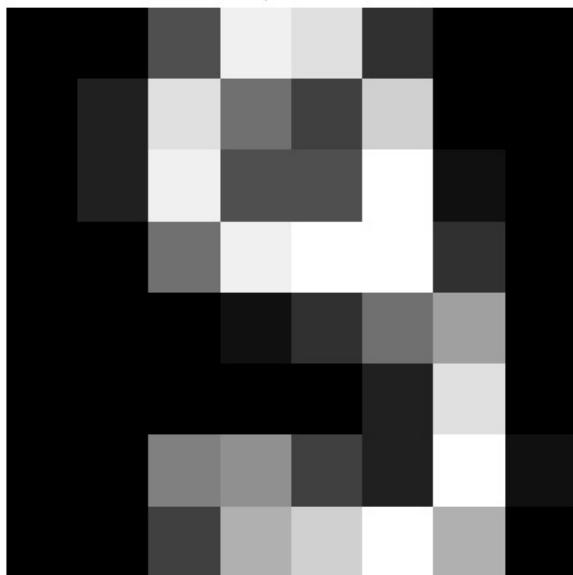
Actual: 2, Predicted: 2



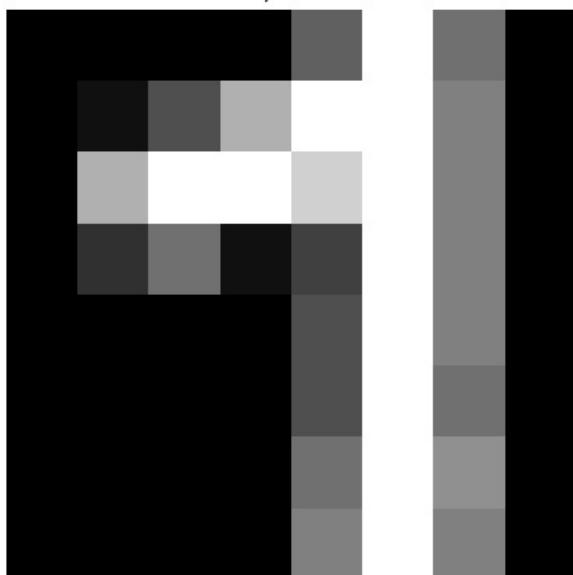
Actual: 9, Predicted: 9



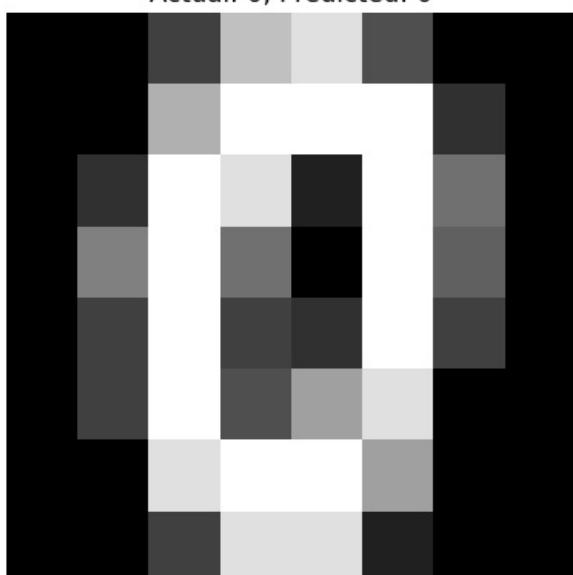
Actual: 9, Predicted: 9



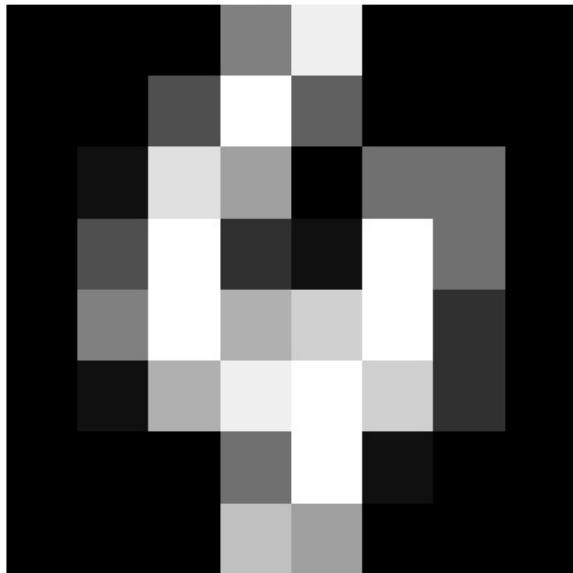
Actual: 1, Predicted: 1



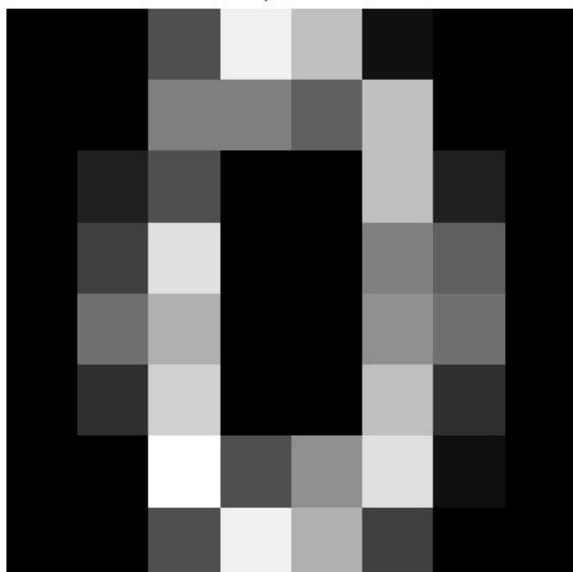
Actual: 0, Predicted: 0



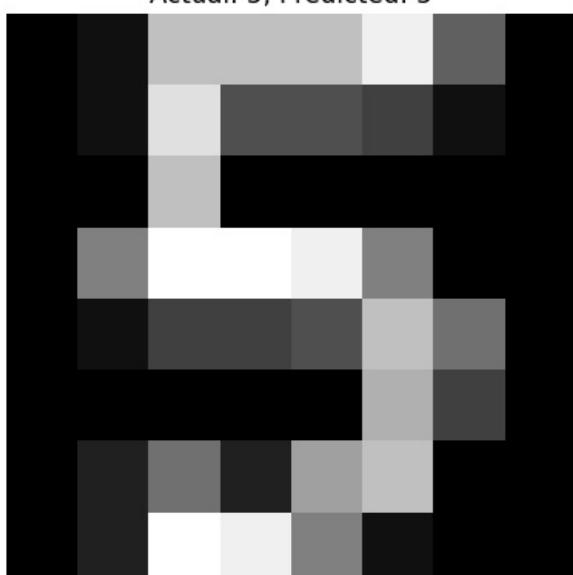
Actual: 4, Predicted: 4



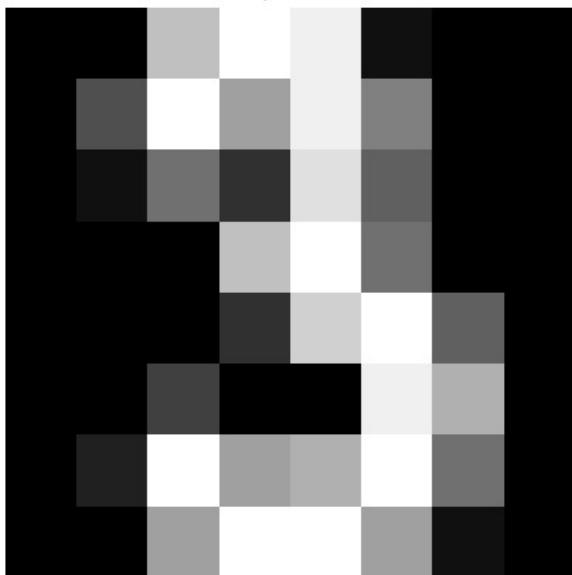
Actual: 0, Predicted: 0



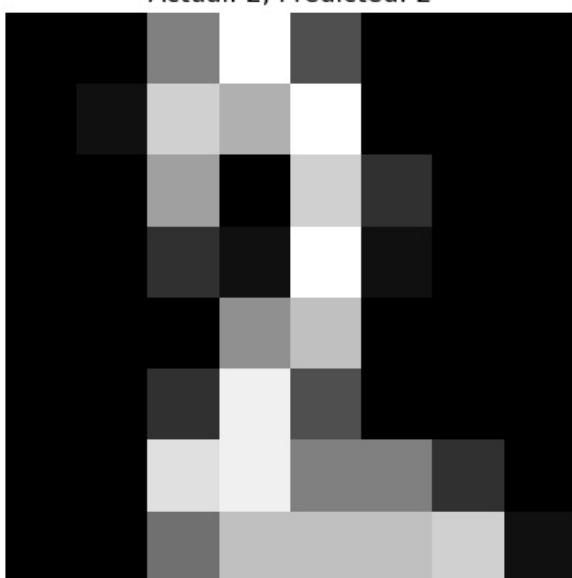
Actual: 5, Predicted: 5



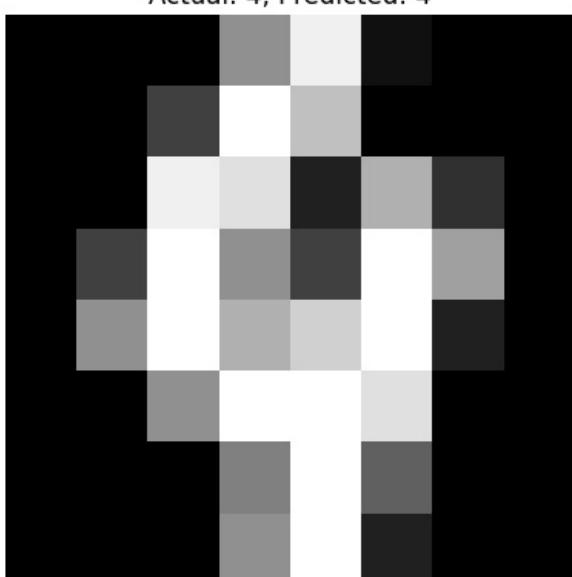
Actual: 3, Predicted: 3



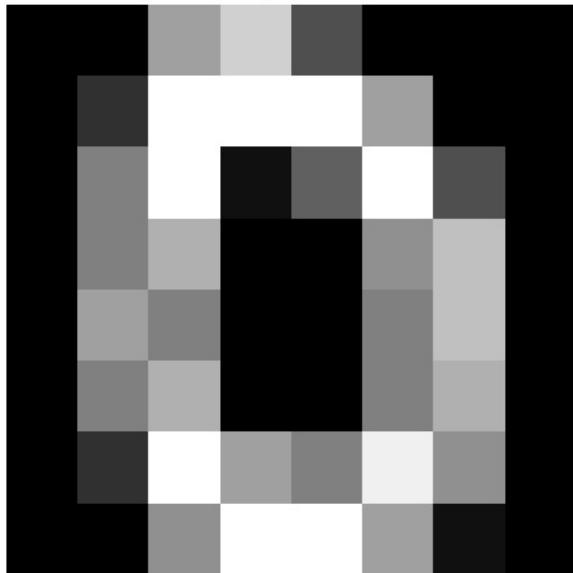
Actual: 2, Predicted: 2



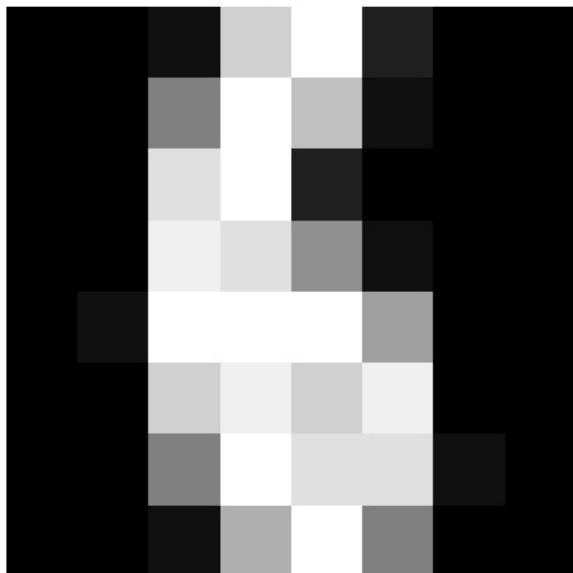
Actual: 4, Predicted: 4



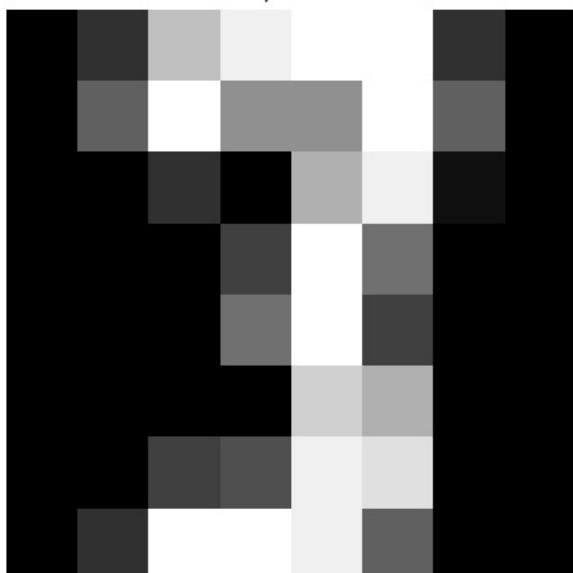
Actual: 0, Predicted: 0



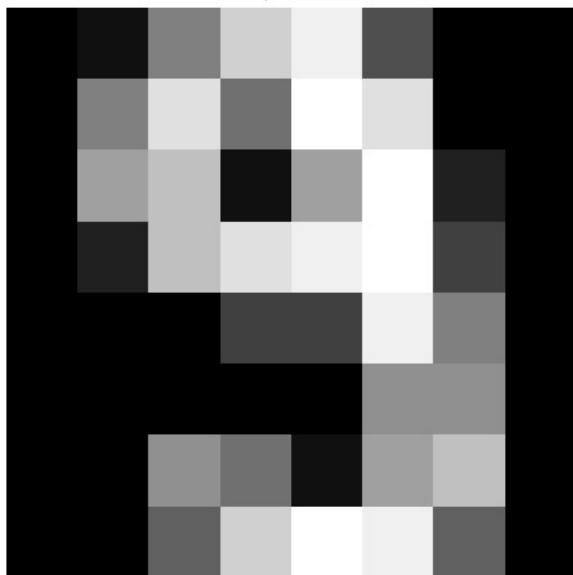
Actual: 6, Predicted: 6



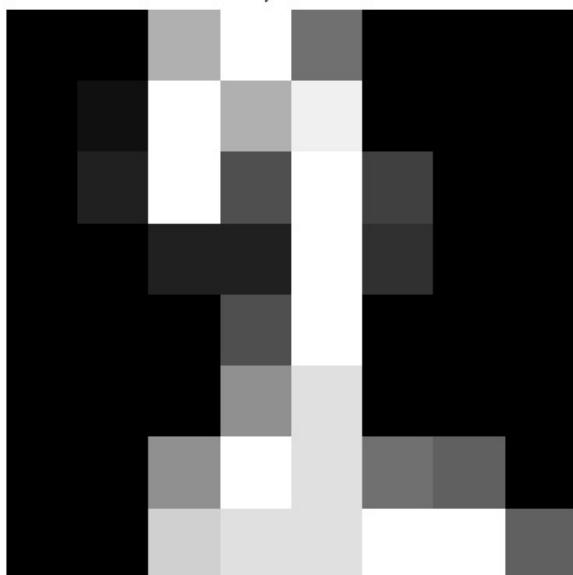
Actual: 3, Predicted: 3



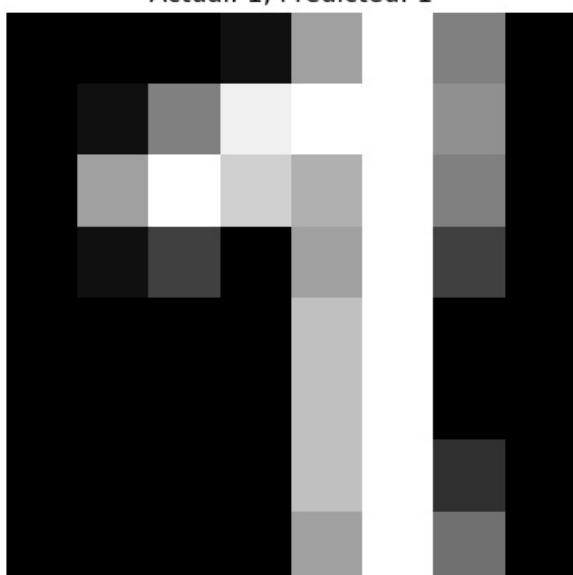
Actual: 9, Predicted: 9



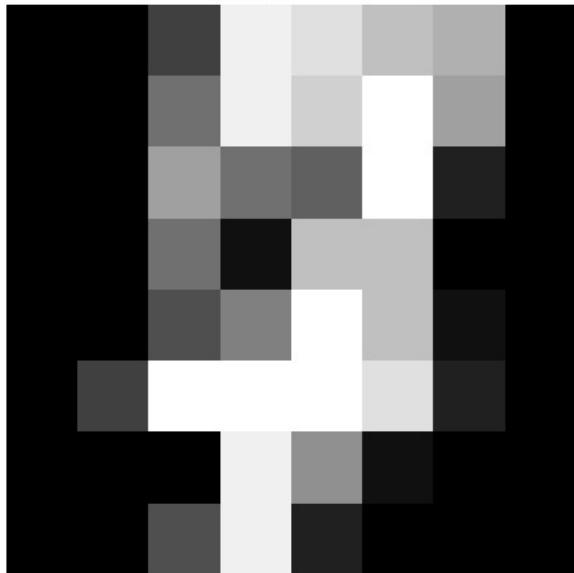
Actual: 2, Predicted: 2



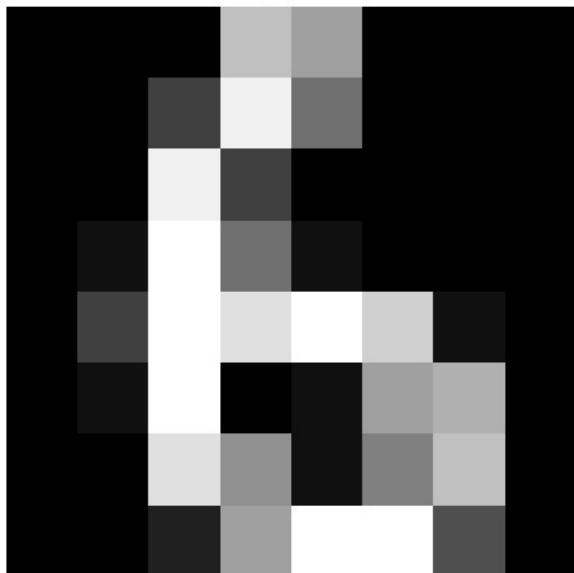
Actual: 1, Predicted: 1



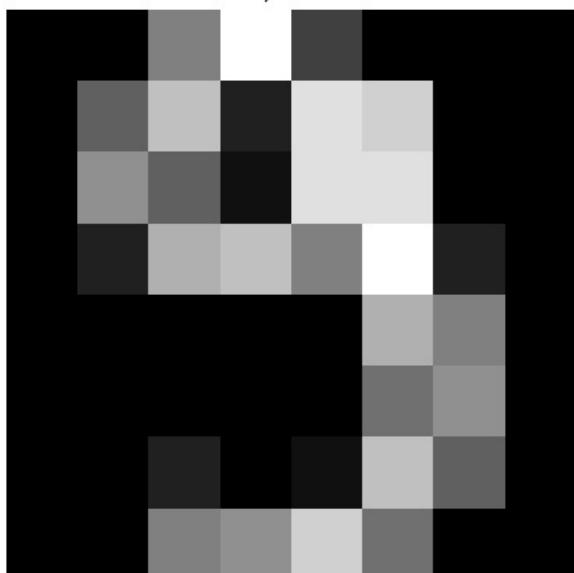
Actual: 7, Predicted: 7



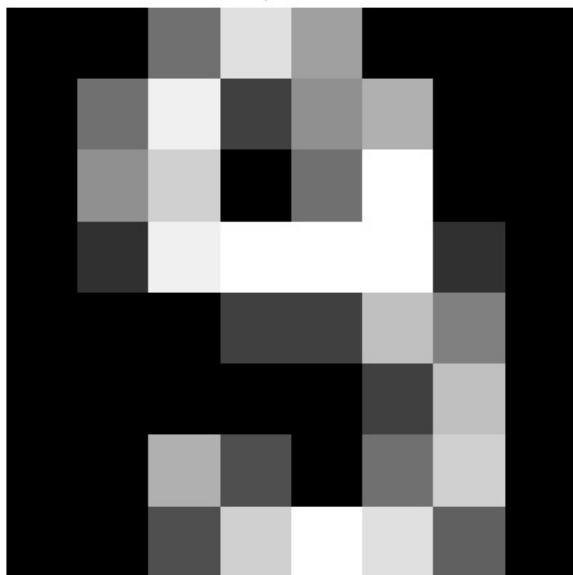
Actual: 6, Predicted: 6



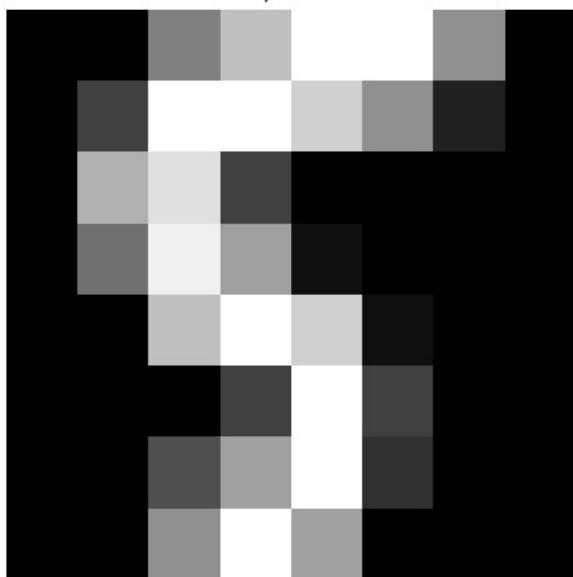
Actual: 9, Predicted: 9



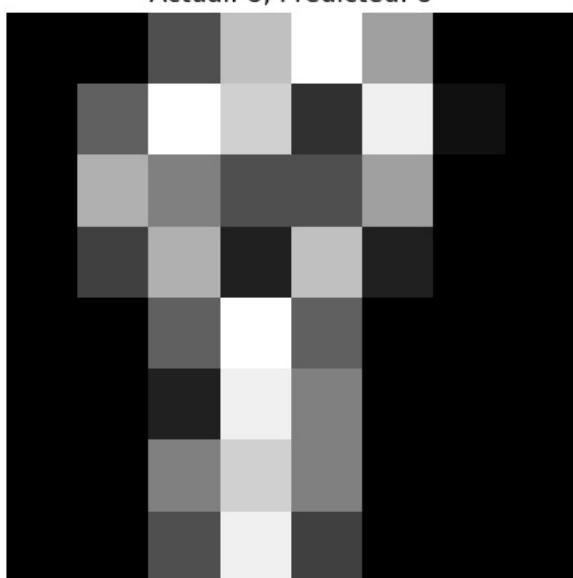
Actual: 9, Predicted: 9



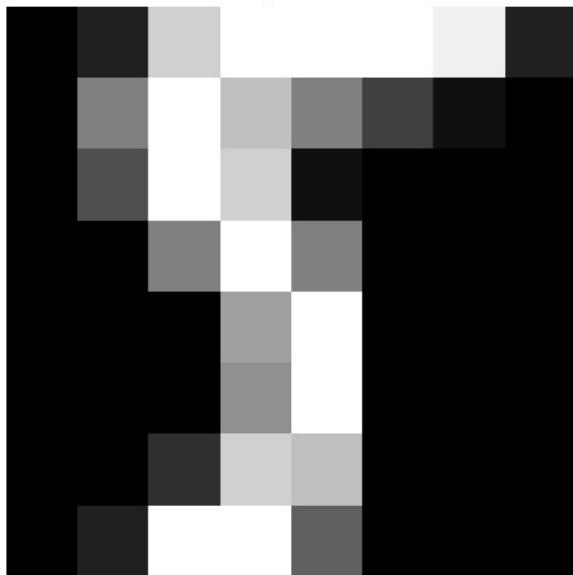
Actual: 5, Predicted: 5



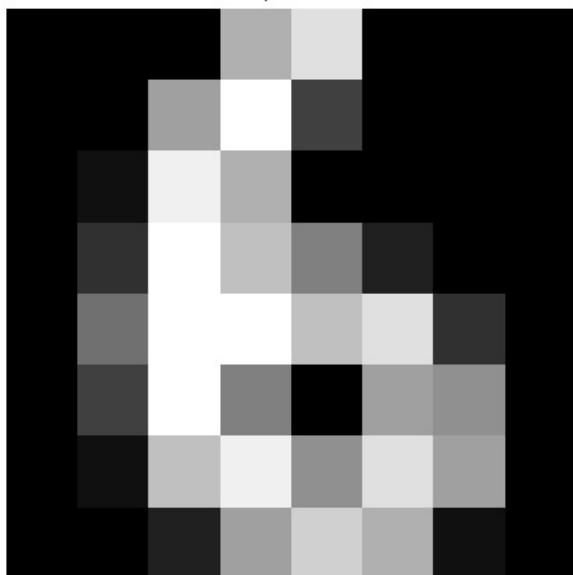
Actual: 8, Predicted: 8



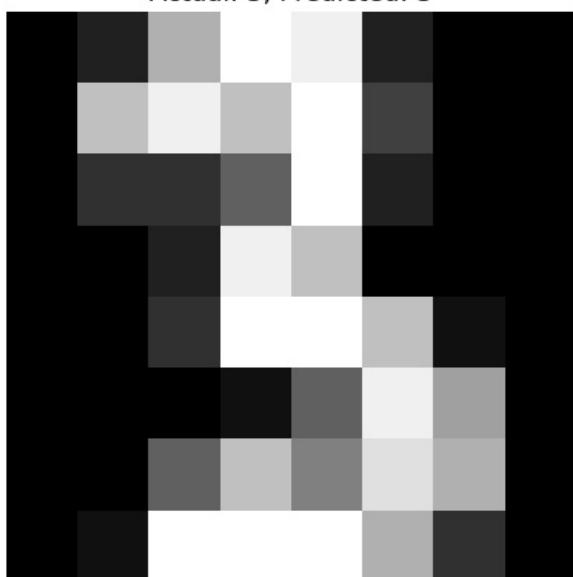
Actual: 5, Predicted: 5



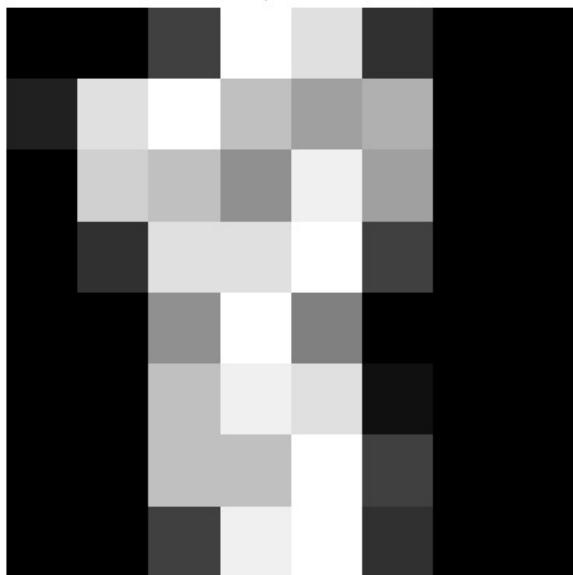
Actual: 6, Predicted: 6



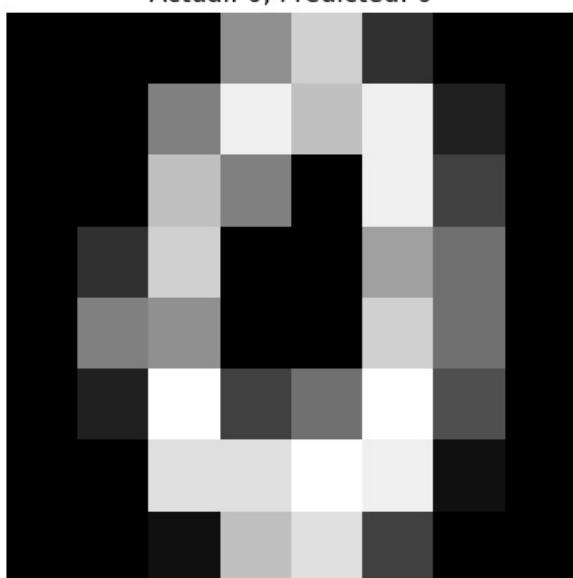
Actual: 3, Predicted: 3



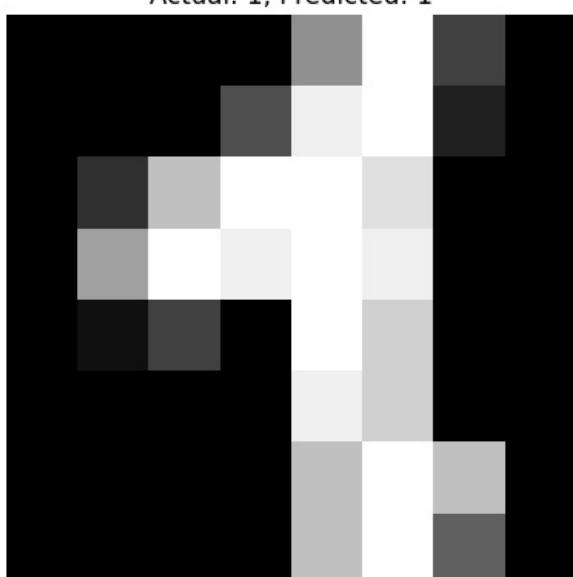
Actual: 8, Predicted: 8



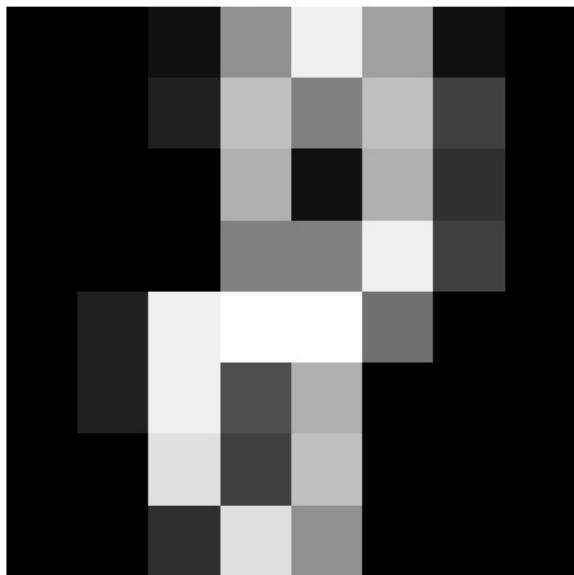
Actual: 0, Predicted: 0



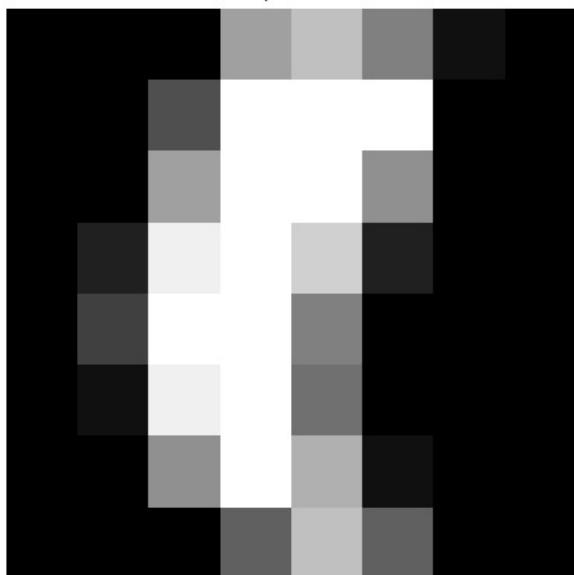
Actual: 1, Predicted: 1



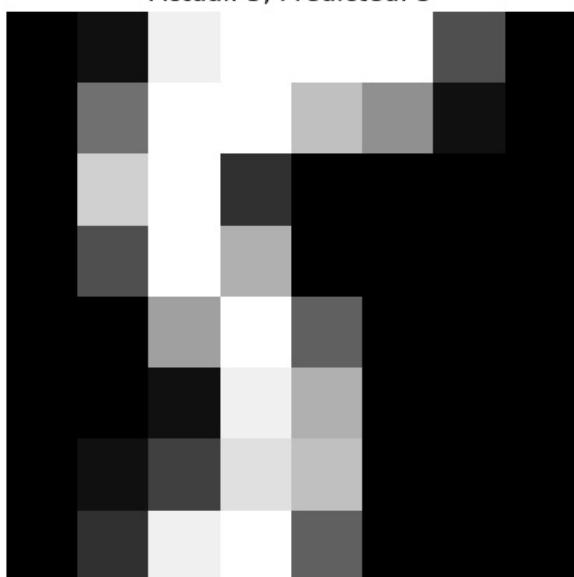
Actual: 8, Predicted: 8



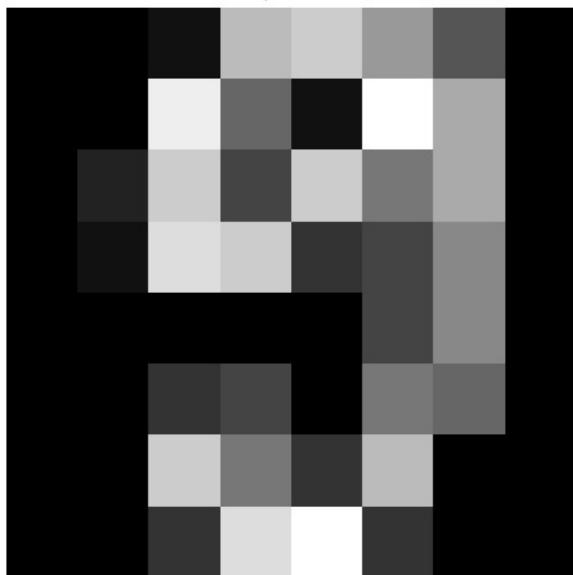
Actual: 1, Predicted: 1



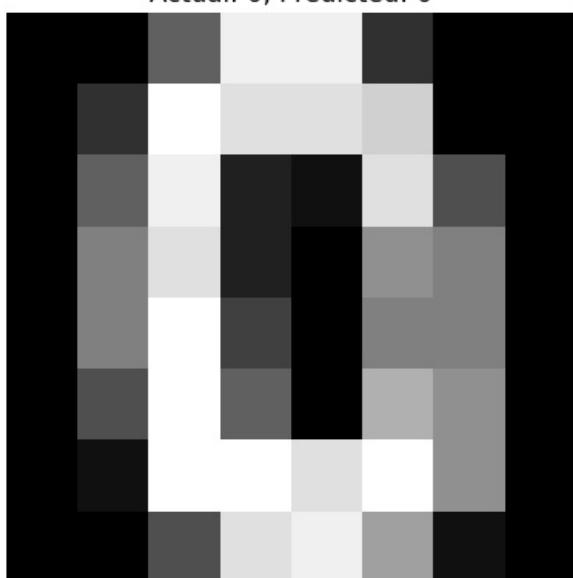
Actual: 5, Predicted: 5



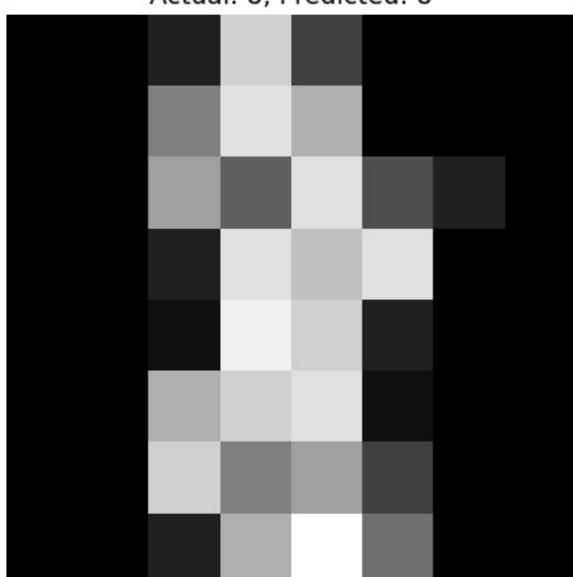
Actual: 9, Predicted: 9



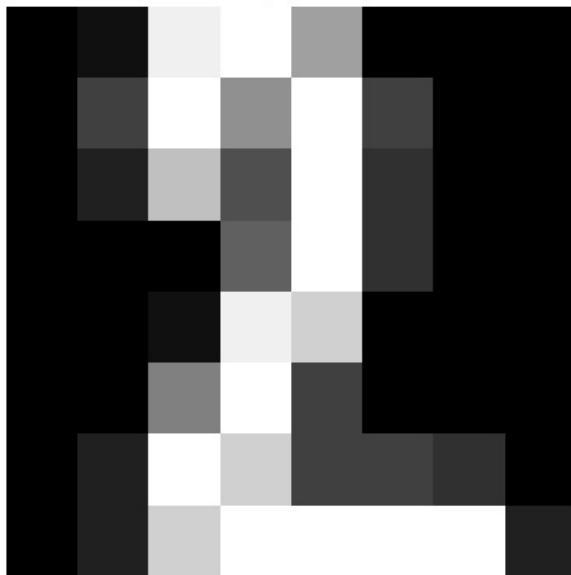
Actual: 0, Predicted: 0



Actual: 8, Predicted: 8



Actual: 2, Predicted: 2



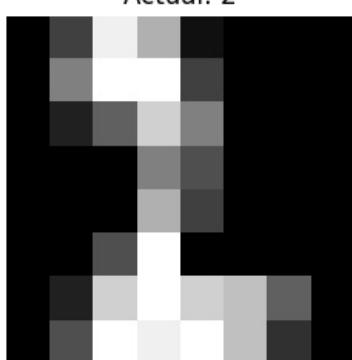
You can do the below code for subplot

```
In [67]: # Display actual and predicted values alongside the images
for i in range(len(predict)):
    plt.subplot(1, 2, 1) # Create a subplot with 1 row and 2 columns
    plt.imshow(X_test[i].reshape(8, 8), cmap='gray') # Reshape the flattened image to its original shape
    plt.title(f'Actual: {y_test[i]}')
    plt.axis('off') # Turn off axis labels for better visualization

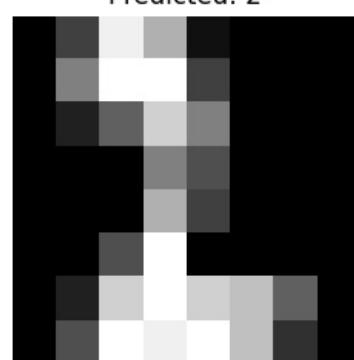
    plt.subplot(1, 2, 2)
    plt.imshow(X_test[i].reshape(8, 8), cmap='gray')
    plt.title(f'Predicted: {predict[i]}')
    plt.axis('off')

    plt.show()
```

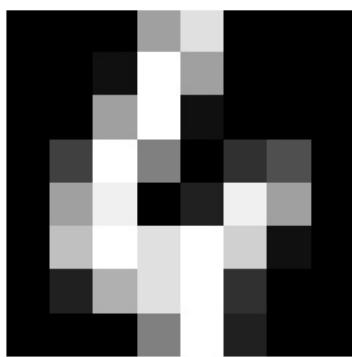
Actual: 2



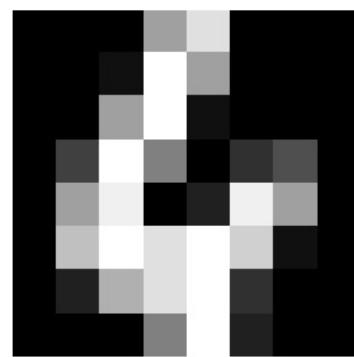
Predicted: 2



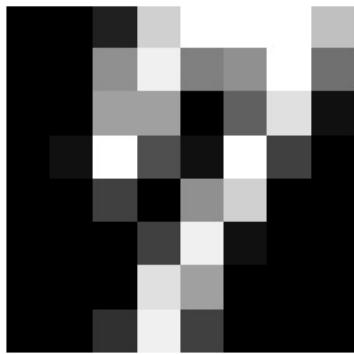
Actual: 4



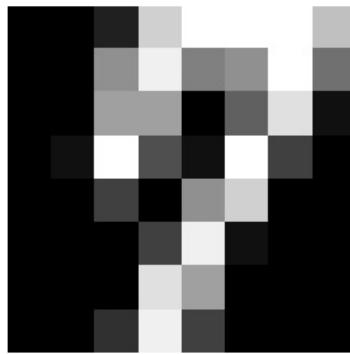
Predicted: 4



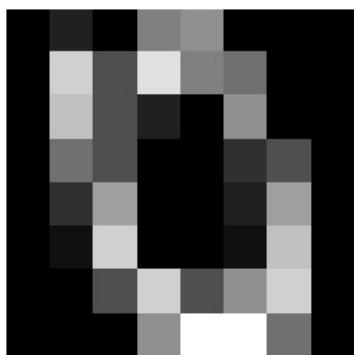
Actual: 7



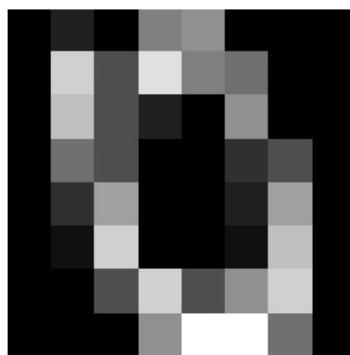
Predicted: 7



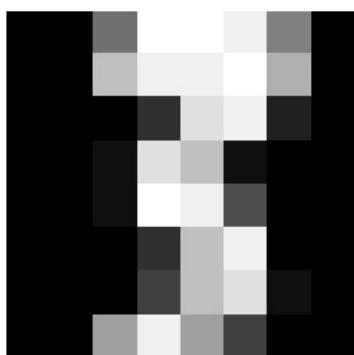
Actual: 0



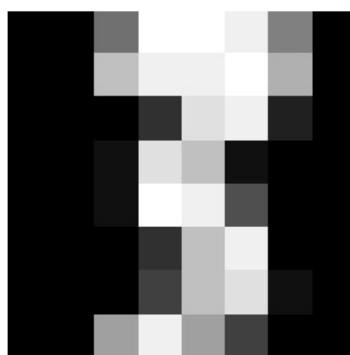
Predicted: 0



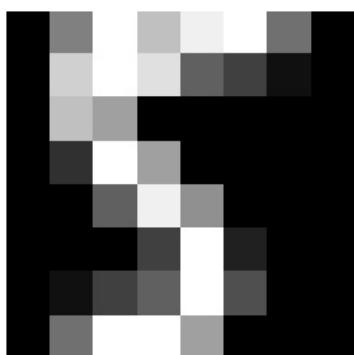
Actual: 3



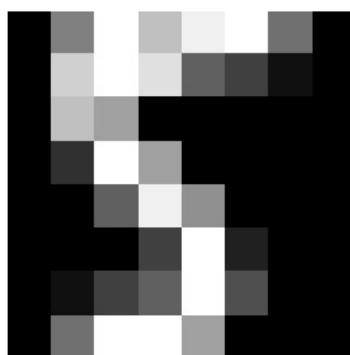
Predicted: 3



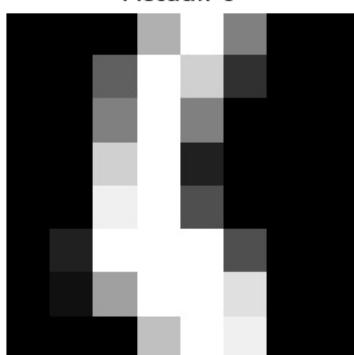
Actual: 5



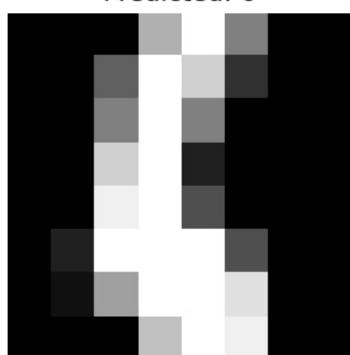
Predicted: 5



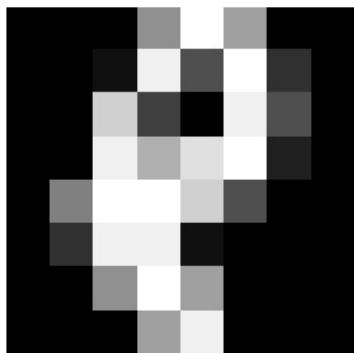
Actual: 6



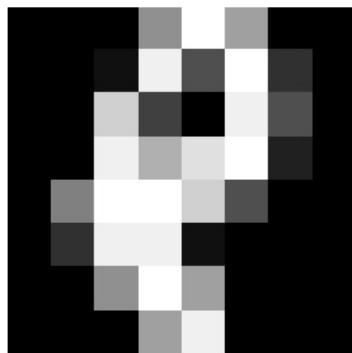
Predicted: 6



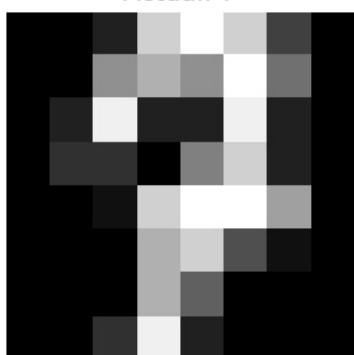
Actual: 8



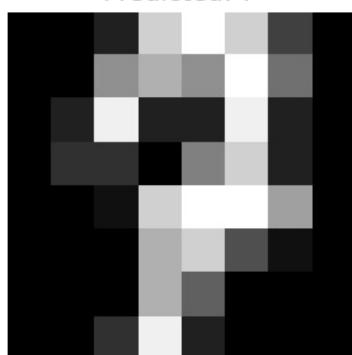
Predicted: 8



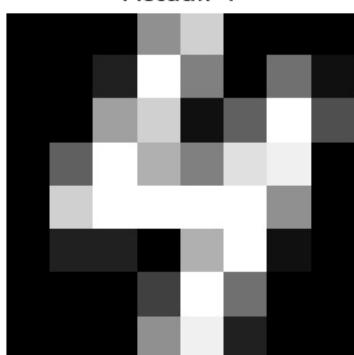
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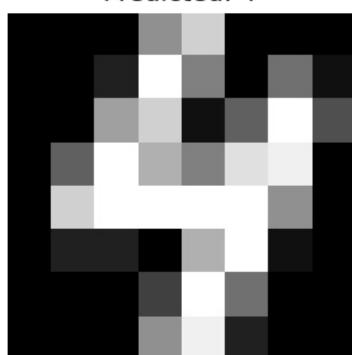
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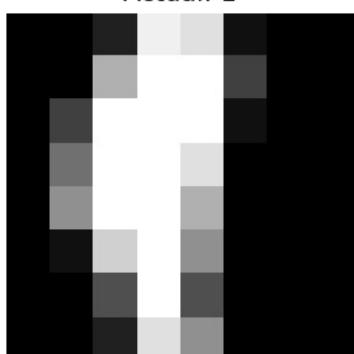
Actual: 4



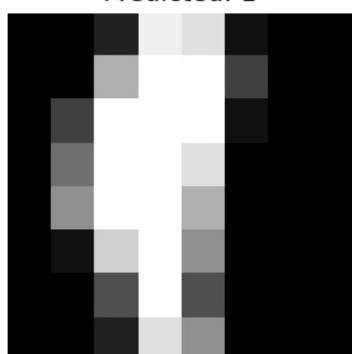
Predicted: 4



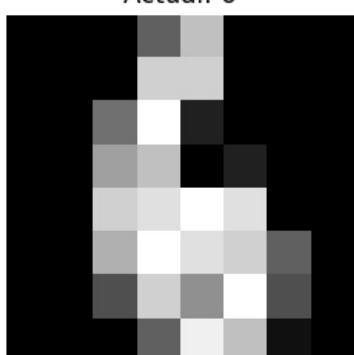
Actual: 1



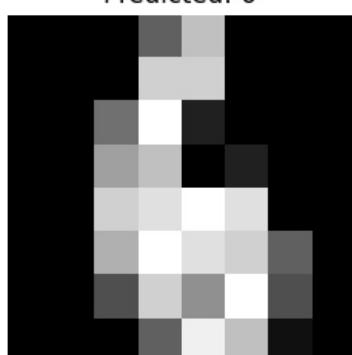
Predicted: 1



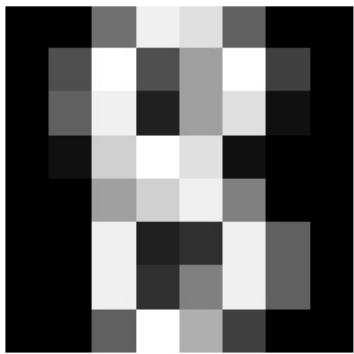
Actual: 6



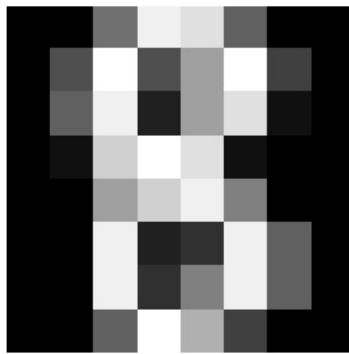
Predicted: 6



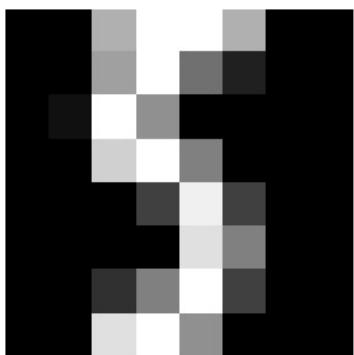
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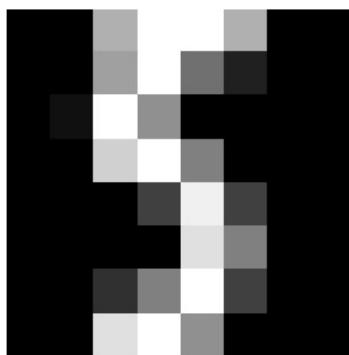
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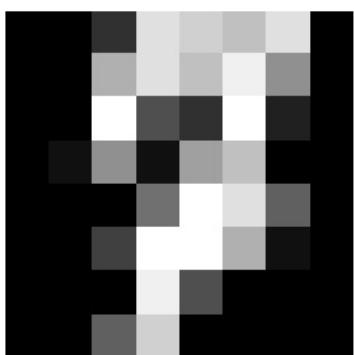
Actual: 5



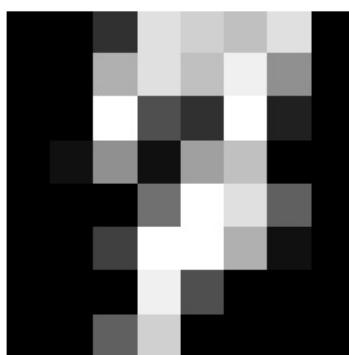
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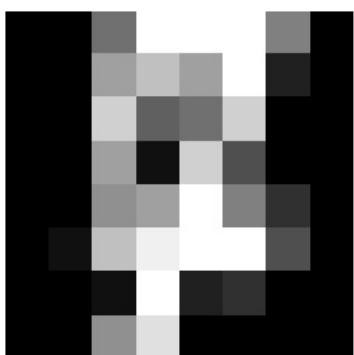
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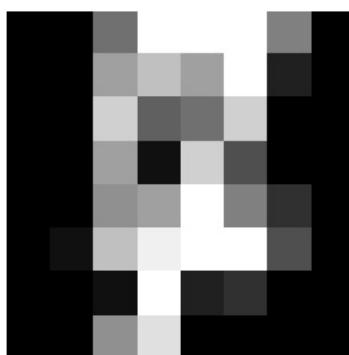
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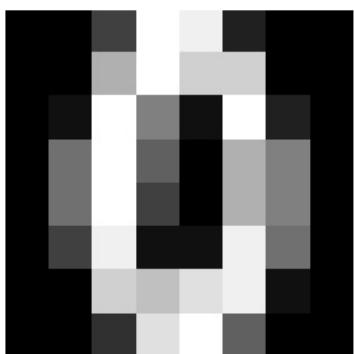
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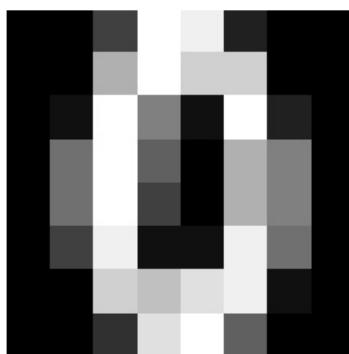
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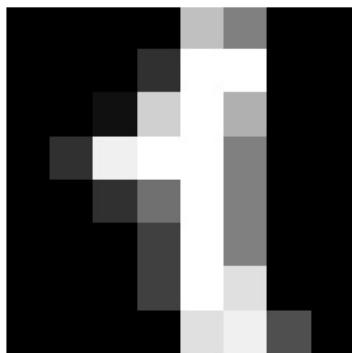
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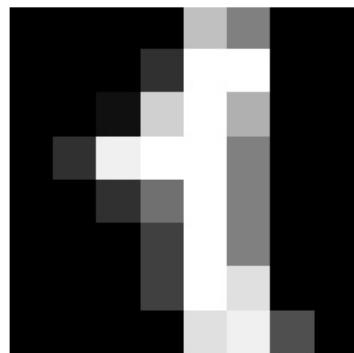
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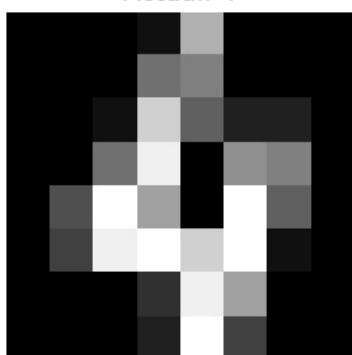
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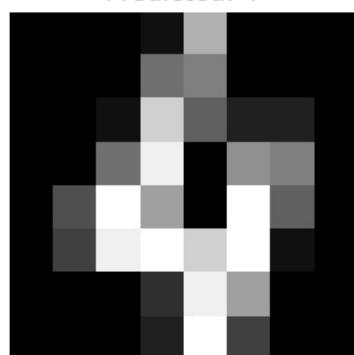
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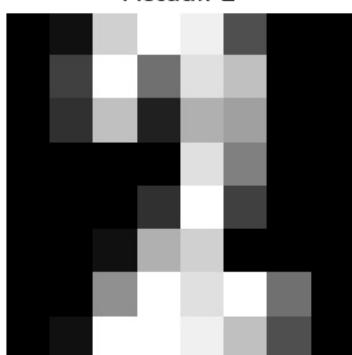
Actual: 4



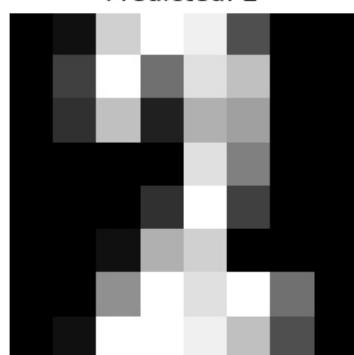
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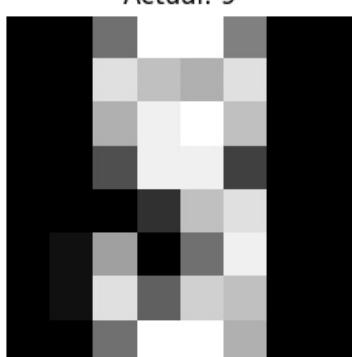
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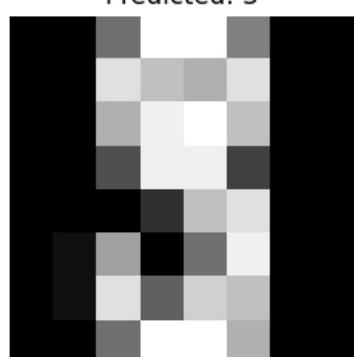
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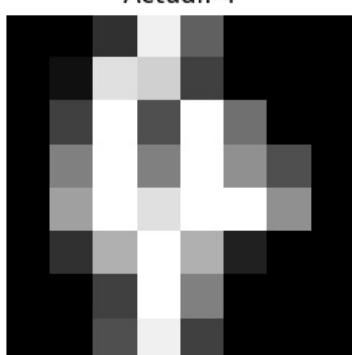
Actual: 9



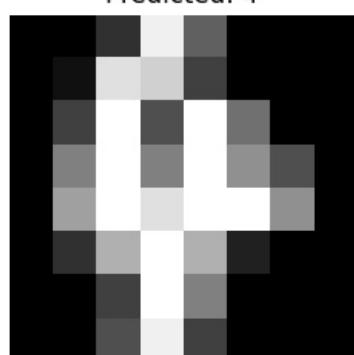
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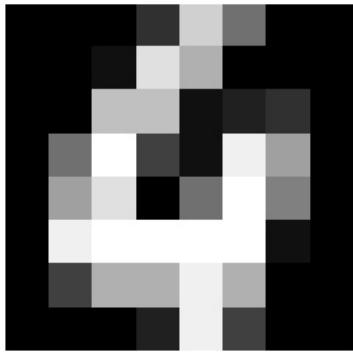
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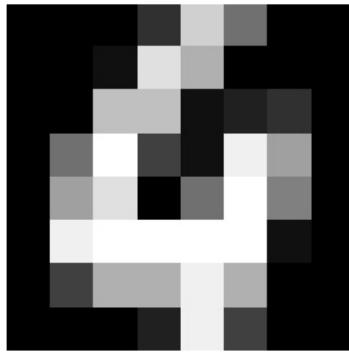
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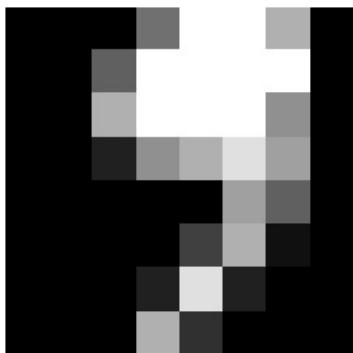
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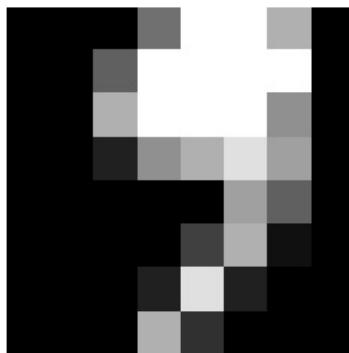
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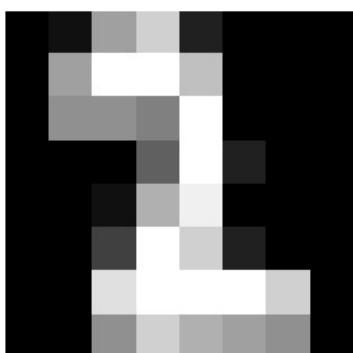
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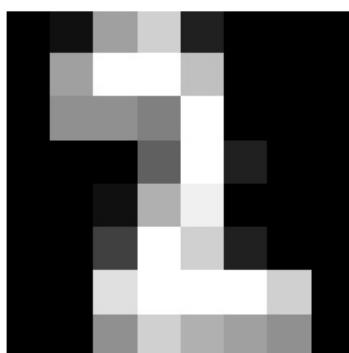
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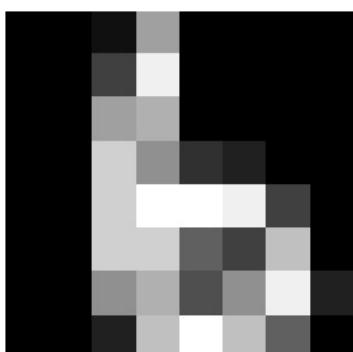
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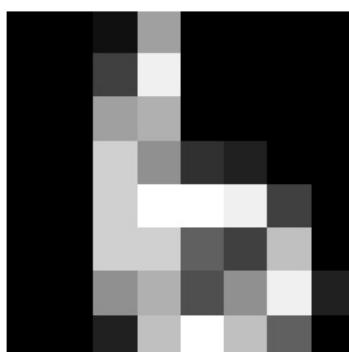
Predicted: 2



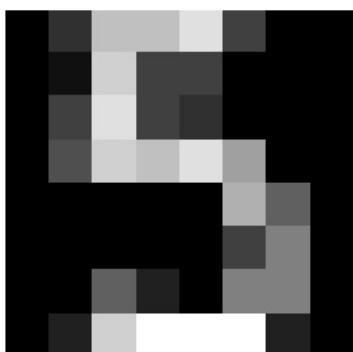
Actual: 6



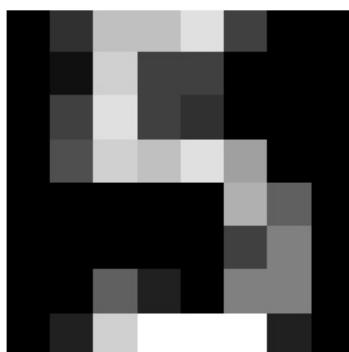
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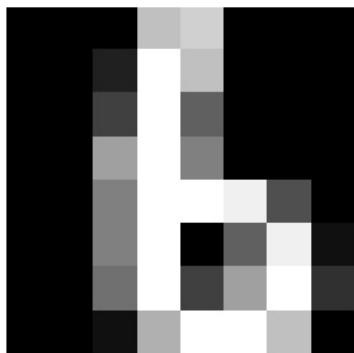
Actual: 5



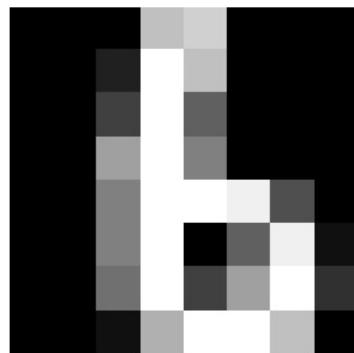
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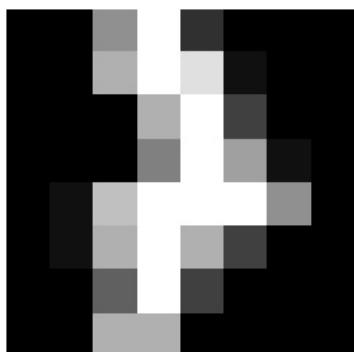
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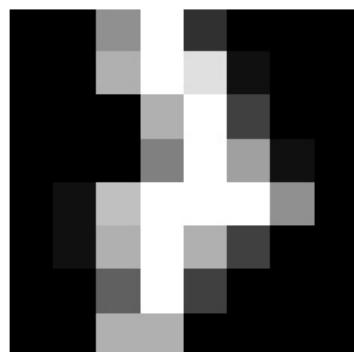
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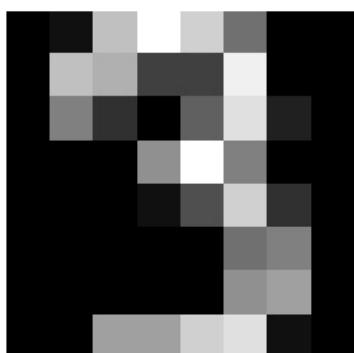
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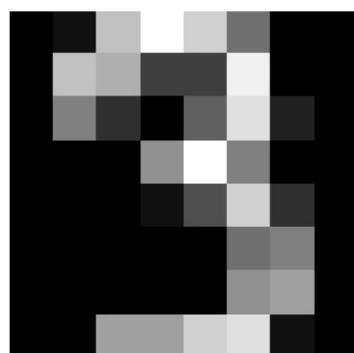
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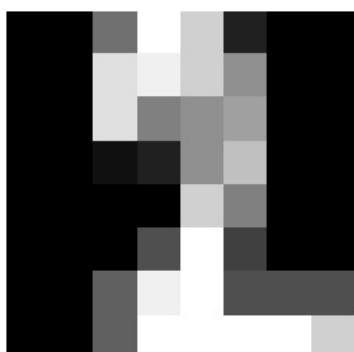
Actual: 3



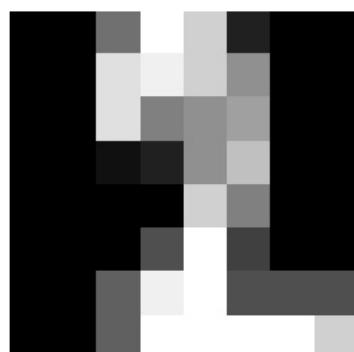
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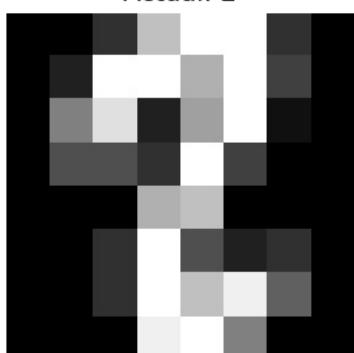
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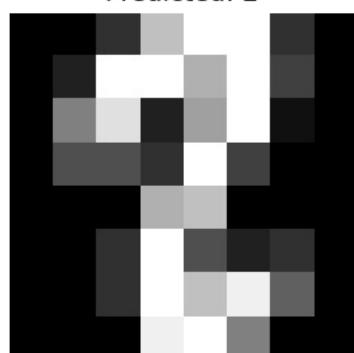
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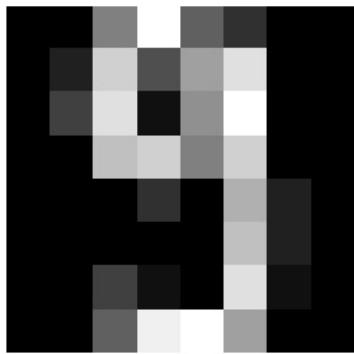
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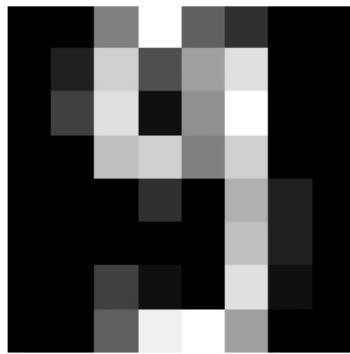
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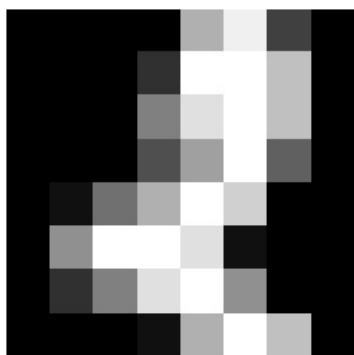
Actual: 9



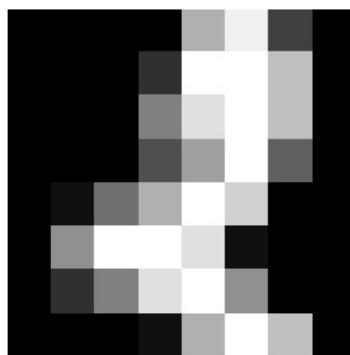
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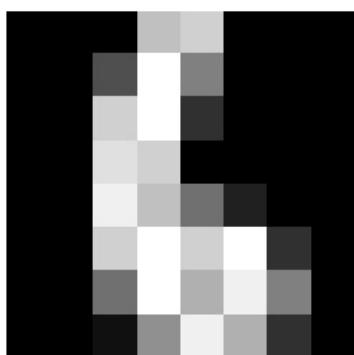
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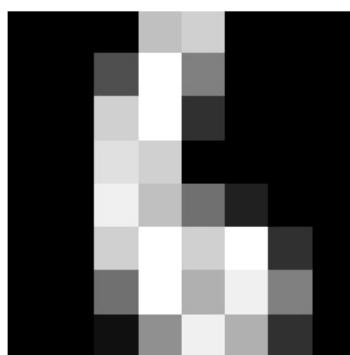
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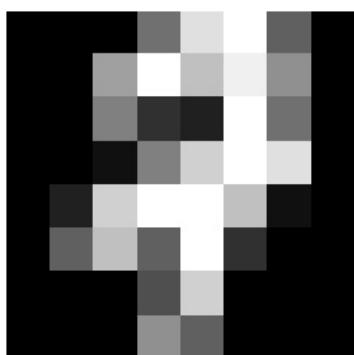
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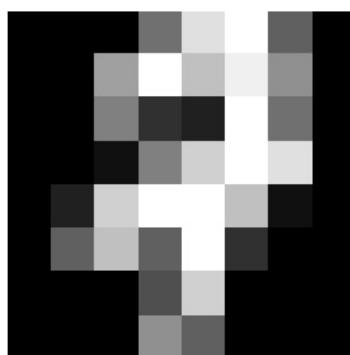
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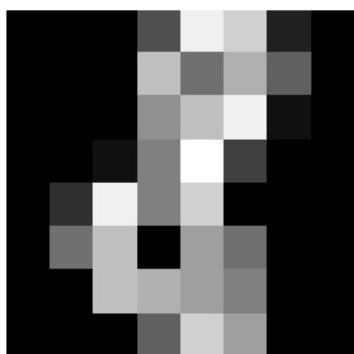
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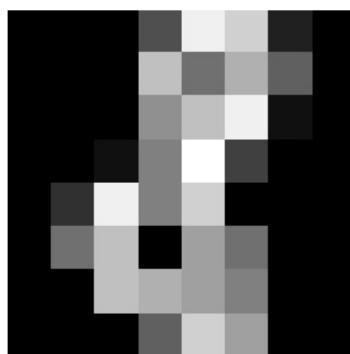
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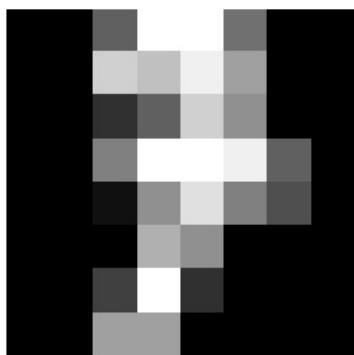
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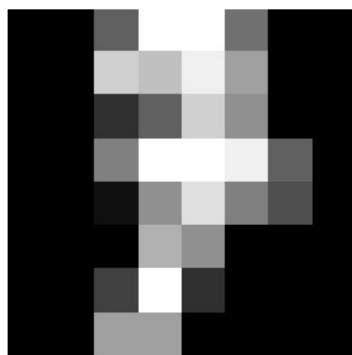
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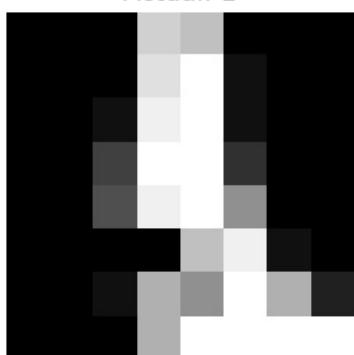
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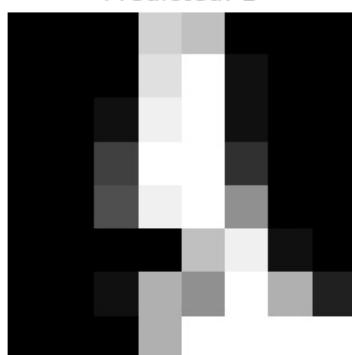
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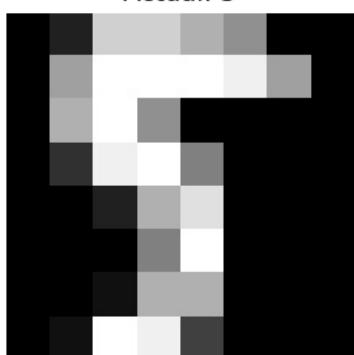
Actual: 1



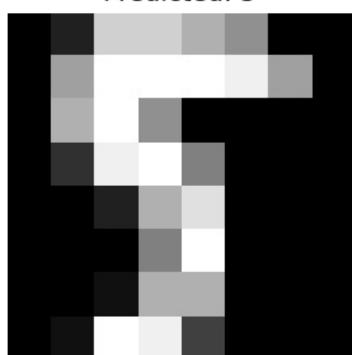
Predicted: 1



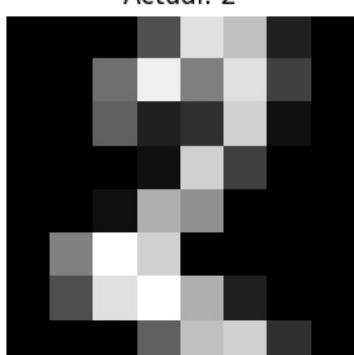
Actual: 5



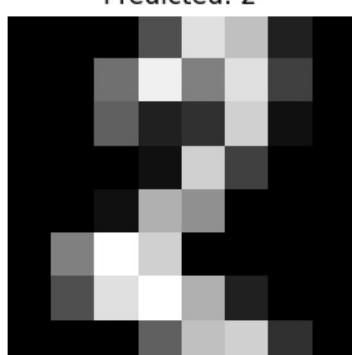
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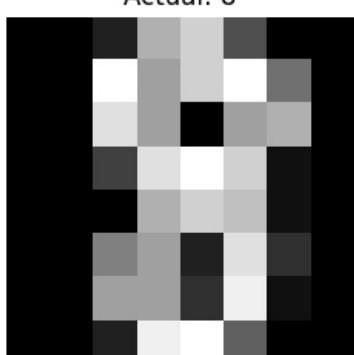
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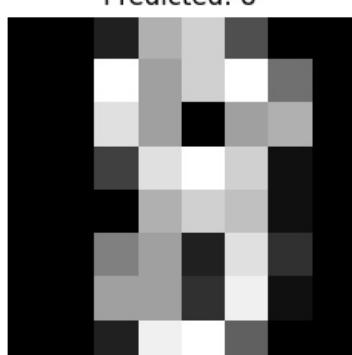
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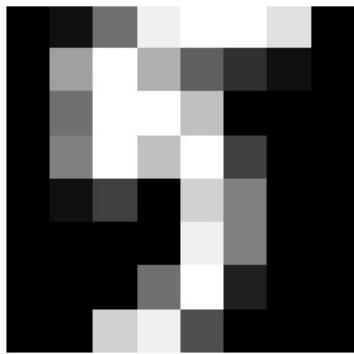
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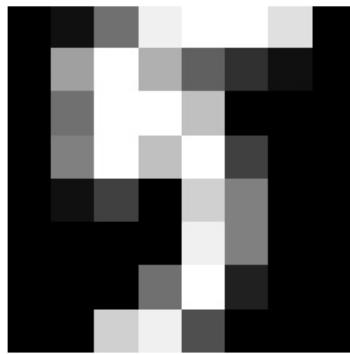
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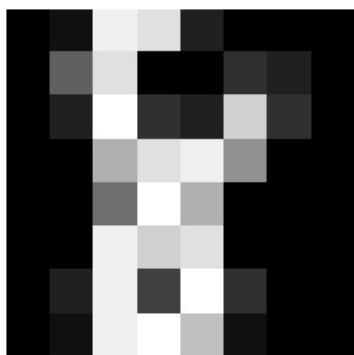
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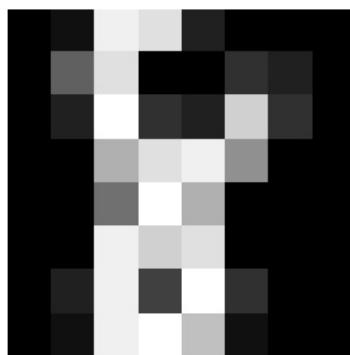
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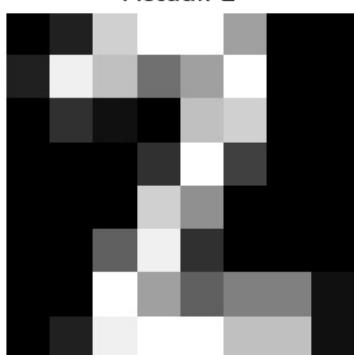
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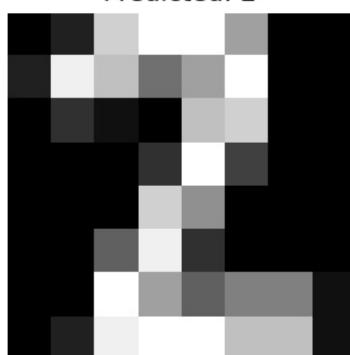
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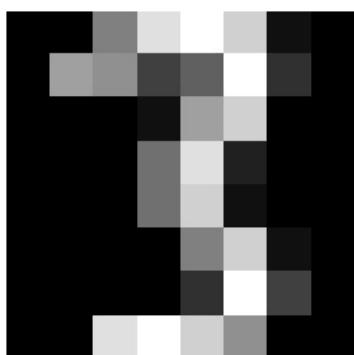
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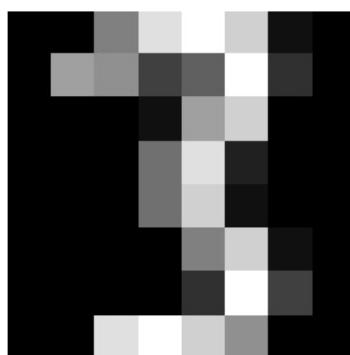
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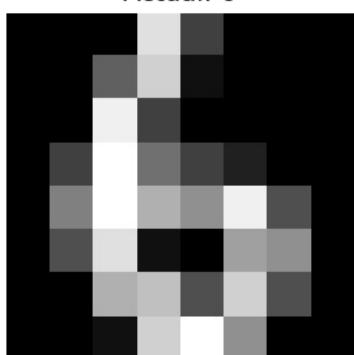
Actual: 3



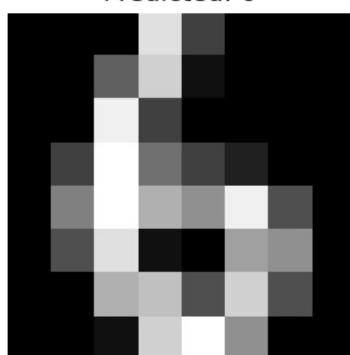
Predicted: 3



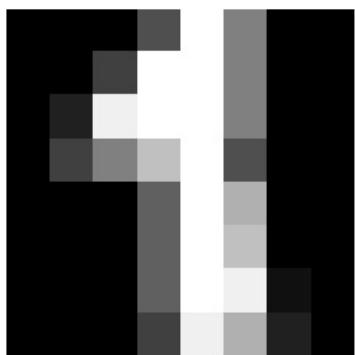
Actual: 6



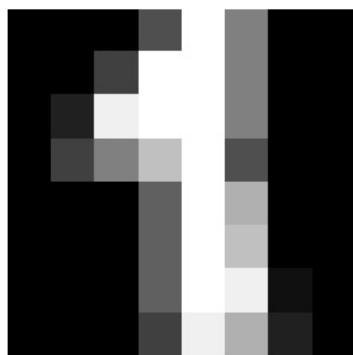
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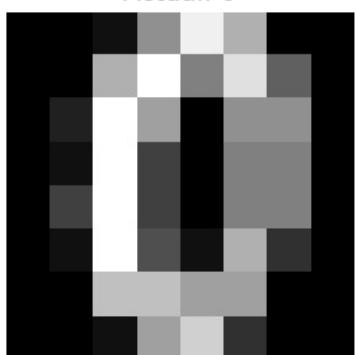
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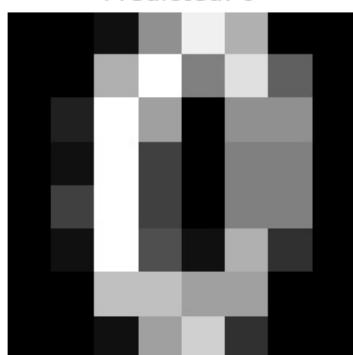
Predicted: 1



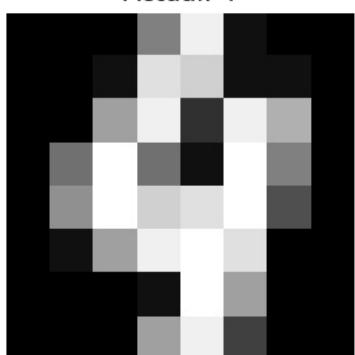
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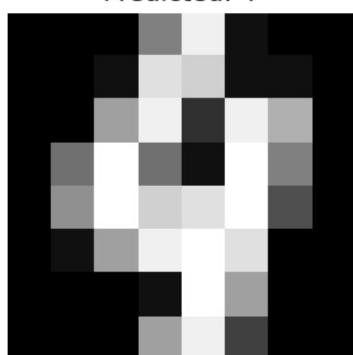
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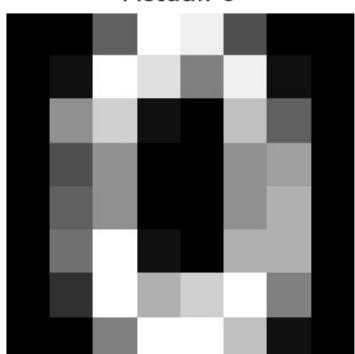
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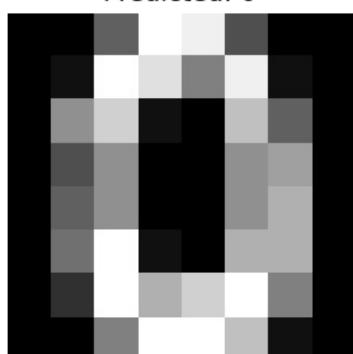
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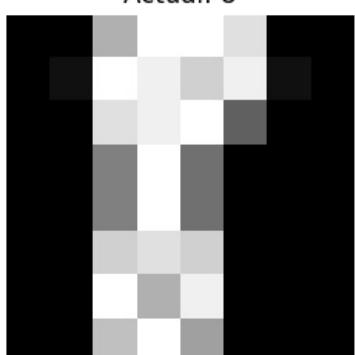
Actual: 0



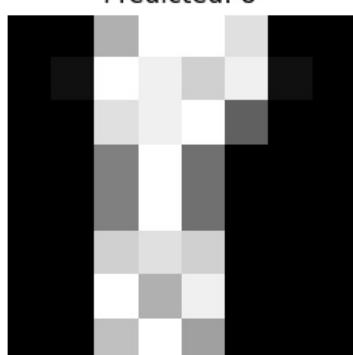
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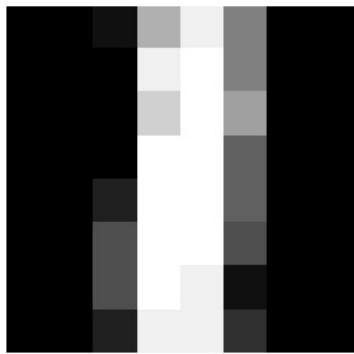
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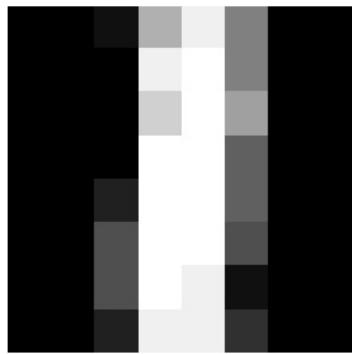
Predicted: 8



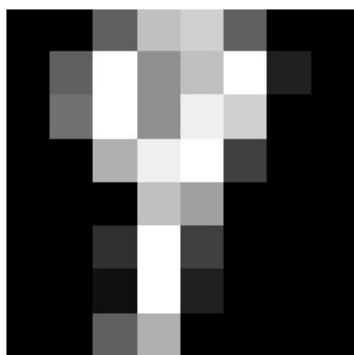
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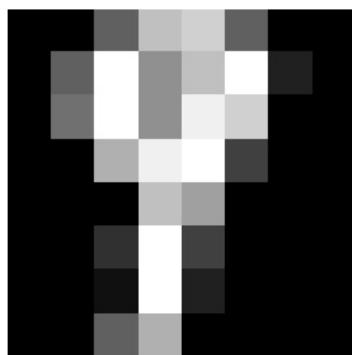
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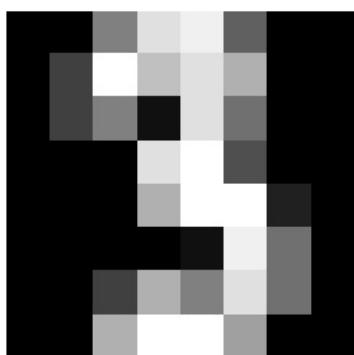
Actual: 9



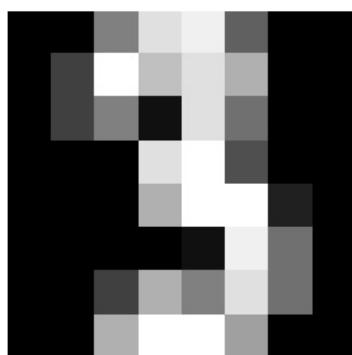
Predicted: 7



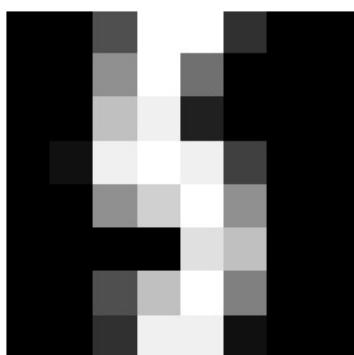
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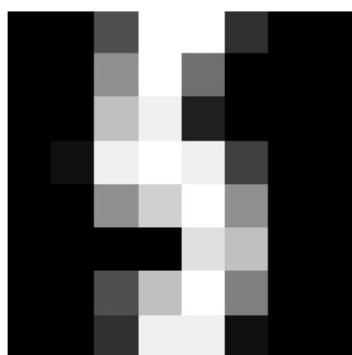
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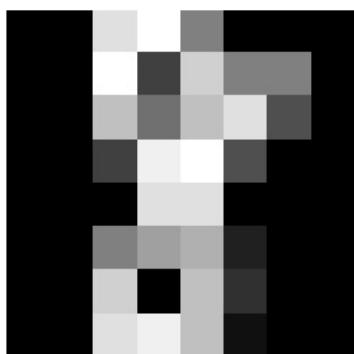
Actual: 5



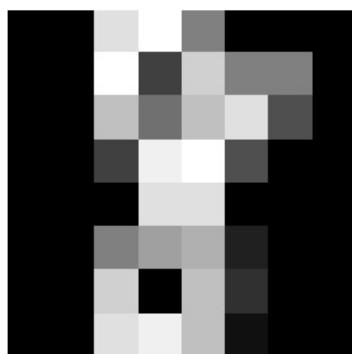
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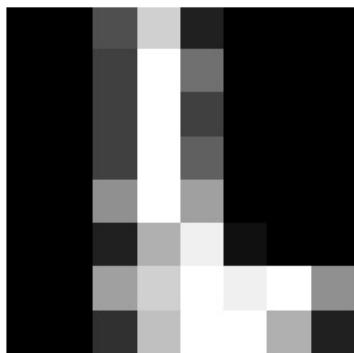
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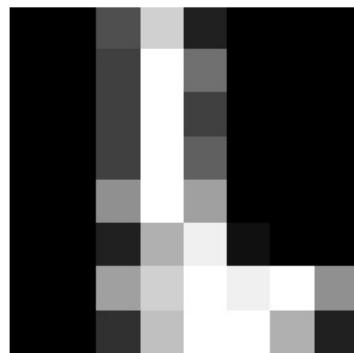
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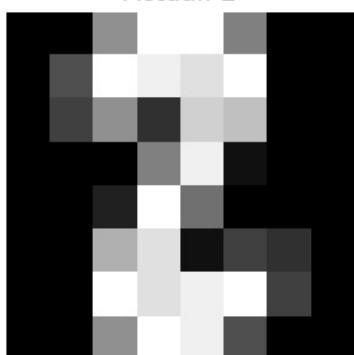
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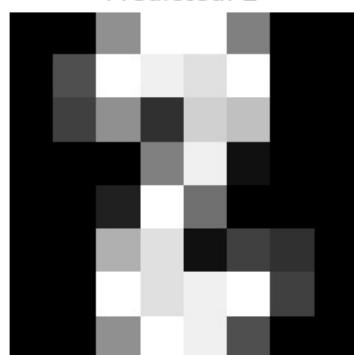
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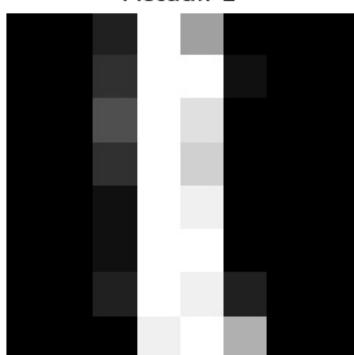
Actual: 2



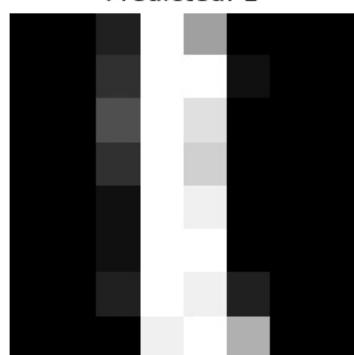
Predicted: 2



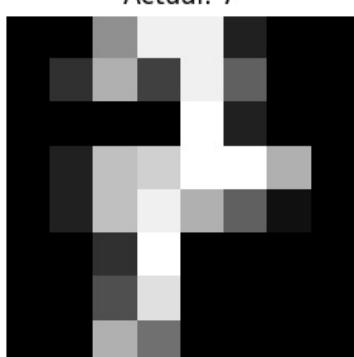
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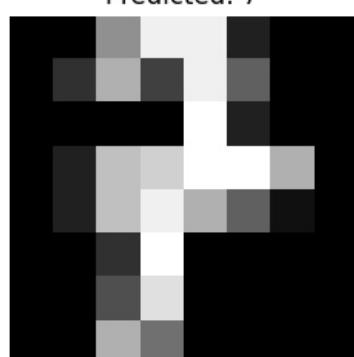
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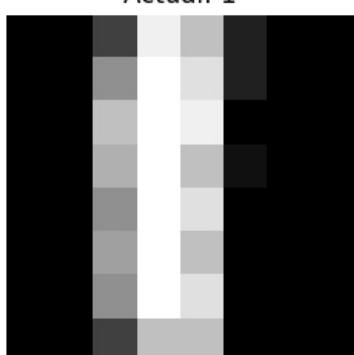
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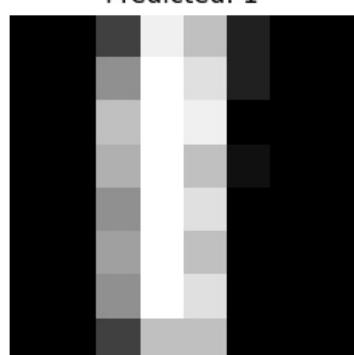
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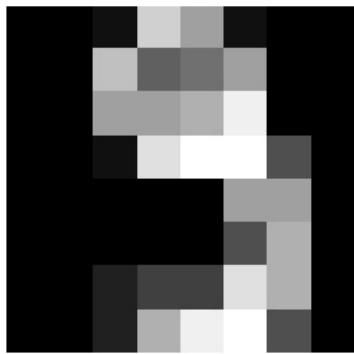
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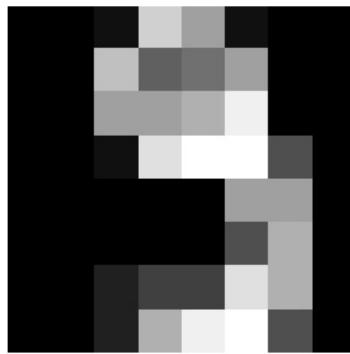
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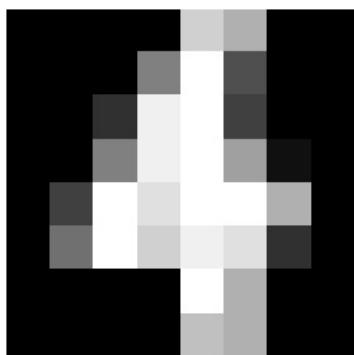
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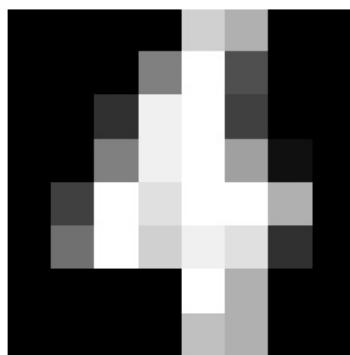
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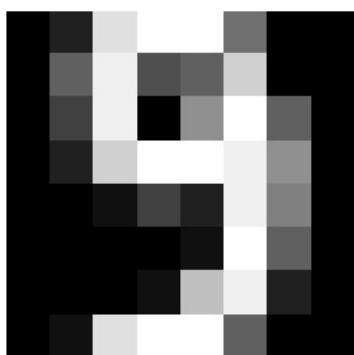
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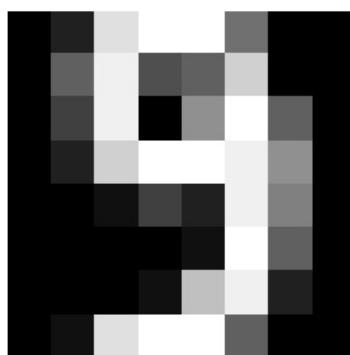
Predicted: 4



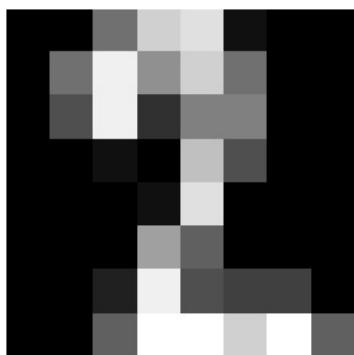
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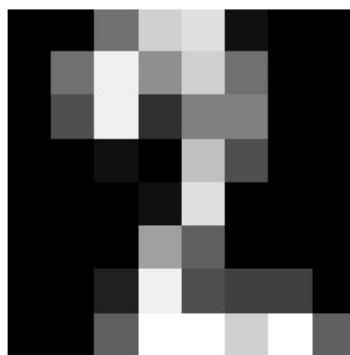
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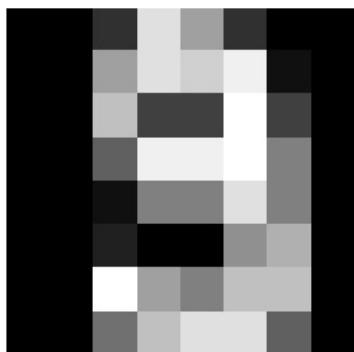
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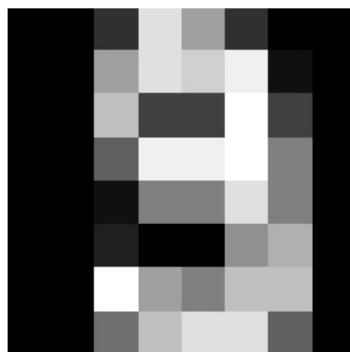
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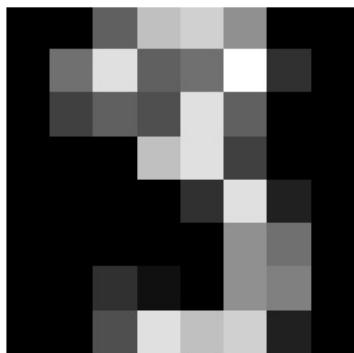
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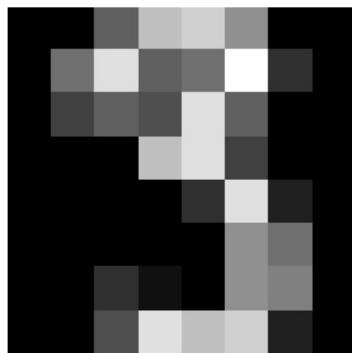
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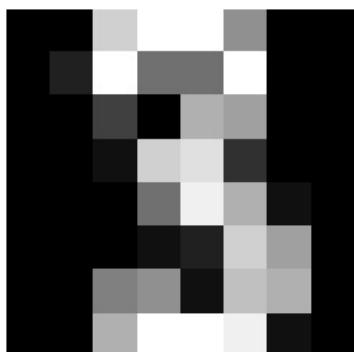
Actual: 3



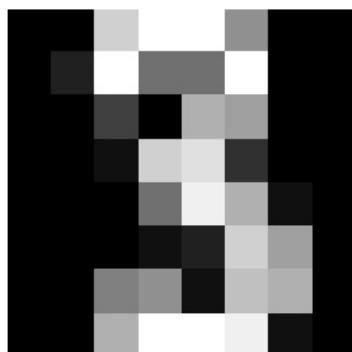
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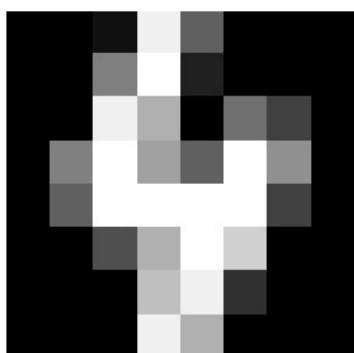
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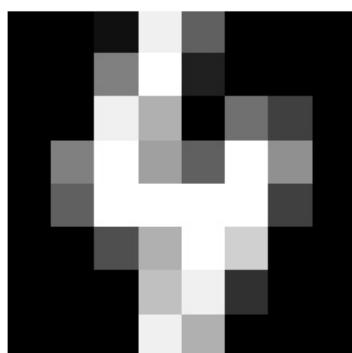
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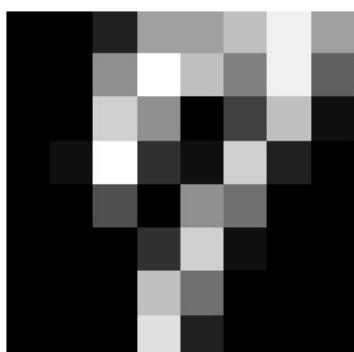
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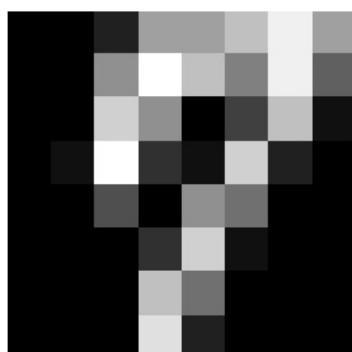
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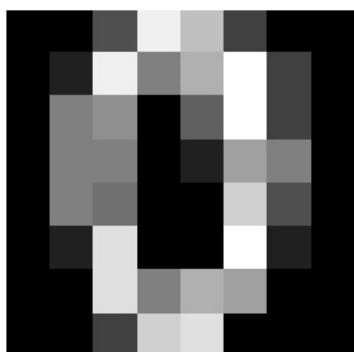
Actual: 7



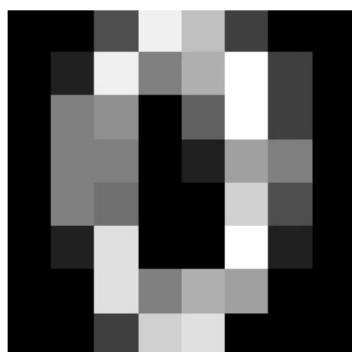
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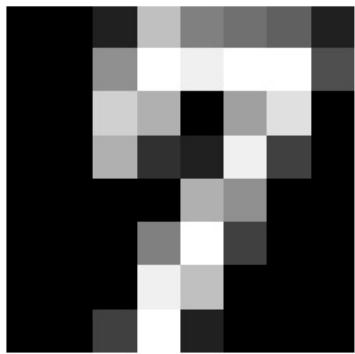
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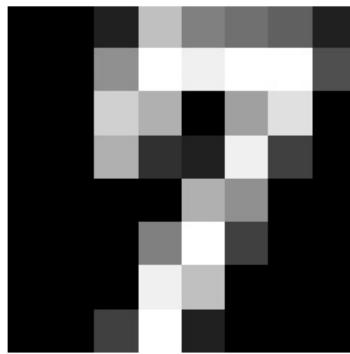
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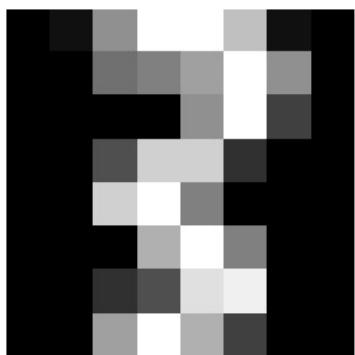
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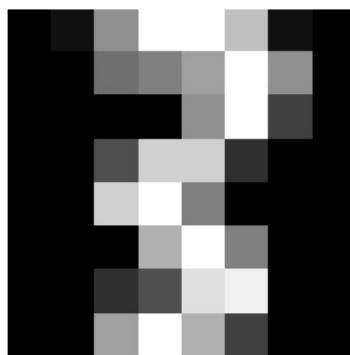
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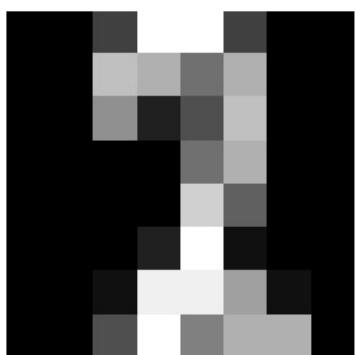
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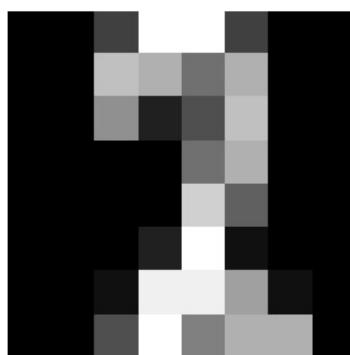
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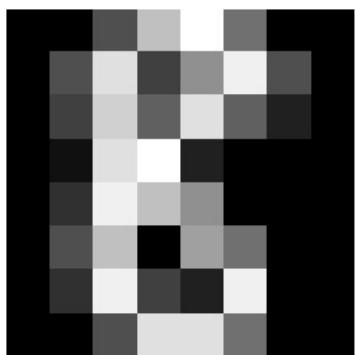
Actual: 2



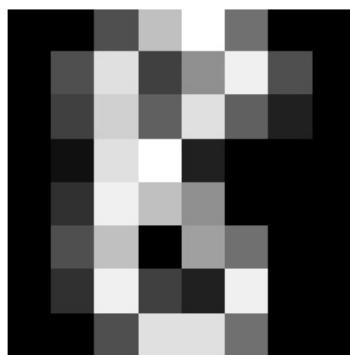
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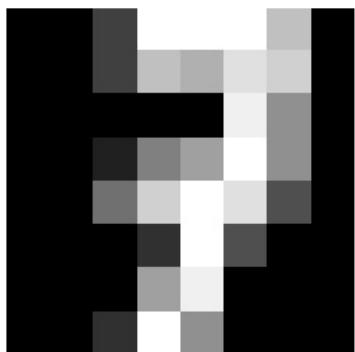
Actual: 8



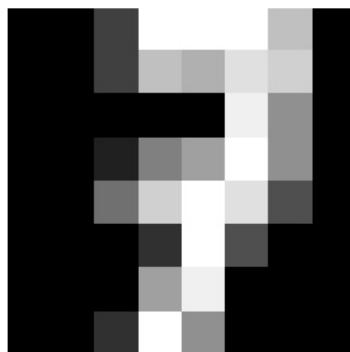
Predicted: 8



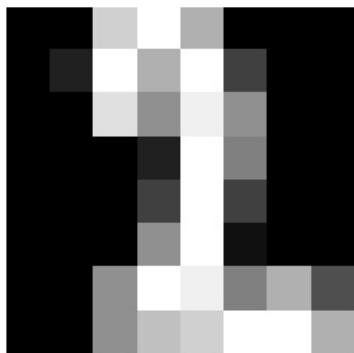
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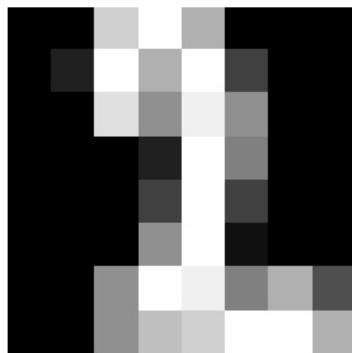
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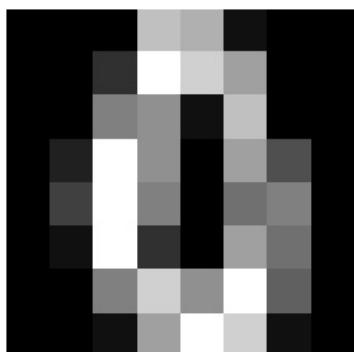
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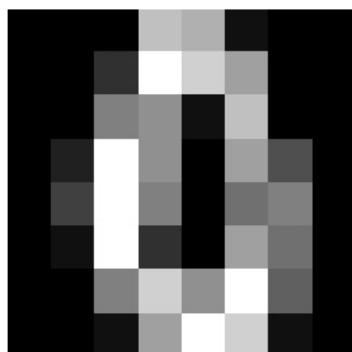
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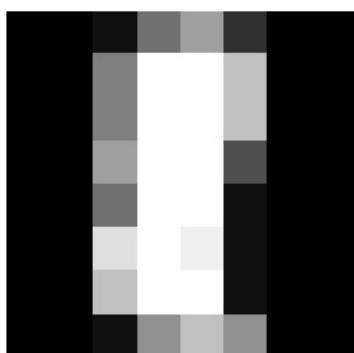
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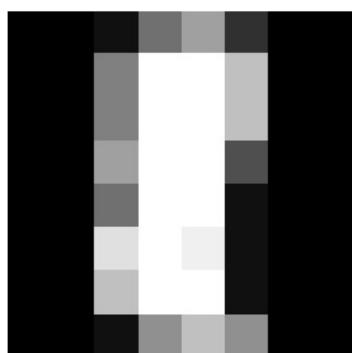
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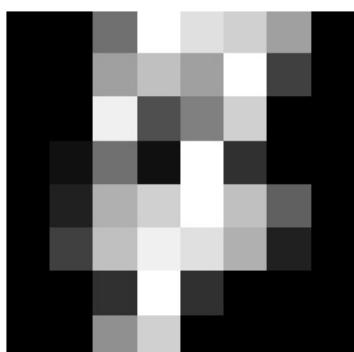
Actual: 1



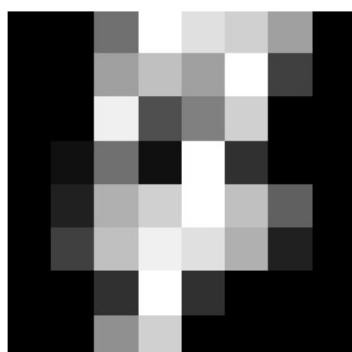
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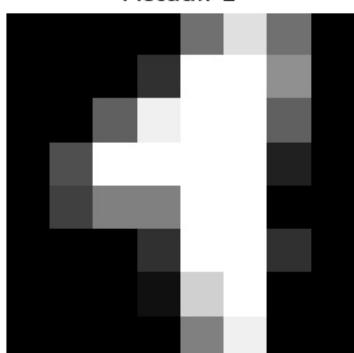
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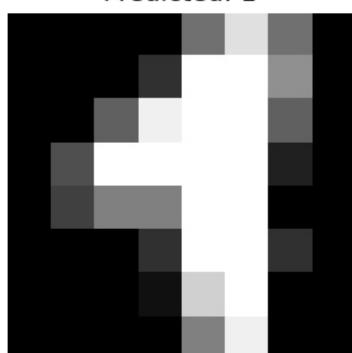
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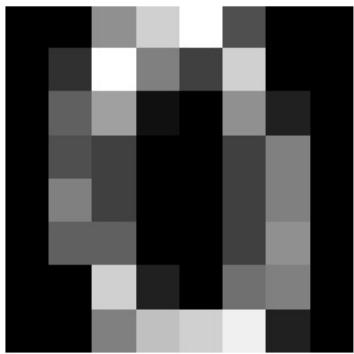
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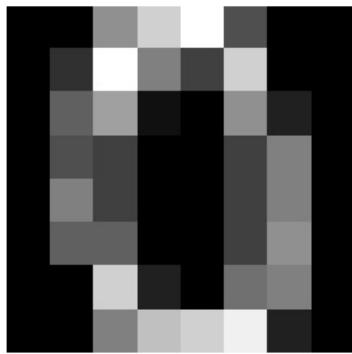
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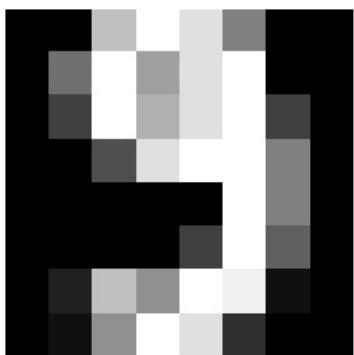
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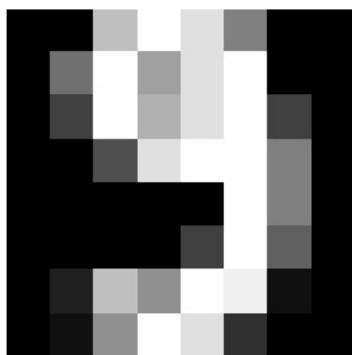
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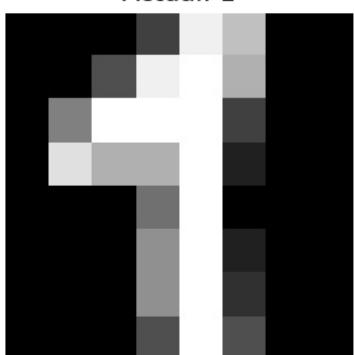
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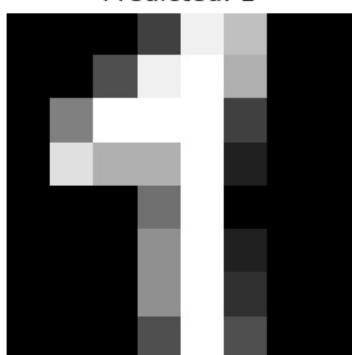
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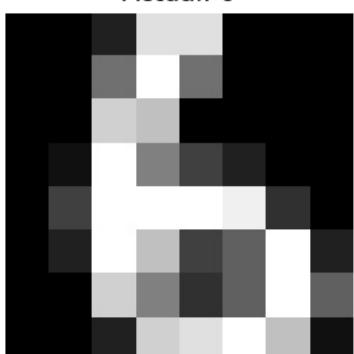
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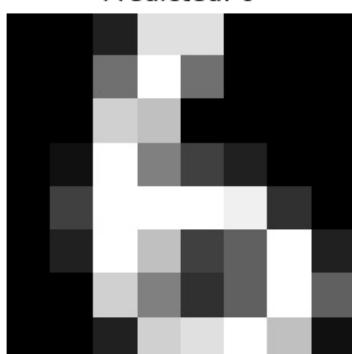
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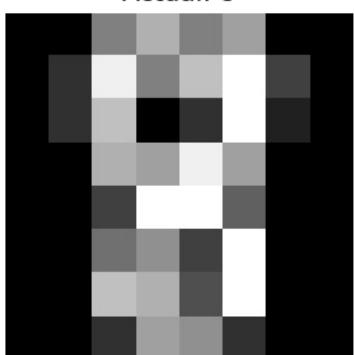
Actual: 6



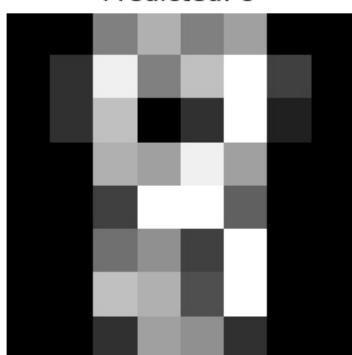
Predicted: 6



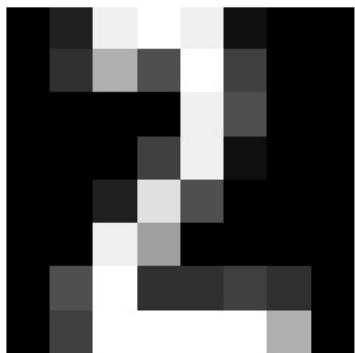
Actual: 8



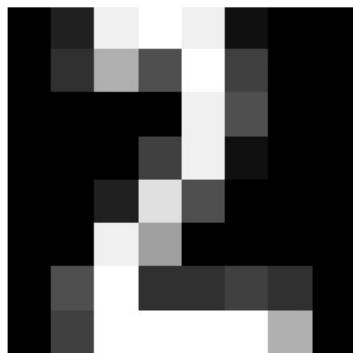
Predicted: 8



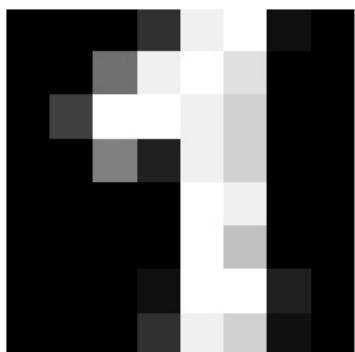
Actual: 2



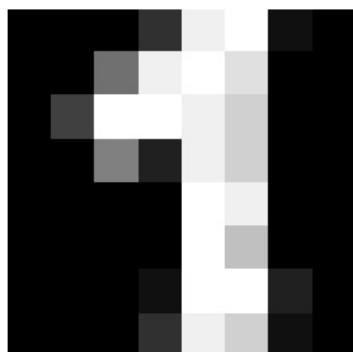
Predicted: 2



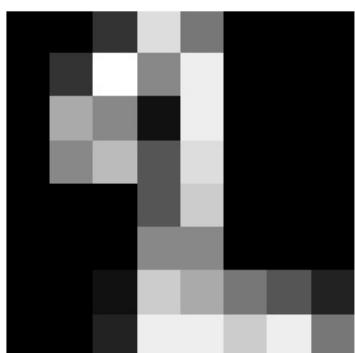
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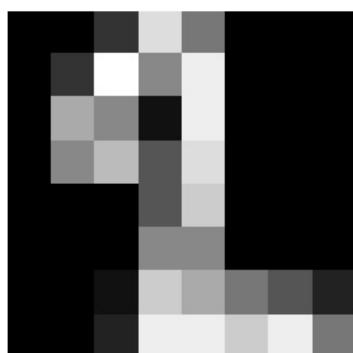
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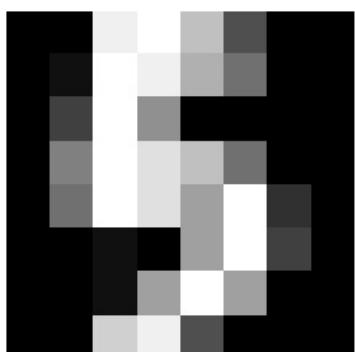
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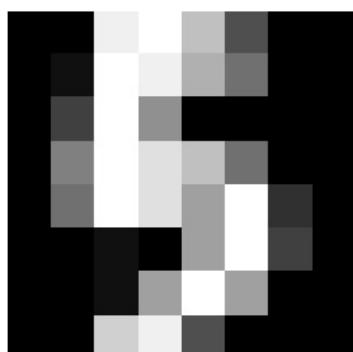
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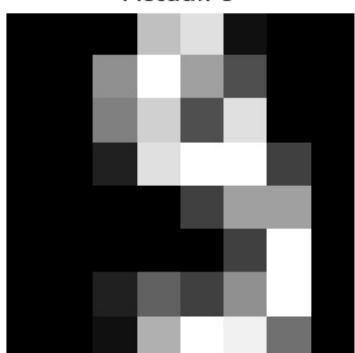
Actual: 5



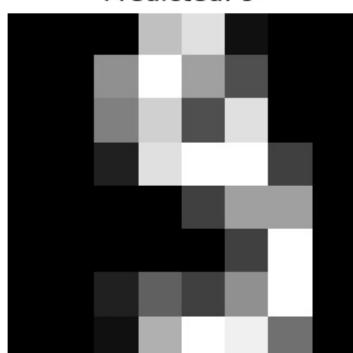
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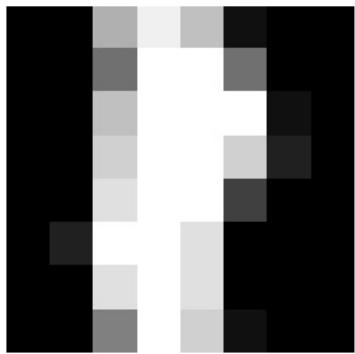
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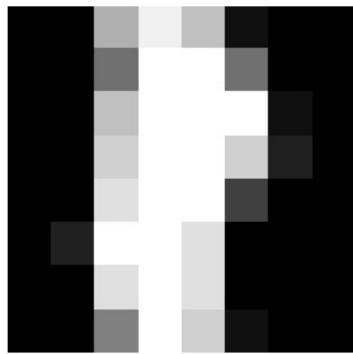
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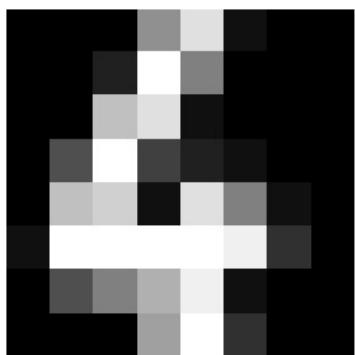
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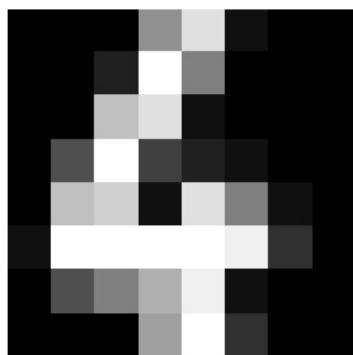
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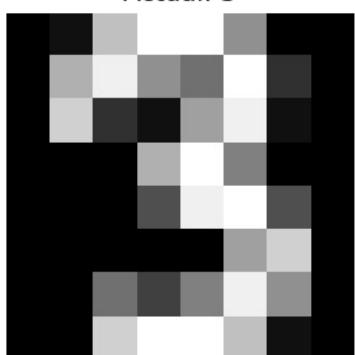
Actual: 4



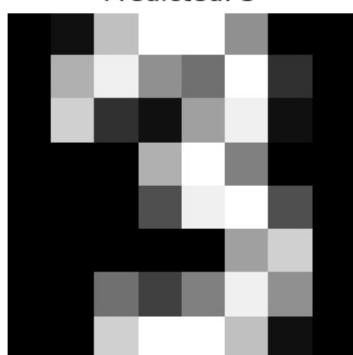
Predicted: 4



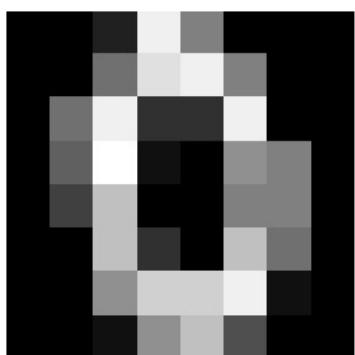
Actual: 3



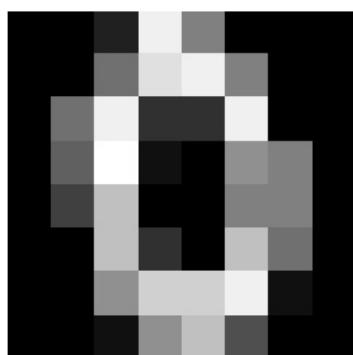
Predicted: 3



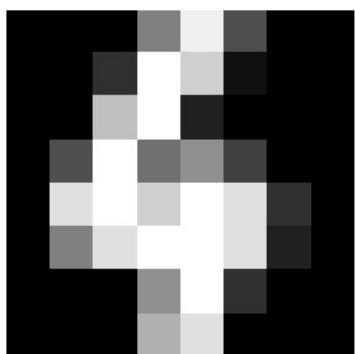
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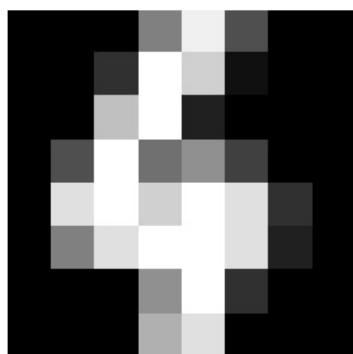
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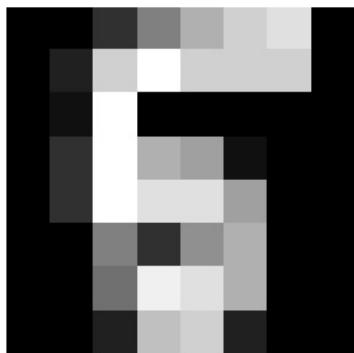
Actual: 4



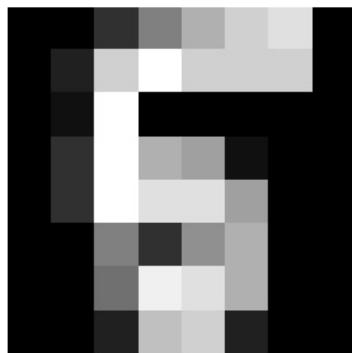
Predicted: 4



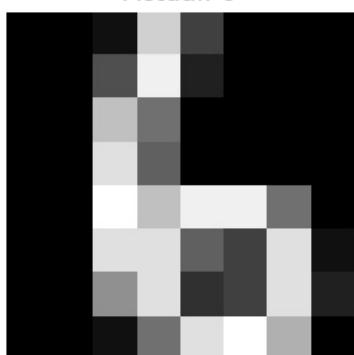
Actual: 5



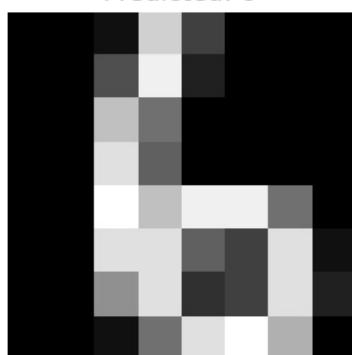
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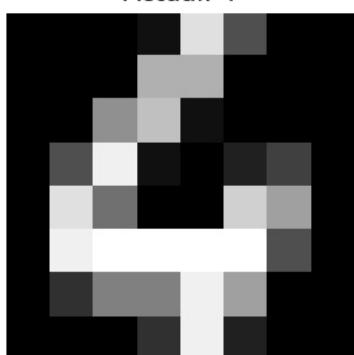
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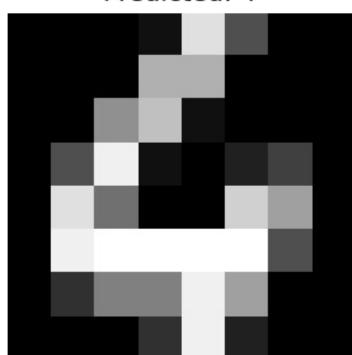
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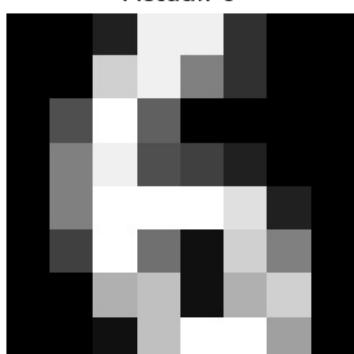
Actual: 4



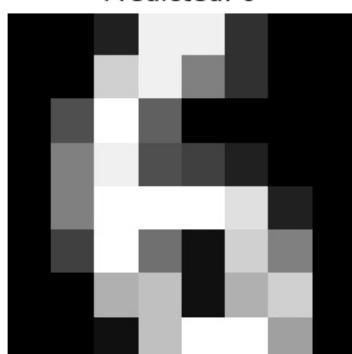
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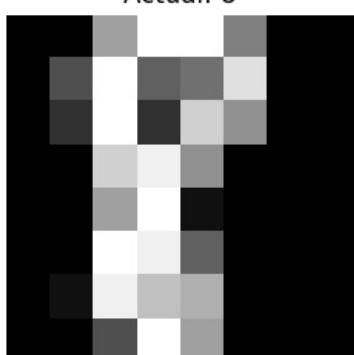
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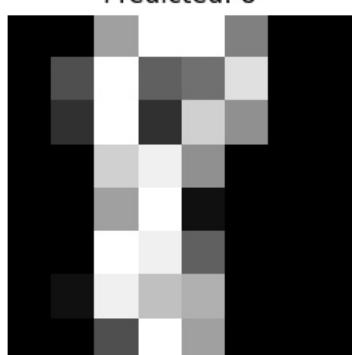
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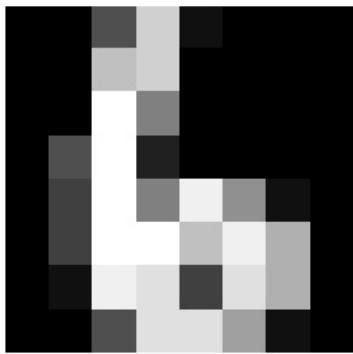
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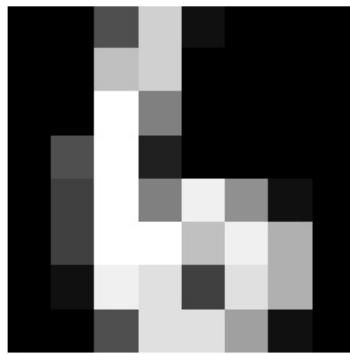
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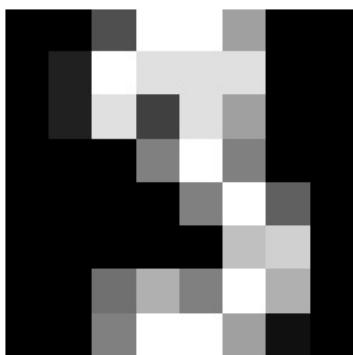
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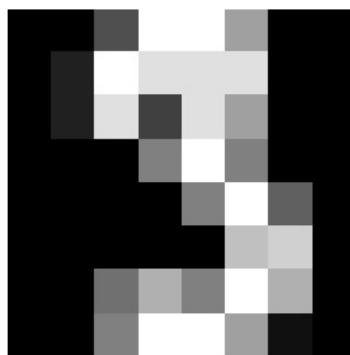
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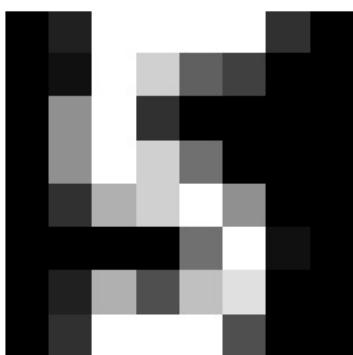
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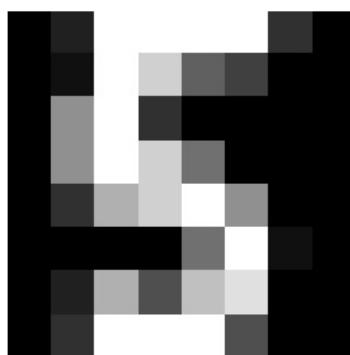
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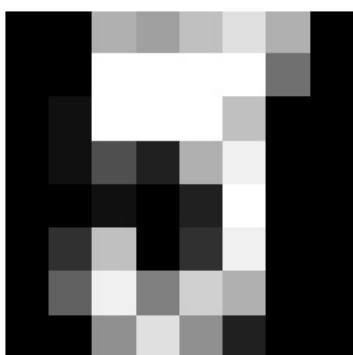
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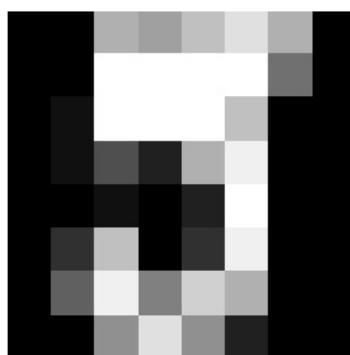
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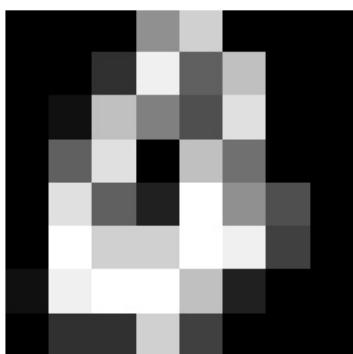
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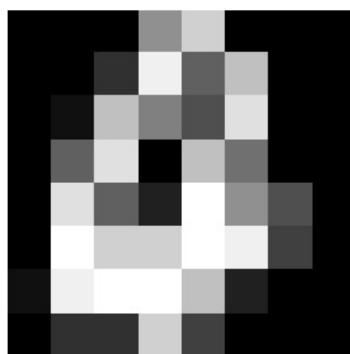
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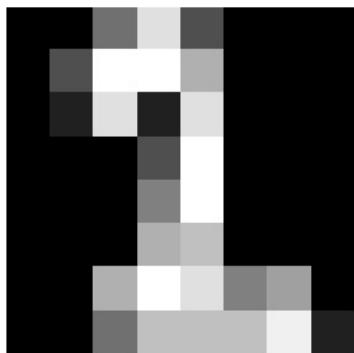
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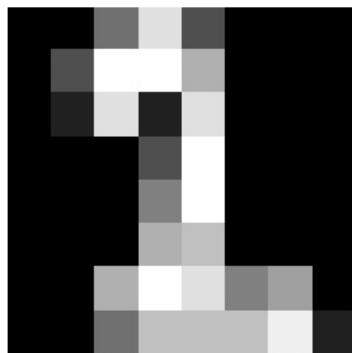
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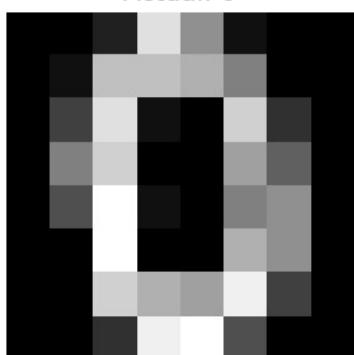
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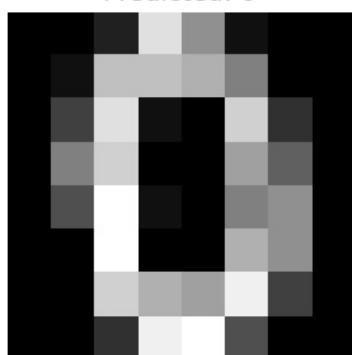
Predicted: 2



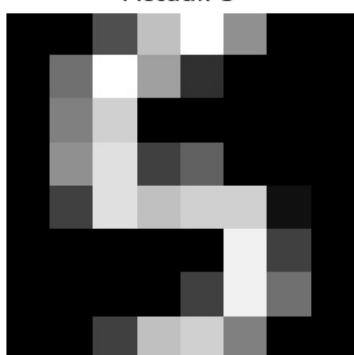
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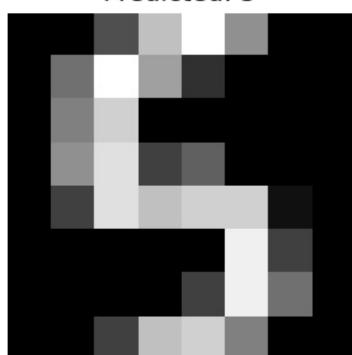
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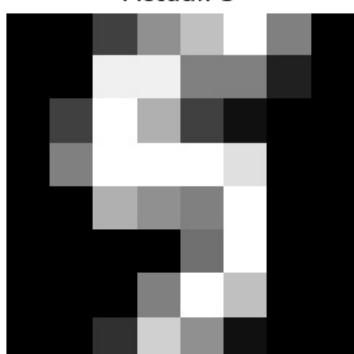
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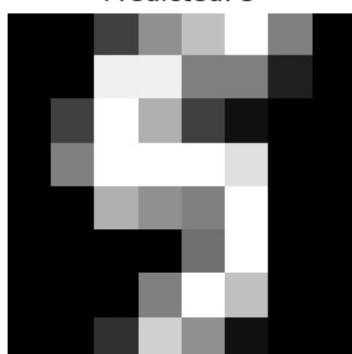
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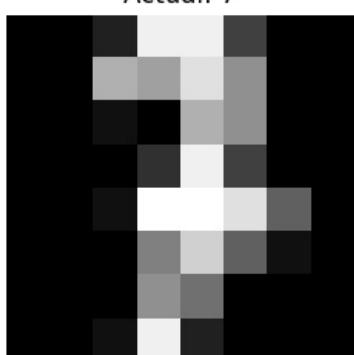
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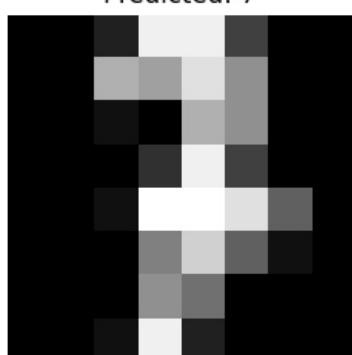
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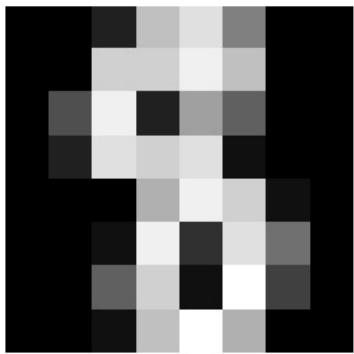
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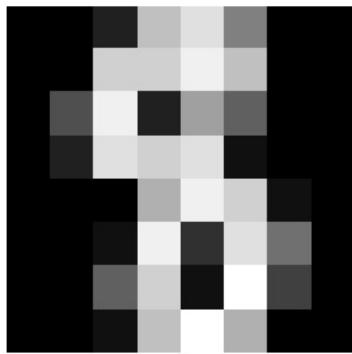
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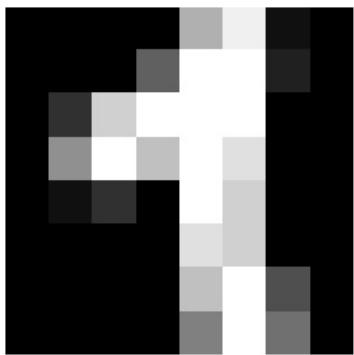
Actual: 8



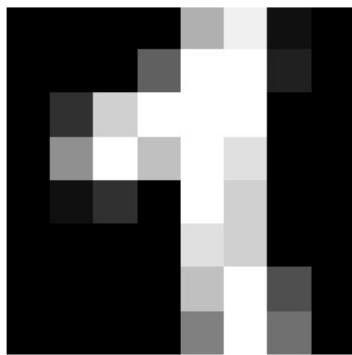
Predicted: 8



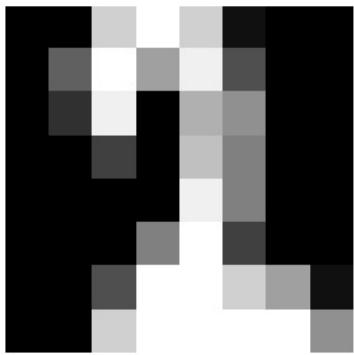
Actual: 1



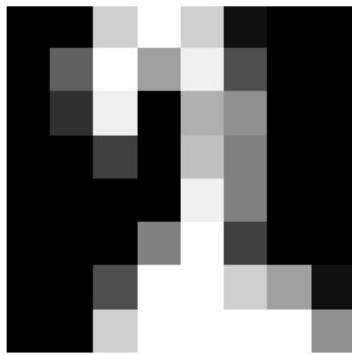
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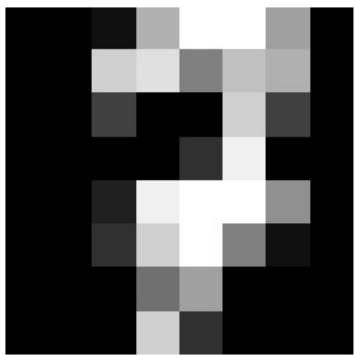
Actual: 2



Predicted: 2



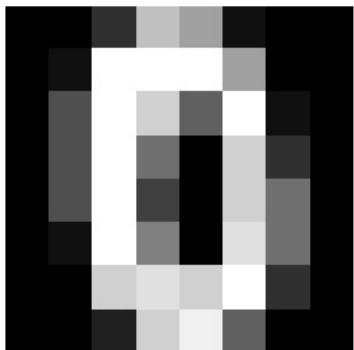
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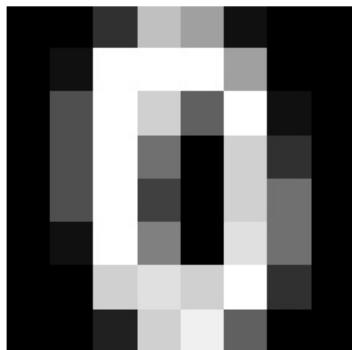
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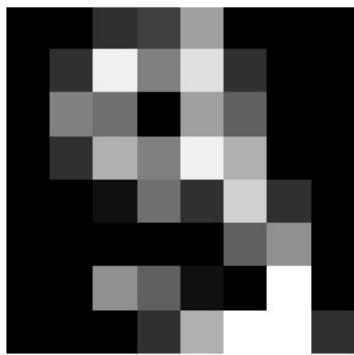
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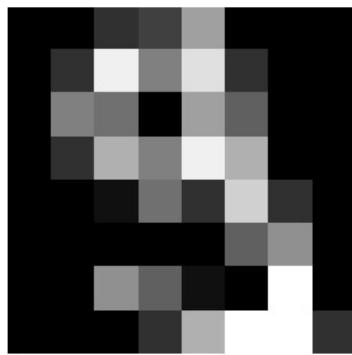
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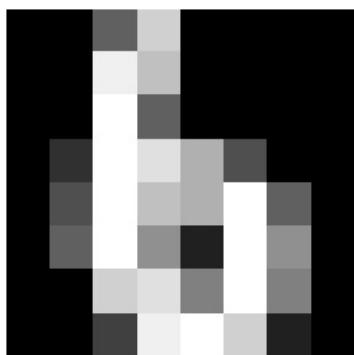
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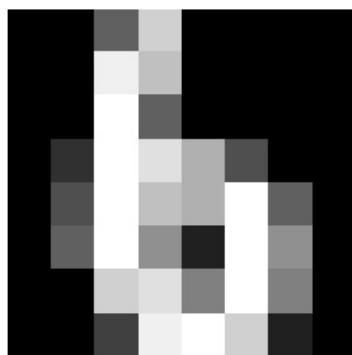
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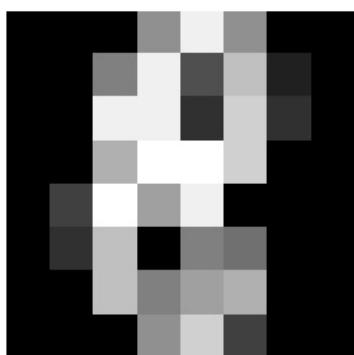
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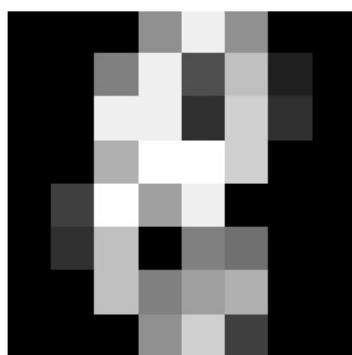
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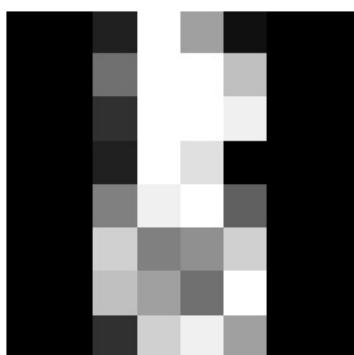
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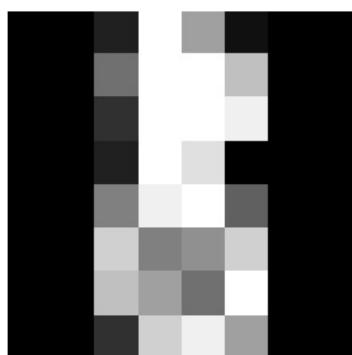
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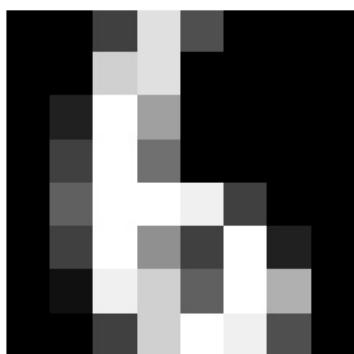
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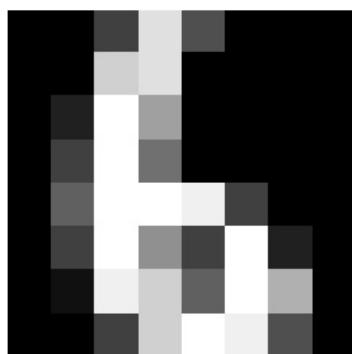
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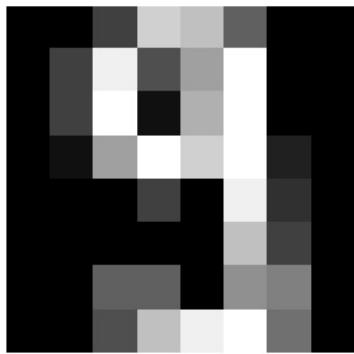
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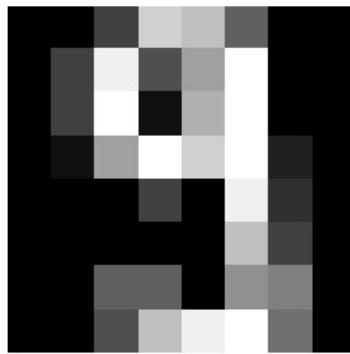
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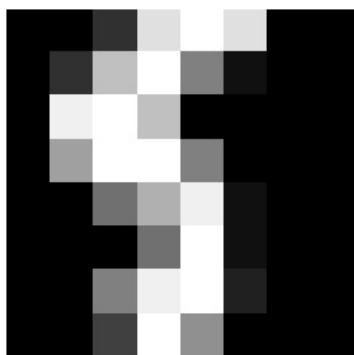
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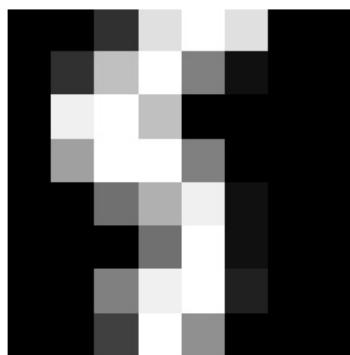
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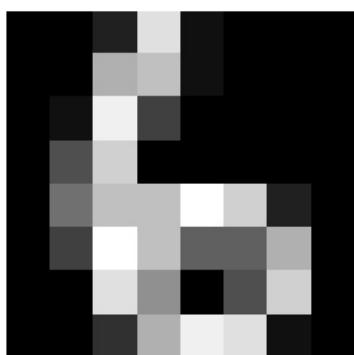
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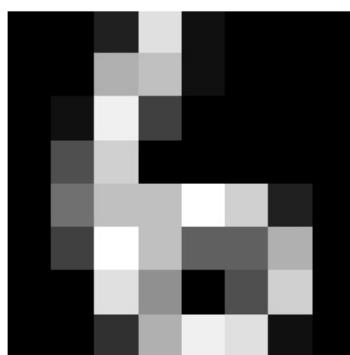
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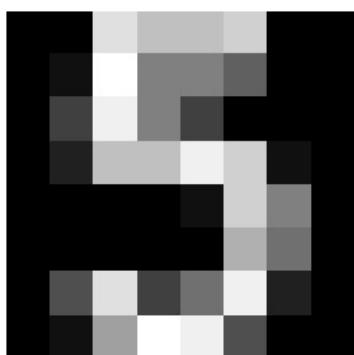
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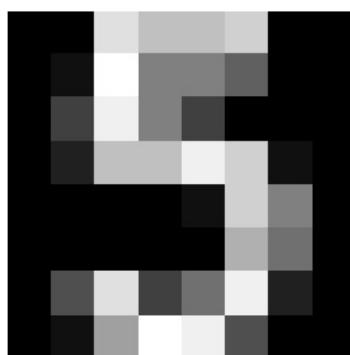
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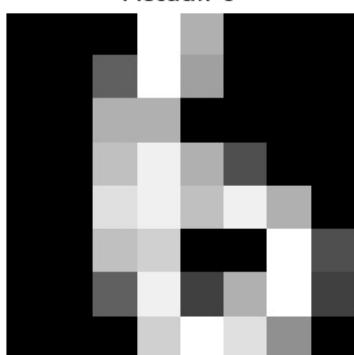
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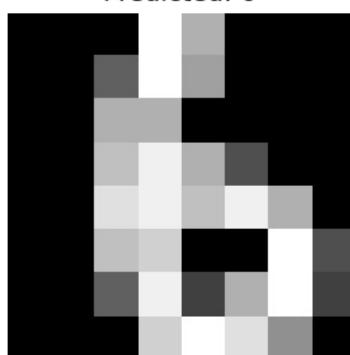
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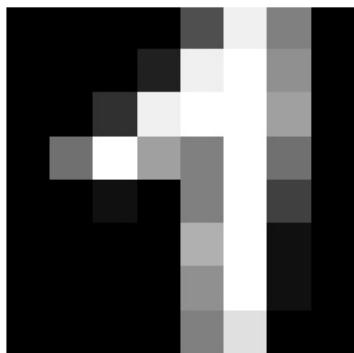
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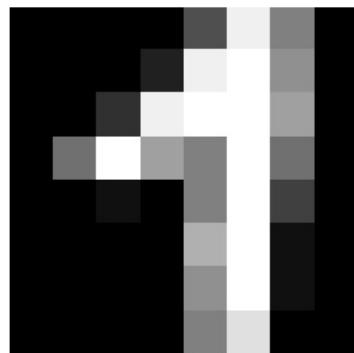
Predicted: 6



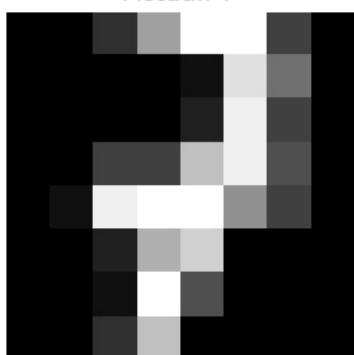
Actual: 1



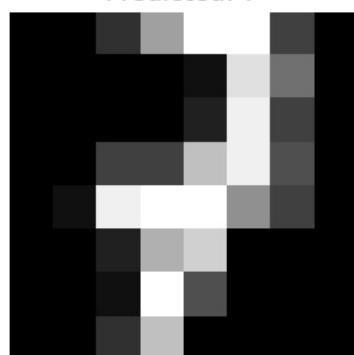
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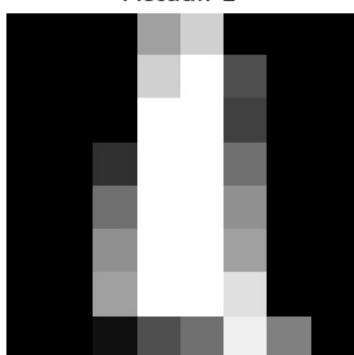
Actual: 7



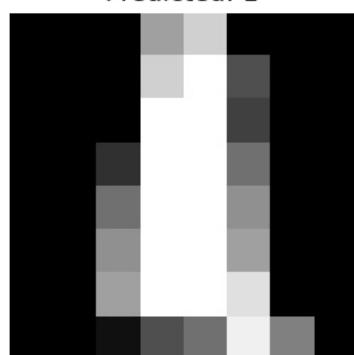
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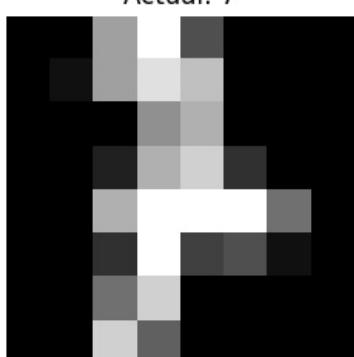
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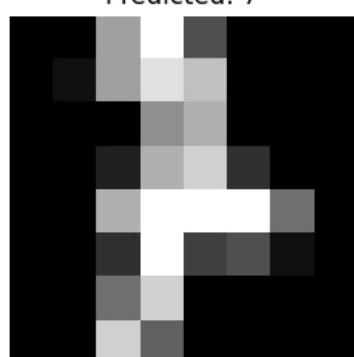
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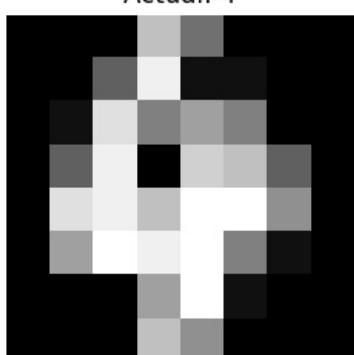
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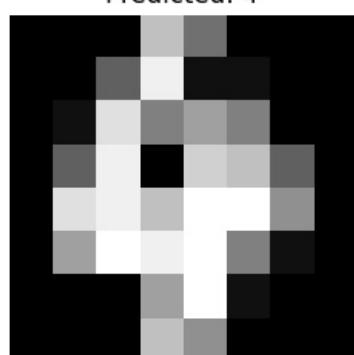
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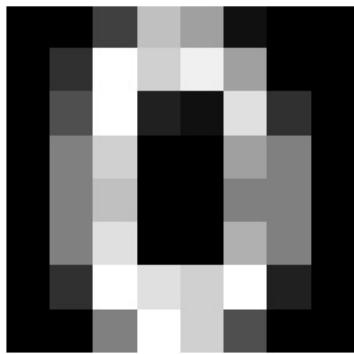
Actual: 4



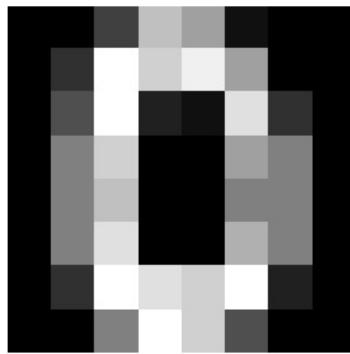
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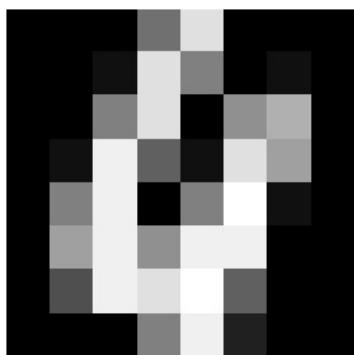
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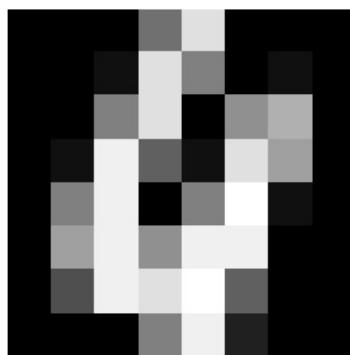
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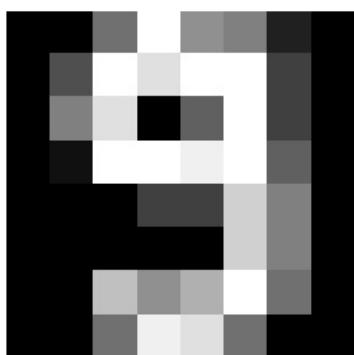
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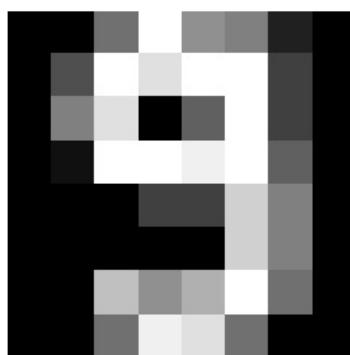
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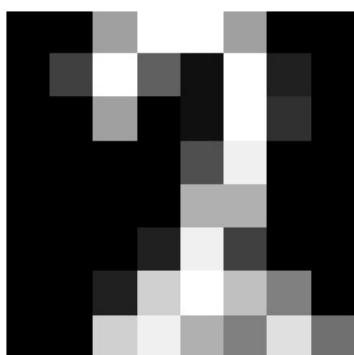
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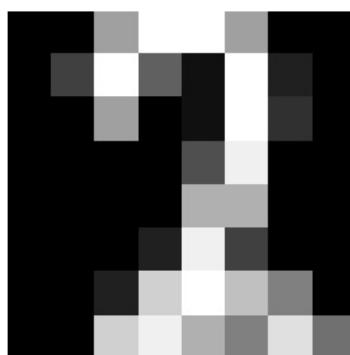
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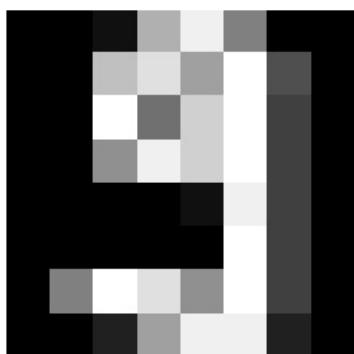
Actual: 2



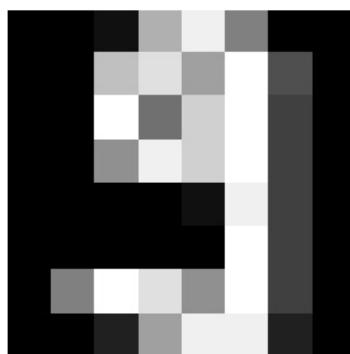
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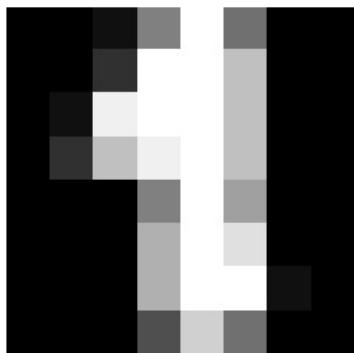
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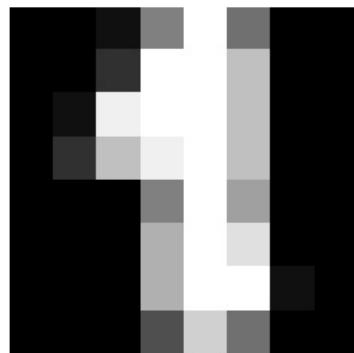
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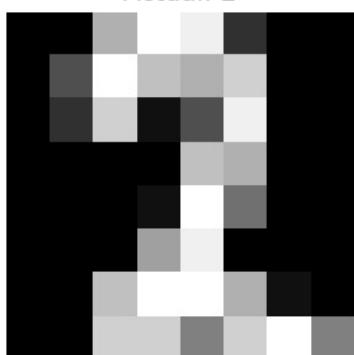
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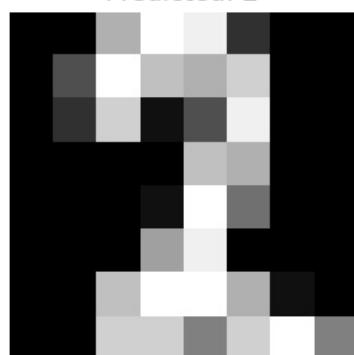
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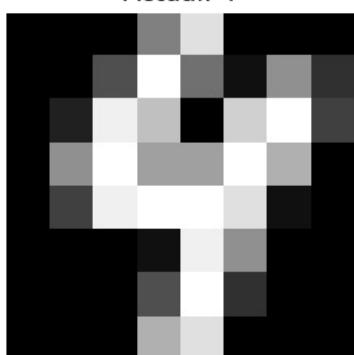
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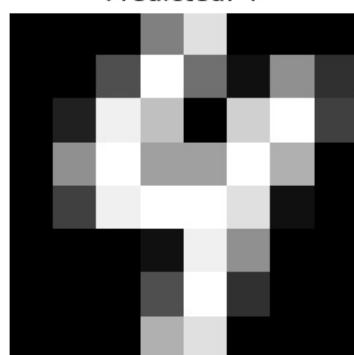
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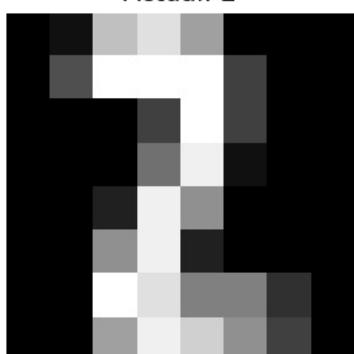
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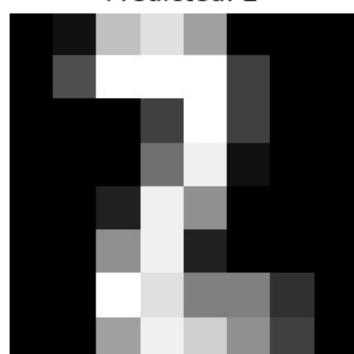
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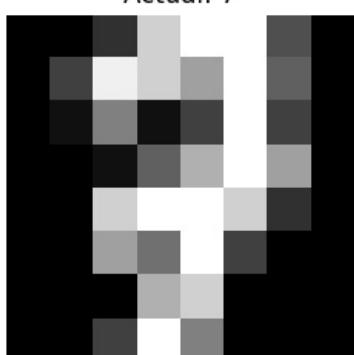
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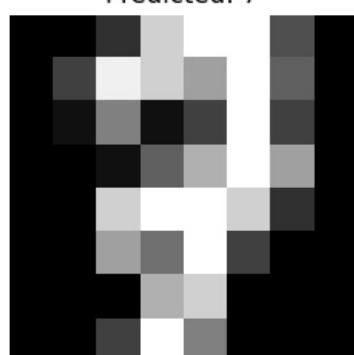
Predicted: 2



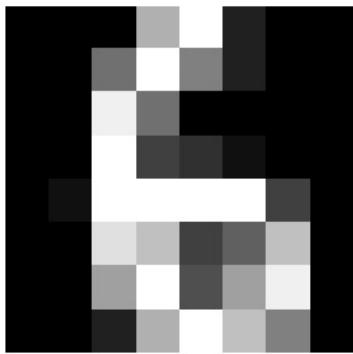
Actual: 7



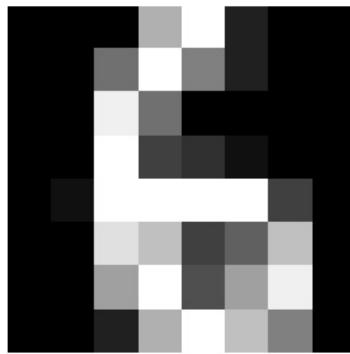
Predicted: 7



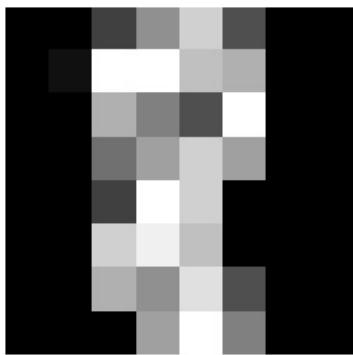
Actual: 6



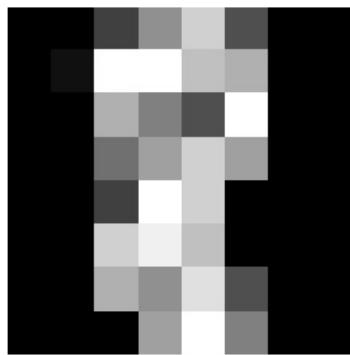
Predicted: 6



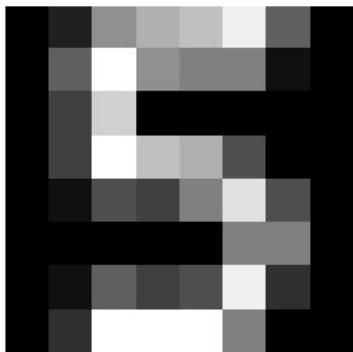
Actual: 8



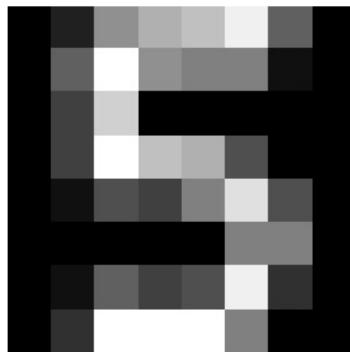
Predicted: 8



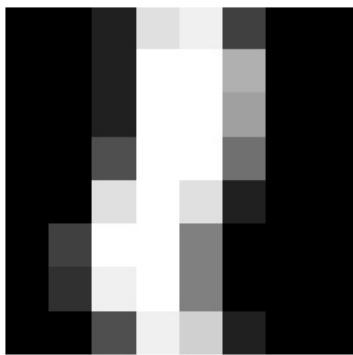
Actual: 5



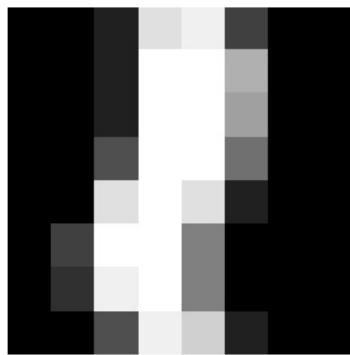
Predicted: 5



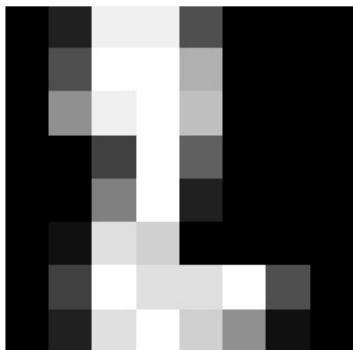
Actual: 1



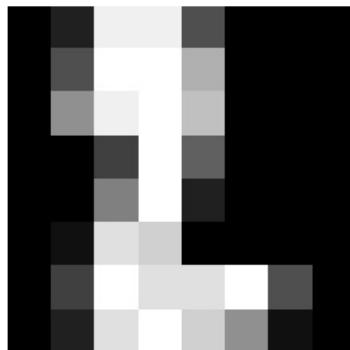
Predicted: 1



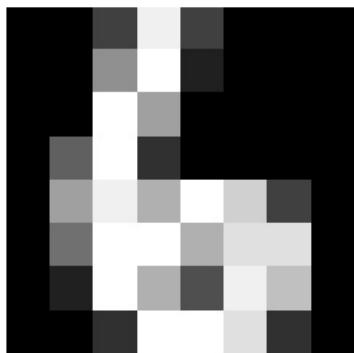
Actual: 2



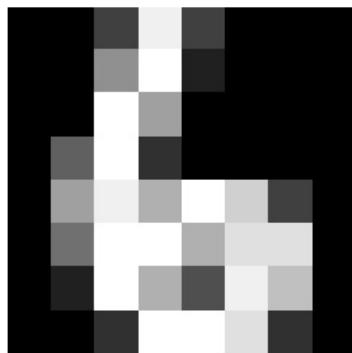
Predicted: 2



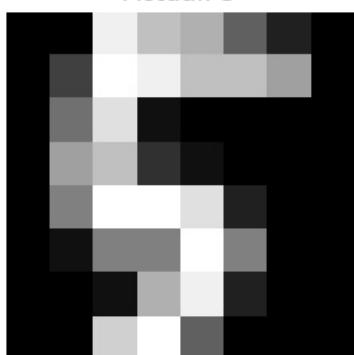
Actual: 6



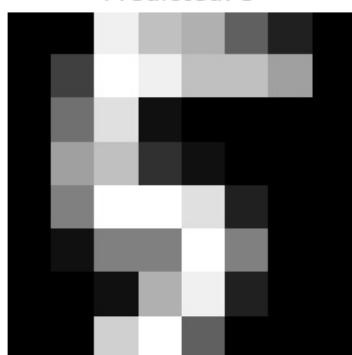
Predicted: 6



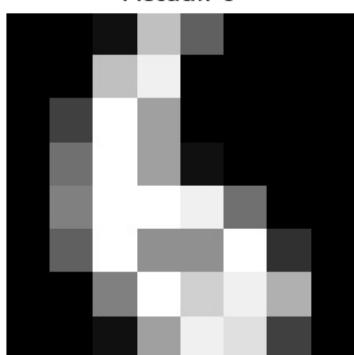
Actual: 5



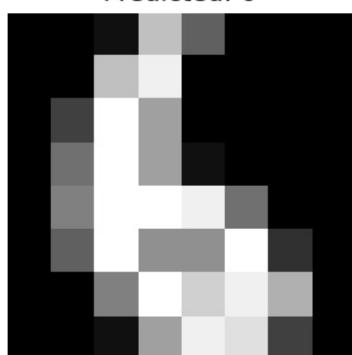
Predicted: 5



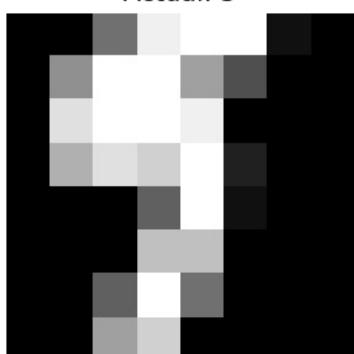
Actual: 6



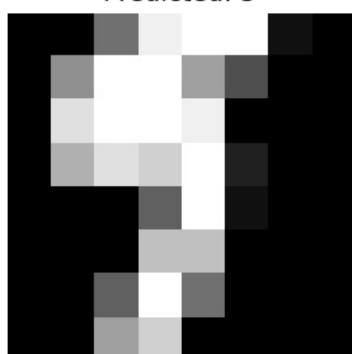
Predicted: 6



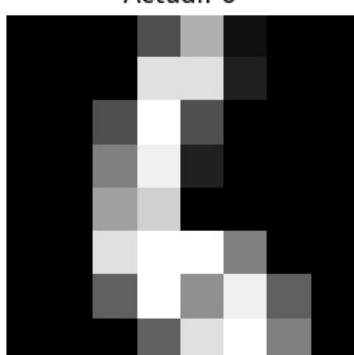
Actual: 5



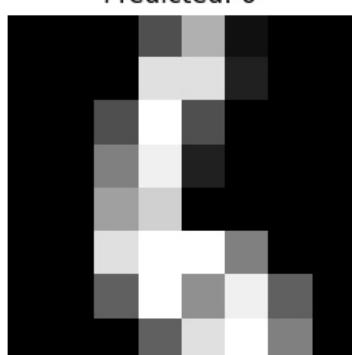
Predicted: 5



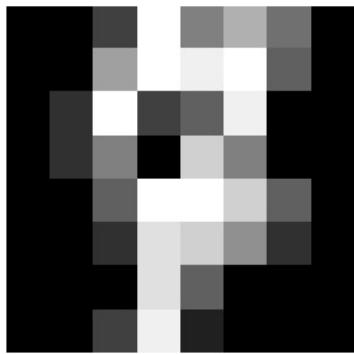
Actual: 6



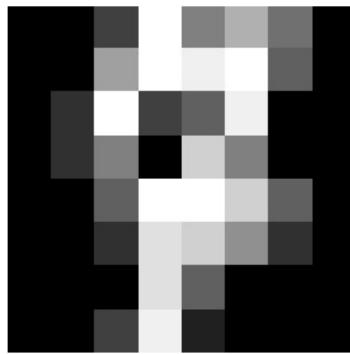
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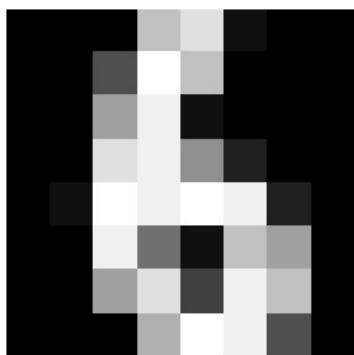
Actual: 7



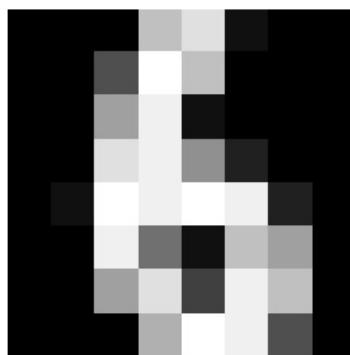
Predicted: 7



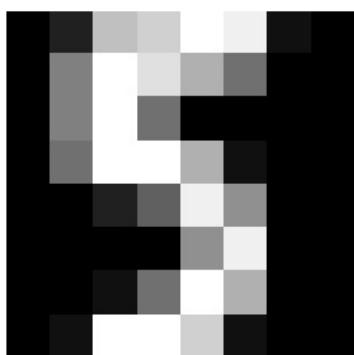
Actual: 6



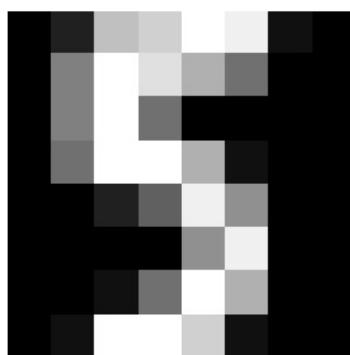
Predicted: 6



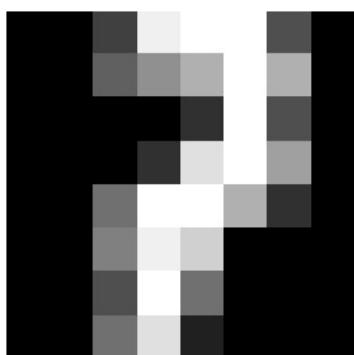
Actual: 5



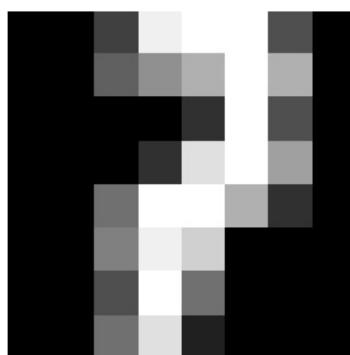
Predicted: 5



Actual: 7



Predicted: 7



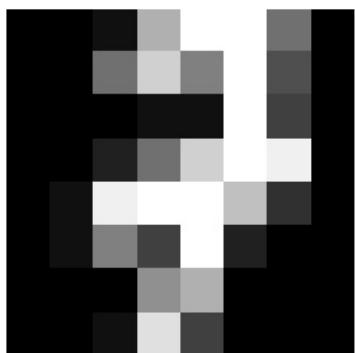
Actual: 2



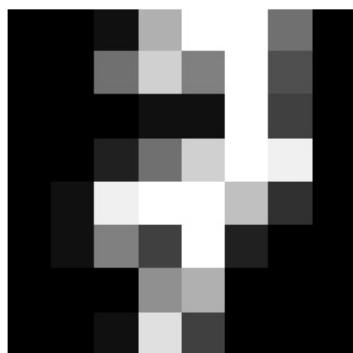
Predicted: 2



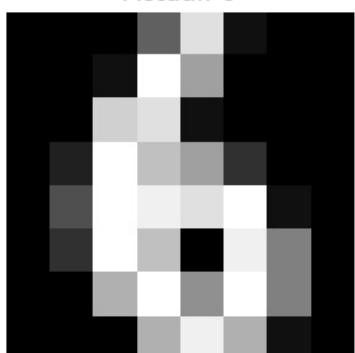
Actual: 7



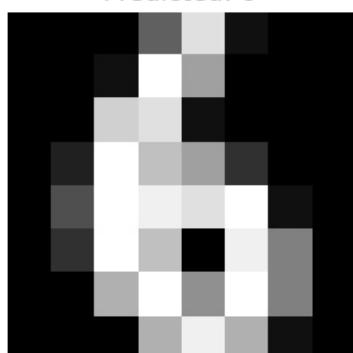
Predicted: 7



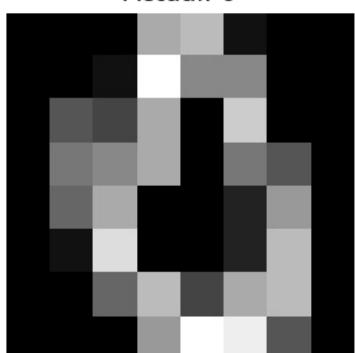
Actual: 6



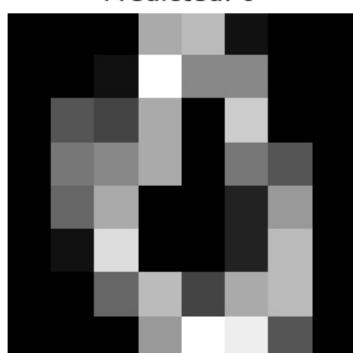
Predicted: 6



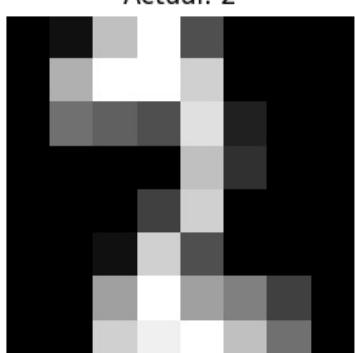
Actual: 0



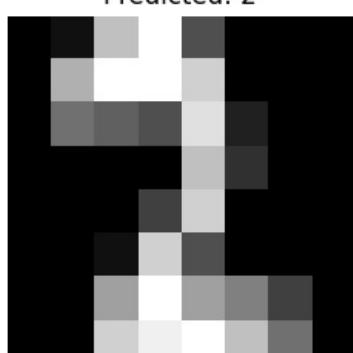
Predicted: 0



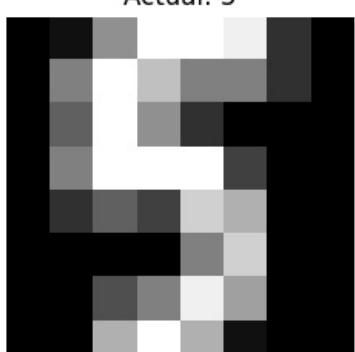
Actual: 2



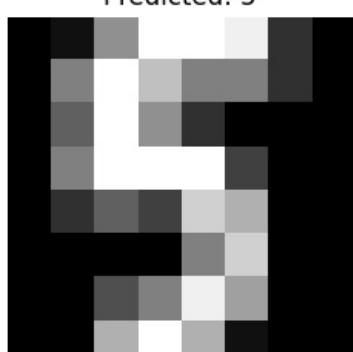
Predicted: 2



Actual: 5



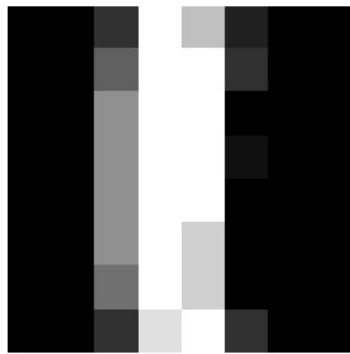
Predicted: 5



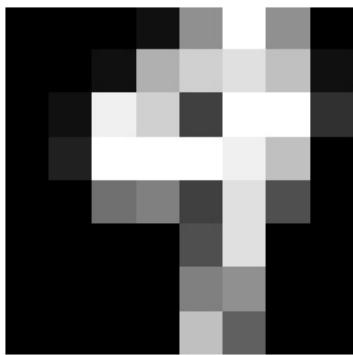
Actual: 1



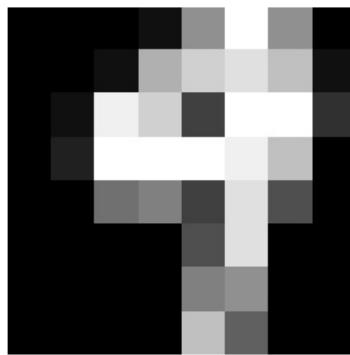
Predicted: 1



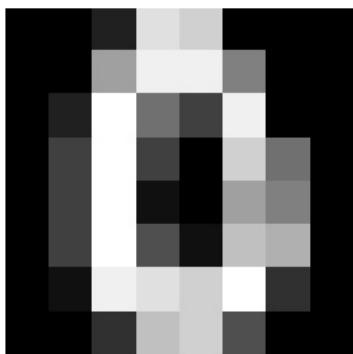
Actual: 9



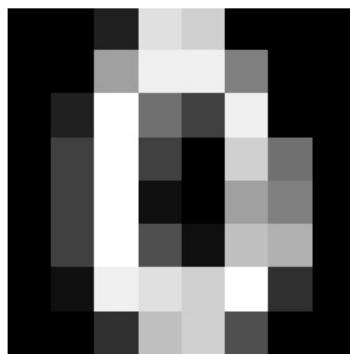
Predicted: 9



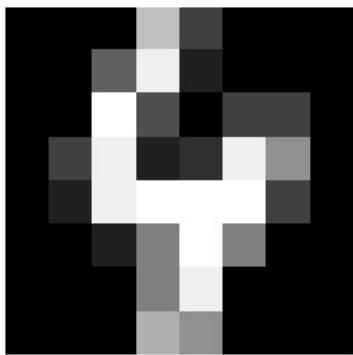
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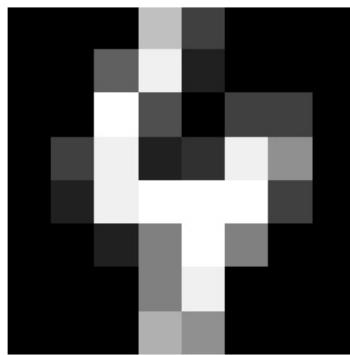
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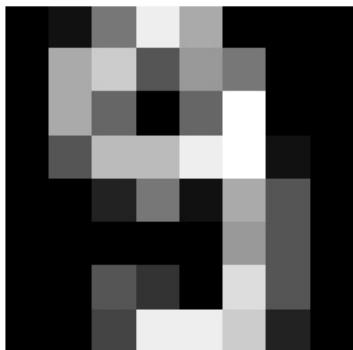
Actual: 4



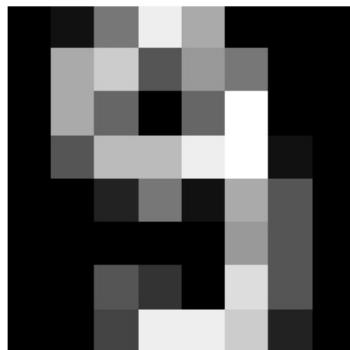
Predicted: 4



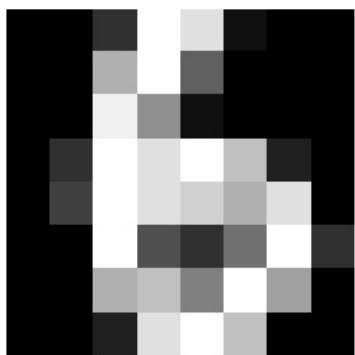
Actual: 9



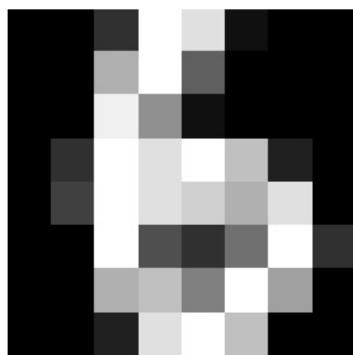
Predicted: 9



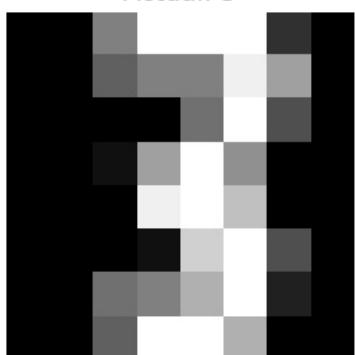
Actual: 6



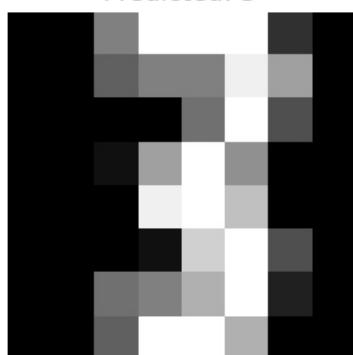
Predicted: 6



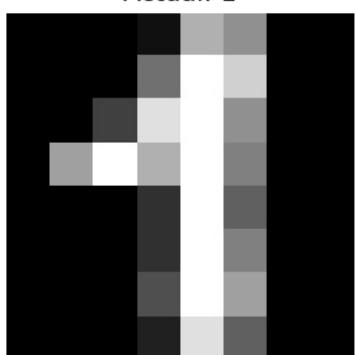
Actual: 3



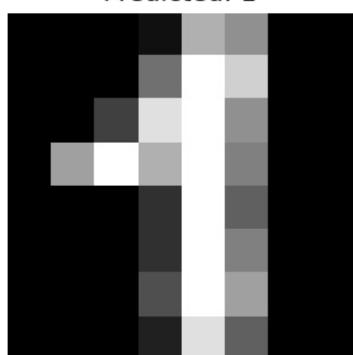
Predicted: 3



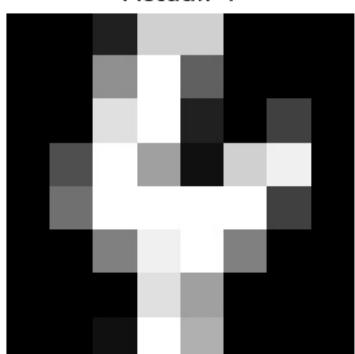
Actual: 1



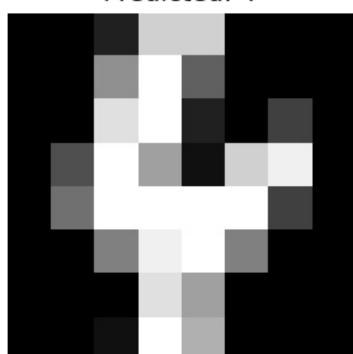
Predicted: 1



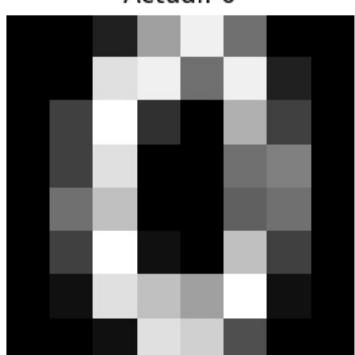
Actual: 4



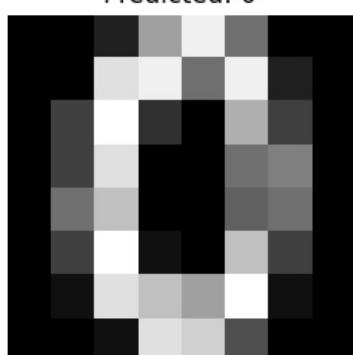
Predicted: 4



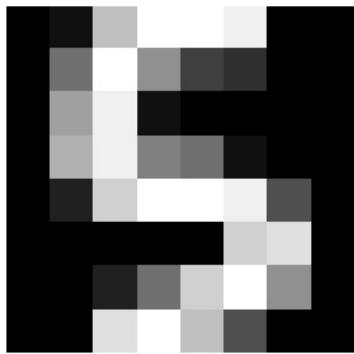
Actual: 0



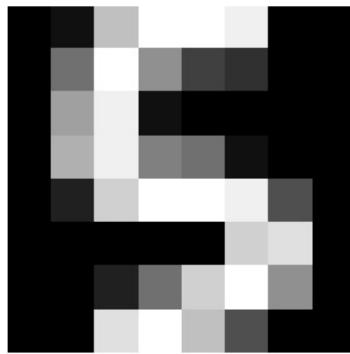
Predicted: 0



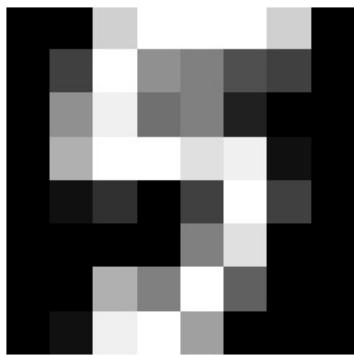
Actual: 5



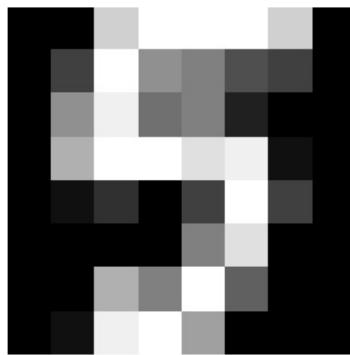
Predicted: 5



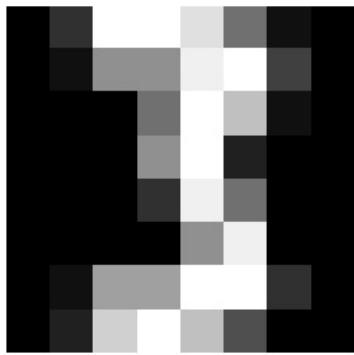
Actual: 5



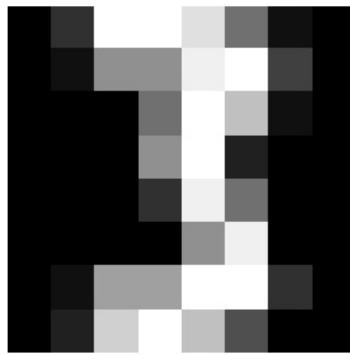
Predicted: 5



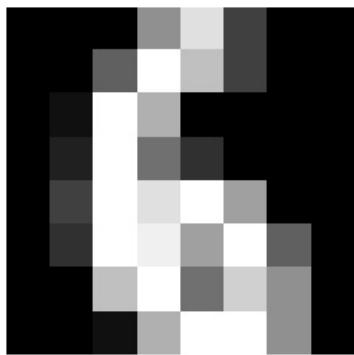
Actual: 3



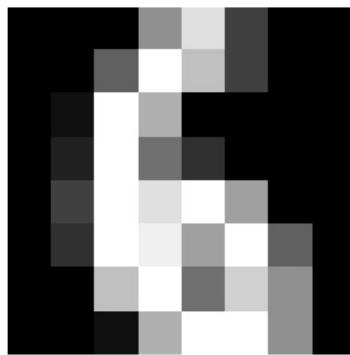
Predicted: 3



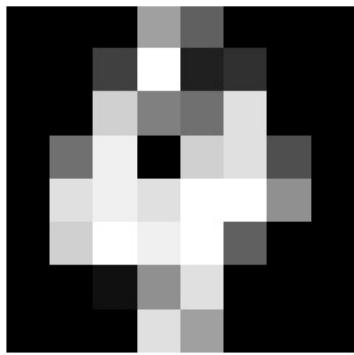
Actual: 6



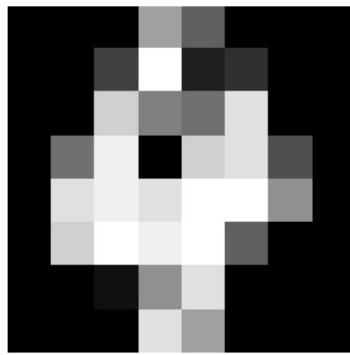
Predicted: 6



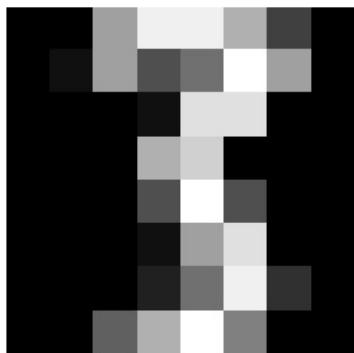
Actual: 4



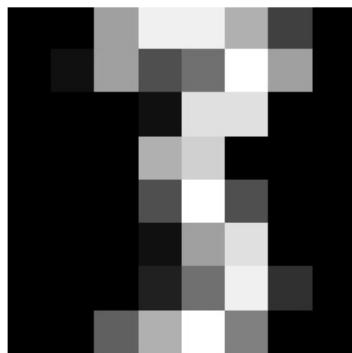
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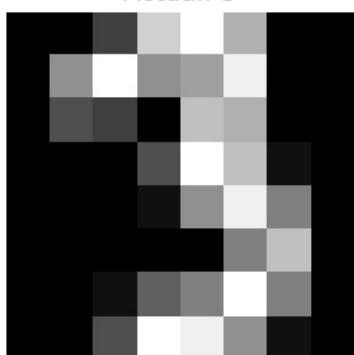
Actual: 3



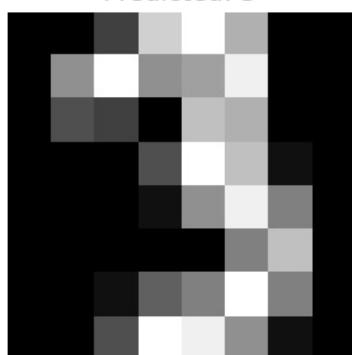
Predicted: 3



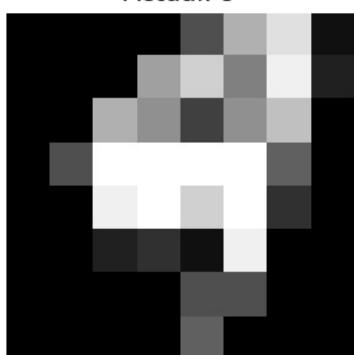
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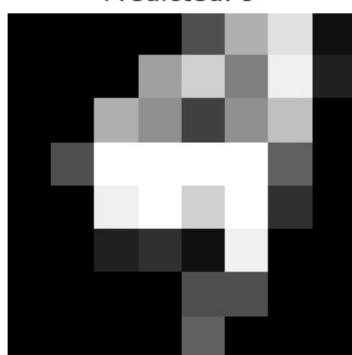
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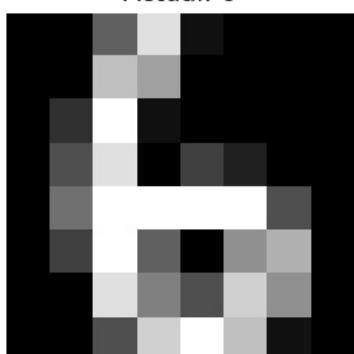
Actual: 9



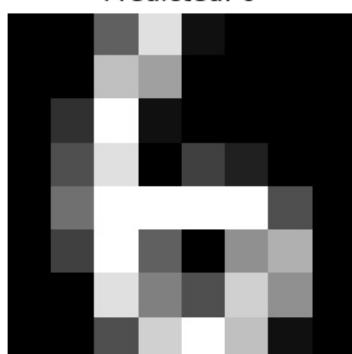
Predicted: 9



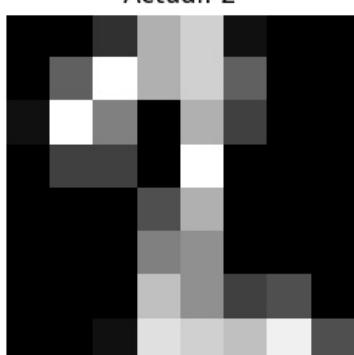
Actual: 6



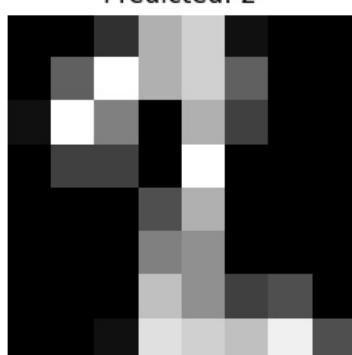
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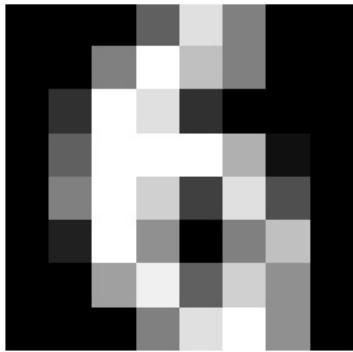
Actual: 2



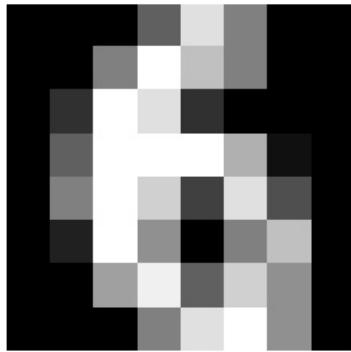
Predicted: 2



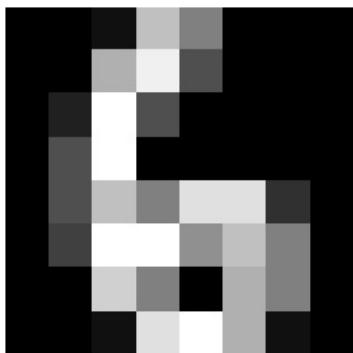
Actual: 6



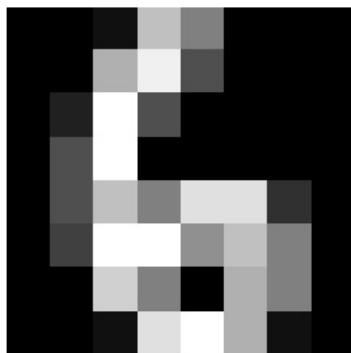
Predicted: 6



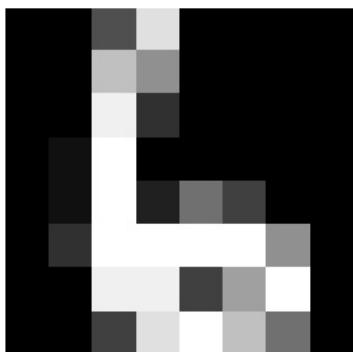
Actual: 6



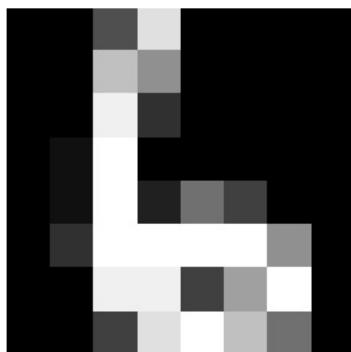
Predicted: 6



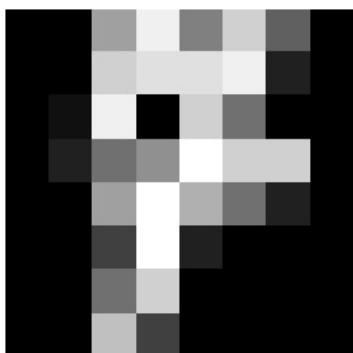
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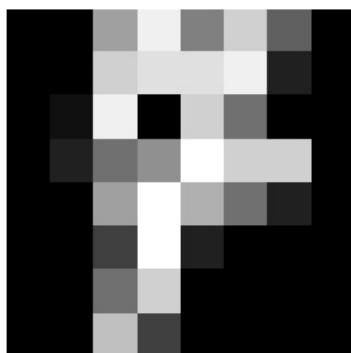
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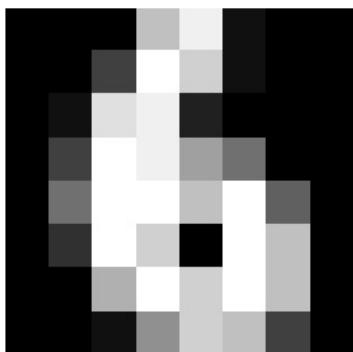
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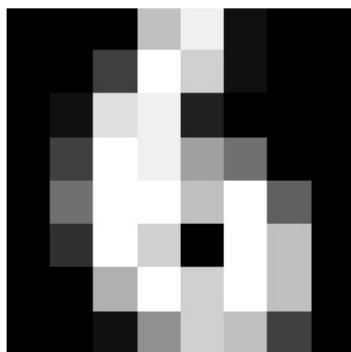
Predicted: 7



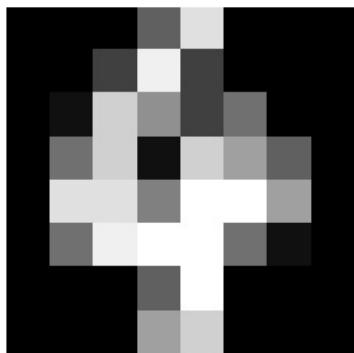
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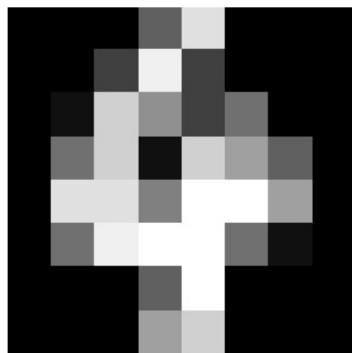
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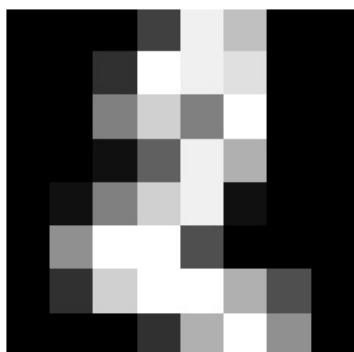
Actual: 4



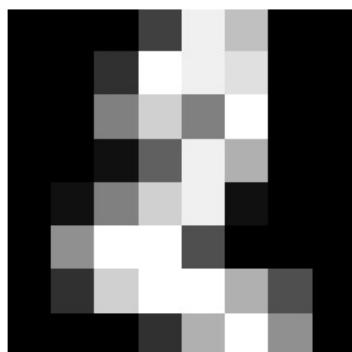
Predicted: 4



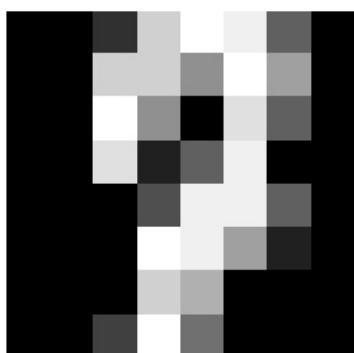
Actual: 2



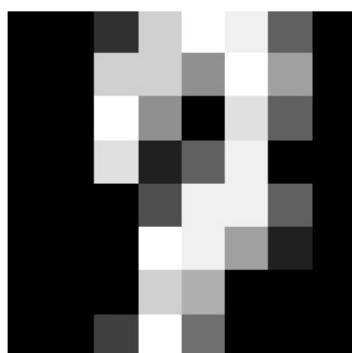
Predicted: 2



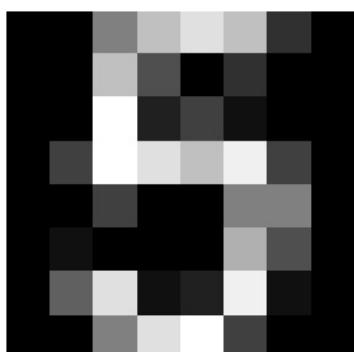
Actual: 7



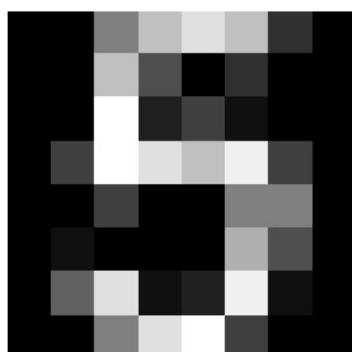
Predicted: 7



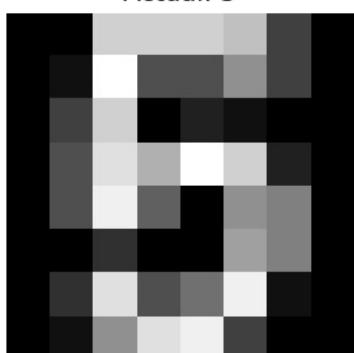
Actual: 5



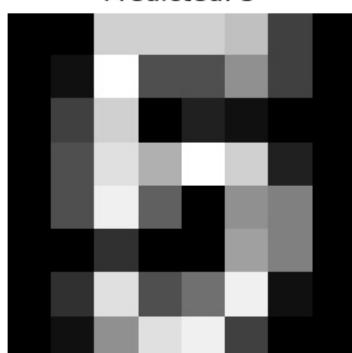
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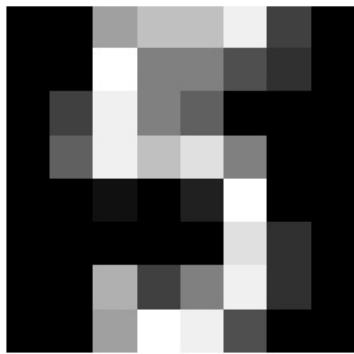
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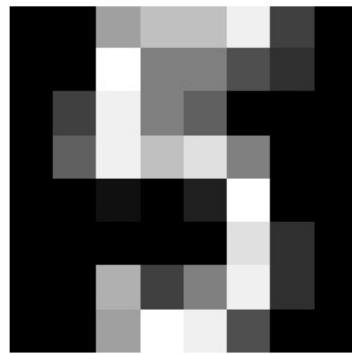
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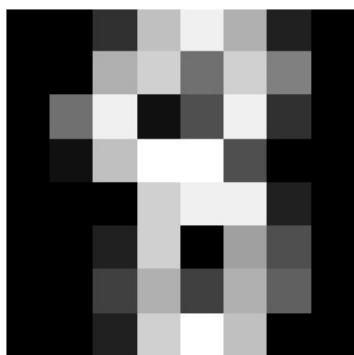
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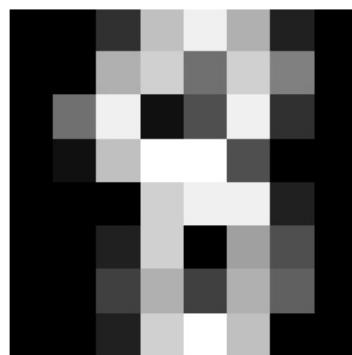
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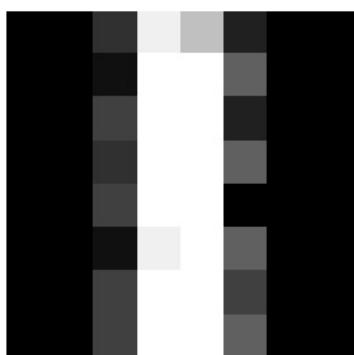
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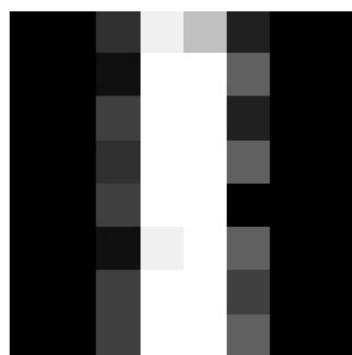
Predicted: 8



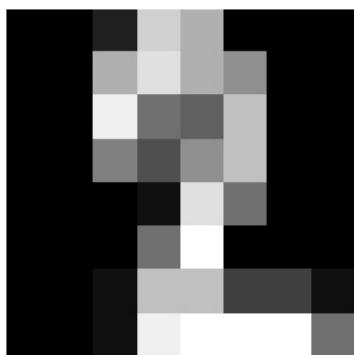
Actual: 1



Predicted: 1



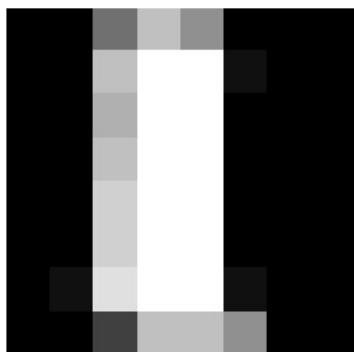
Actual: 2



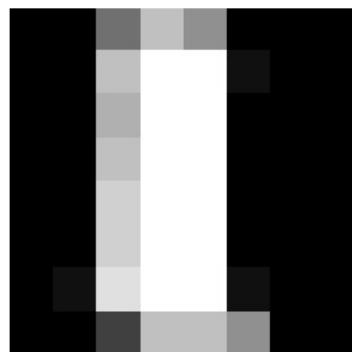
Predicted: 2



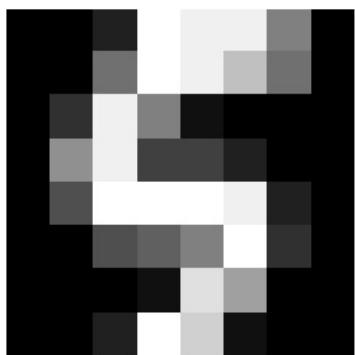
Actual: 1



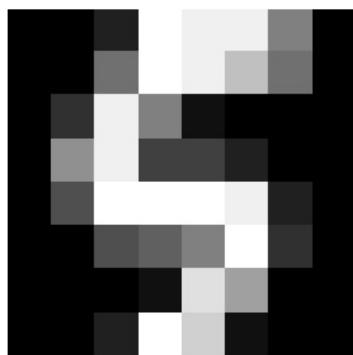
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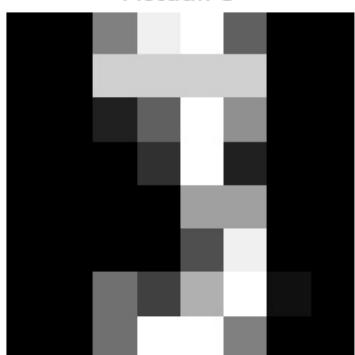
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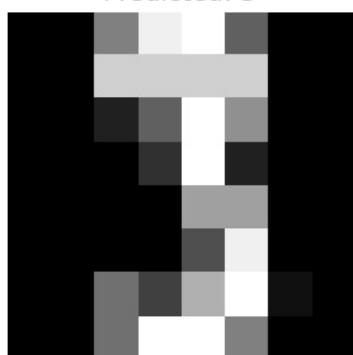
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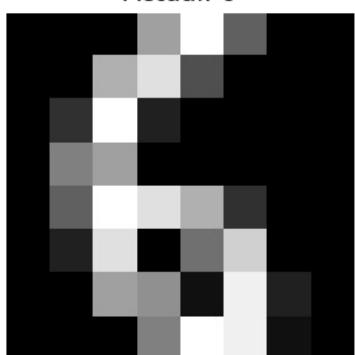
Actual: 3



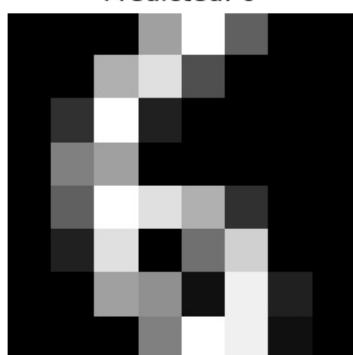
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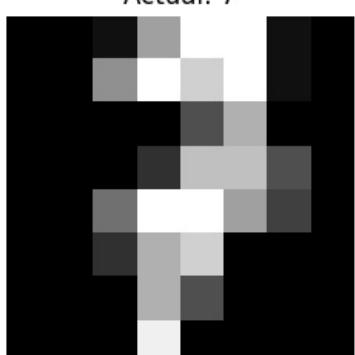
Actual: 6



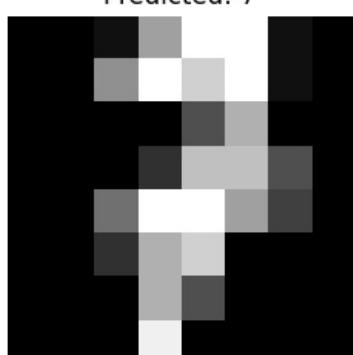
Predicted: 6



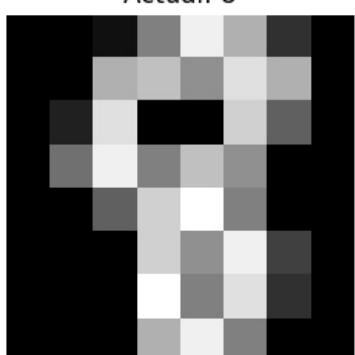
Actual: 7



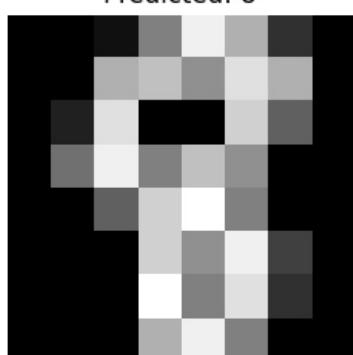
Predicted: 7



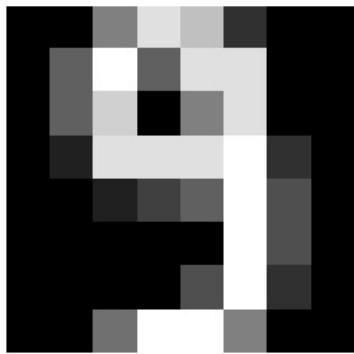
Actual: 8



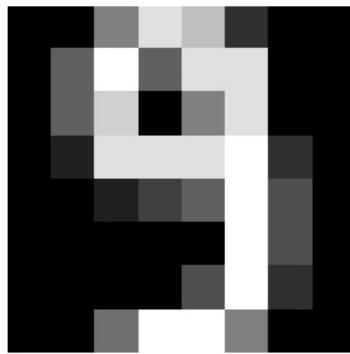
Predicted: 8



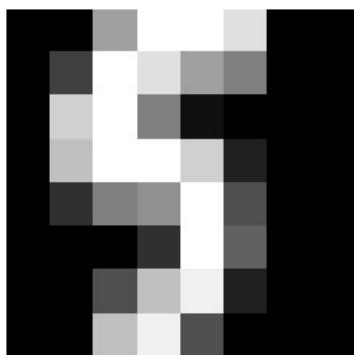
Actual: 9



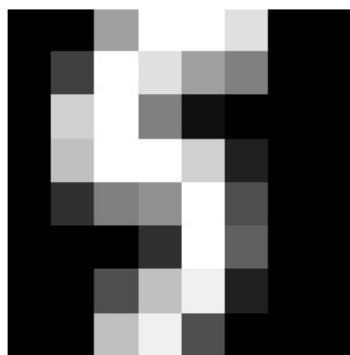
Predicted: 9



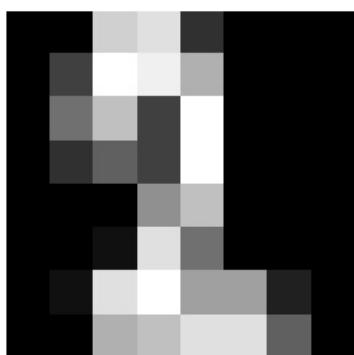
Actual: 5



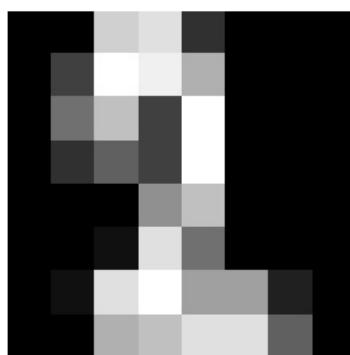
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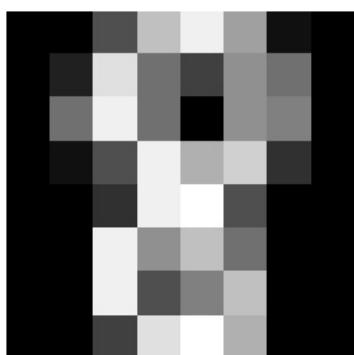
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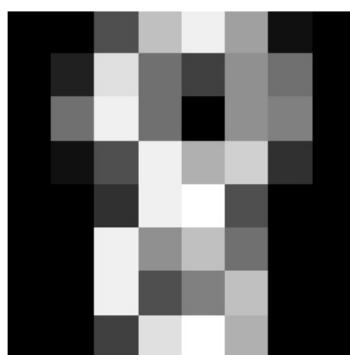
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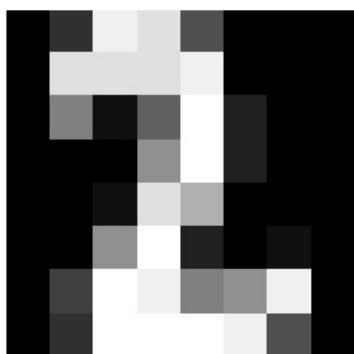
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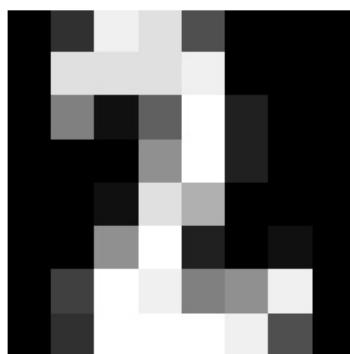
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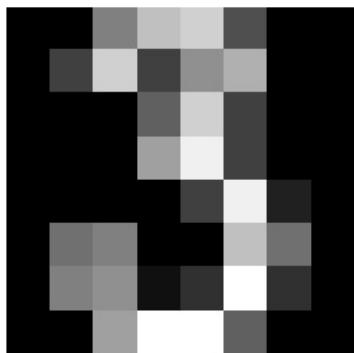
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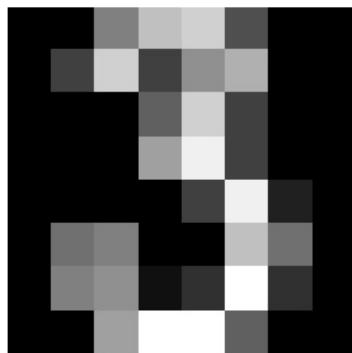
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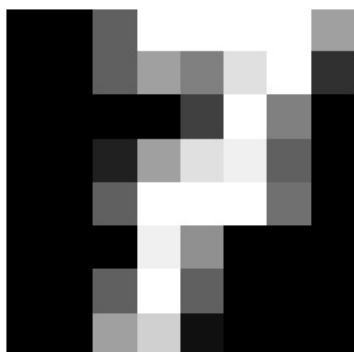
Actual: 3



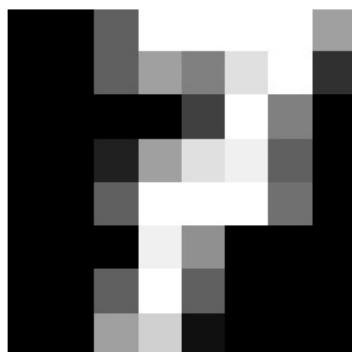
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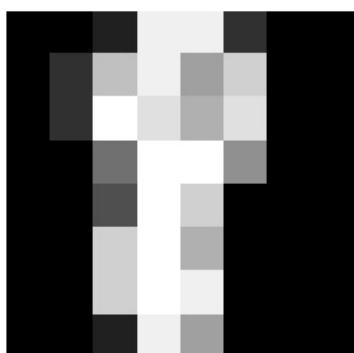
Actual: 7



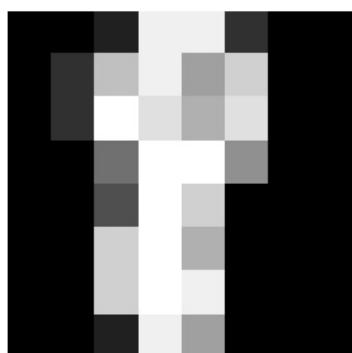
Predicted: 7



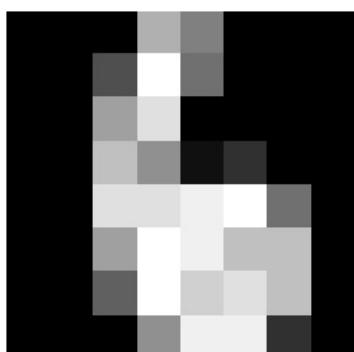
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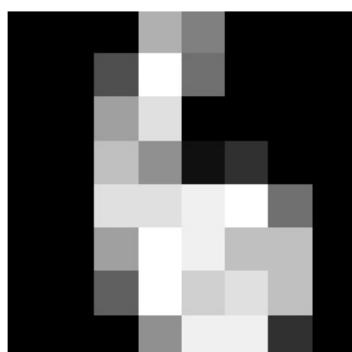
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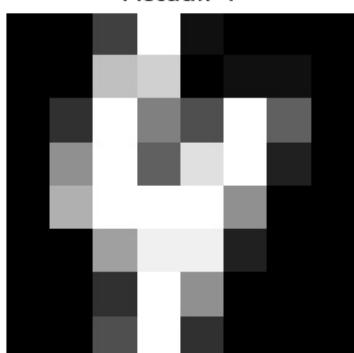
Actual: 6



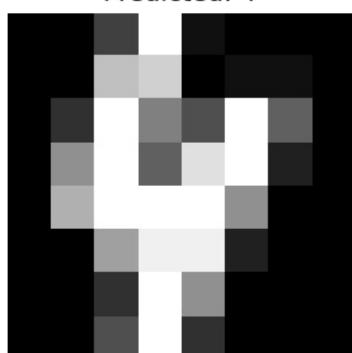
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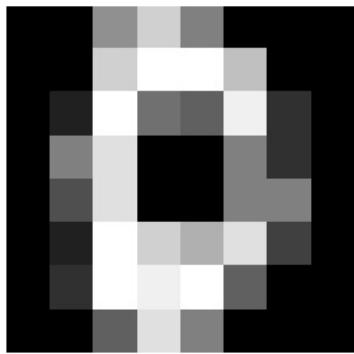
Actual: 4



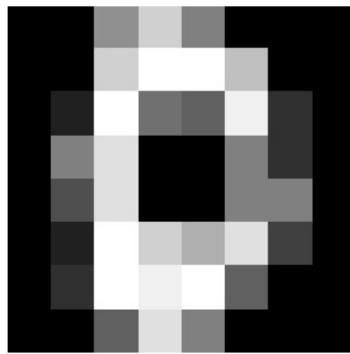
Predicted: 4



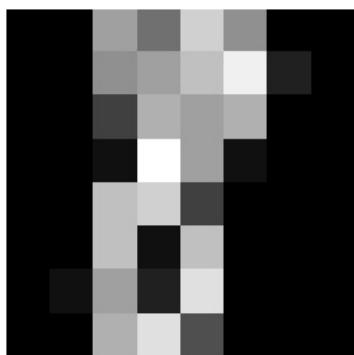
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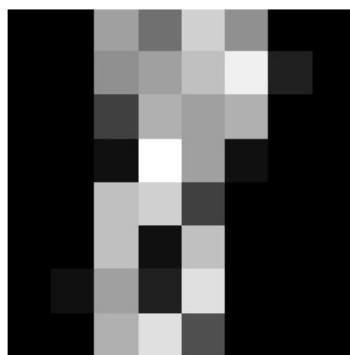
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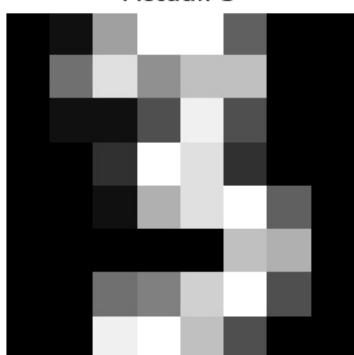
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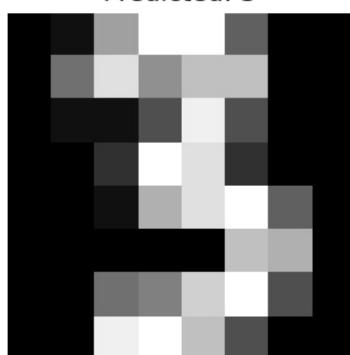
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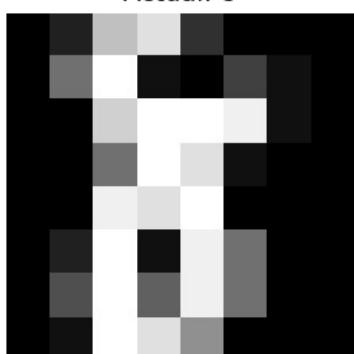
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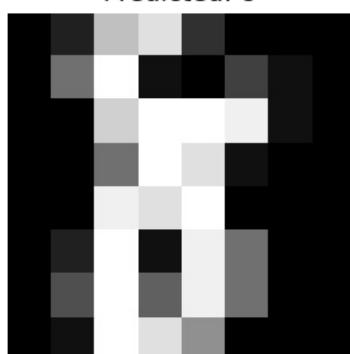
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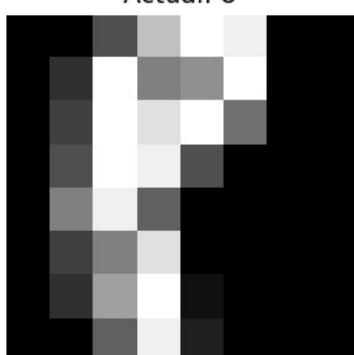
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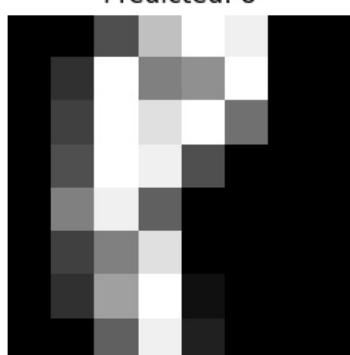
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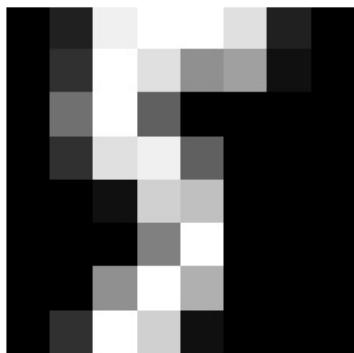
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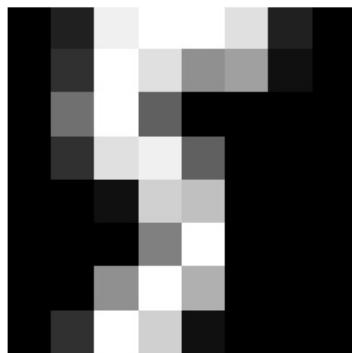
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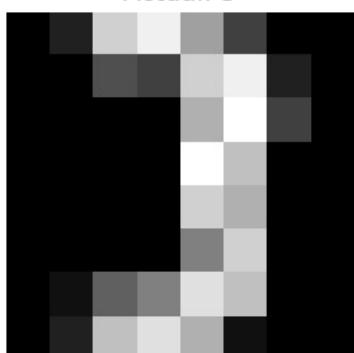
Actual: 5



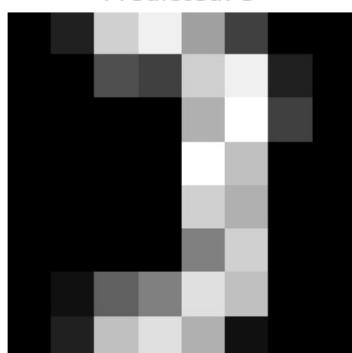
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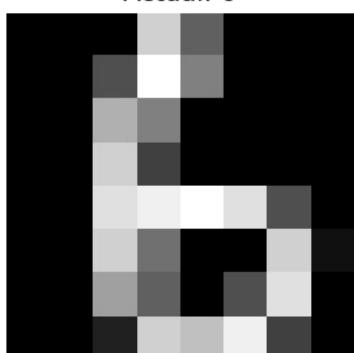
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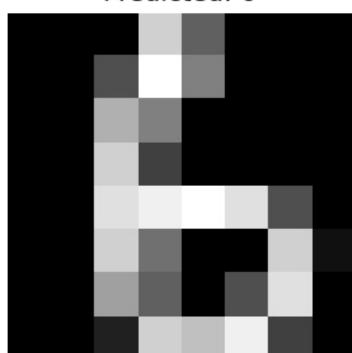
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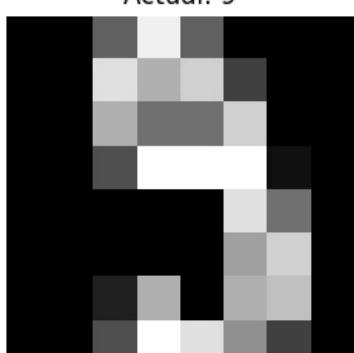
Actual: 6



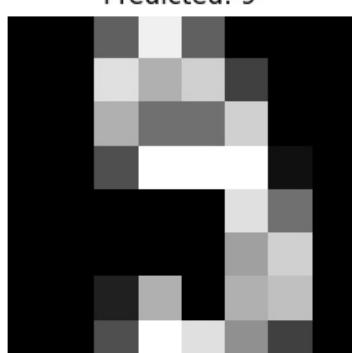
Predicted: 6



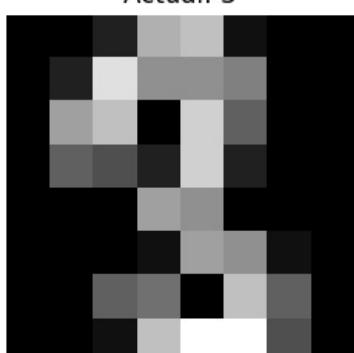
Actual: 9



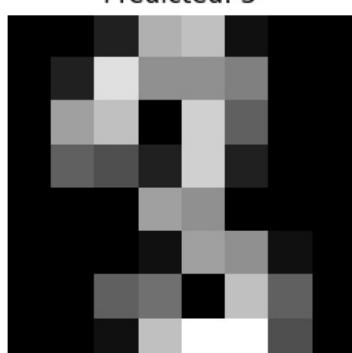
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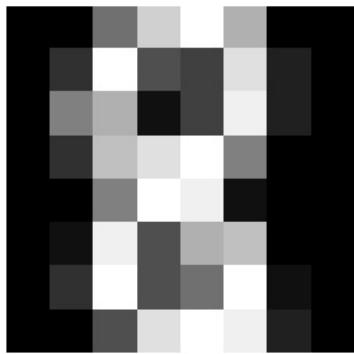
Actual: 3



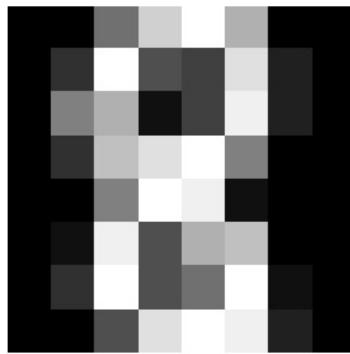
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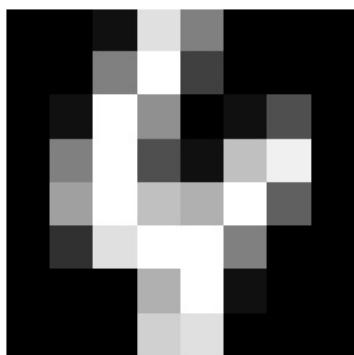
Actual: 8



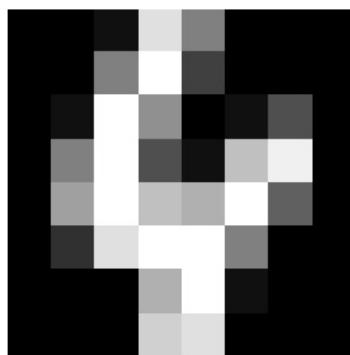
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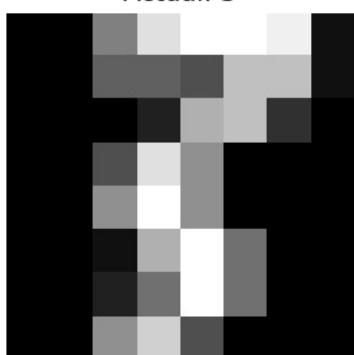
Actual: 4



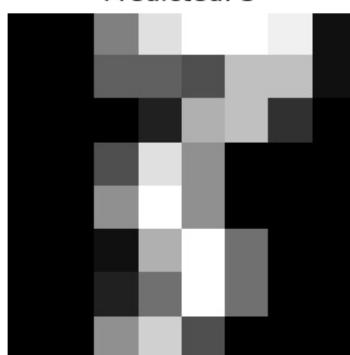
Predicted: 4



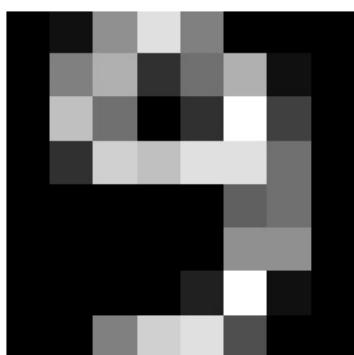
Actual: 3



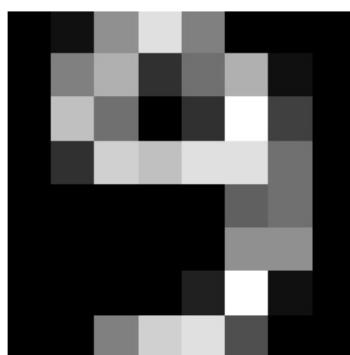
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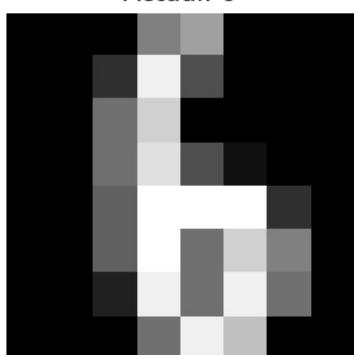
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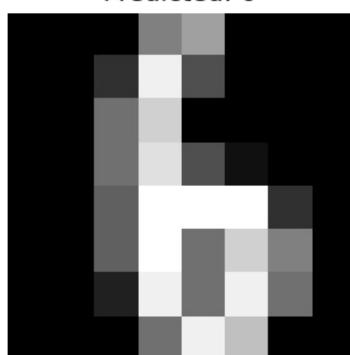
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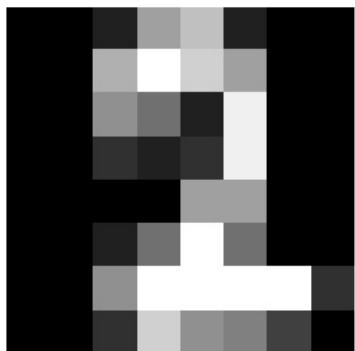
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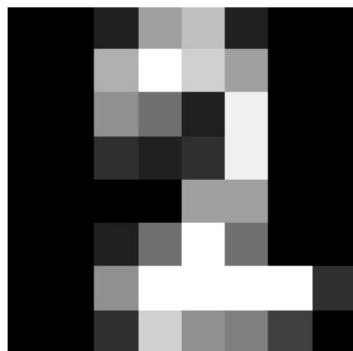
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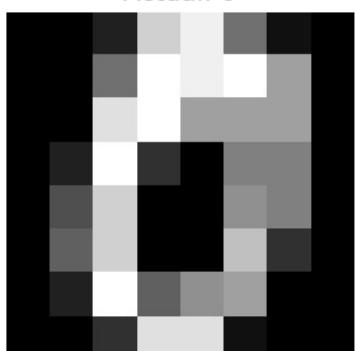
Actual: 2



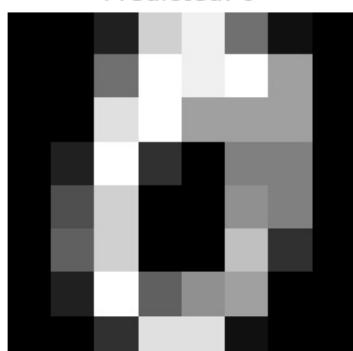
Predicted: 2



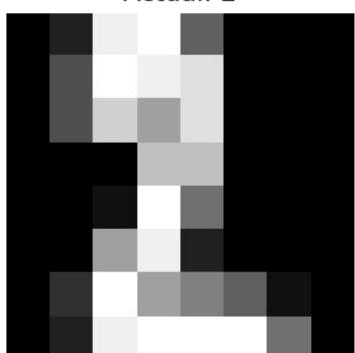
Actual: 0



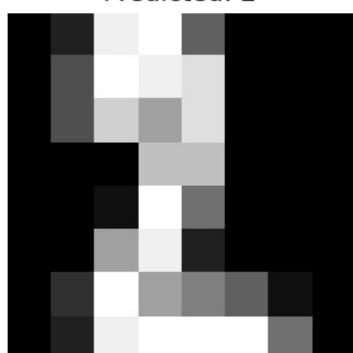
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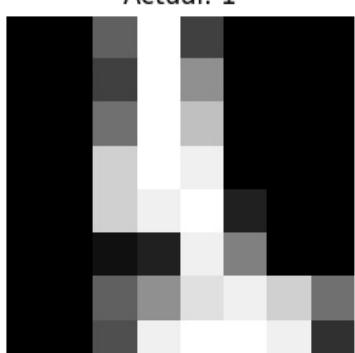
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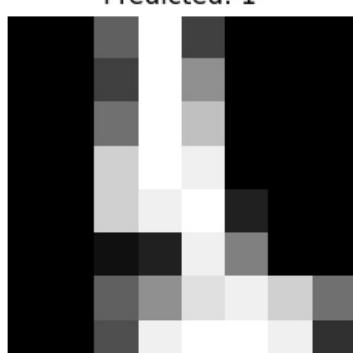
Predicted: 2



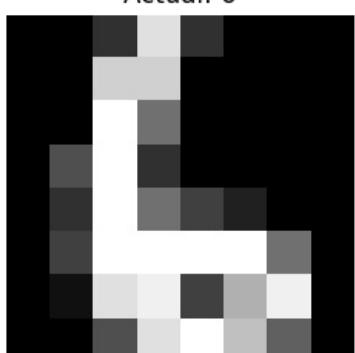
Actual: 1



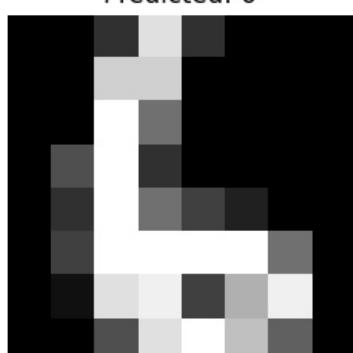
Predicted: 1



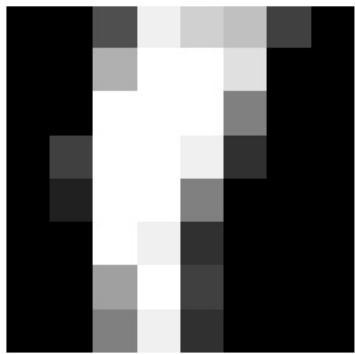
Actual: 6



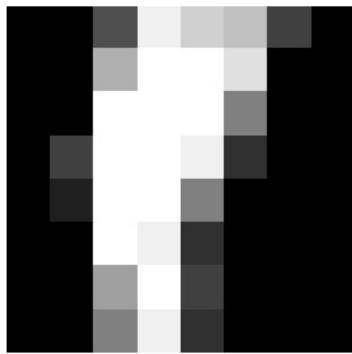
Predicted: 6



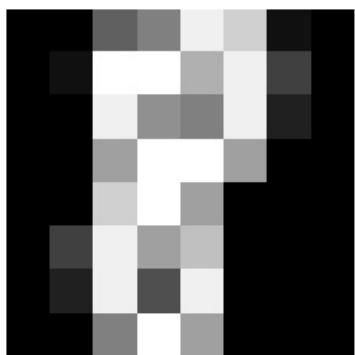
Actual: 1



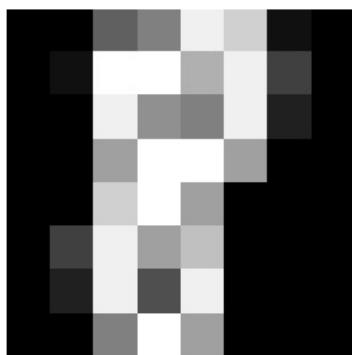
Predicted: 1



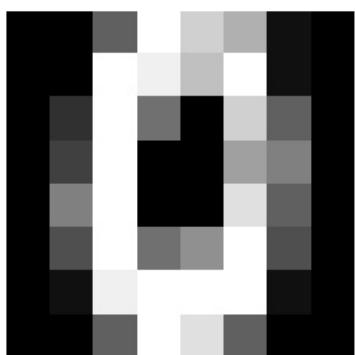
Actual: 8



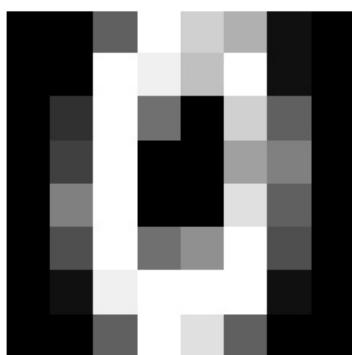
Predicted: 8



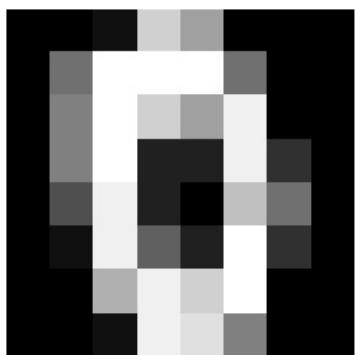
Actual: 0



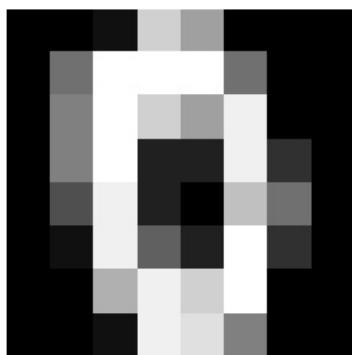
Predicted: 0



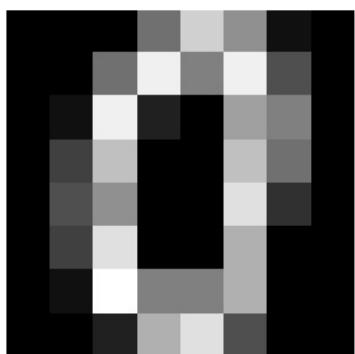
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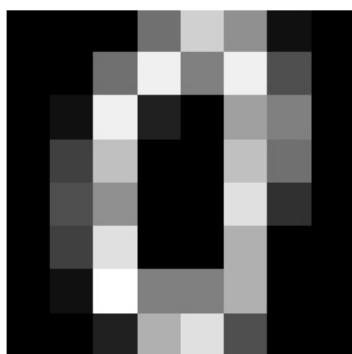
Predicted: 0



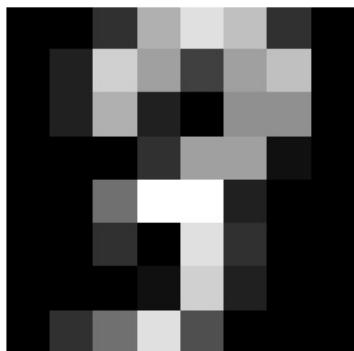
Actual: 0



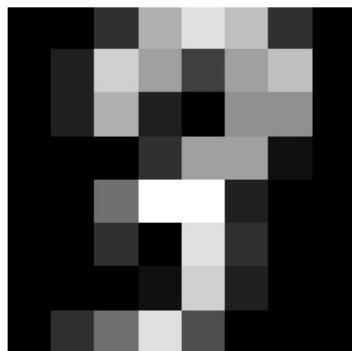
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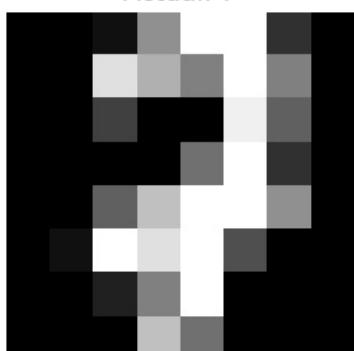
Actual: 3



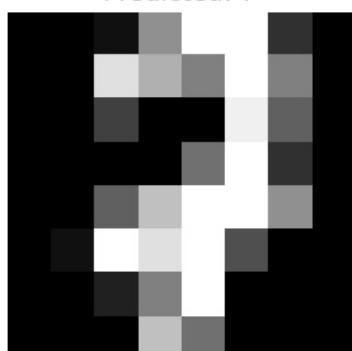
Predicted: 7



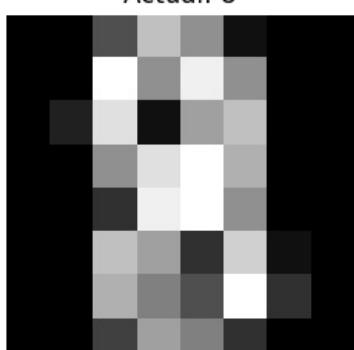
Actual: 7



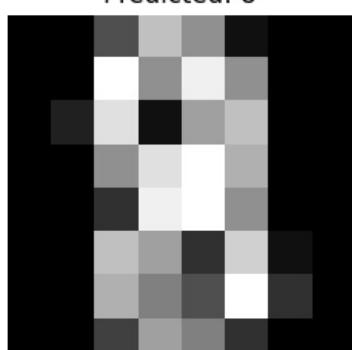
Predicted: 7



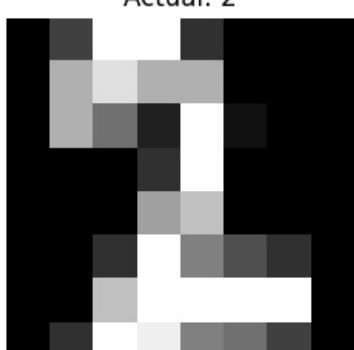
Actual: 8



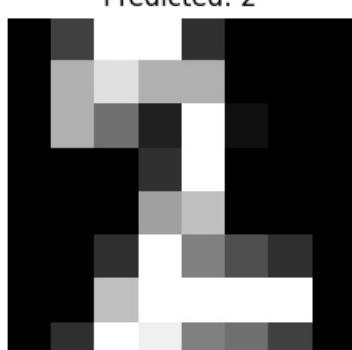
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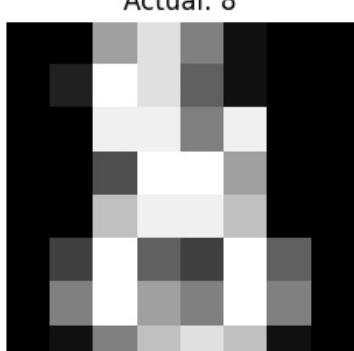
Actual: 2



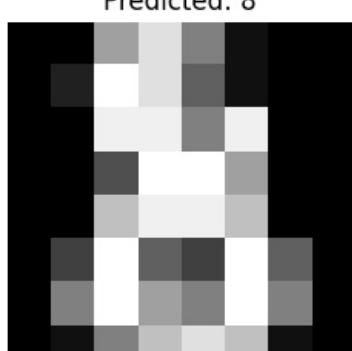
Predicted: 2



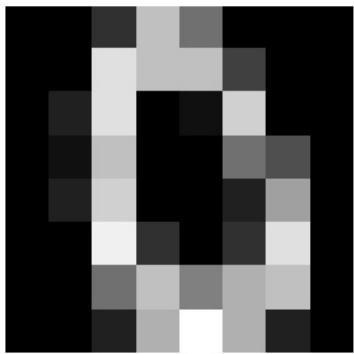
Actual: 8



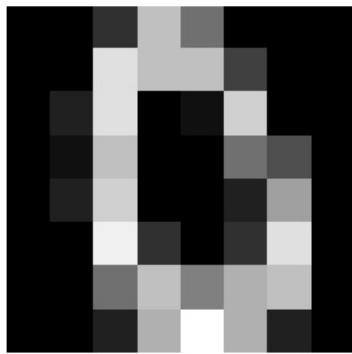
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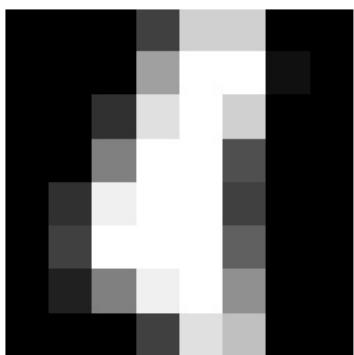
Actual: 0



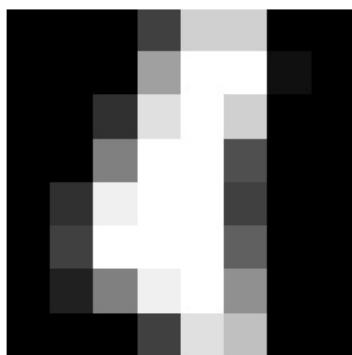
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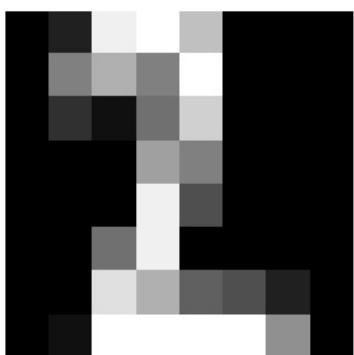
Actual: 1



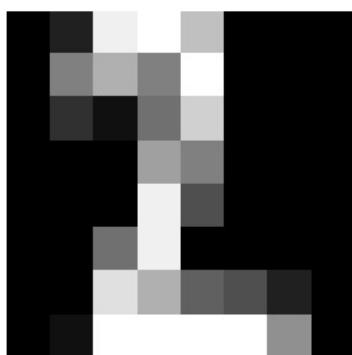
Predicted: 1



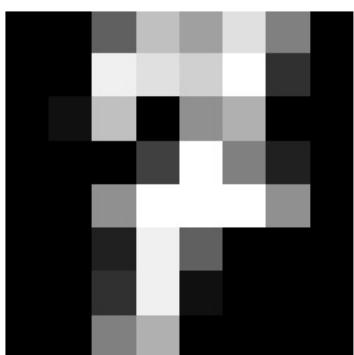
Actual: 2



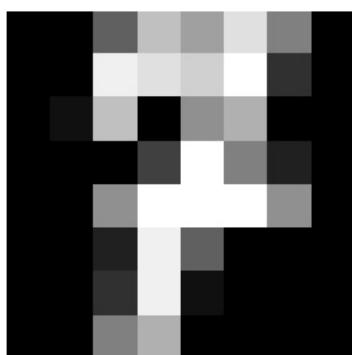
Predicted: 2



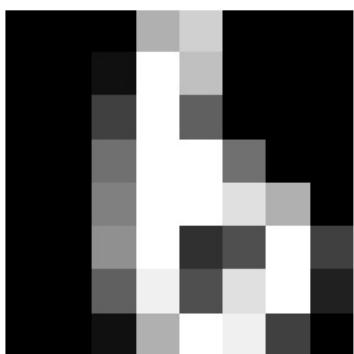
Actual: 7



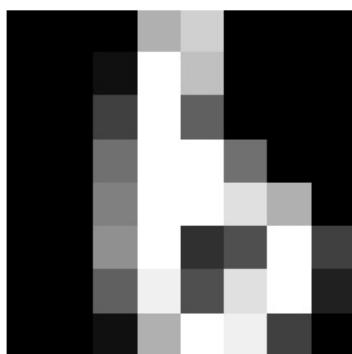
Predicted: 7



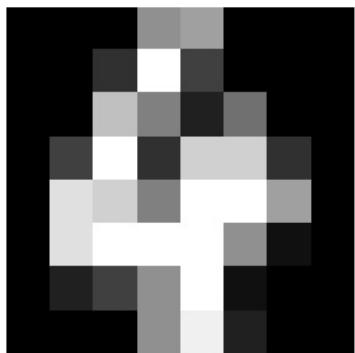
Actual: 6



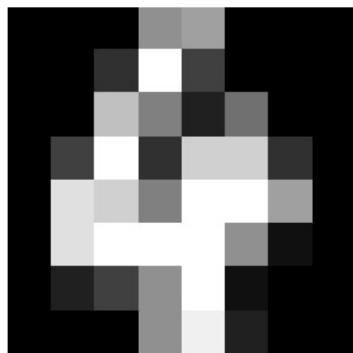
Predicted: 6



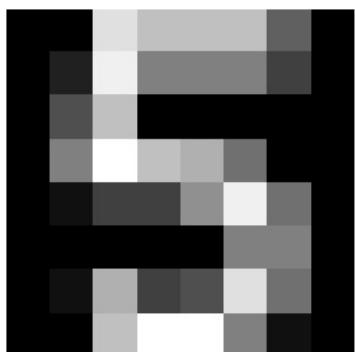
Actual: 4



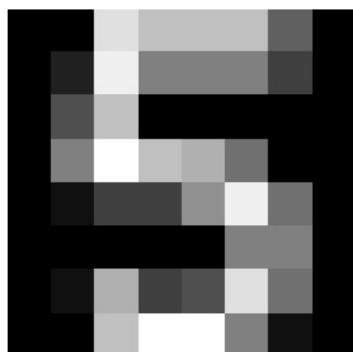
Predicted: 4



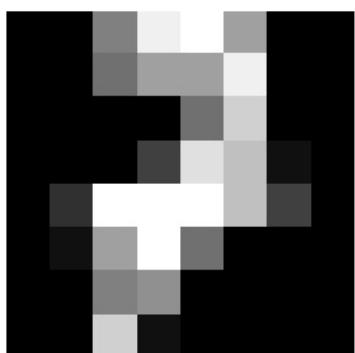
Actual: 5



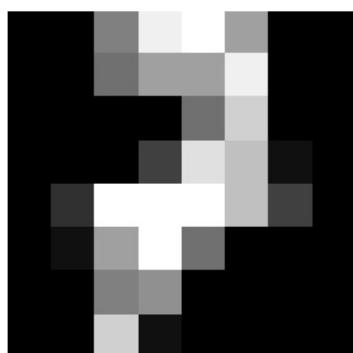
Predicted: 5



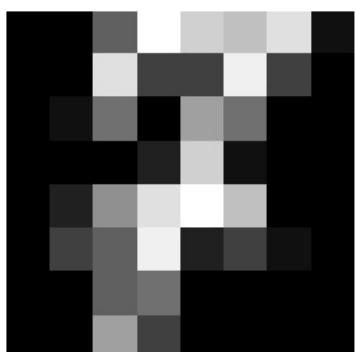
Actual: 7



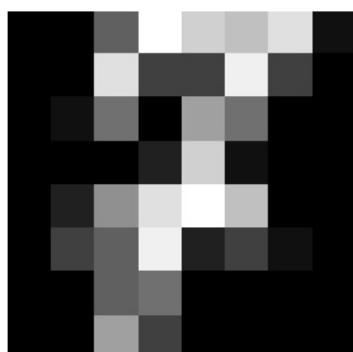
Predicted: 7



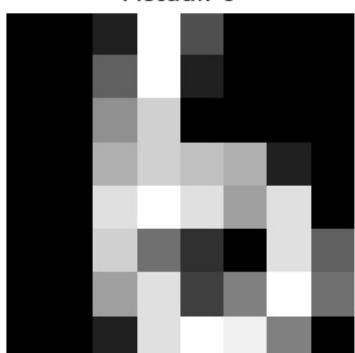
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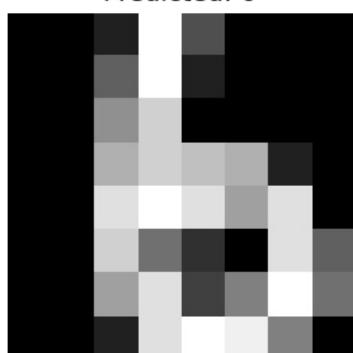
Predicted: 7



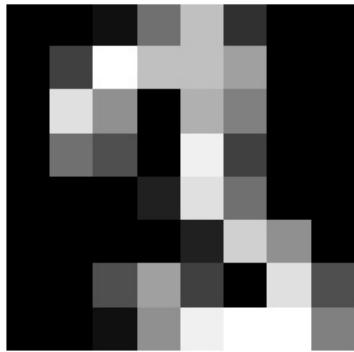
Actual: 6



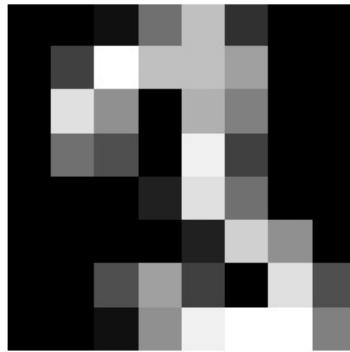
Predicted: 6



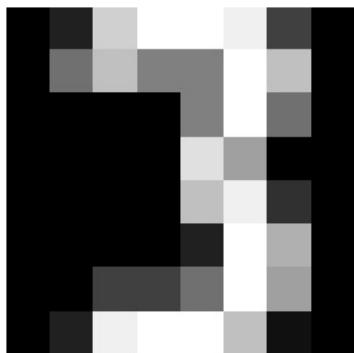
Actual: 3



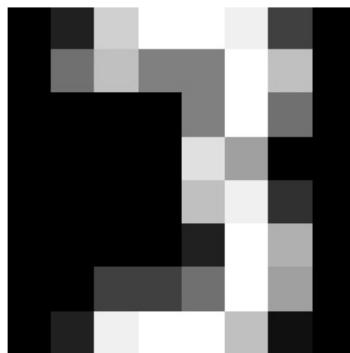
Predicted: 3



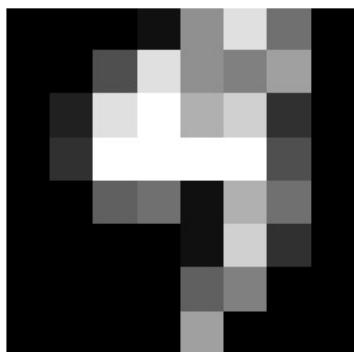
Actual: 3



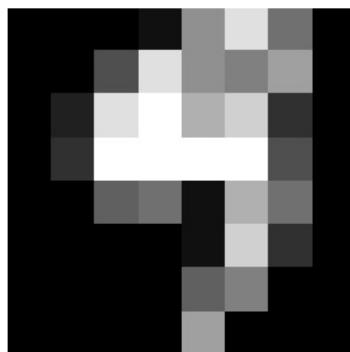
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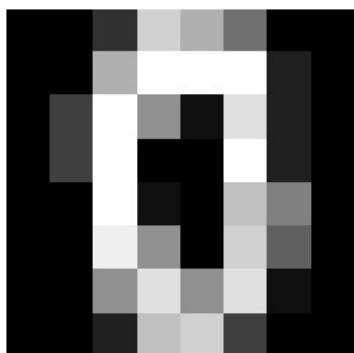
Actual: 9



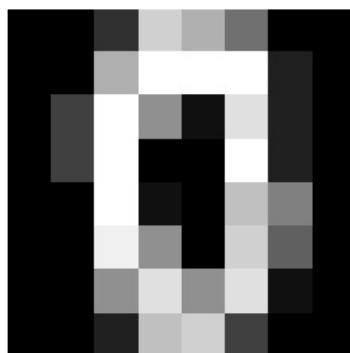
Predicted: 9



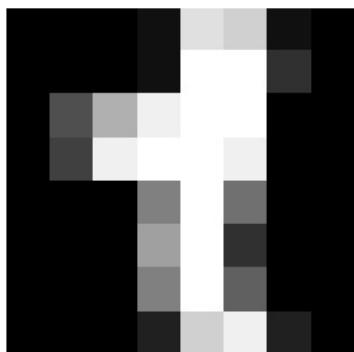
Actual: 0



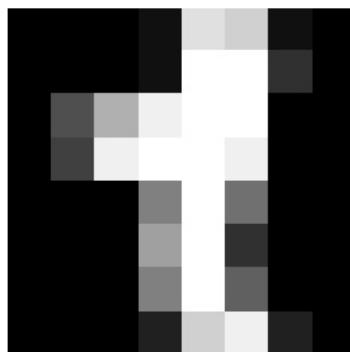
Predicted: 0



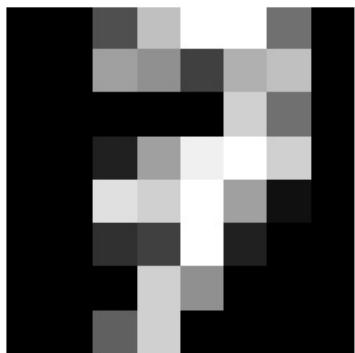
Actual: 1



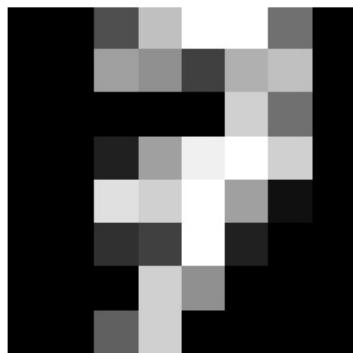
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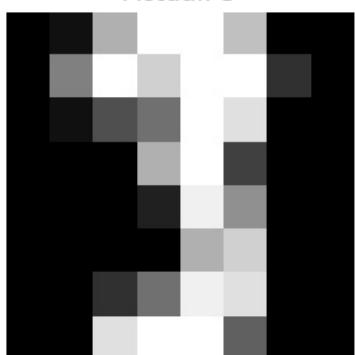
Actual: 7



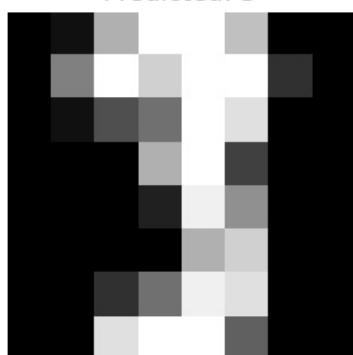
Predicted: 7



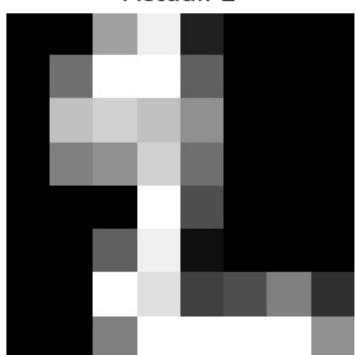
Actual: 3



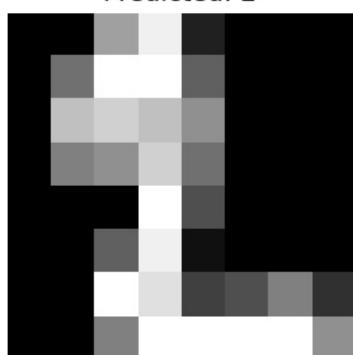
Predicted: 3



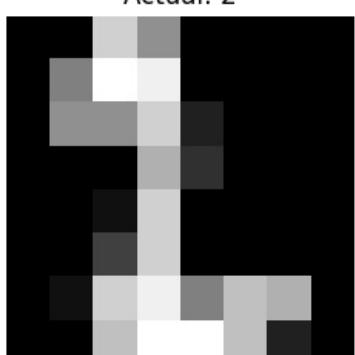
Actual: 2



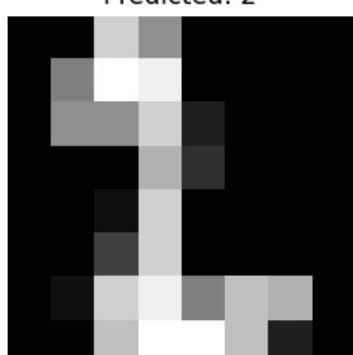
Predicted: 2



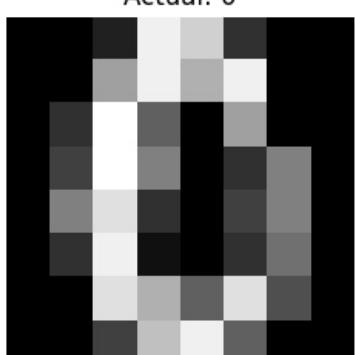
Actual: 2



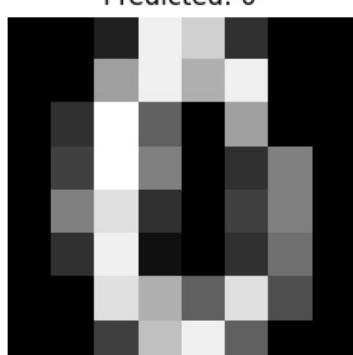
Predicted: 2



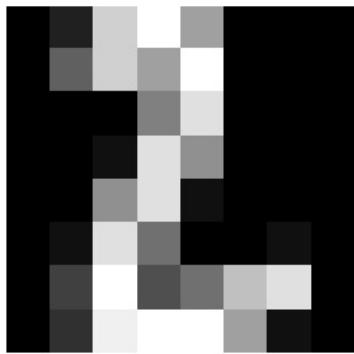
Actual: 0



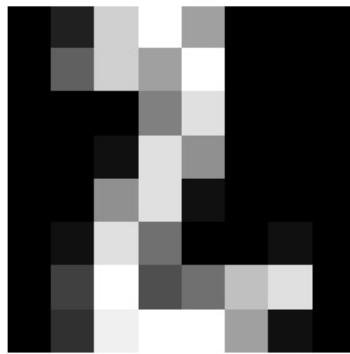
Predicted: 0



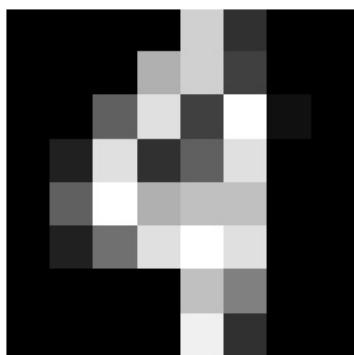
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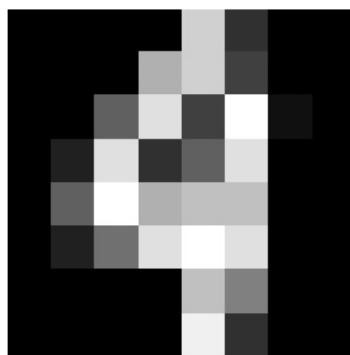
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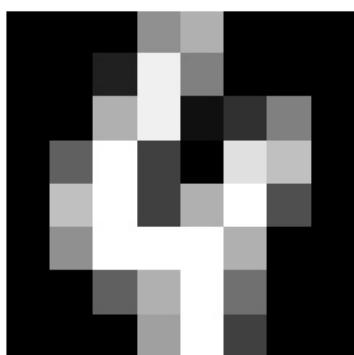
Actual: 4



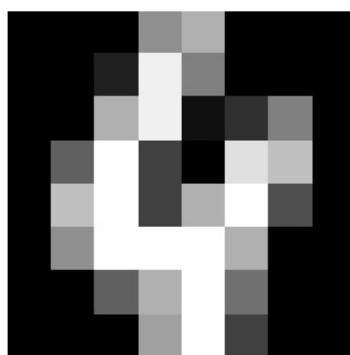
Predicted: 4



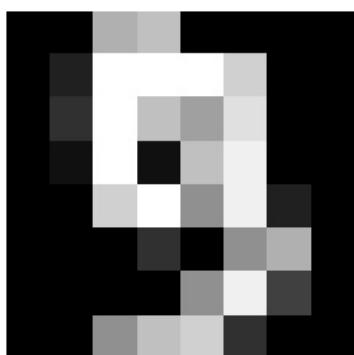
Actual: 4



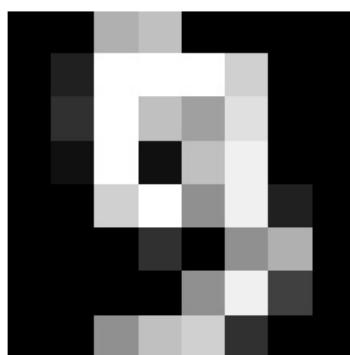
Predicted: 4



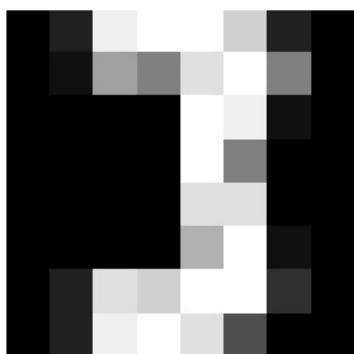
Actual: 9



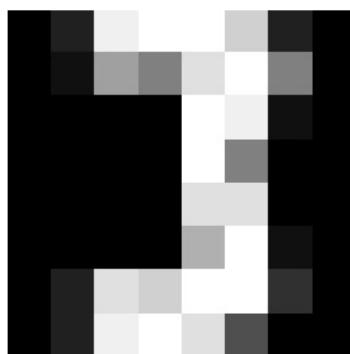
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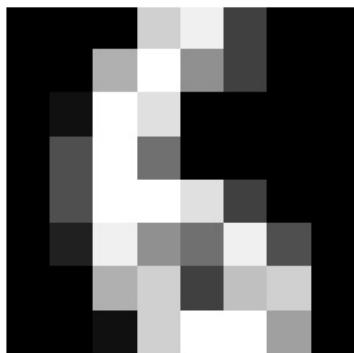
Actual: 3



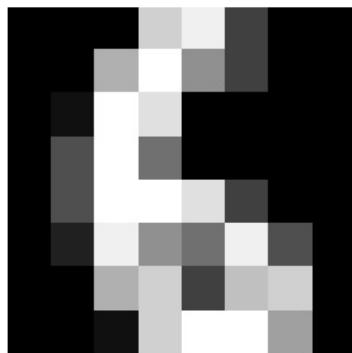
Predicted: 3



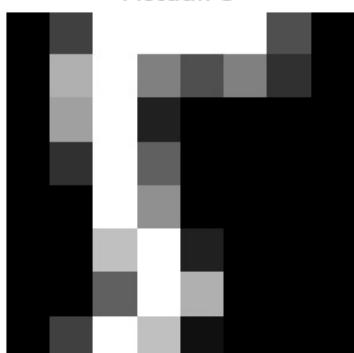
Actual: 6



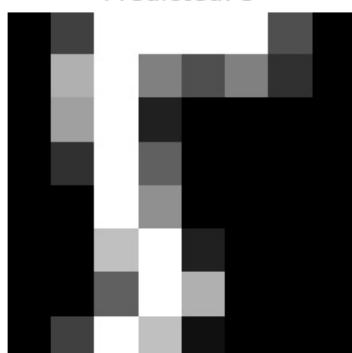
Predicted: 6



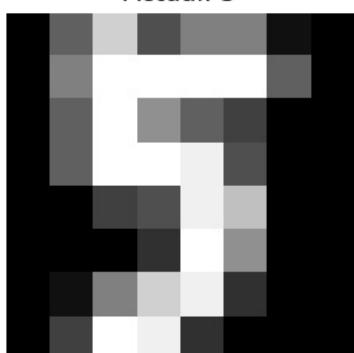
Actual: 5



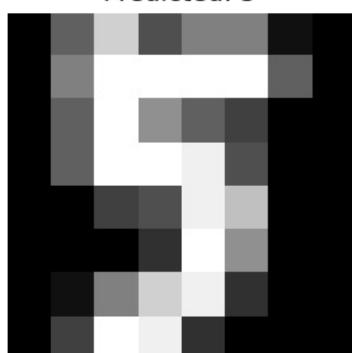
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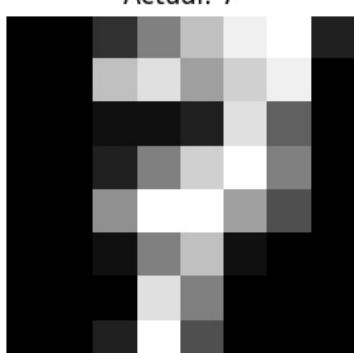
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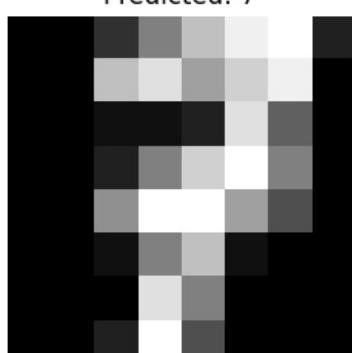
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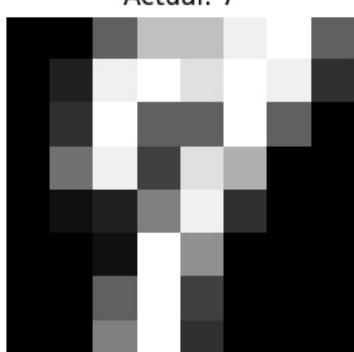
Actual: 7



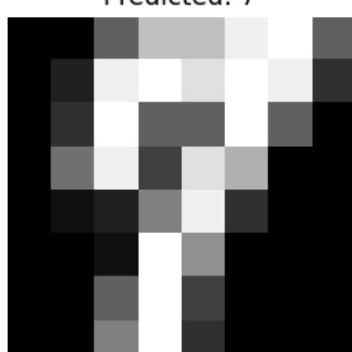
Predicted: 7



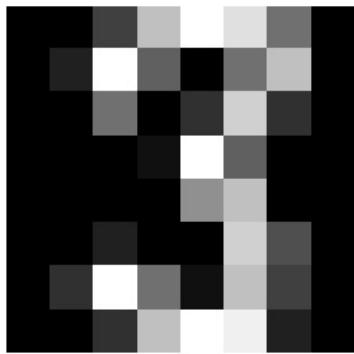
Actual: 7



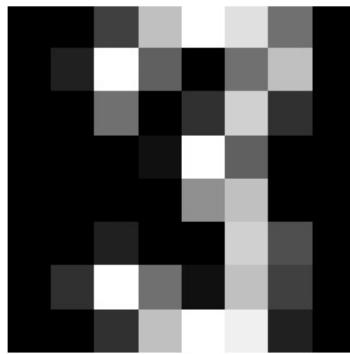
Predicted: 7



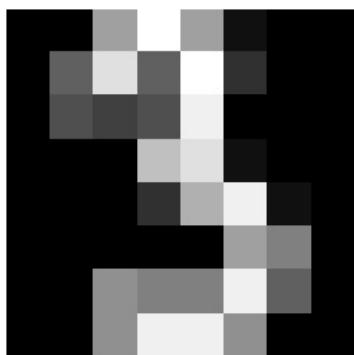
Actual: 3



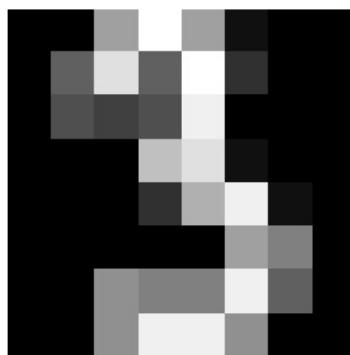
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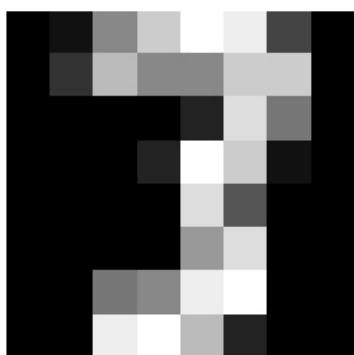
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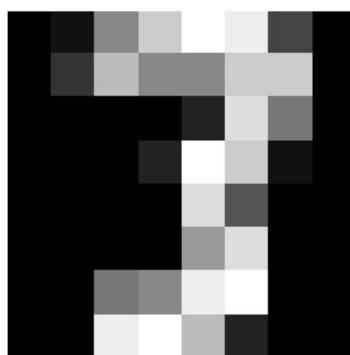
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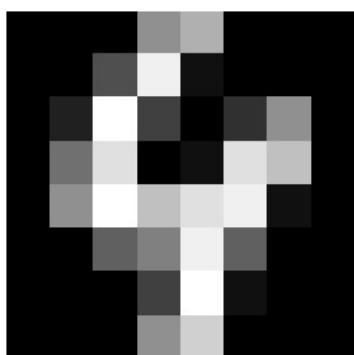
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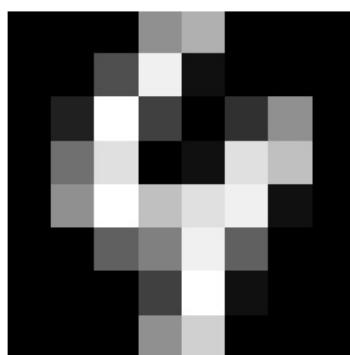
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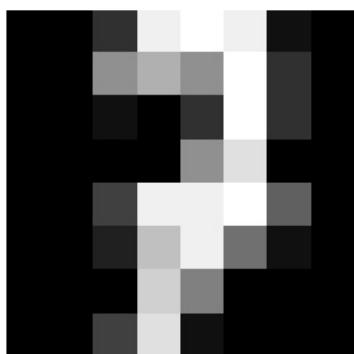
Actual: 4



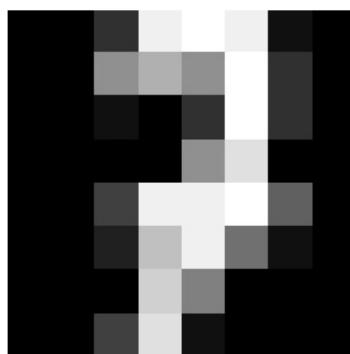
Predicted: 4



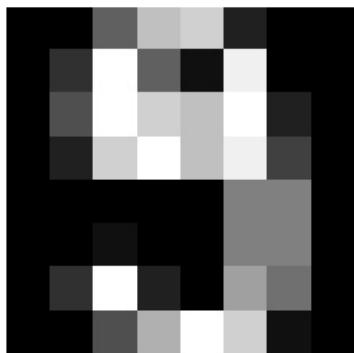
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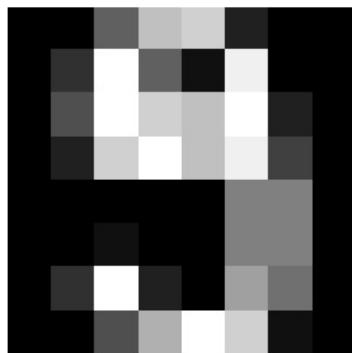
Predicted: 7



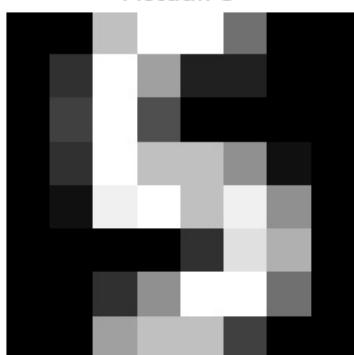
Actual: 9



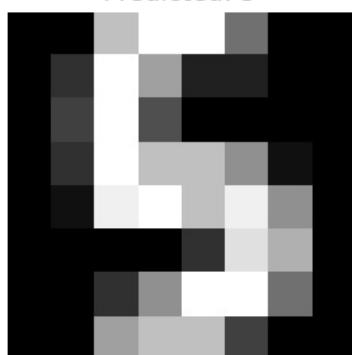
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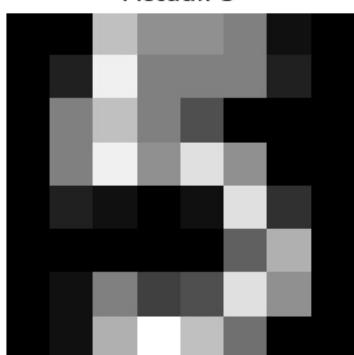
Actual: 5



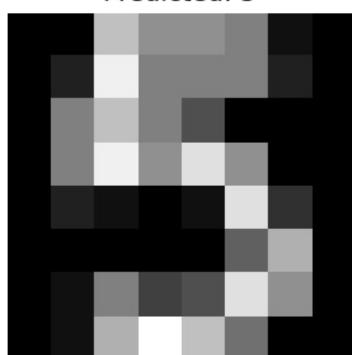
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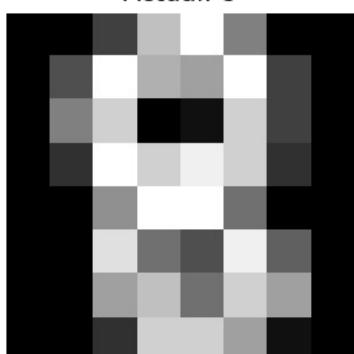
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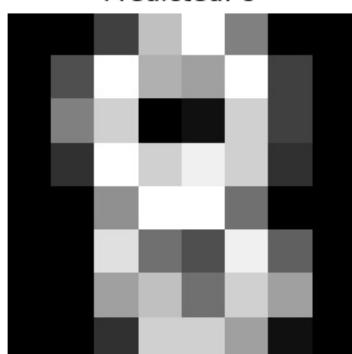
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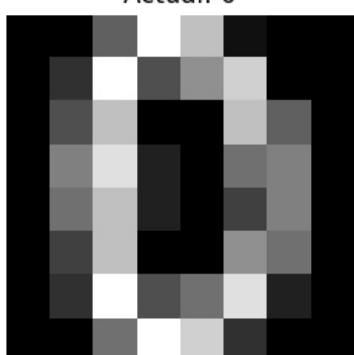
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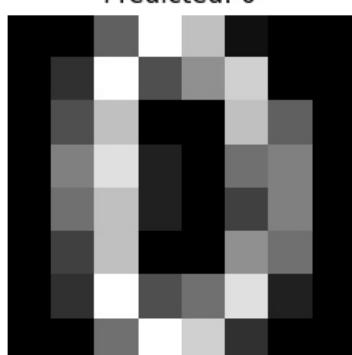
Predicted: 8



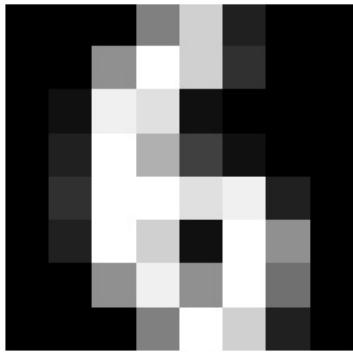
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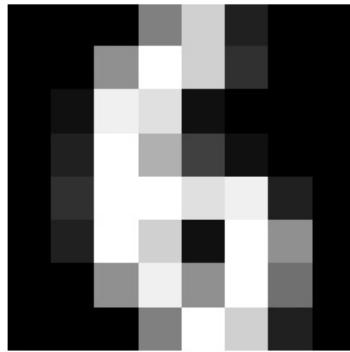
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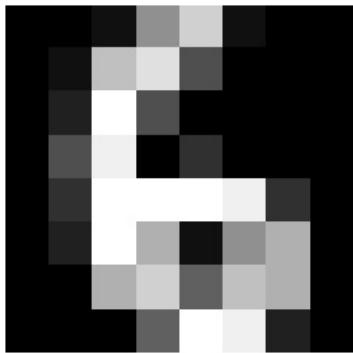
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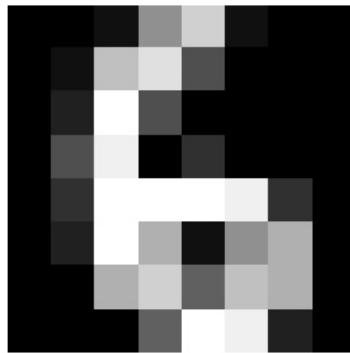
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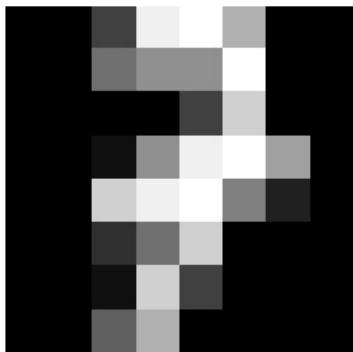
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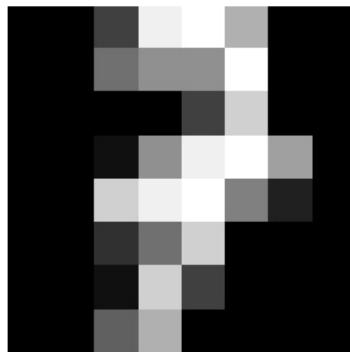
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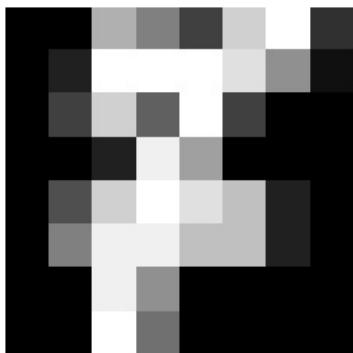
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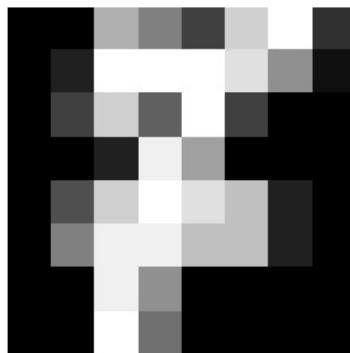
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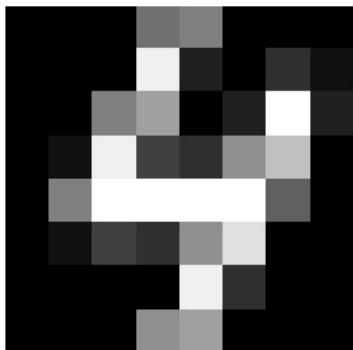
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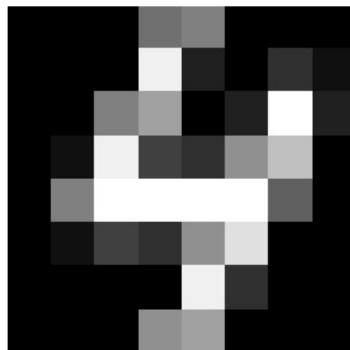
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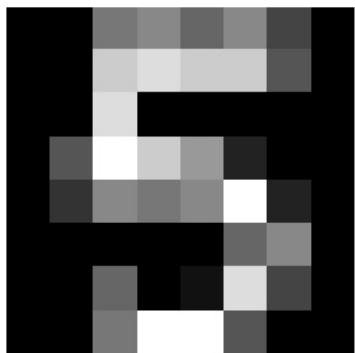
Actual: 4



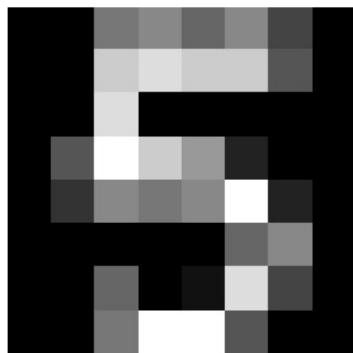
Predicted: 4



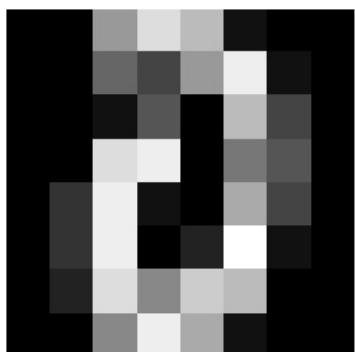
Actual: 5



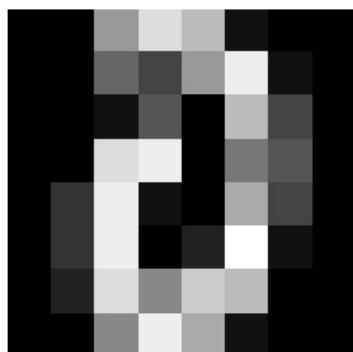
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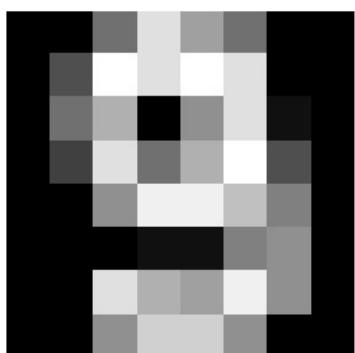
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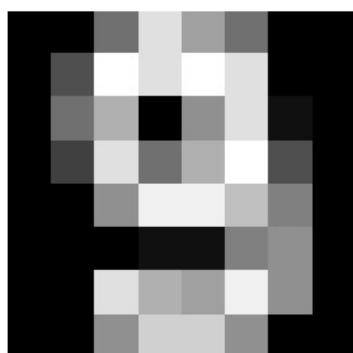
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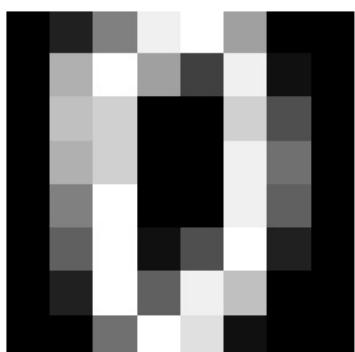
Actual: 9



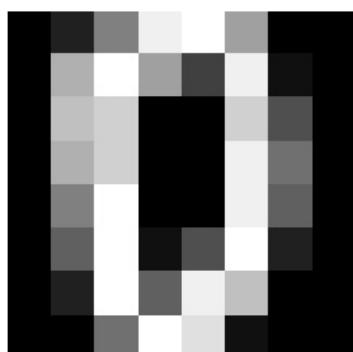
Predicted: 9



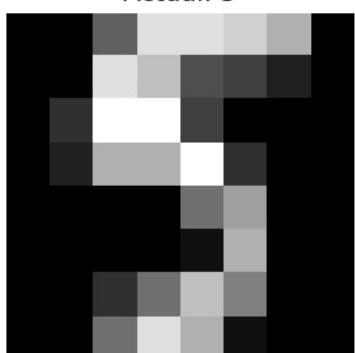
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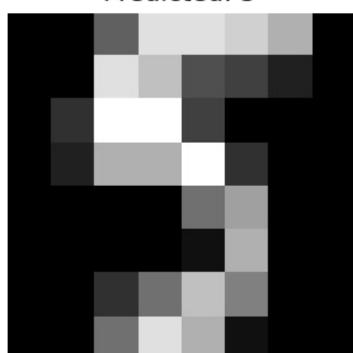
Predicted: 0



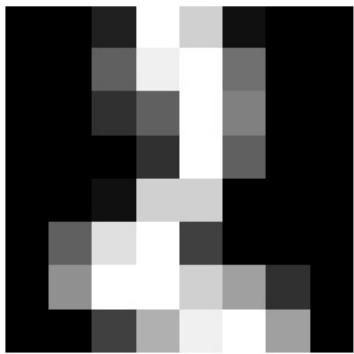
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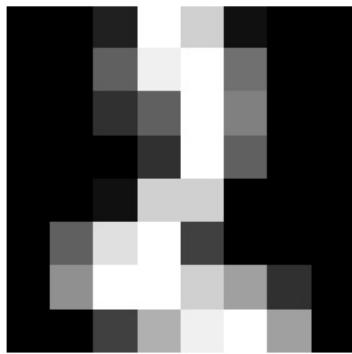
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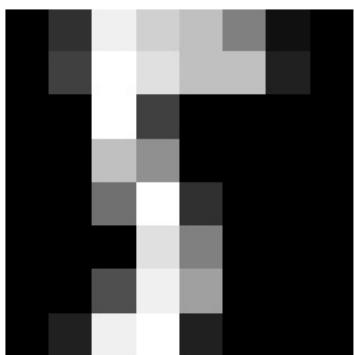
Actual: 2



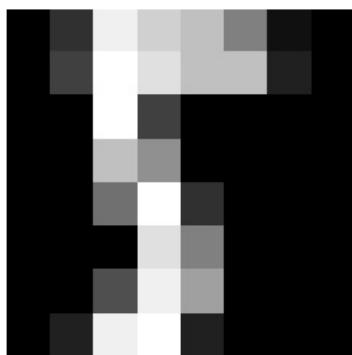
Predicted: 2



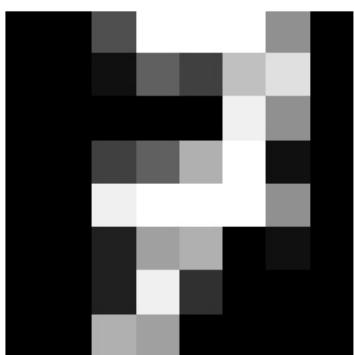
Actual: 5



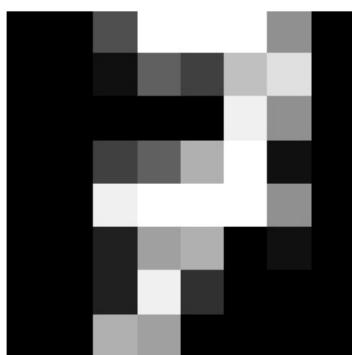
Predicted: 5



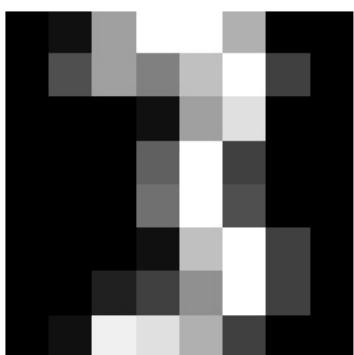
Actual: 7



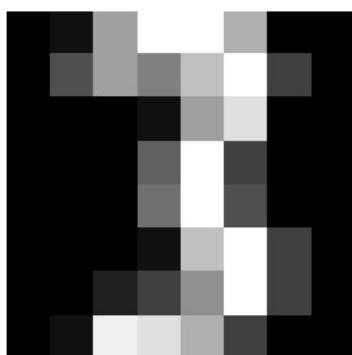
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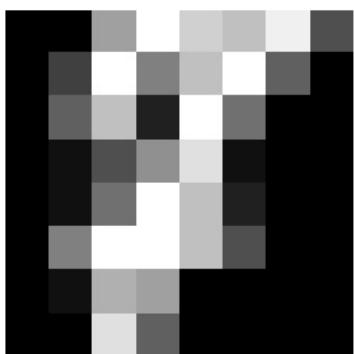
Actual: 3



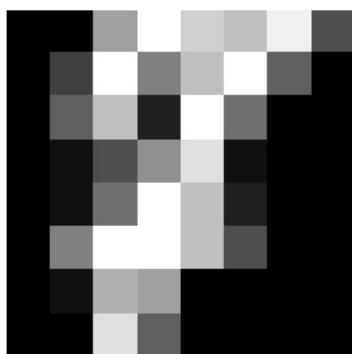
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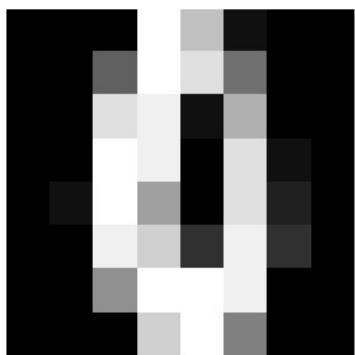
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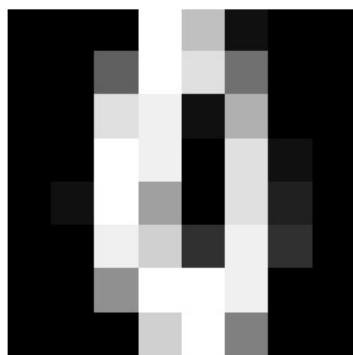
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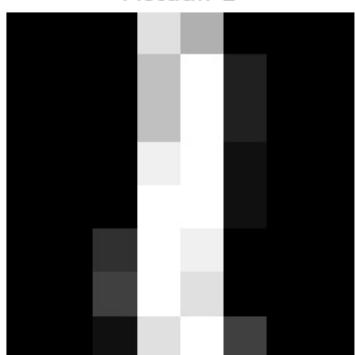
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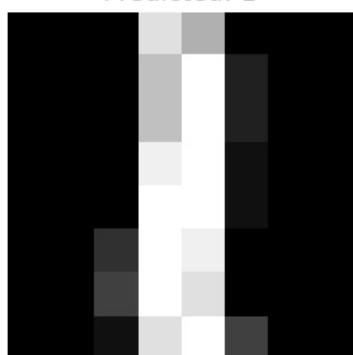
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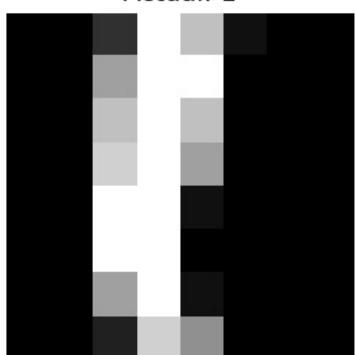
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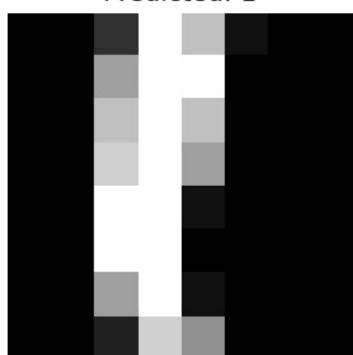
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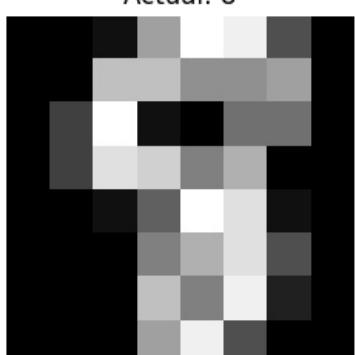
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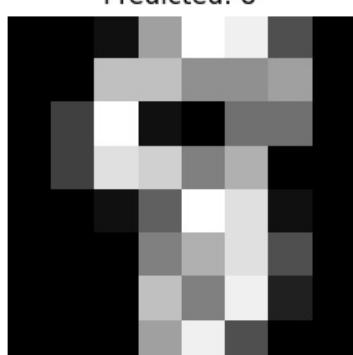
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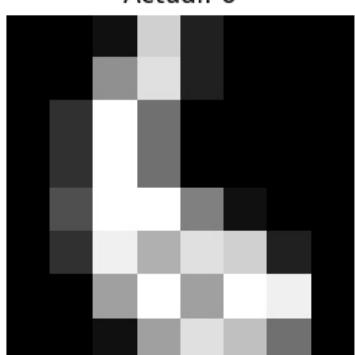
Actual: 8



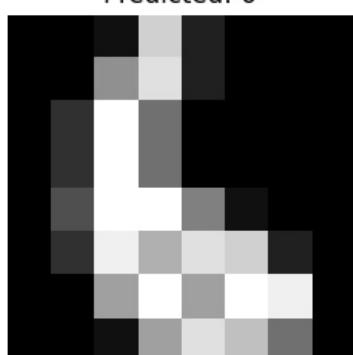
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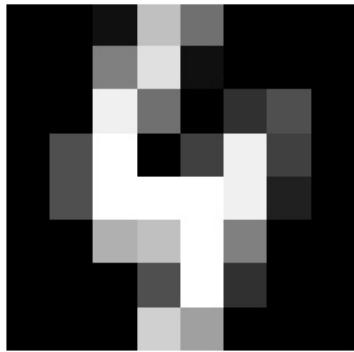
Actual: 6



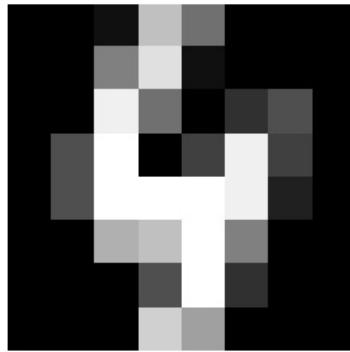
Predicted: 6



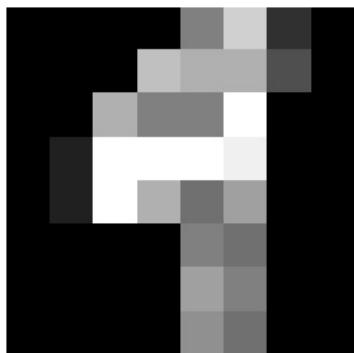
Actual: 4



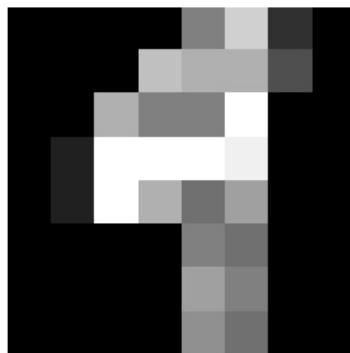
Predicted: 4



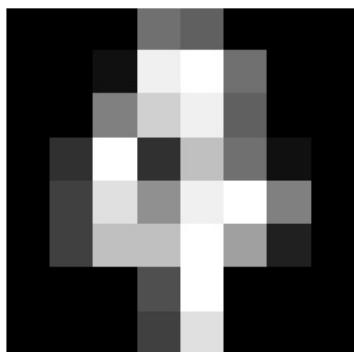
Actual: 9



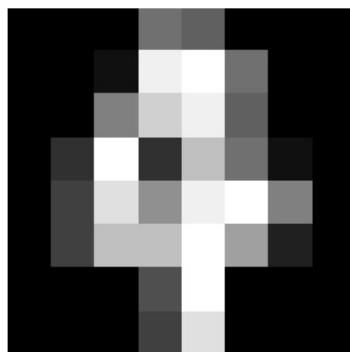
Predicted: 9



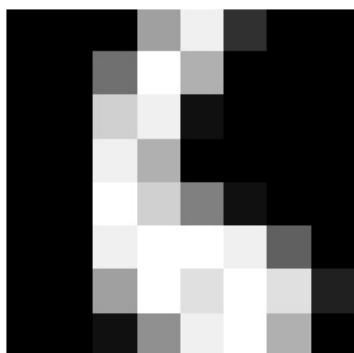
Actual: 4



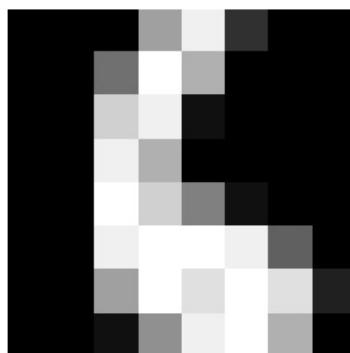
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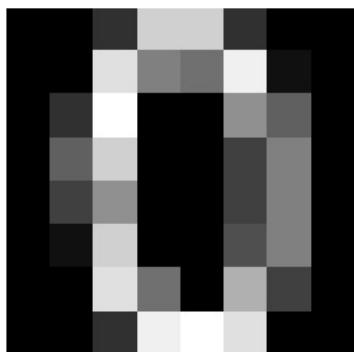
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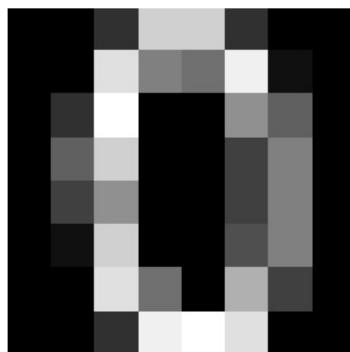
Predicted: 6



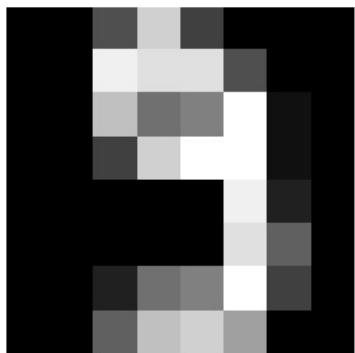
Actual: 0



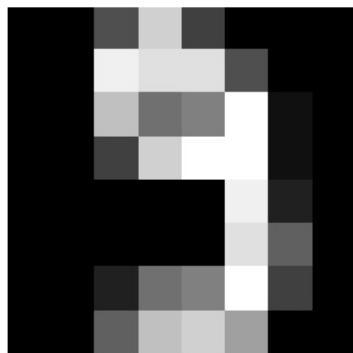
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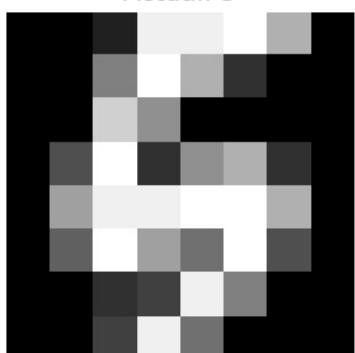
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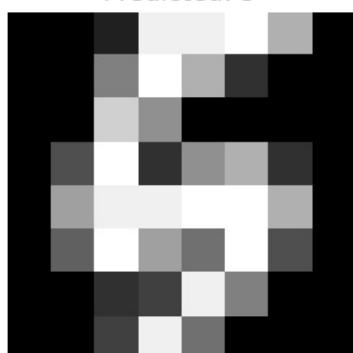
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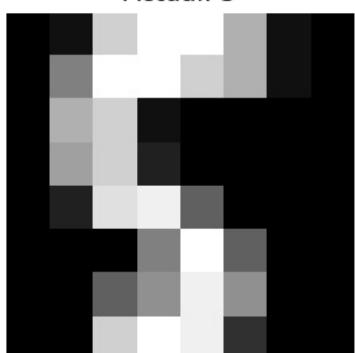
Actual: 5



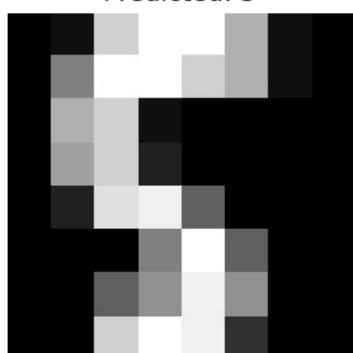
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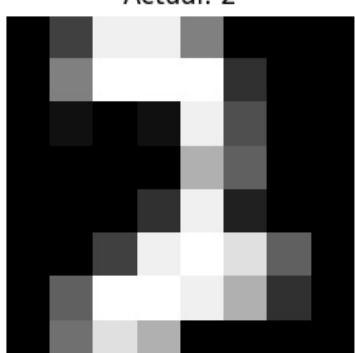
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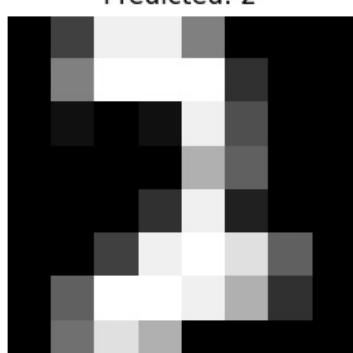
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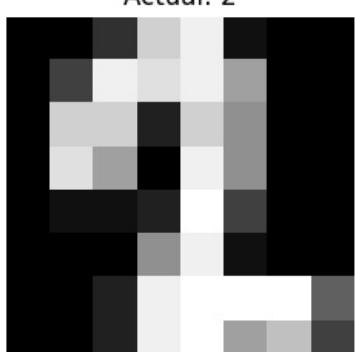
Actual: 2



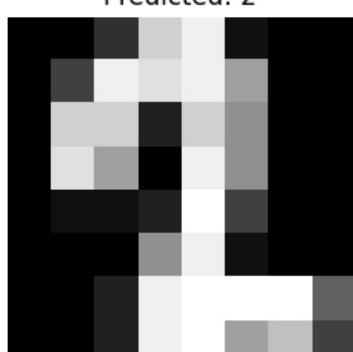
Predicted: 2



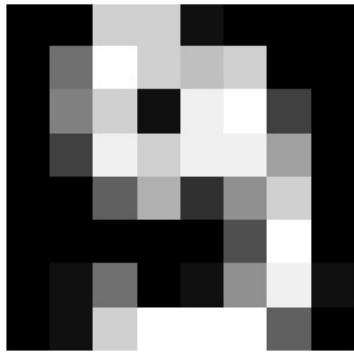
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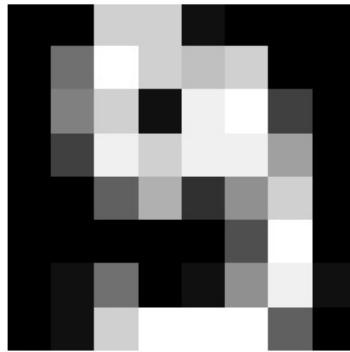
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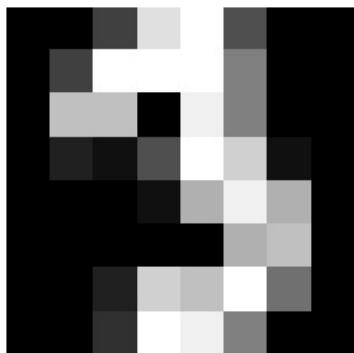
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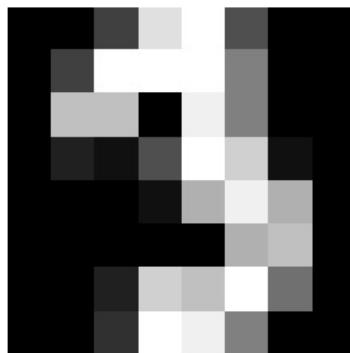
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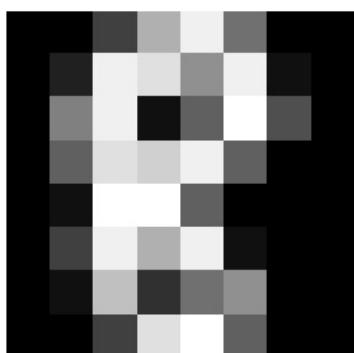
Actual: 3



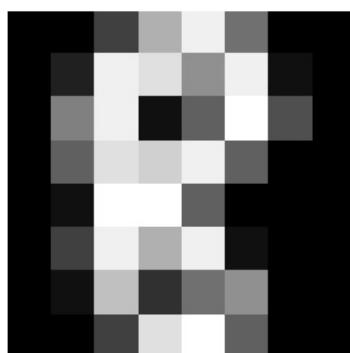
Predicted: 3



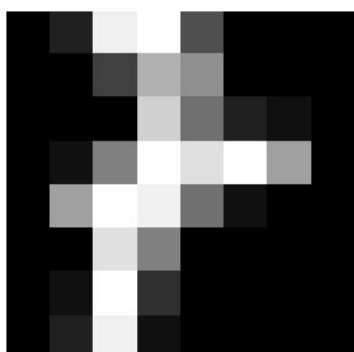
Actual: 8



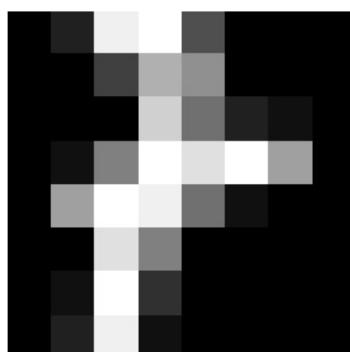
Predicted: 8



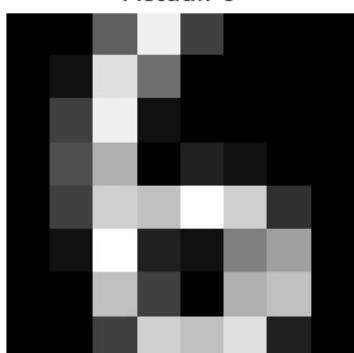
Actual: 7



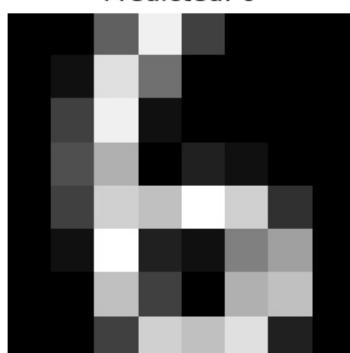
Predicted: 7



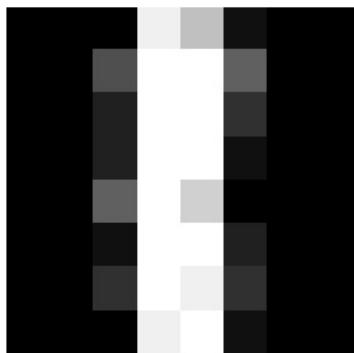
Actual: 6



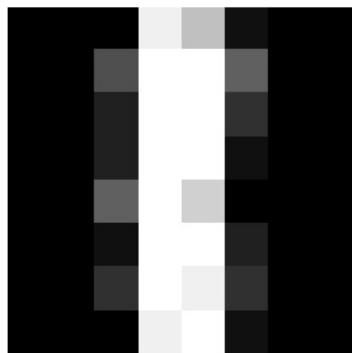
Predicted: 6



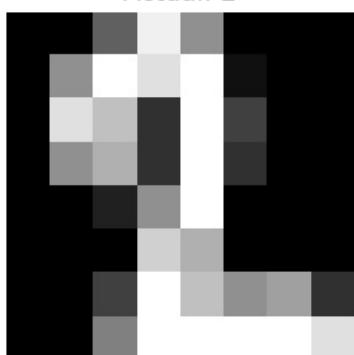
Actual: 1



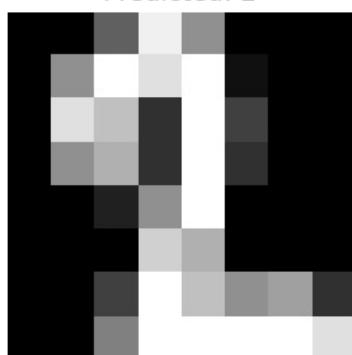
Predicted: 1



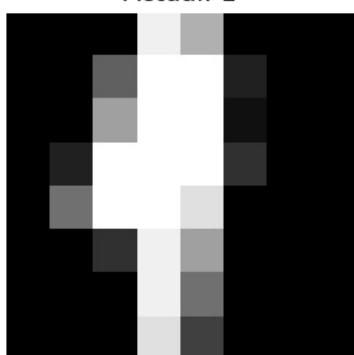
Actual: 2



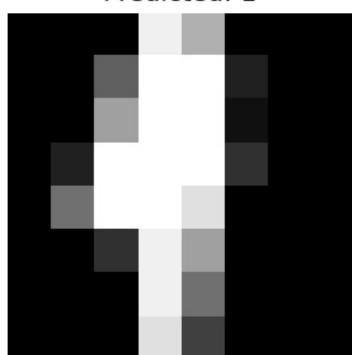
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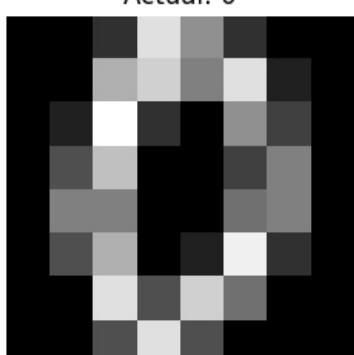
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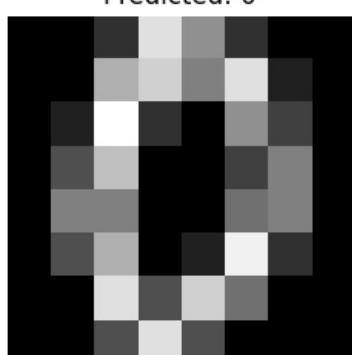
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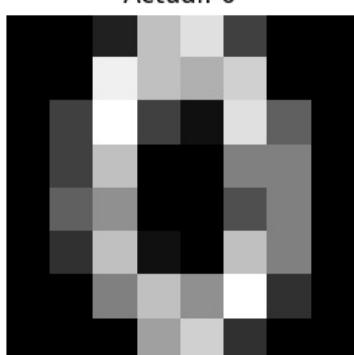
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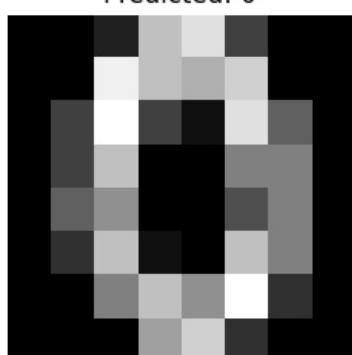
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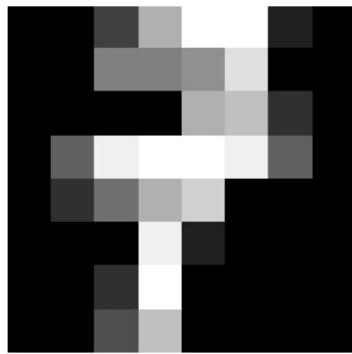
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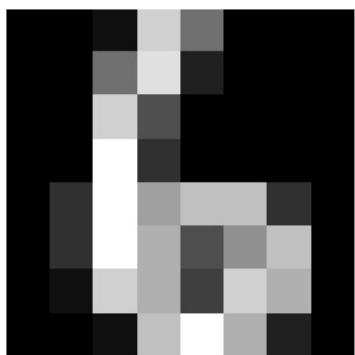
Actual: 7



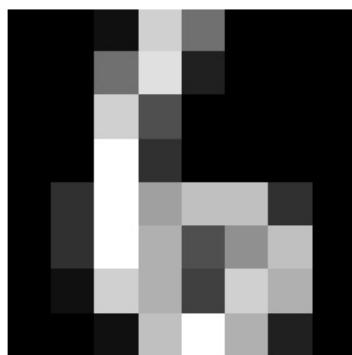
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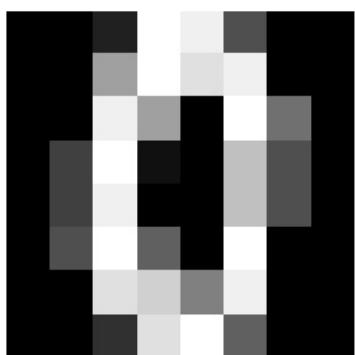
Actual: 6



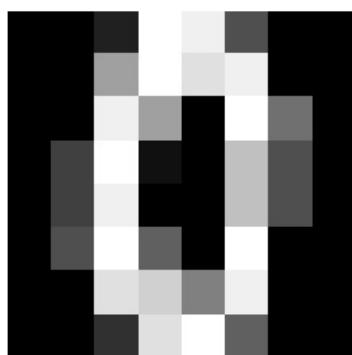
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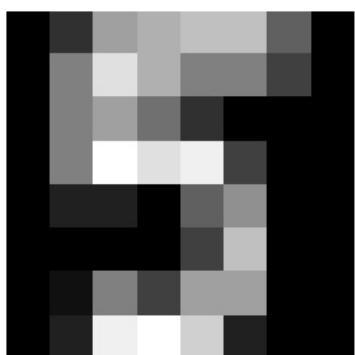
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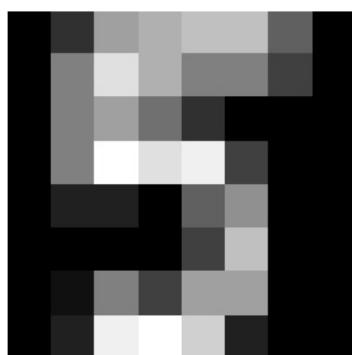
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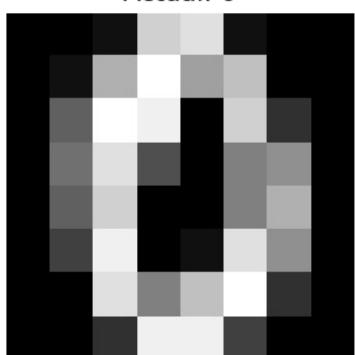
Actual: 5



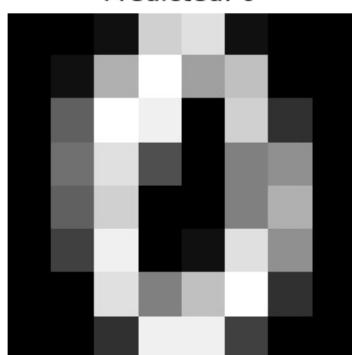
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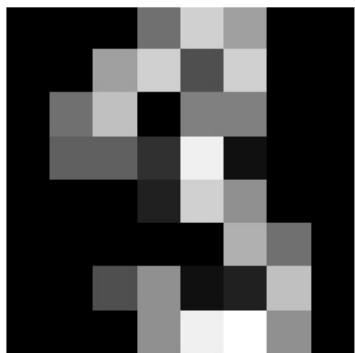
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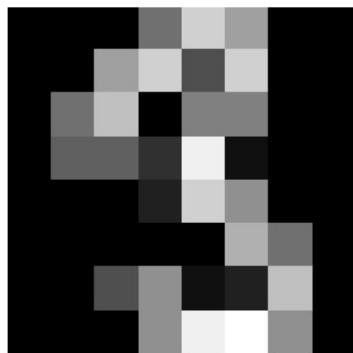
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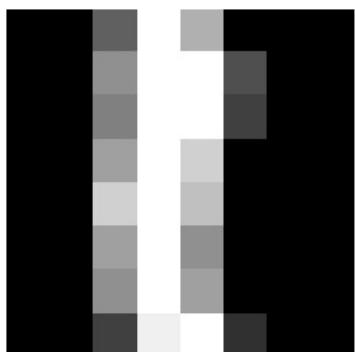
Actual: 3



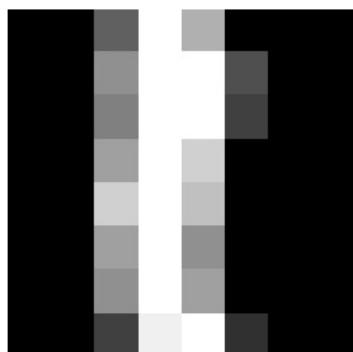
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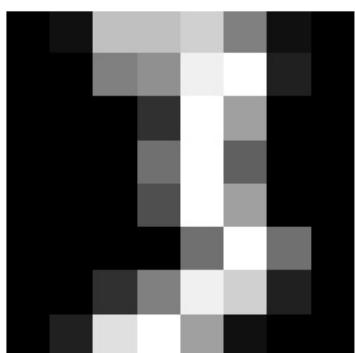
Actual: 1



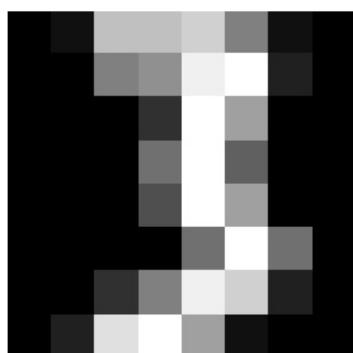
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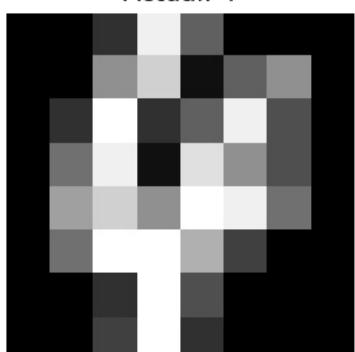
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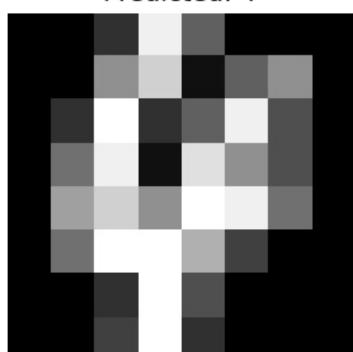
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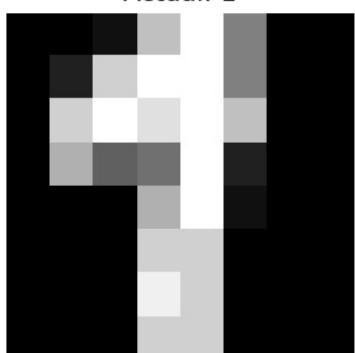
Actual: 4



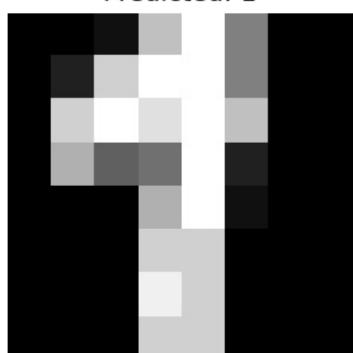
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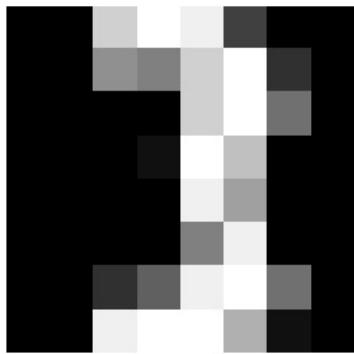
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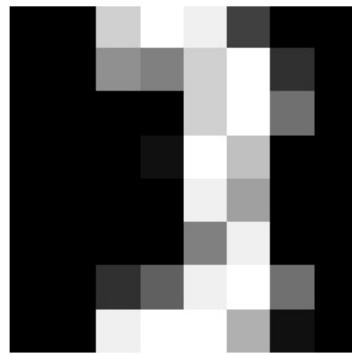
Predicted: 1



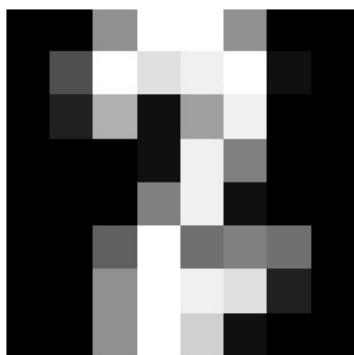
Actual: 3



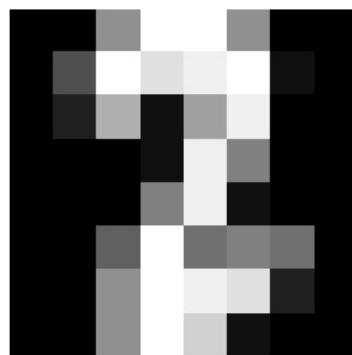
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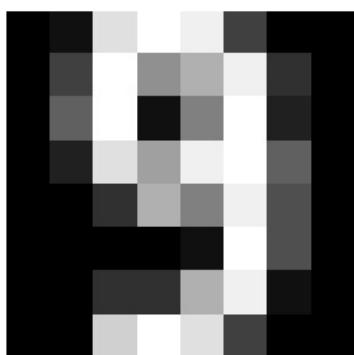
Actual: 2



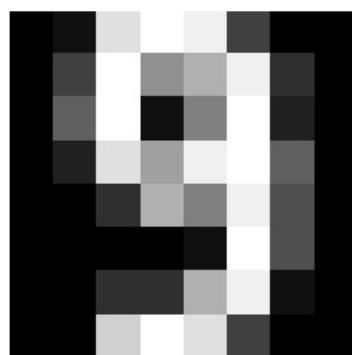
Predicted: 2



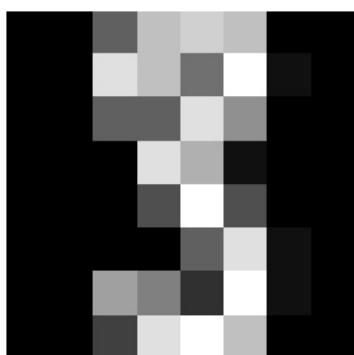
Actual: 9



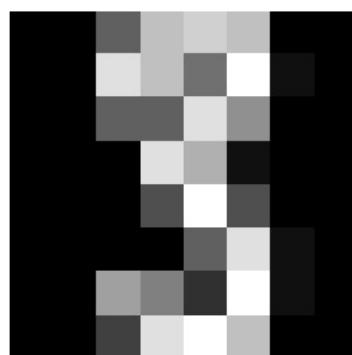
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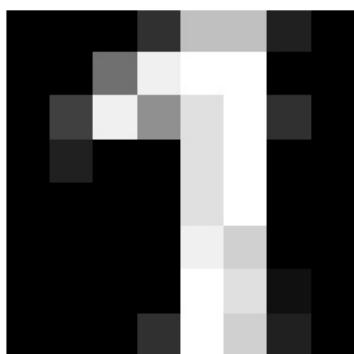
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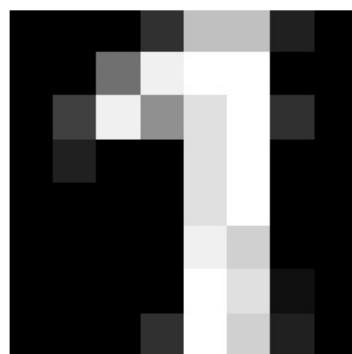
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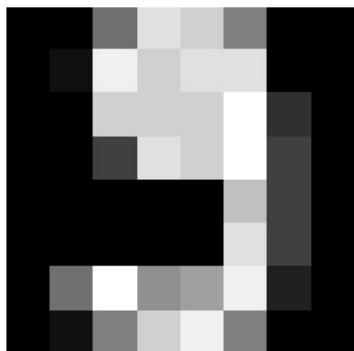
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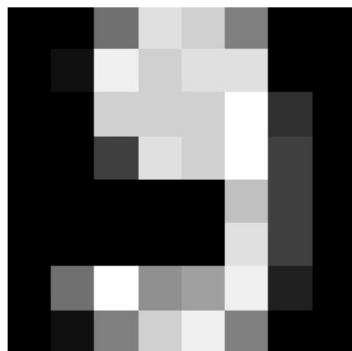
Predicted: 1



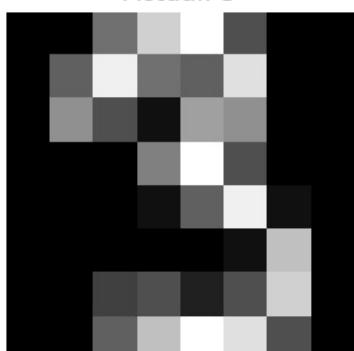
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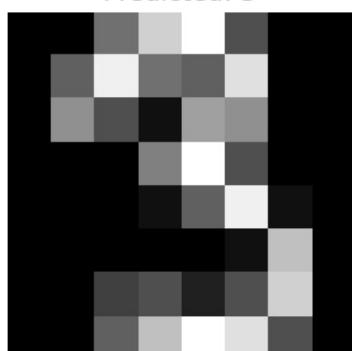
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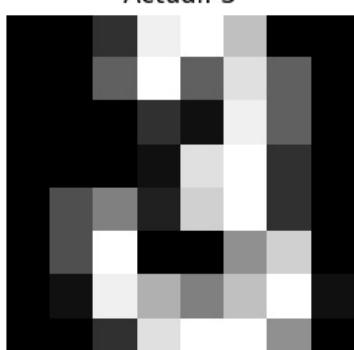
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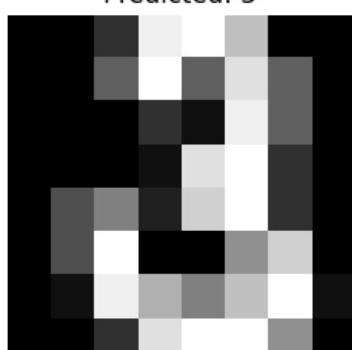
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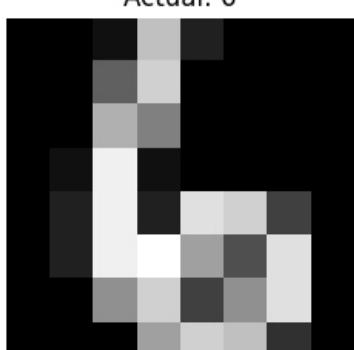
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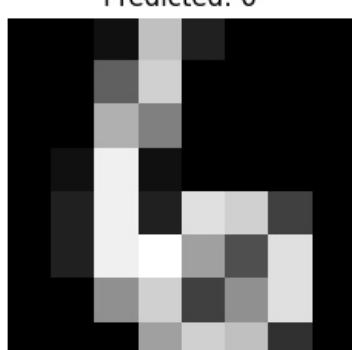
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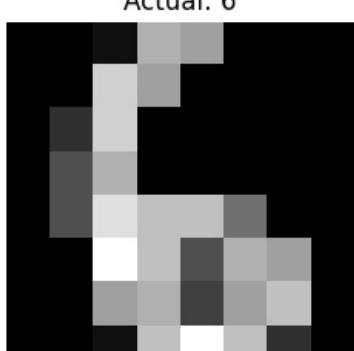
Actual: 6



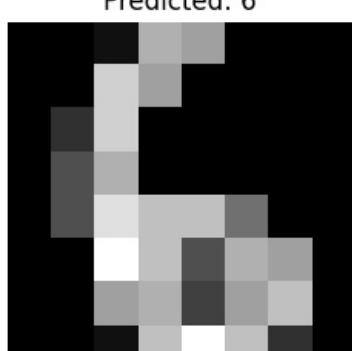
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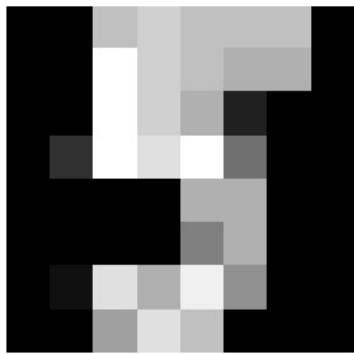
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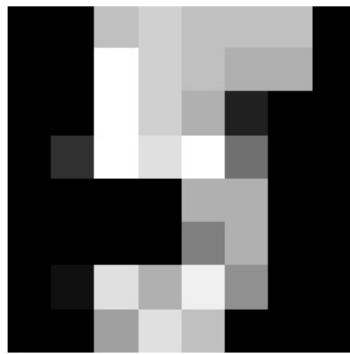
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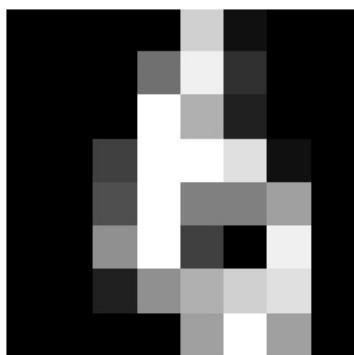
Actual: 5



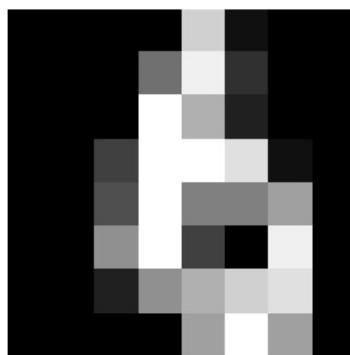
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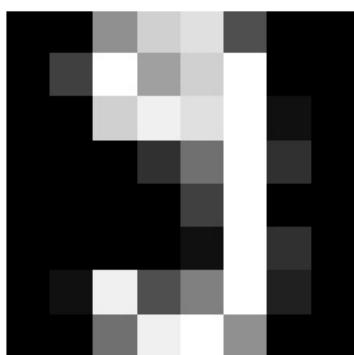
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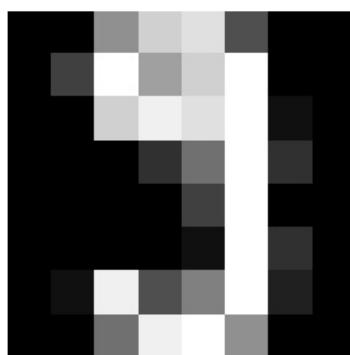
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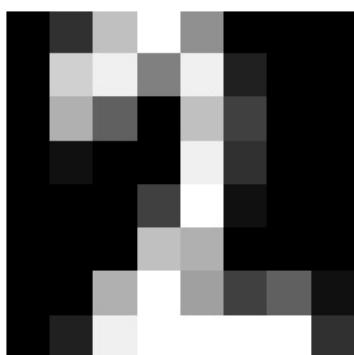
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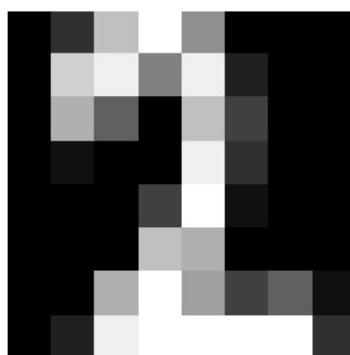
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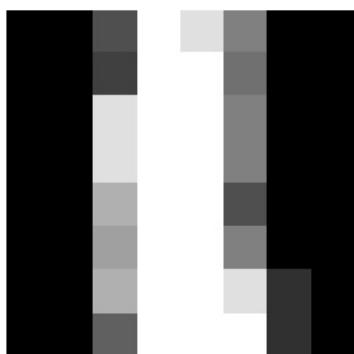
Actual: 2



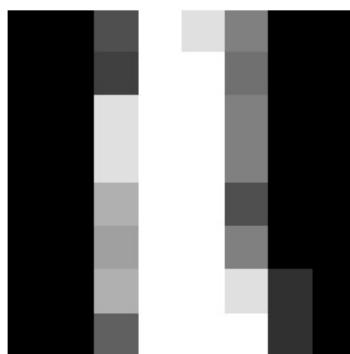
Predicted: 2



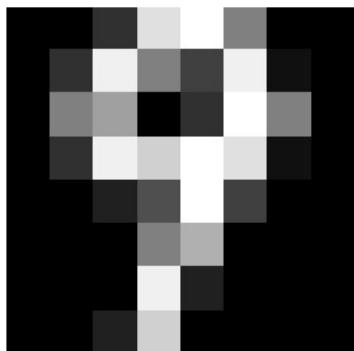
Actual: 1



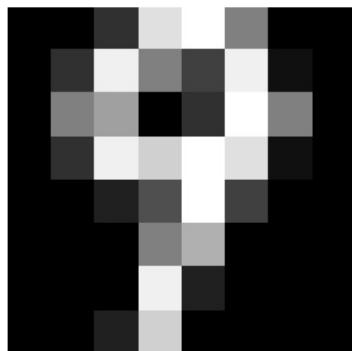
Predicted: 1



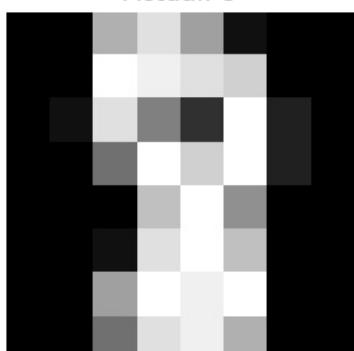
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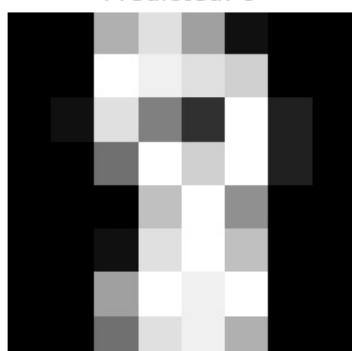
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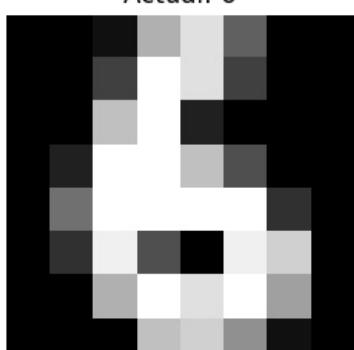
Actual: 8



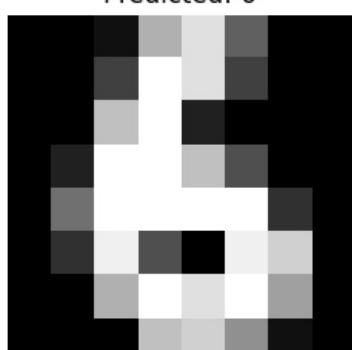
Predicted: 8



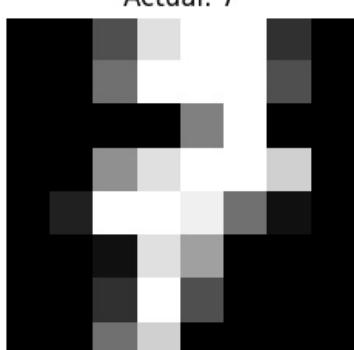
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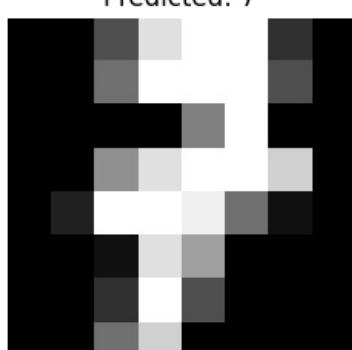
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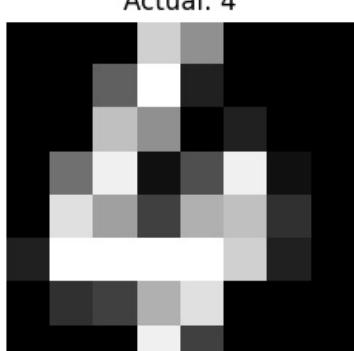
Actual: 7



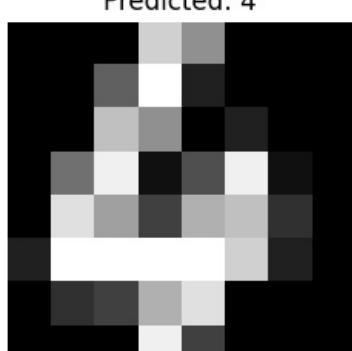
Predicted: 7



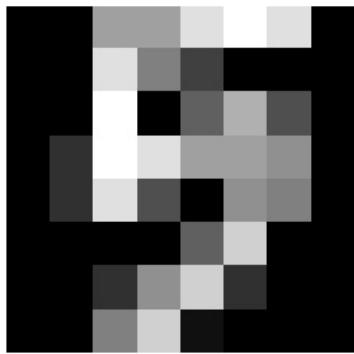
Actual: 4



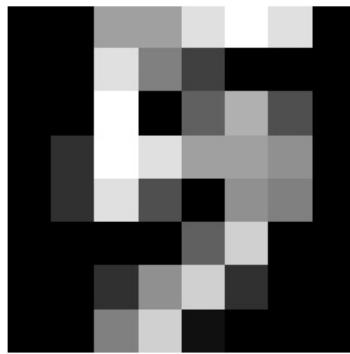
Predicted: 4



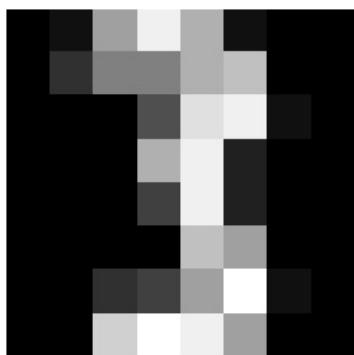
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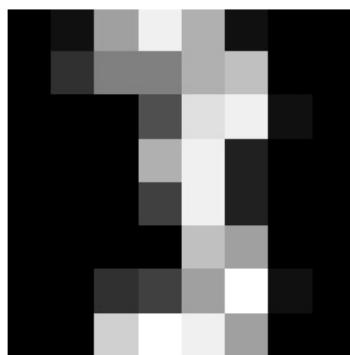
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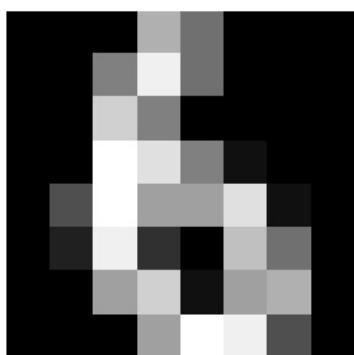
Actual: 3



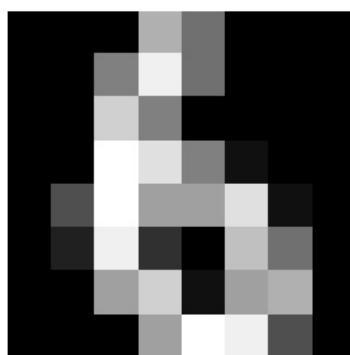
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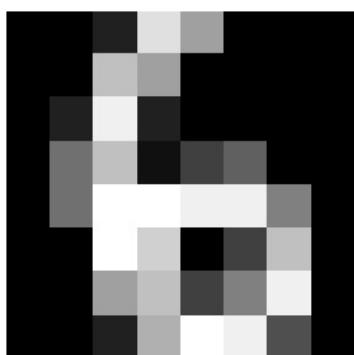
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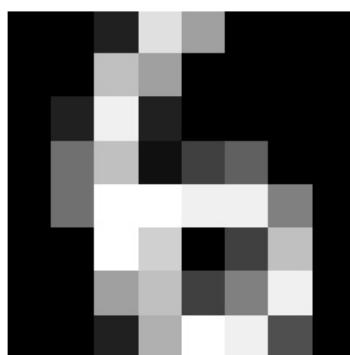
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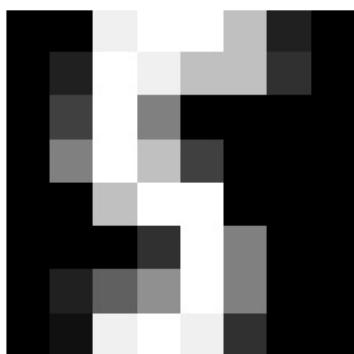
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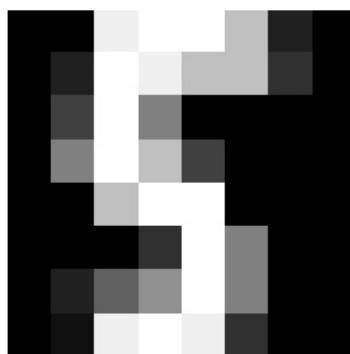
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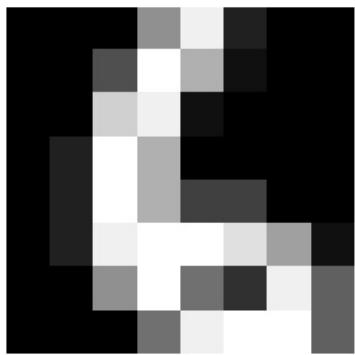
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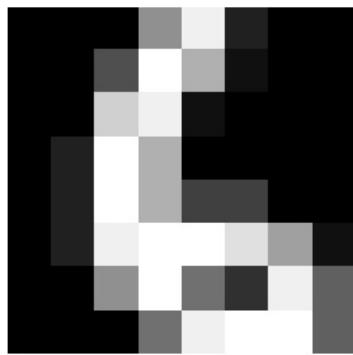
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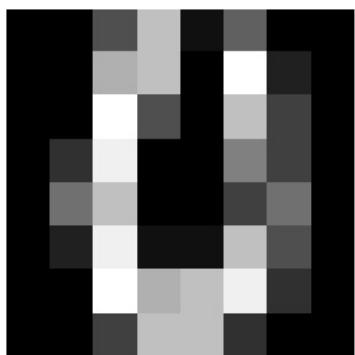
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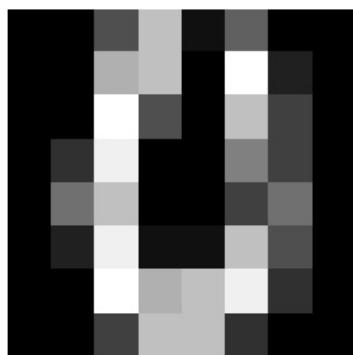
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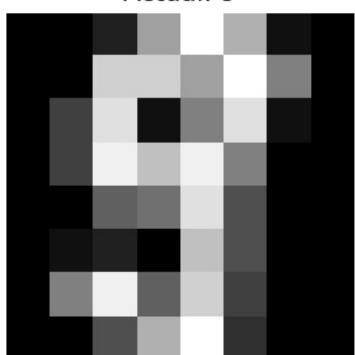
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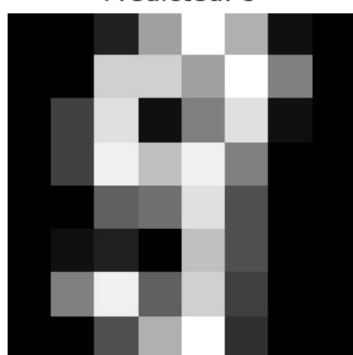
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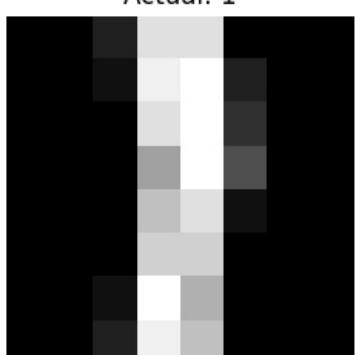
Actual: 9



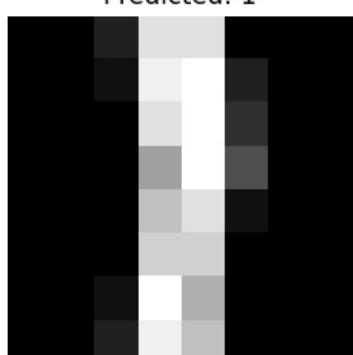
Predicted: 8



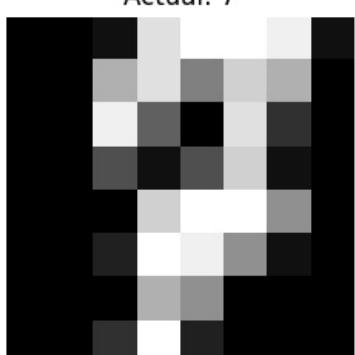
Actual: 1



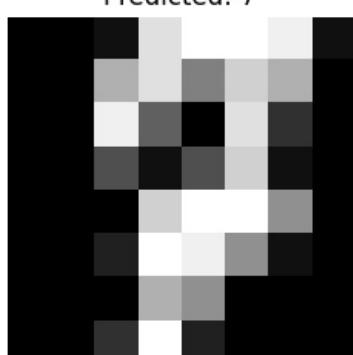
Predicted: 1



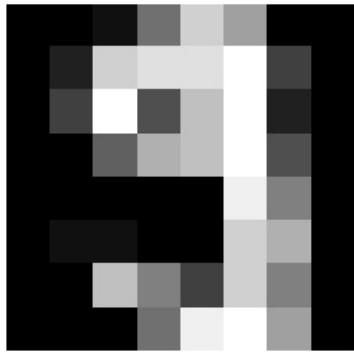
Actual: 7



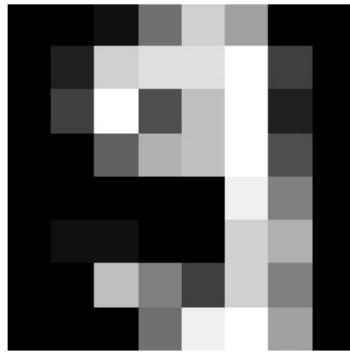
Predicted: 7



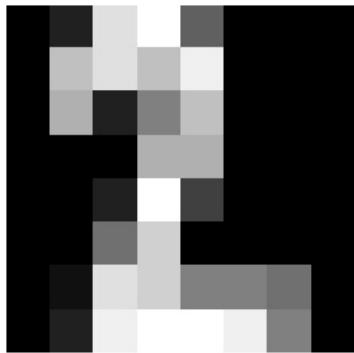
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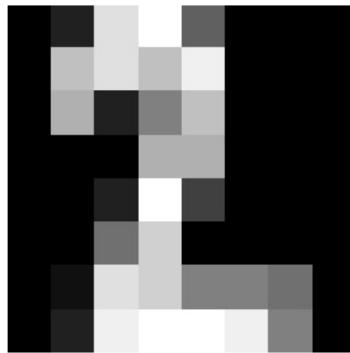
Predicted: 9



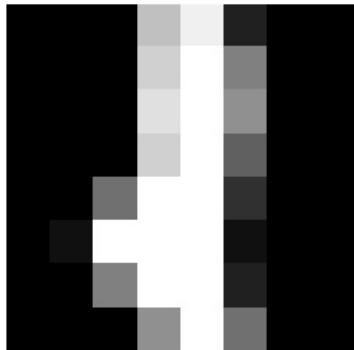
Actual: 2



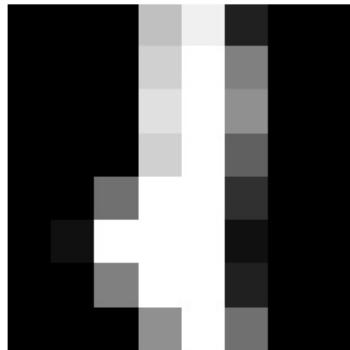
Predicted: 2



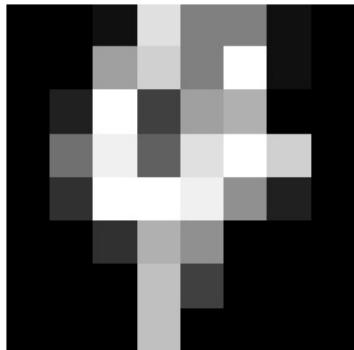
Actual: 1



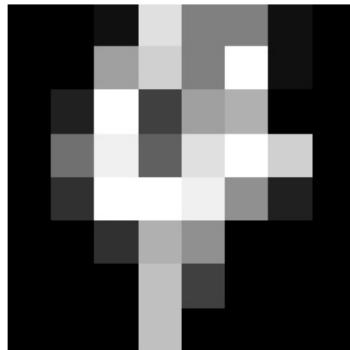
Predicted: 1



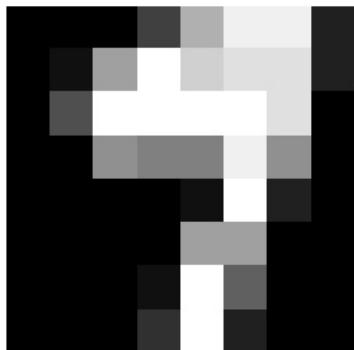
Actual: 4



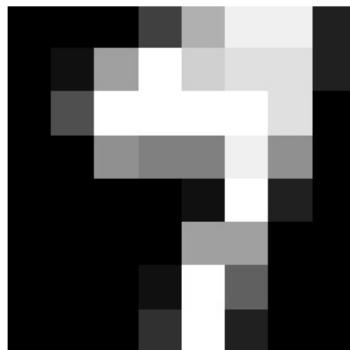
Predicted: 4



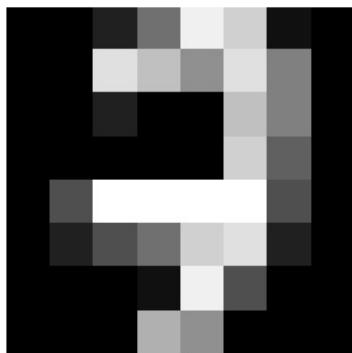
Actual: 9



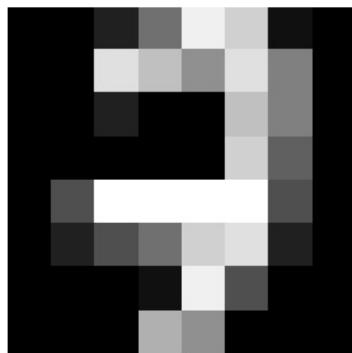
Predicted: 9



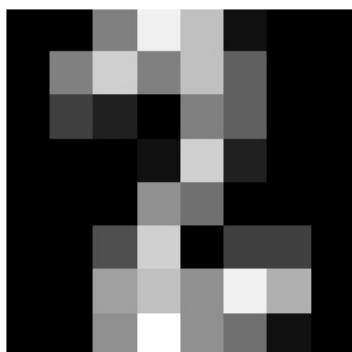
Actual: 7



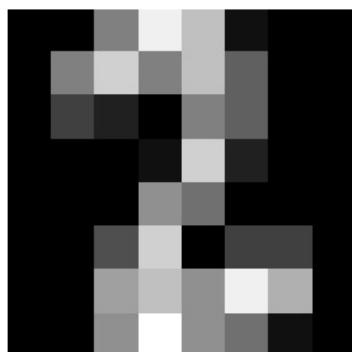
Predicted: 7



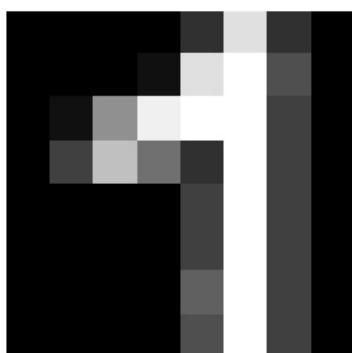
Actual: 2



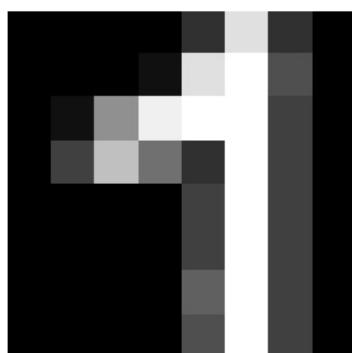
Predicted: 2



Actual: 1



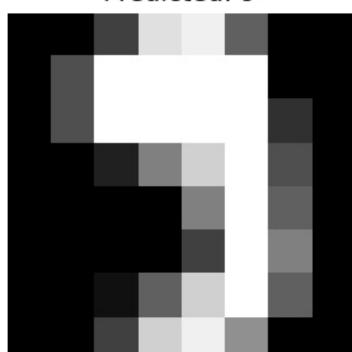
Predicted: 1



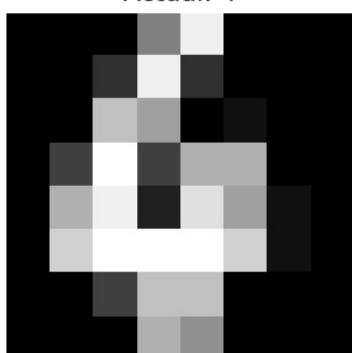
Actual: 9



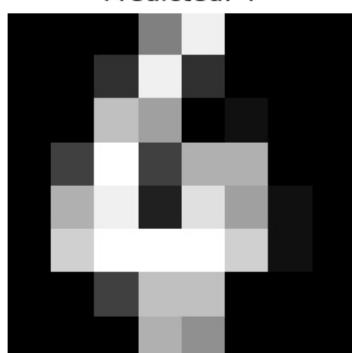
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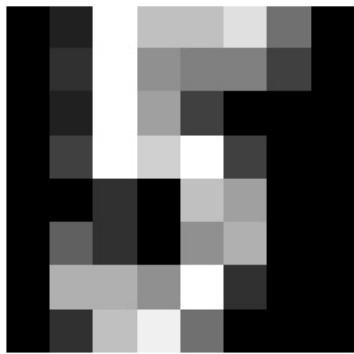
Actual: 4



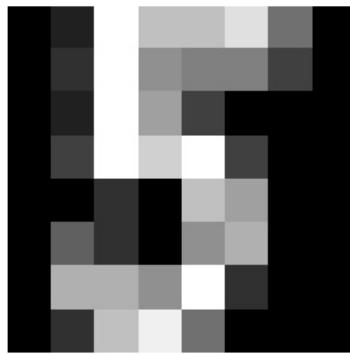
Predicted: 4



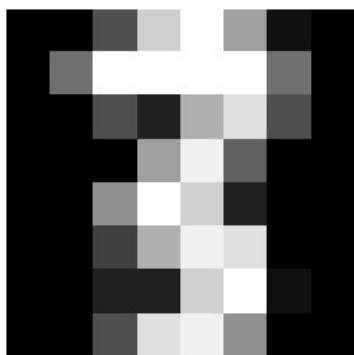
Actual: 5



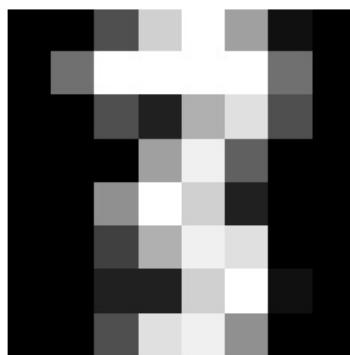
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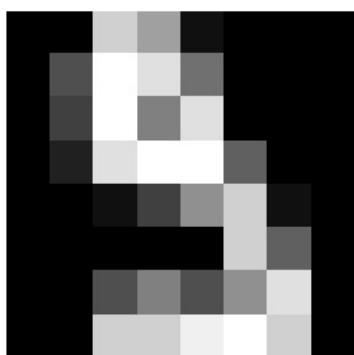
Actual: 3



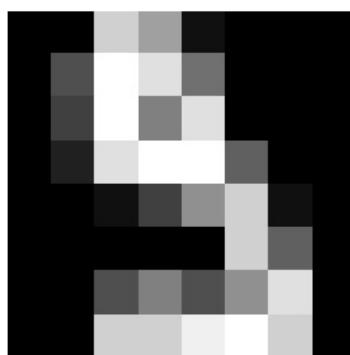
Predicted: 3



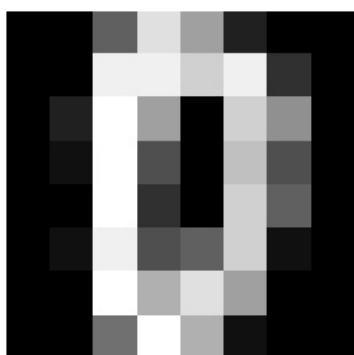
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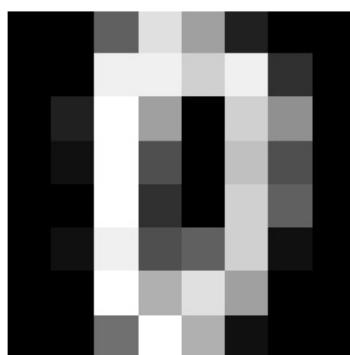
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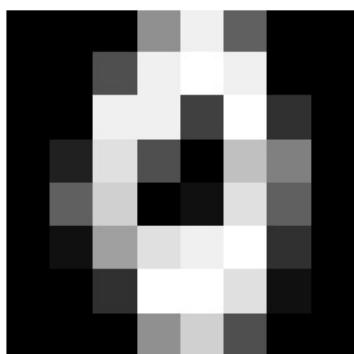
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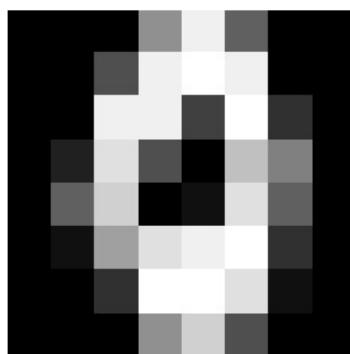
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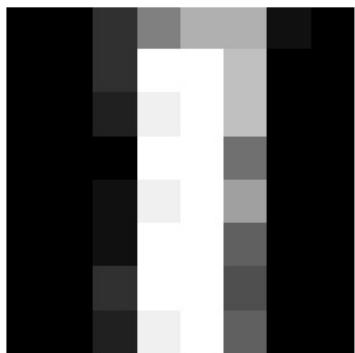
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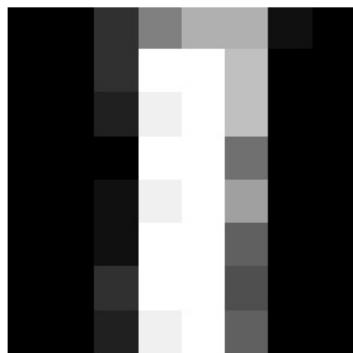
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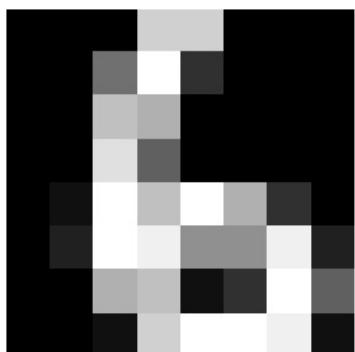
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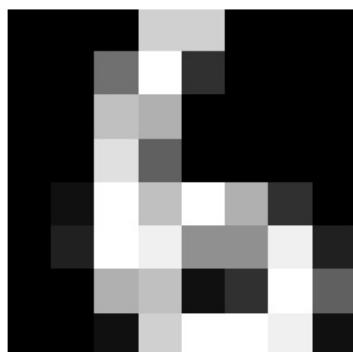
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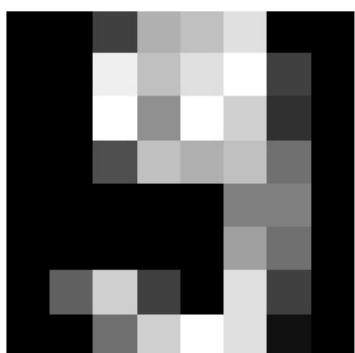
Actual: 6



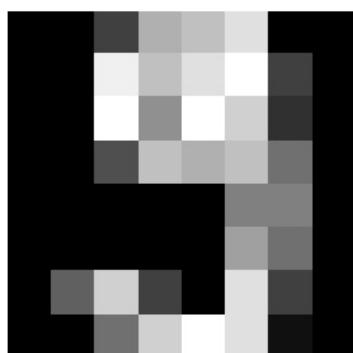
Predicted: 6



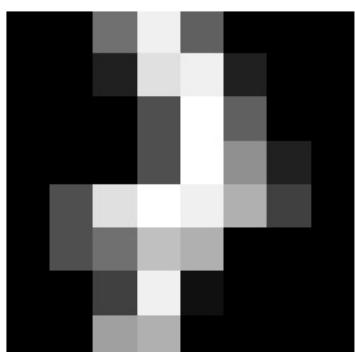
Actual: 9



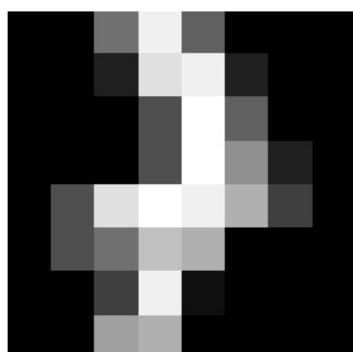
Predicted: 9



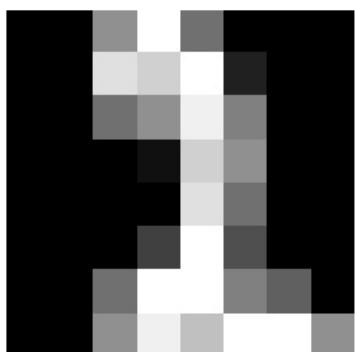
Actual: 7



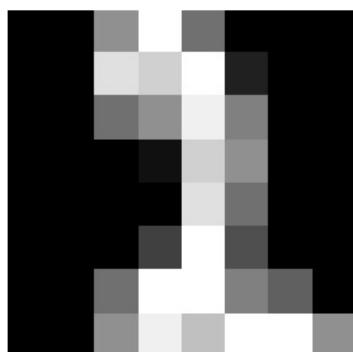
Predicted: 7



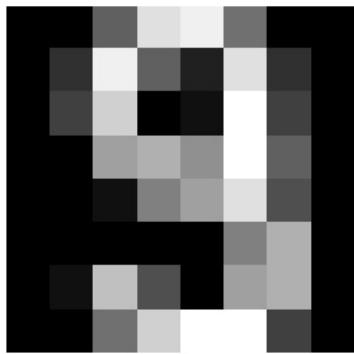
Actual: 2



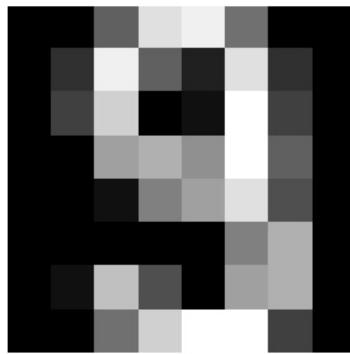
Predicted: 2



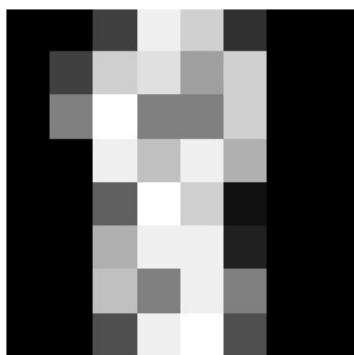
Actual: 9



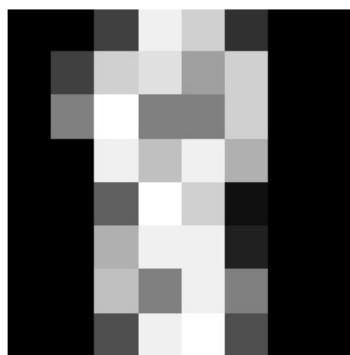
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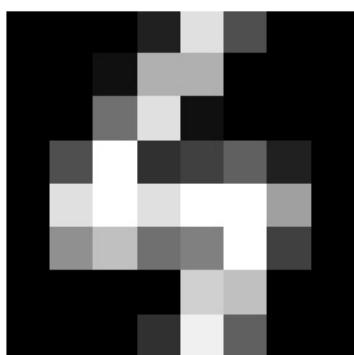
Actual: 8



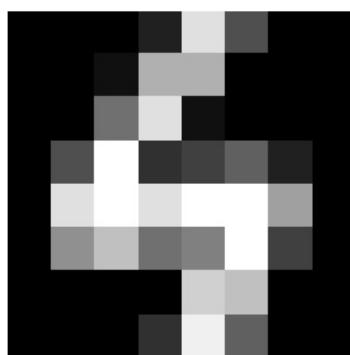
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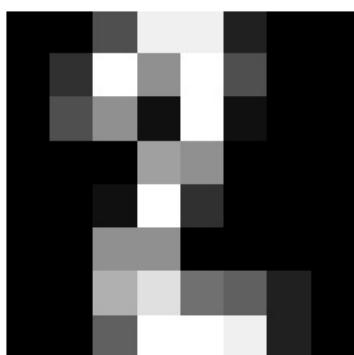
Actual: 4



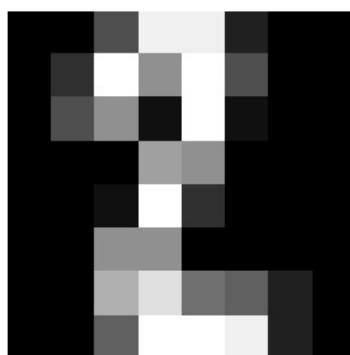
Predicted: 4



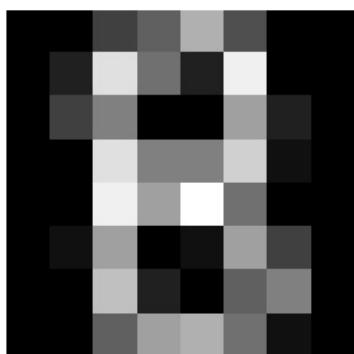
Actual: 2



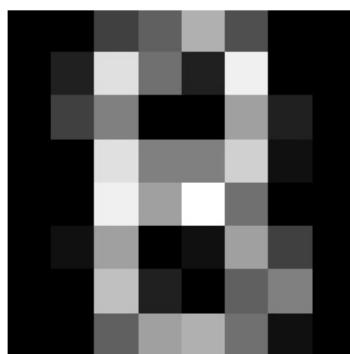
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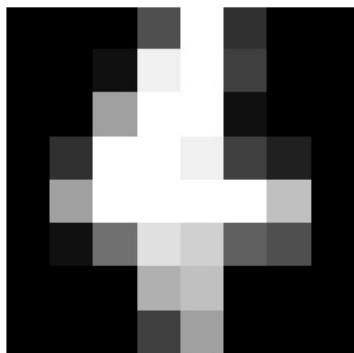
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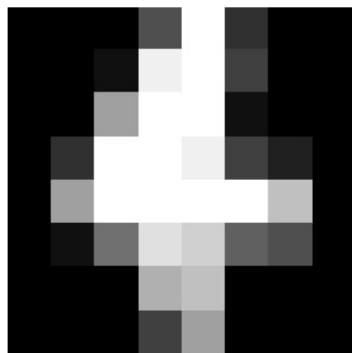
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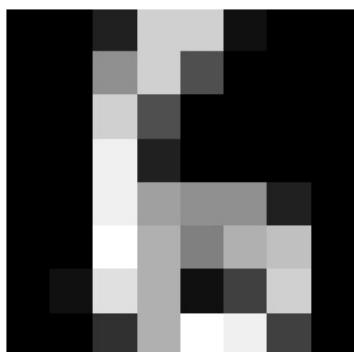
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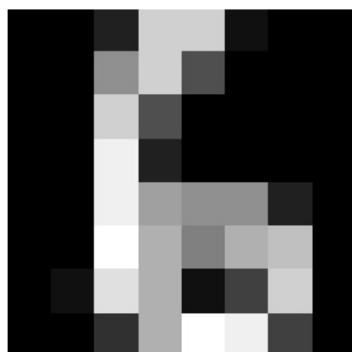
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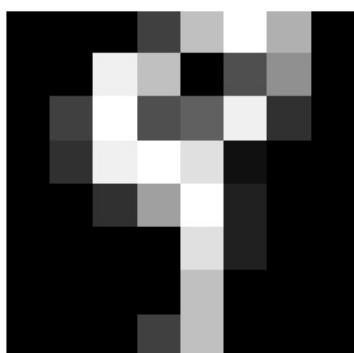
Actual: 6



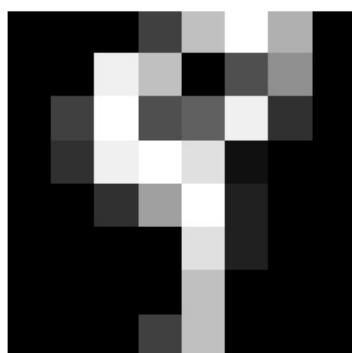
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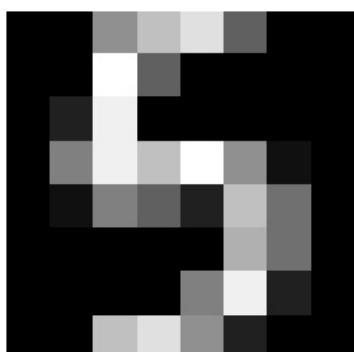
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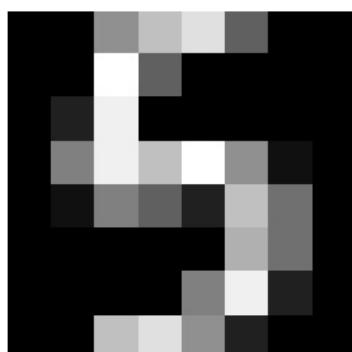
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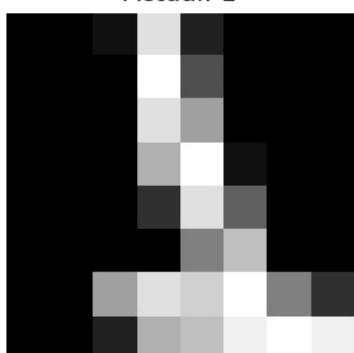
Actual: 5



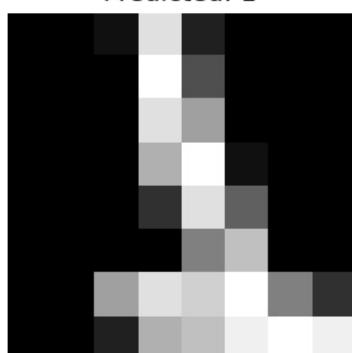
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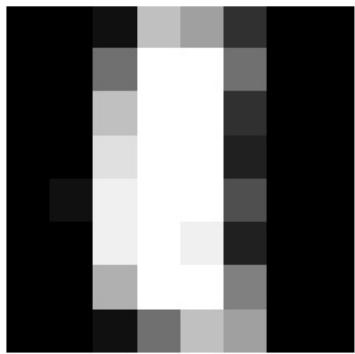
Actual: 1



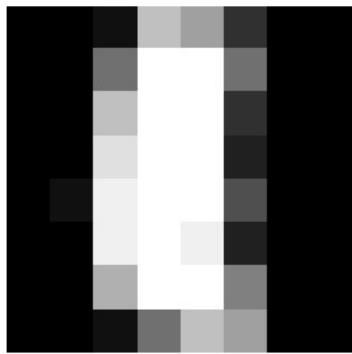
Predicted: 1



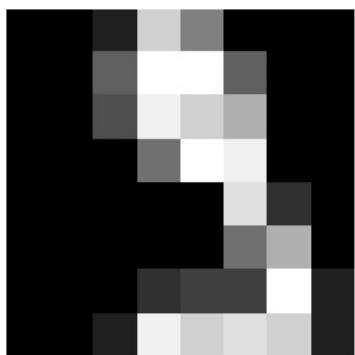
Actual: 1



Predicted: 1



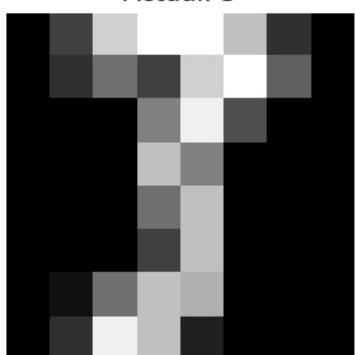
Actual: 9



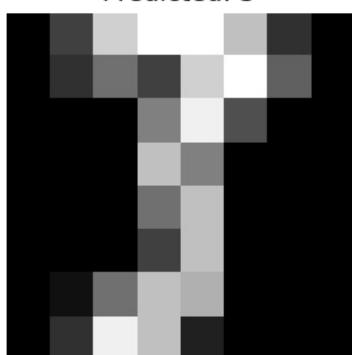
Predicted: 9



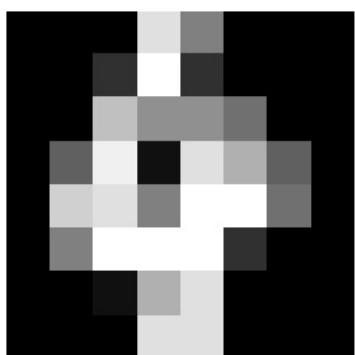
Actual: 3



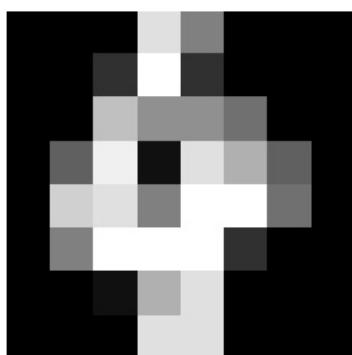
Predicted: 3



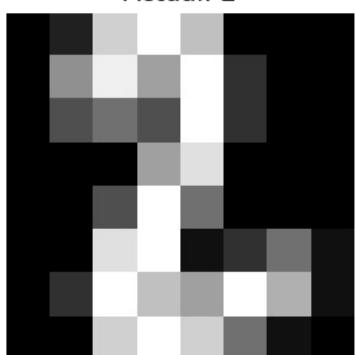
Actual: 4



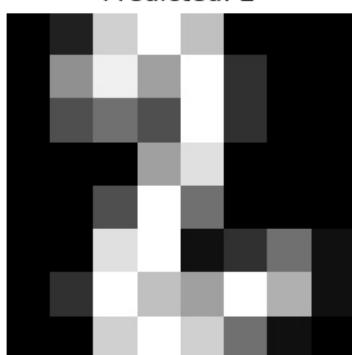
Predicted: 4



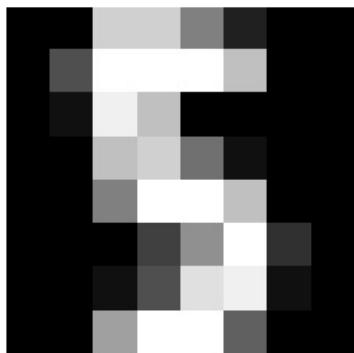
Actual: 2



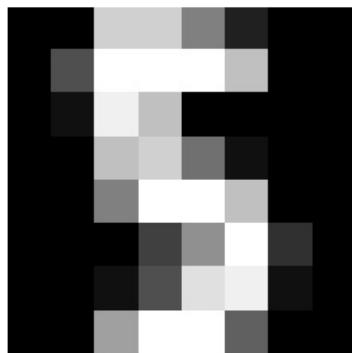
Predicted: 2



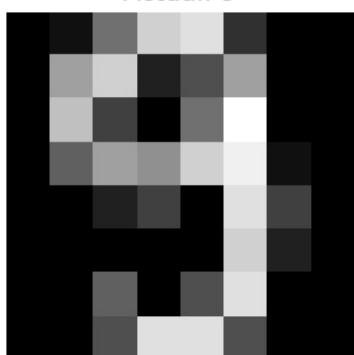
Actual: 5



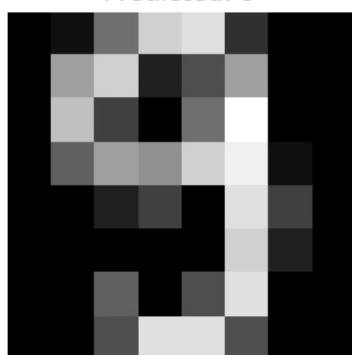
Predicted: 5



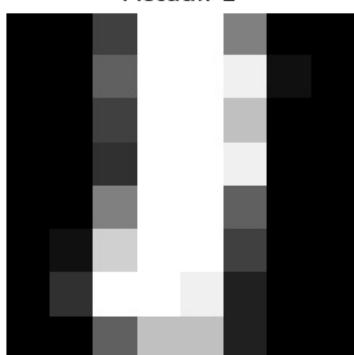
Actual: 9



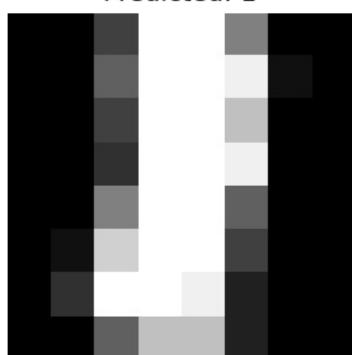
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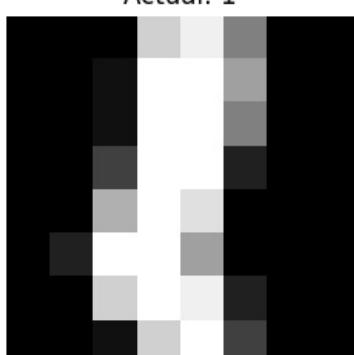
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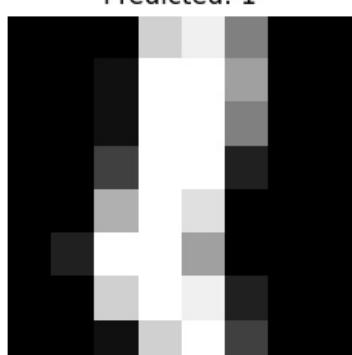
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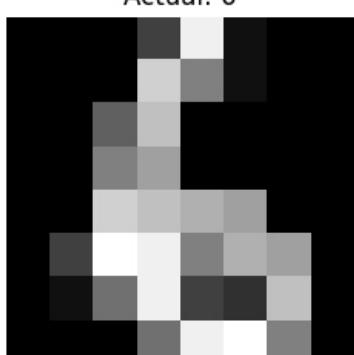
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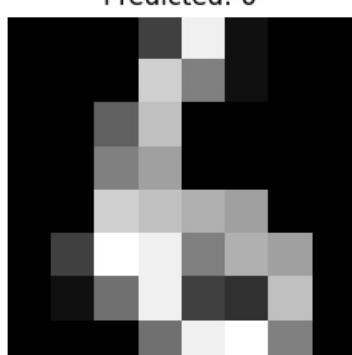
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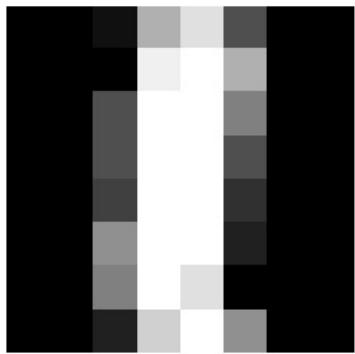
Actual: 6



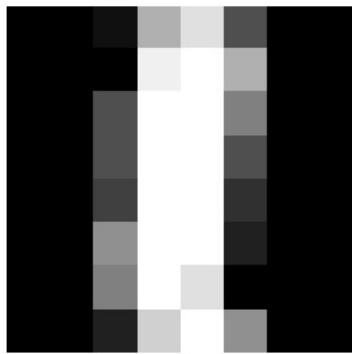
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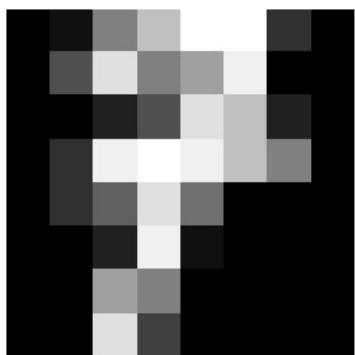
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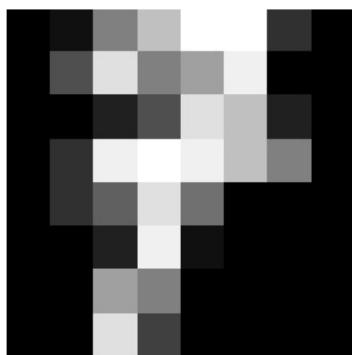
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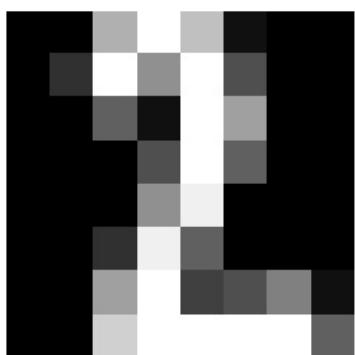
Actual: 7



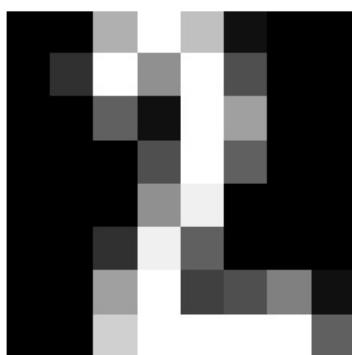
Predicted: 7



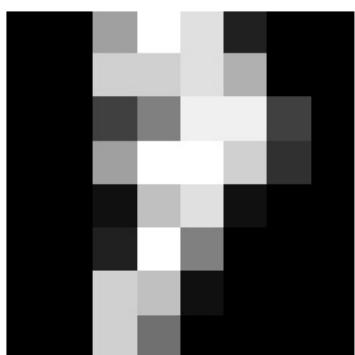
Actual: 2



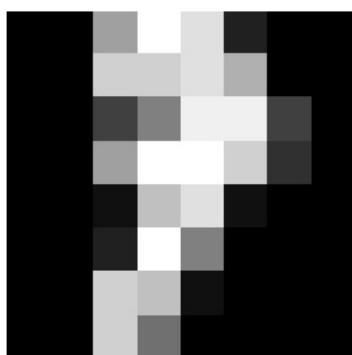
Predicted: 2



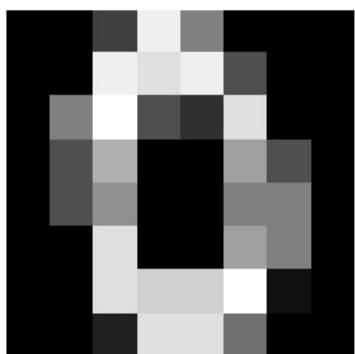
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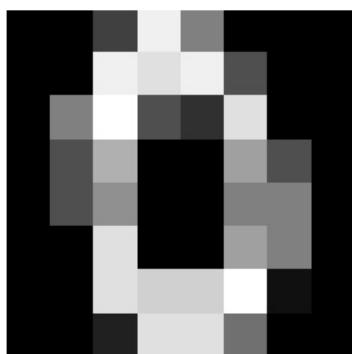
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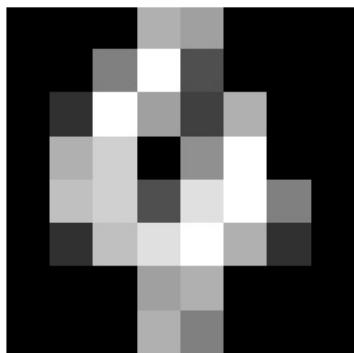
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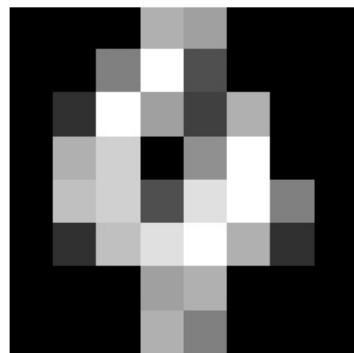
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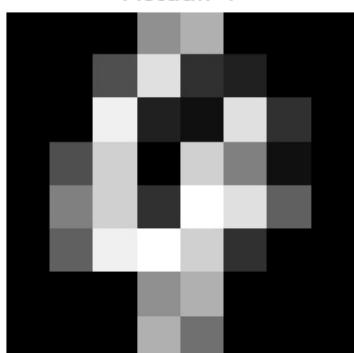
Actual: 4



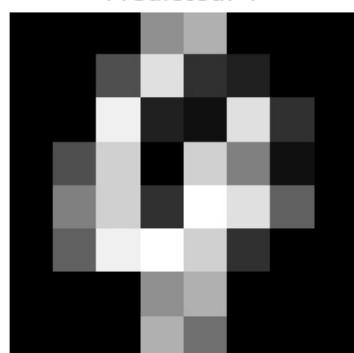
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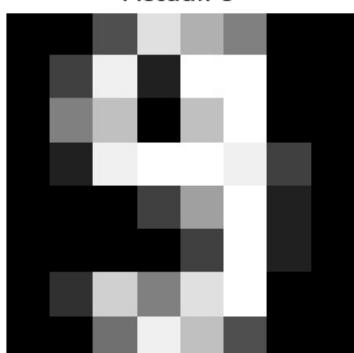
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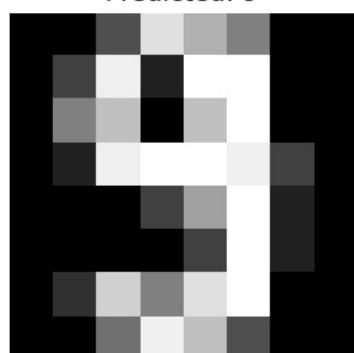
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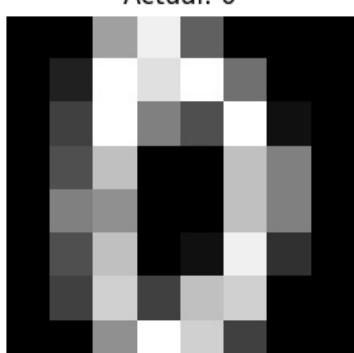
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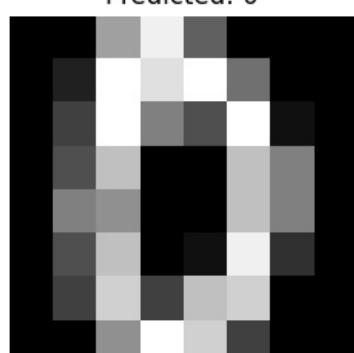
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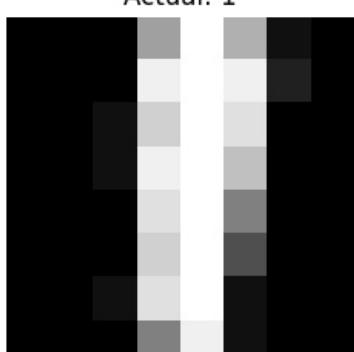
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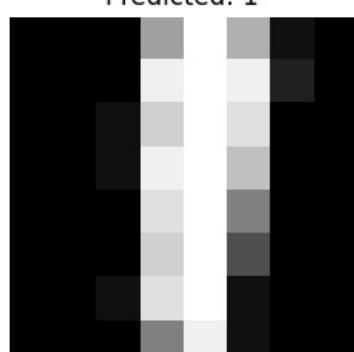
Predicted: 0



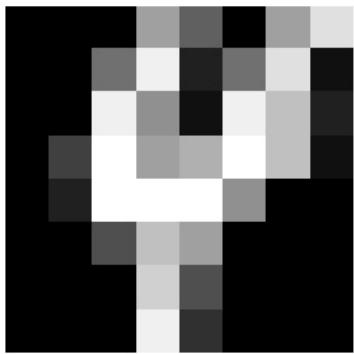
Actual: 1



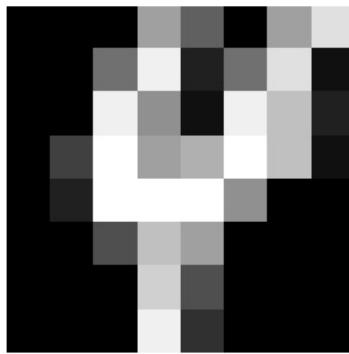
Predicted: 1



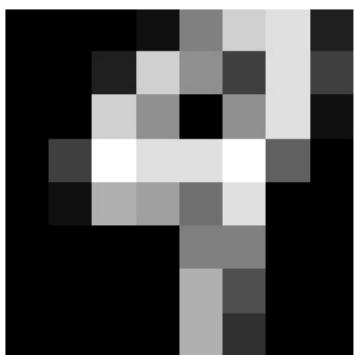
Actual: 4



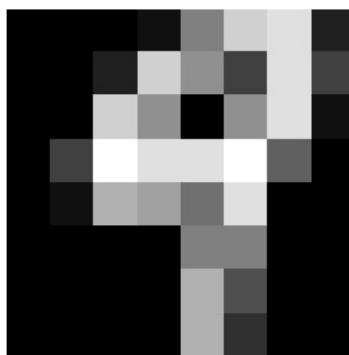
Predicted: 4



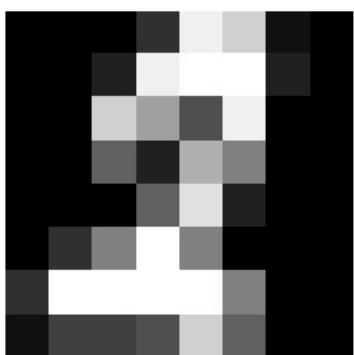
Actual: 9



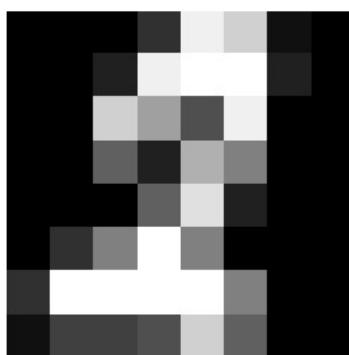
Predicted: 9



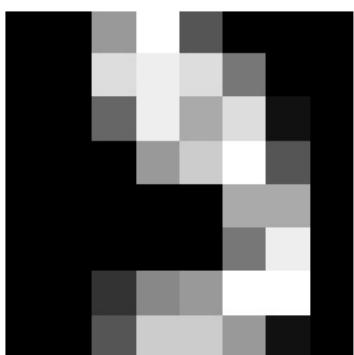
Actual: 2



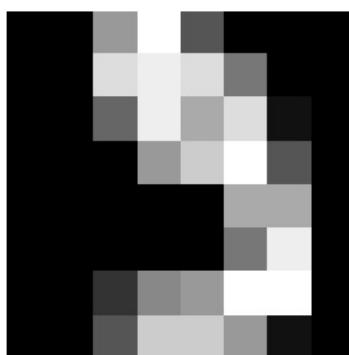
Predicted: 2



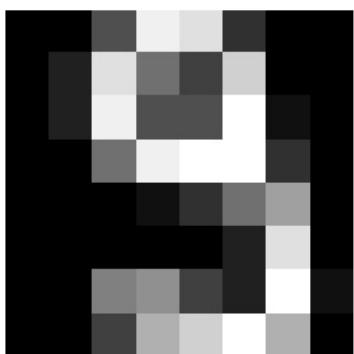
Actual: 9



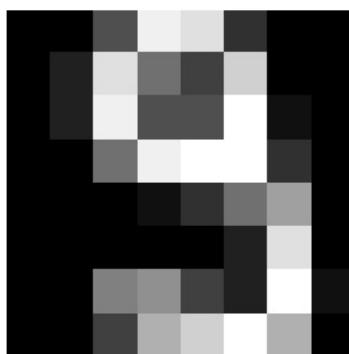
Predicted: 9



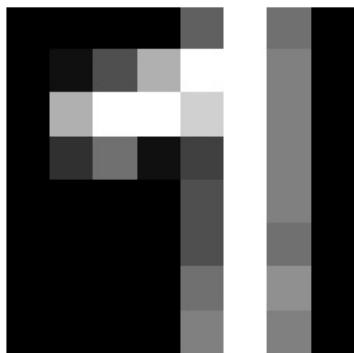
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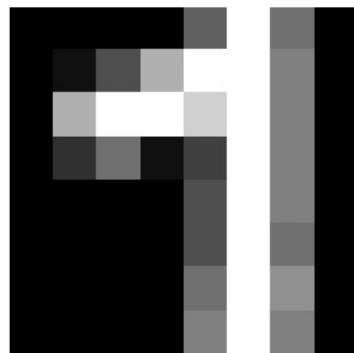
Predicted: 9



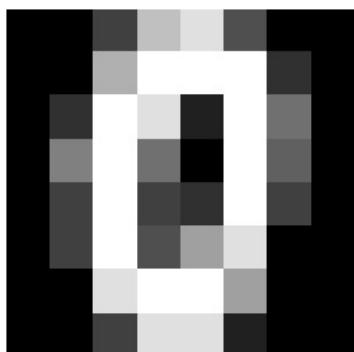
Actual: 1



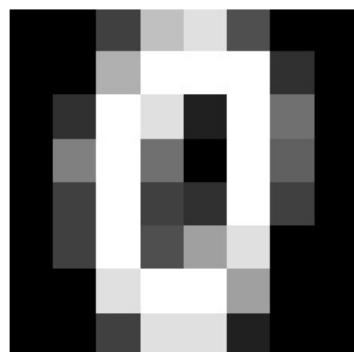
Predicted: 1



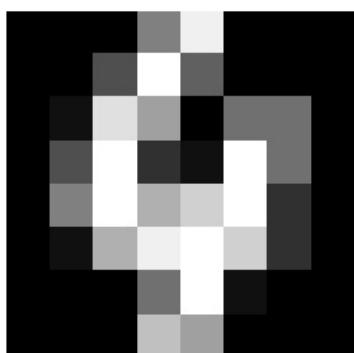
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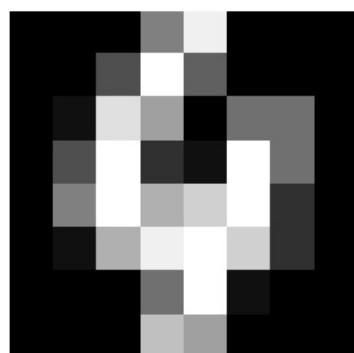
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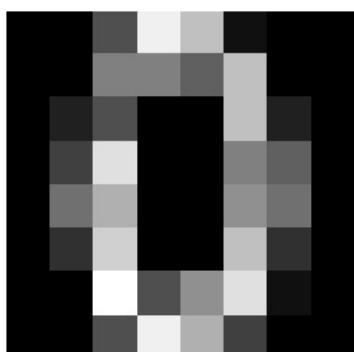
Actual: 4



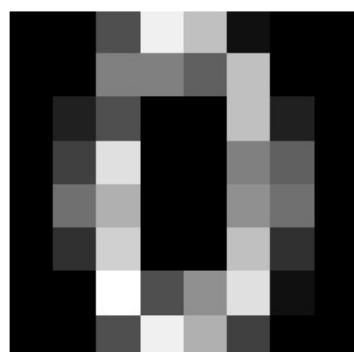
Predicted: 4



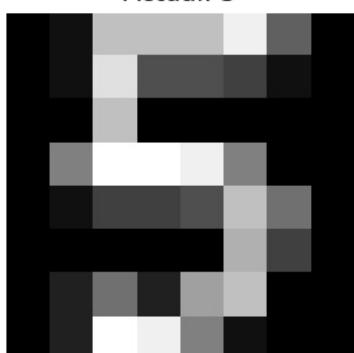
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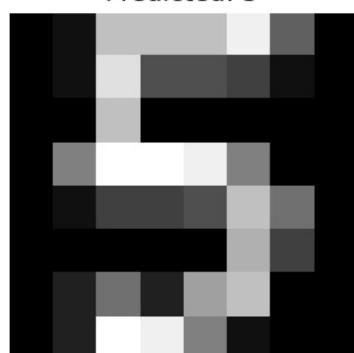
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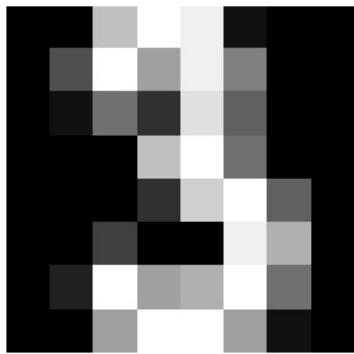
Actual: 5



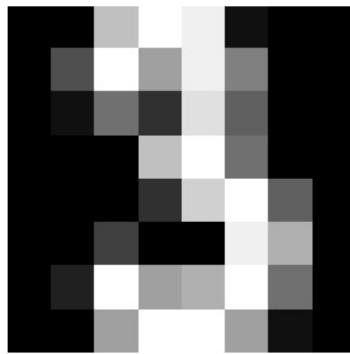
Predicted: 5



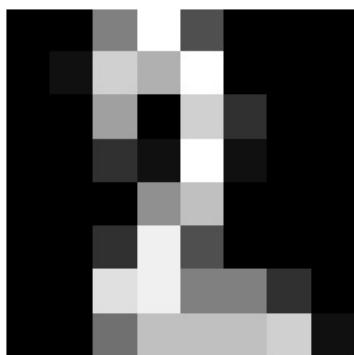
Actual: 3



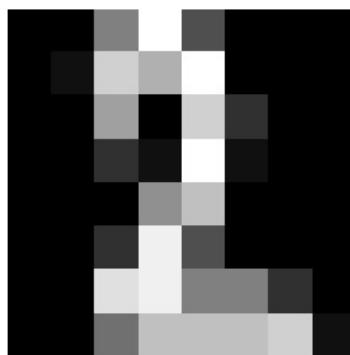
Predicted: 3



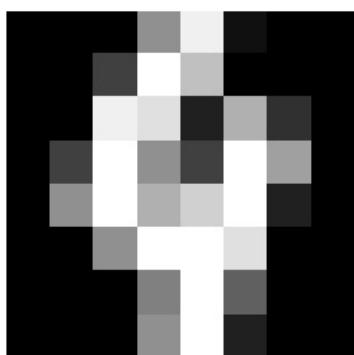
Actual: 2



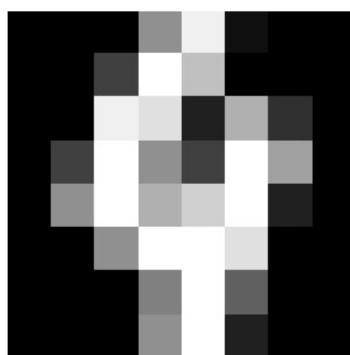
Predicted: 2



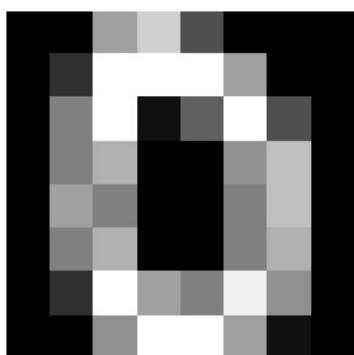
Actual: 4



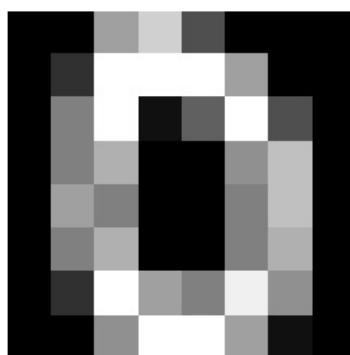
Predicted: 4



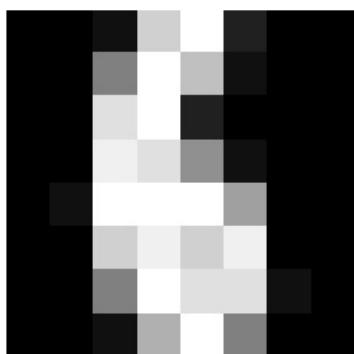
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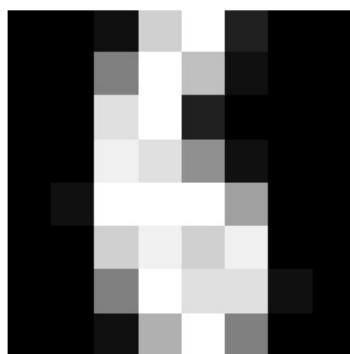
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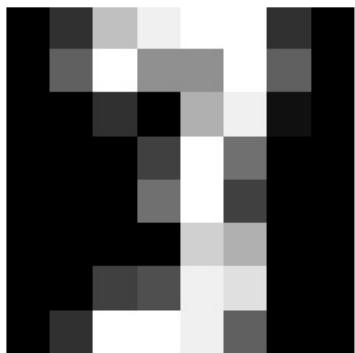
Actual: 6



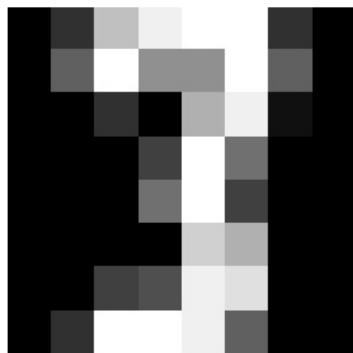
Predicted: 6



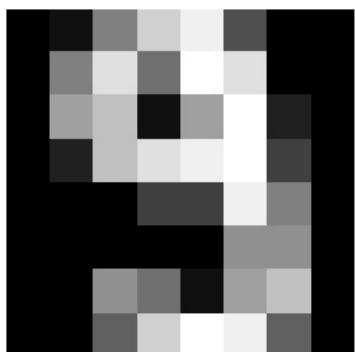
Actual: 3



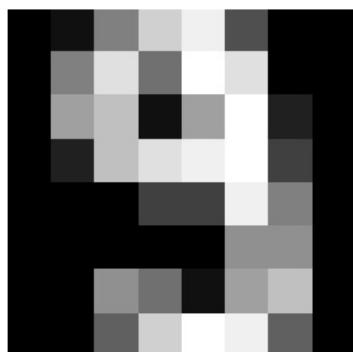
Predicted: 3



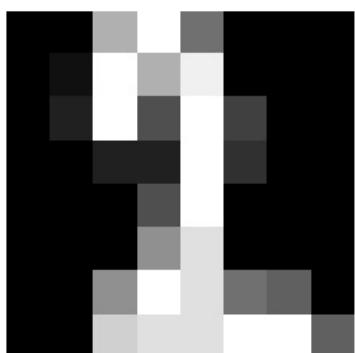
Actual: 9



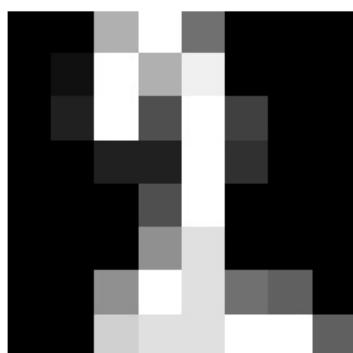
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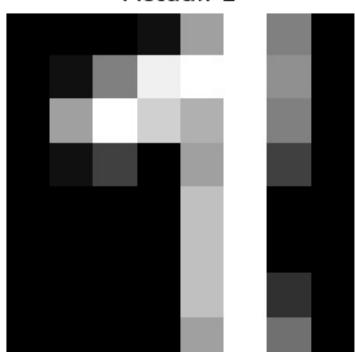
Actual: 2



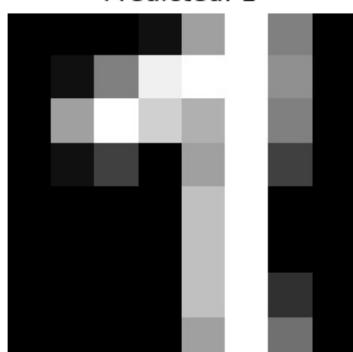
Predicted: 2



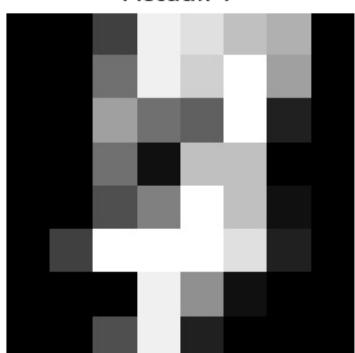
Actual: 1



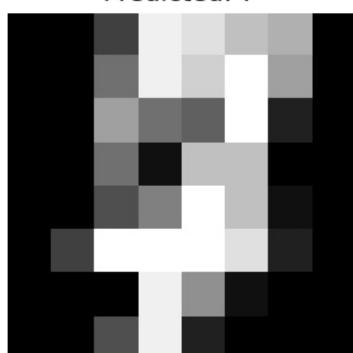
Predicted: 1



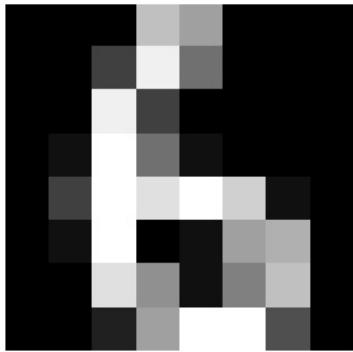
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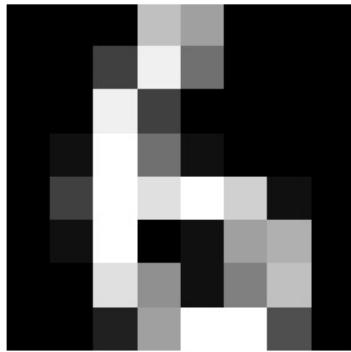
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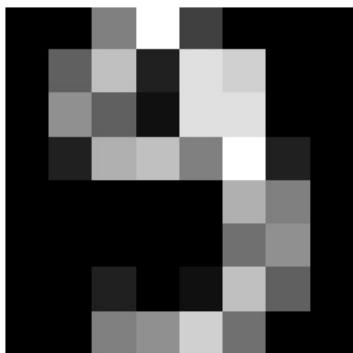
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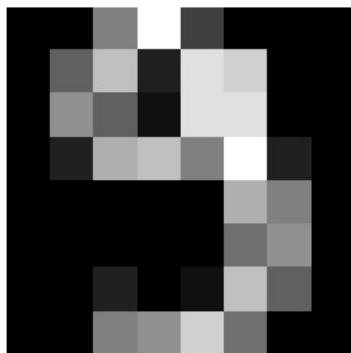
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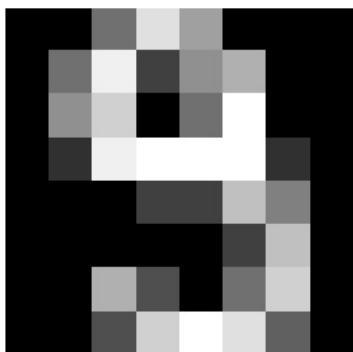
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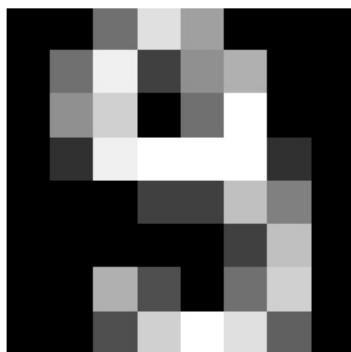
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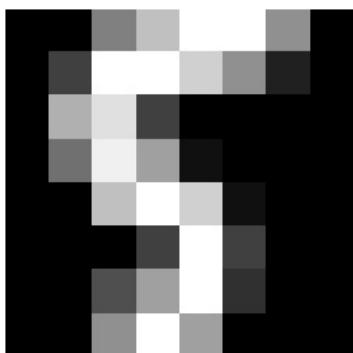
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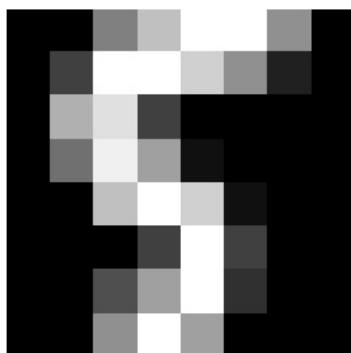
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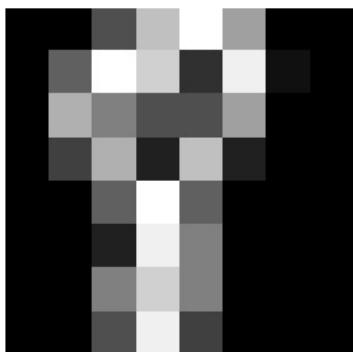
Actual: 5



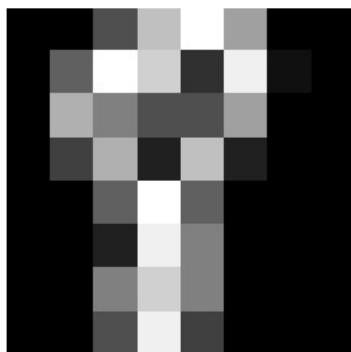
Predicted: 5



Actual: 8



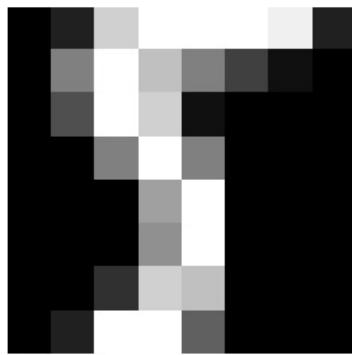
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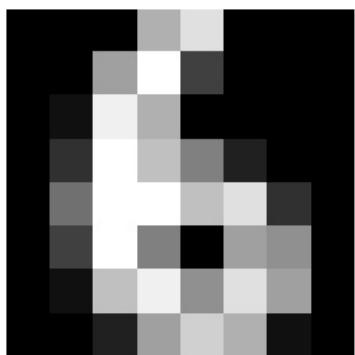
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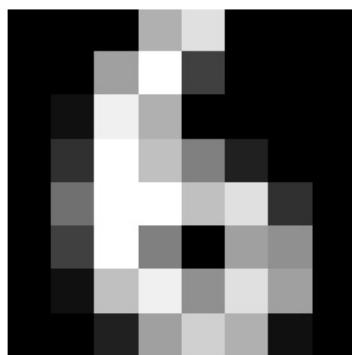
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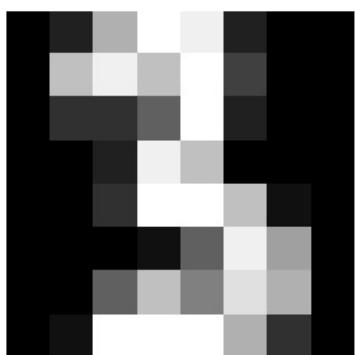
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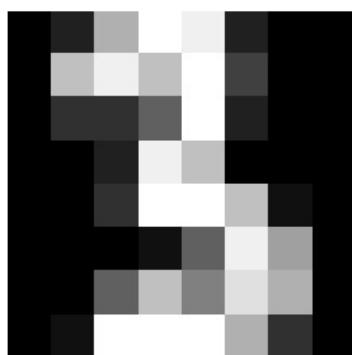
Predicted: 6



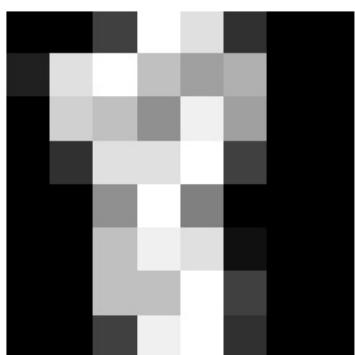
Actual: 3



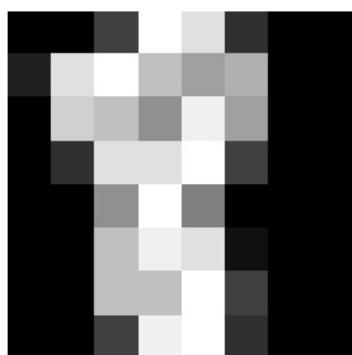
Predicted: 3



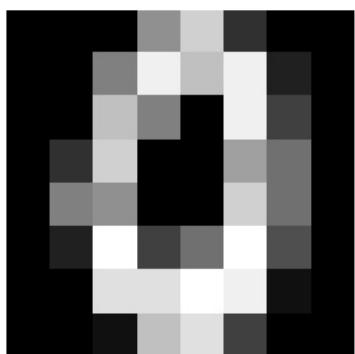
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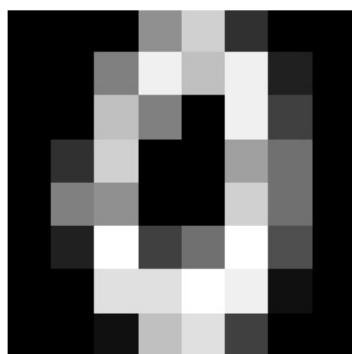
Predicted: 8



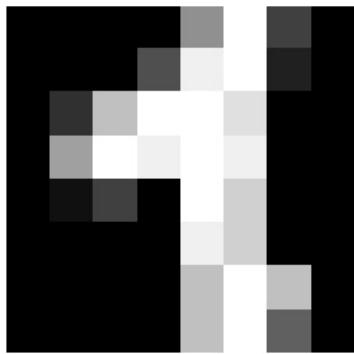
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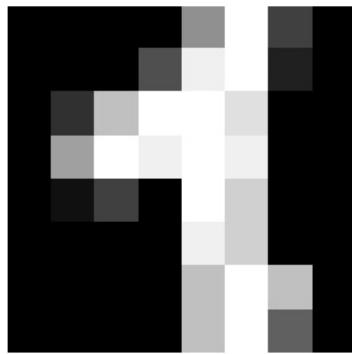
Predicted: 0



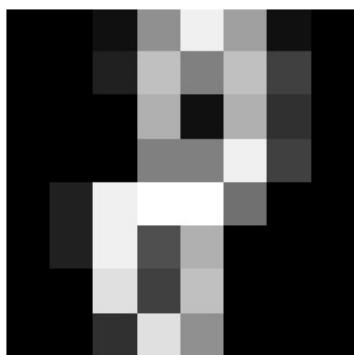
Actual: 1



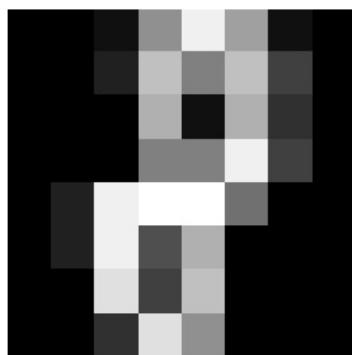
Predicted: 1



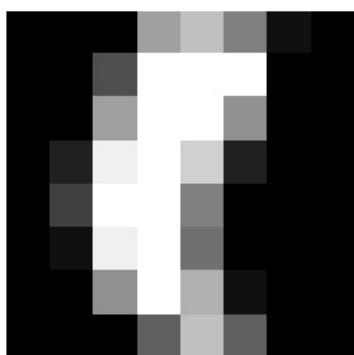
Actual: 8



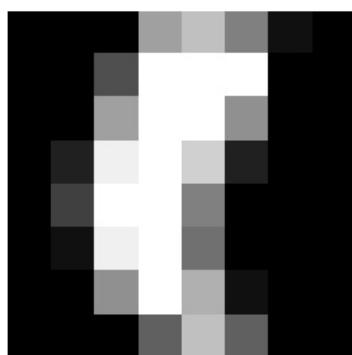
Predicted: 8



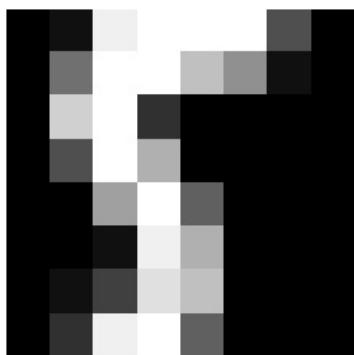
Actual: 1



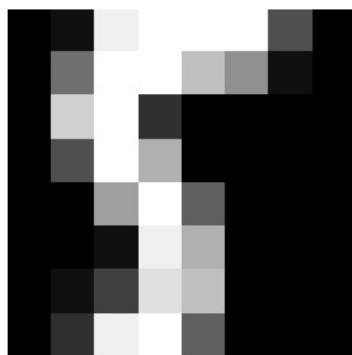
Predicted: 1



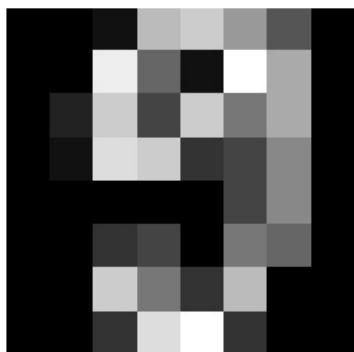
Actual: 5



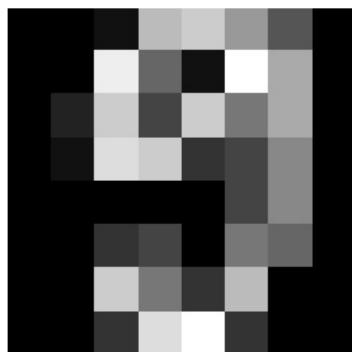
Predicted: 5

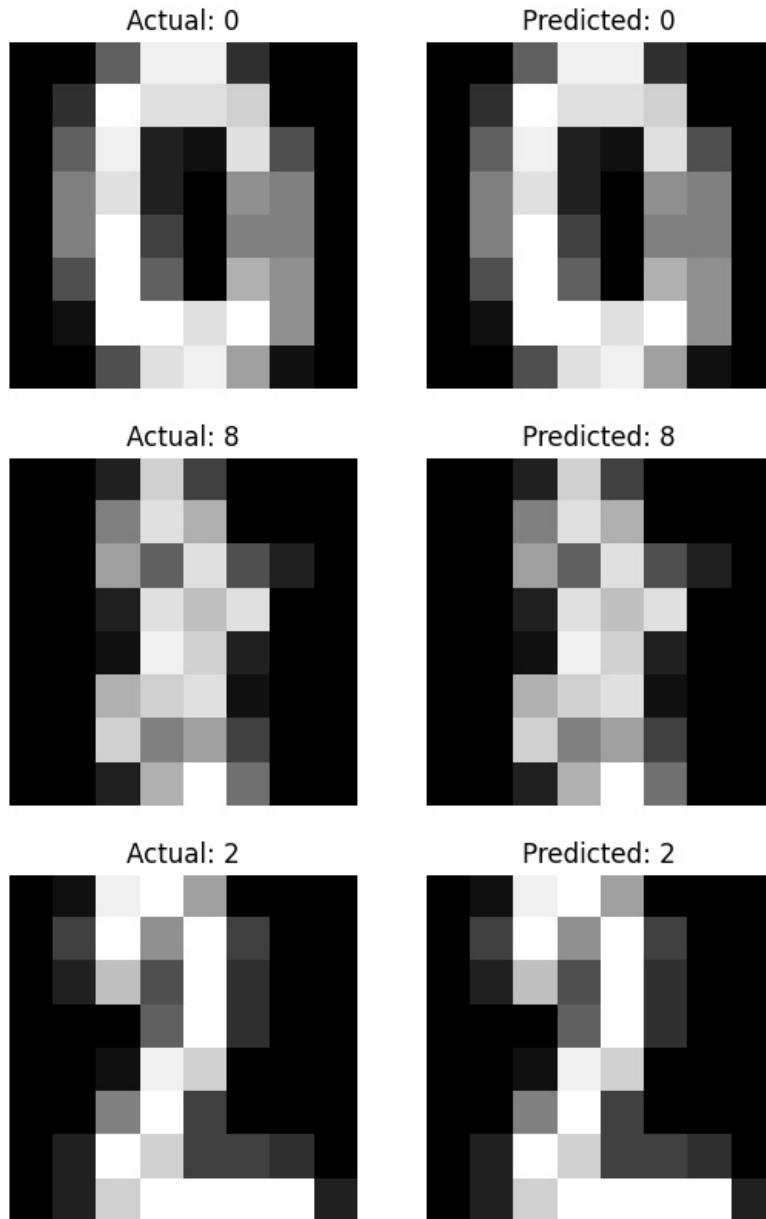


Actual: 9



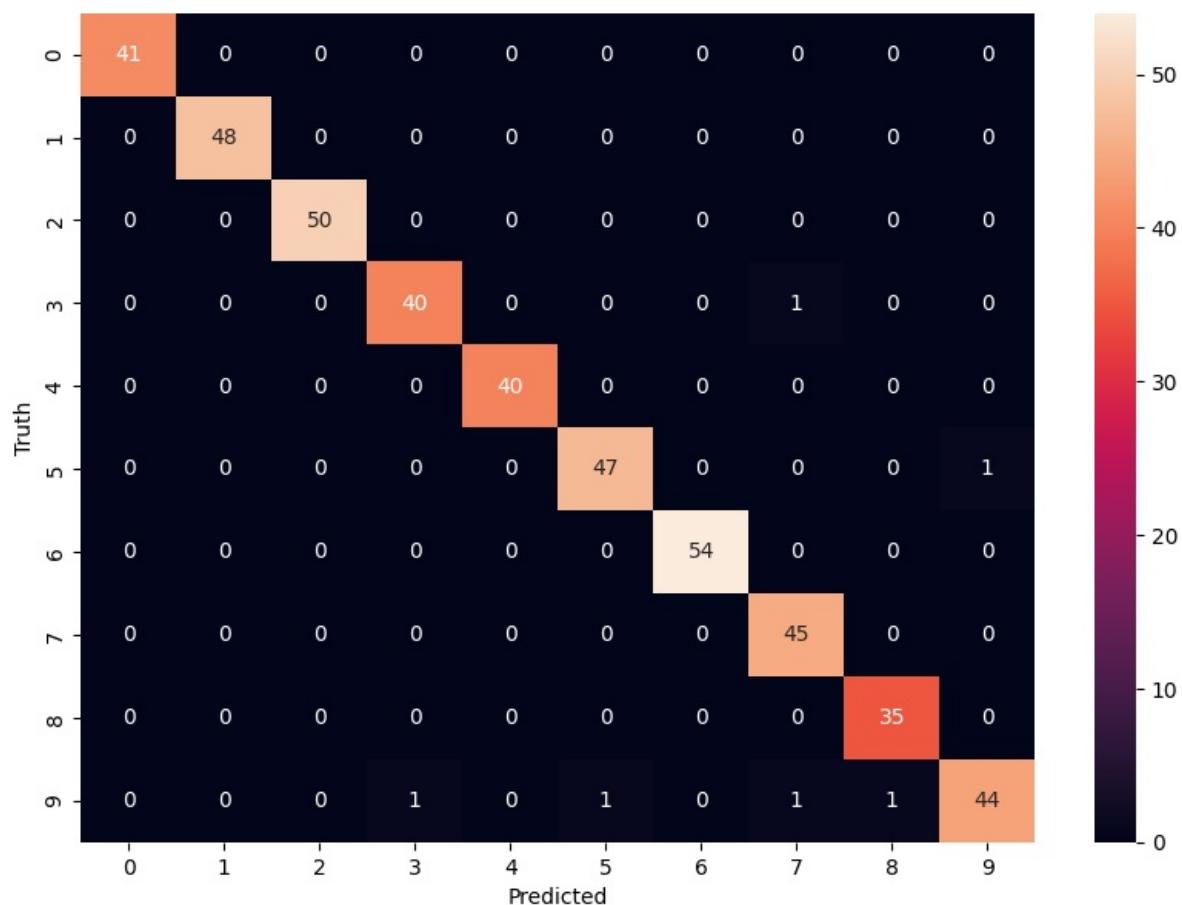
Predicted: 9





```
In [70]: cm = confusion_matrix(y_test, predict)
plt.figure(figsize=(10, 7))
sn.heatmap(cm, annot=True)
plt.xlabel("Predicted")
plt.ylabel("Truth")
```

```
Out[70]: Text(95.72222222222221, 0.5, 'Truth')
```



```
In [71]: count = 0
for i in range(len(predict)):
    if predict[i] != y_test[i]:
        count += 1
print(count)
```

6

```
In [72]: len(predict)
```

Out[72]: 450

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