In [4]:

```
import os
import matplotlib.pyplot as plt
import numpy as np
from skimage.io import imread
from sklearn.model_selection import train_test_split
from skimage.transform import resize
import seaborn as sns
from sklearn.metrics import accuracy_score,confusion_matrix,classification_report
from sklearn.metrics import precision_score
```

In [5]:

```
target = []
images = []
flat_data = []
PATH = 'C:\\Users\\YakupAkdin\\AAAaVeriMadenciligi\\data'
#''
cate = ['arp','baglama','elektroGitar','gitar','kanun','keman','kemence','mandolin','ud','yayliTambur']
import io
#Görüntü Formatı ve diziye atama
for category in cate:
    class_num = cate.index(category)
    path = os.path.join(PATH,category)
    for img in os.listdir(path):
        print(img)
        img_array = imread(os.path.join(path,img))
        img_array= resize(img_array, (64,64,3))
        images.append(img_array)
        img_array = img_array.flatten()
        flat_data.append(img_array)
        target.append(class_num)

flat_data = np.array(flat_data)
target = np.array(target)
images = np.array(images)
```

```
yayliTambur(81).jpg
yayliTambur(82).jpg
yayliTambur(83).jpg
yayliTambur(84).jpg
yayliTambur(85).jpg
yayliTambur(86).jpg
yayliTambur(87).jpg
yayliTambur(88).jpg
yayliTambur(89).jpg
yayliTambur(9).jpg
yayliTambur(90).jpg
yayliTambur(91).jpg
yayliTambur(92).jpg
yayliTambur(93).jpg
yayliTambur(94).jpg
yayliTambur(95).jpg
yayliTambur(96).jpg
yayliTambur(97).jpg
yayliTambur(98).jpg
yayliTambur(99).jpg
```

In [6]:

```
from sklearn.ensemble import RandomForestClassifier
from sklearn.model_selection import train_test_split
#Train-Test
x_train, x_test, y_train, y_test = train_test_split(flat_data,target,test_size=0.3)

model=RandomForestClassifier()
```

In [7]:

```
#Eğitme
model.fit(x_train,y_train)


y_pred=model.predict(x_test)

cm = confusion_matrix(y_test, y_pred)
```

In [8]:

```
#Grafik
p = classification_report(y_pred,y_test, target_names=cate)
accuracy_score(y_pred,y_test)
print(classification_report(y_pred,y_test))
print ("Precision = %.3f" % precision_score(y_test, y_pred,average = 'weighted'))
```

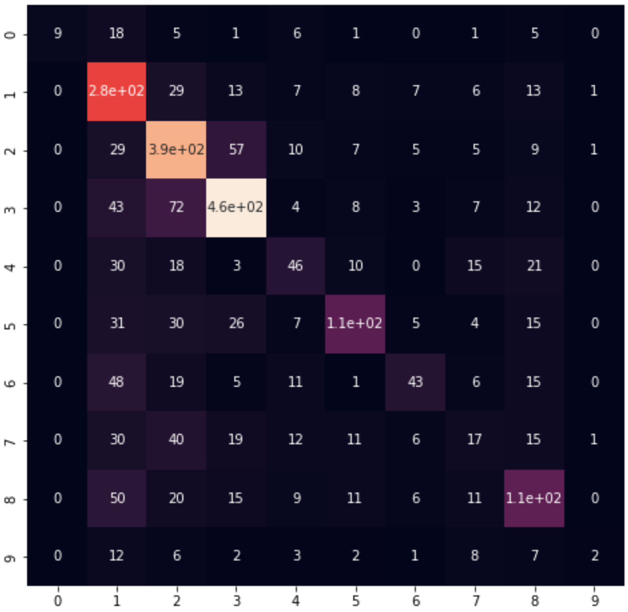
```
              precision    recall  f1-score   support

           0       0.20      1.00      0.33         9
           1       0.77      0.49      0.60       568
           2       0.76      0.62      0.68       627
           3       0.75      0.76      0.76       597
           4       0.32      0.40      0.36       115
           5       0.48      0.64      0.55       166
           6       0.29      0.57      0.38        76
           7       0.11      0.21      0.15        80
           8       0.48      0.50      0.49       224
           9       0.05      0.40      0.08         5

    accuracy                           0.59      2467
   macro avg       0.42      0.56      0.44      2467
weighted avg       0.66      0.59      0.61      2467

Precision = 0.589
```

In [10]:

```
fig, ax = plt.subplots(figsize=(8,8))
sns.heatmap(cm, annot=True, xticklabels = sorted(set(y_test)), yticklabels = sorted(set(y_test)),cbar=False,ax=ax)
```

Out[10]:

```
<AxesSubplot: >
```



In [ ]: