In [3]:
```
import pandas as pd
from sklearn.datasets import load_digits
digits=load_digits()
df=pd.DataFrame(load_digits().data, columns=load_digits().feature_names)
df
```

Out[3]:

	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
0	0.0	0.0	5.0	13.0	9.0	1.0	0.0	0.0	
1	0.0	0.0	0.0	12.0	13.0	5.0	0.0	0.0	
2	0.0	0.0	0.0	4.0	15.0	12.0	0.0	0.0	
3	0.0	0.0	7.0	15.0	13.0	1.0	0.0	0.0	
4	0.0	0.0	0.0	1.0	11.0	0.0	0.0	0.0	
...	...	...	...	...	...	...	...	...	
1792	0.0	0.0	4.0	10.0	13.0	6.0	0.0	0.0	
1793	0.0	0.0	6.0	16.0	13.0	11.0	1.0	0.0	
1794	0.0	0.0	1.0	11.0	15.0	1.0	0.0	0.0	
1795	0.0	0.0	2.0	10.0	7.0	0.0	0.0	0.0	
1796	0.0	0.0	10.0	14.0	8.0	1.0	0.0	0.0	

1797 rows × 64 columns

In [4]:
```
df['target']=digits.target
df
```

Out[4]:

	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
0	0.0	0.0	5.0	13.0	9.0	1.0	0.0	0.0	
1	0.0	0.0	0.0	12.0	13.0	5.0	0.0	0.0	
2	0.0	0.0	0.0	4.0	15.0	12.0	0.0	0.0	
3	0.0	0.0	7.0	15.0	13.0	1.0	0.0	0.0	
4	0.0	0.0	0.0	1.0	11.0	0.0	0.0	0.0	
...	...	...	...	...	...	...	...	...	
1792	0.0	0.0	4.0	10.0	13.0	6.0	0.0	0.0	
1793	0.0	0.0	6.0	16.0	13.0	11.0	1.0	0.0	
1794	0.0	0.0	1.0	11.0	15.0	1.0	0.0	0.0	
1795	0.0	0.0	2.0	10.0	7.0	0.0	0.0	0.0	
1796	0.0	0.0	10.0	14.0	8.0	1.0	0.0	0.0	

1797 rows × 65 columns

In [32]:
```
x=df.drop('target',axis='columns')
y=df.target
from sklearn.model_selection import train_test_split
x_train,x_test,y_train,y_test=train_test_split(x,y,test_size=0.2)
```

In [33]:
```
from sklearn.neighbors import KNeighborsClassifier
knn=KNeighborsClassifier(n_neighbors=10)
```

In [34]:
```
knn.fit(x_train,y_train)
```

Out[34]:
```
KNeighborsClassifier(n_neighbors=10)
```

In [35]:
```
knn.score(x_test,y_test)
```

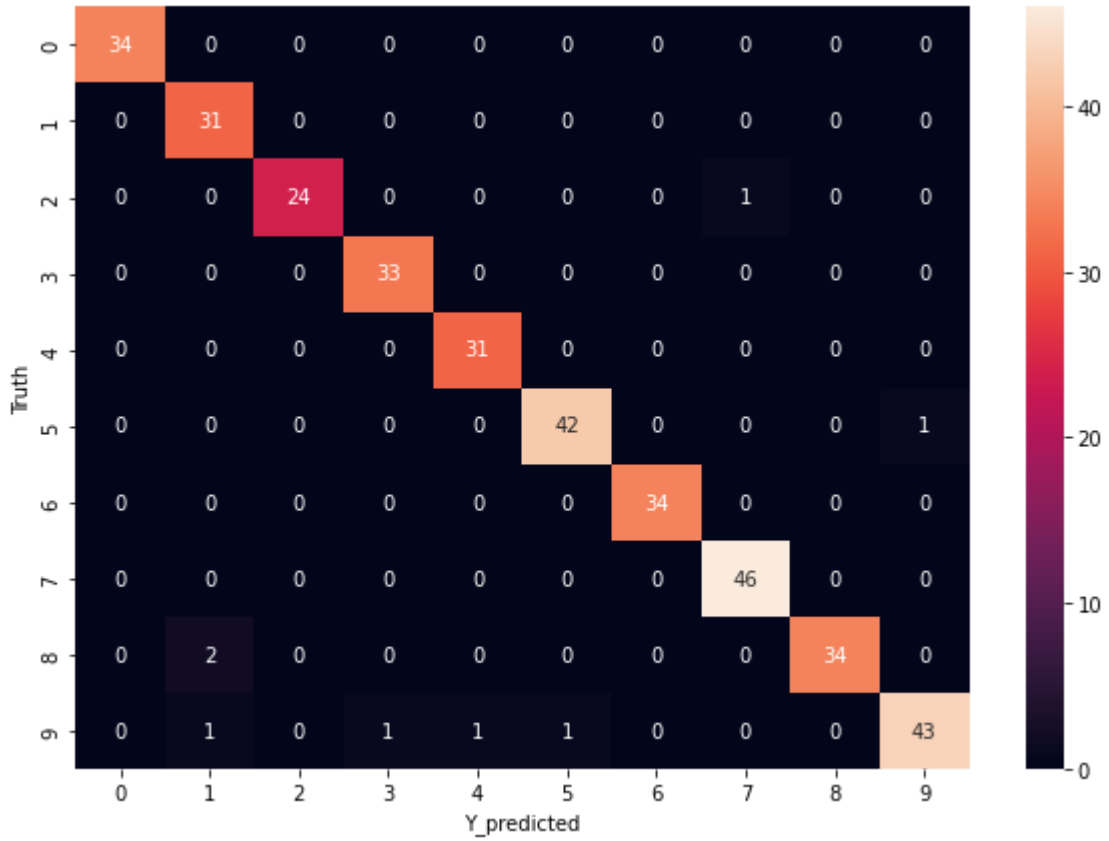
Out[35]:
```
0.9777777777777777
```

In [36]:
```
y_predicted=knn.predict(x_test)
from sklearn.metrics import confusion_matrix
cm=confusion_matrix(y_test,y_predicted)
cm
```

Out[36]:
```
array([[34,  0,  0,  0,  0,  0,  0,  0,  0,  0],
       [ 0, 31,  0,  0,  0,  0,  0,  0,  0,  0],
       [ 0,  0, 24,  0,  0,  0,  0,  1,  0,  0],
       [ 0,  0,  0, 33,  0,  0,  0,  0,  0,  0],
       [ 0,  0,  0,  0, 31,  0,  0,  0,  0,  0],
       [ 0,  0,  0,  0,  0, 42,  0,  0,  0,  1],
       [ 0,  0,  0,  0,  0,  0, 34,  0,  0,  0],
       [ 0,  0,  0,  0,  0,  0,  0, 46,  0,  0],
       [ 0,  2,  0,  0,  0,  0,  0,  0, 34,  0],
       [ 0,  1,  0,  1,  1,  1,  0,  0,  0, 43]], dtype=int64)
```

In [37]:
```
%matplotlib inline
import matplotlib.pyplot as plt
import seaborn as sn
plt.figure(figsize=(10,7))
sn.heatmap(cm,annot=True)
plt.xlabel("Y_predicted")
plt.ylabel("Truth")
```

Out[37]: Text(69.0, 0.5, 'Truth')



In [ ]: