In [1]:

```
import numpy as np
import pandas as pd

data=pd.read_csv('occupancy1.csv')
print(data.head())
print(data.info())
```

```
   index            date  Temperature  Humidity       Light         CO2  \
0    140  2/2/2015 14:19      23.7000    26.272  585.200000  749.200000
1    141  2/2/2015 14:19      23.7180    26.290  578.400000  760.400000
2    142  2/2/2015 14:21      23.7300    26.230  572.666667  769.666667
3    143  2/2/2015 14:22      23.7225    26.125  493.750000  774.750000
4    144  2/2/2015 14:23      23.7540    26.200  488.600000  779.000000

  HumidityRatio  Occupancy
0   0.004764163          1
1   0.004772661          1
2   0.004765153          1
3   0.004743773          1
4   0.004766594          1
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 7235 entries, 0 to 7234
Data columns (total 8 columns):
index            7235 non-null int64
date             7235 non-null object
Temperature      7235 non-null float64
Humidity         7235 non-null float64
Light            7235 non-null float64
CO2              7235 non-null float64
HumidityRatio    7235 non-null object
Occupancy        7235 non-null int64
dtypes: float64(4), int64(2), object(2)
memory usage: 452.3+ KB
None
```

In [2]:

```
data
data['date']=pd.to_datetime(data['date'],format='%m/%d/%Y %H:%M')
data.set_index('date', inplace=True)  # set the date time as index
data=data.drop(columns=['index'])
print(data.head())

```

```
                     Temperature  Humidity       Light         CO2  \
date
2015-02-02 14:19:00      23.7000    26.272  585.200000  749.200000
2015-02-02 14:19:00      23.7180    26.290  578.400000  760.400000
2015-02-02 14:21:00      23.7300    26.230  572.666667  769.666667
2015-02-02 14:22:00      23.7225    26.125  493.750000  774.750000
2015-02-02 14:23:00      23.7540    26.200  488.600000  779.000000

                     HumidityRatio  Occupancy
date
2015-02-02 14:19:00   0.004764163          1
2015-02-02 14:19:00   0.004772661          1
2015-02-02 14:21:00   0.004765153          1
2015-02-02 14:22:00   0.004743773          1
2015-02-02 14:23:00   0.004766594          1
```

In [3]:

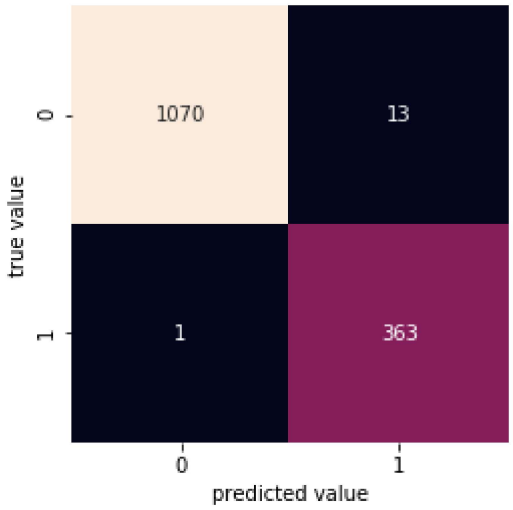
```
import numpy as np
import pandas as pd
from sklearn import datasets
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import SGDClassifier
from sklearn.metrics import accuracy_score
classifier=SGDClassifier(max_iter=1000)
#prepare data which is step 3
Y = data['Occupancy']  #price is the target, Y
X = np.array([data['Temperature'],data['Light']])  # X
X=X.T
xtrain,xtest,ytrain,ytest=train_test_split(X,Y,random_state=43,test_size=0.2)
classifier.fit(xtrain,ytrain)
ypredict=classifier.predict(xtest)
print(accuracy_score(ytest,ypredict))  #percentage of classification on the t
```

```
0.9903248099516241
```

In [4]:

```
from sklearn.metrics import confusion_matrix
import  seaborn as sns
mat=confusion_matrix(ytest,ypredict)
sns.heatmap(mat,square=True,annot=True,cbar=False,fmt='d')
plt.xlabel('predicted value')
plt.ylabel('true value')
```

Out[4]: Text(91.68,0.5,'true value')



In [ ]:

```
1
```