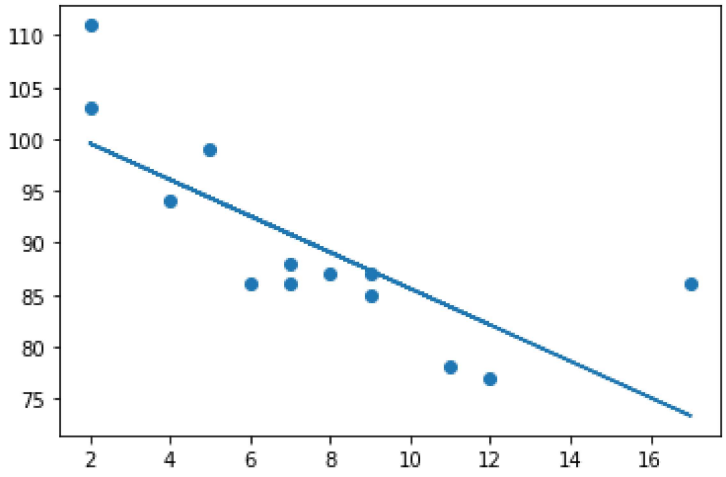
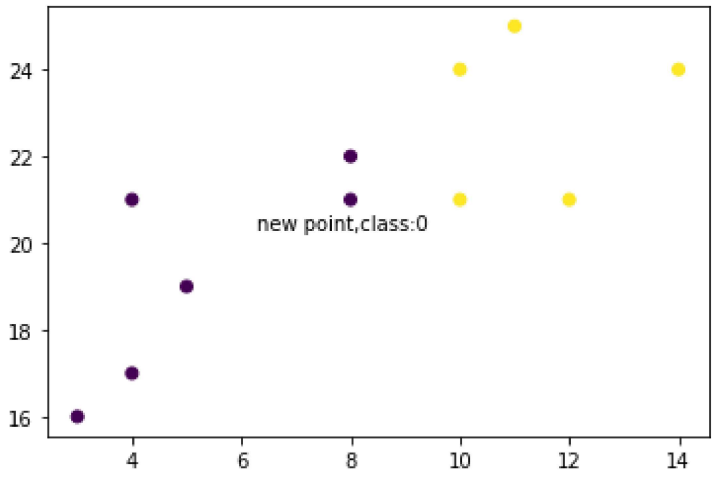
In [6]:
```
import matplotlib.pyplot as plt
from scipy import stats
x=[5,7,8,7,2,17,2,9,4,11,12,9,6]
y=[99,86,87,88,111,86,103,87,94,78,77,85,86]
slope,intercept,r,p,std_err=stats.linregress(x,y)
def myfunc(x):
    return slope*x+intercept
mymodel=list(map(myfunc,x))
plt.scatter(x,y)
plt.plot(x,mymodel)
plt.show()
```



In [10]:
```
import matplotlib.pyplot as plt
from sklearn.neighbors import KNeighborsClassifier
x=[4,5,10,4,3,11,14,8,10,12]
y=[21,19,24,17,16,25,24,22,21,21]
classes=[0,0,1,0,0,1,1,0,1,1]
data=list(zip(x,y))
knn=KNeighborsClassifier(n_neighbors=1)
knn.fit(data,classes)
new_x=8
new_y=21
new_point=[(new_x,new_y)]
prediction=knn.predict(new_point)
plt.scatter(x+[new_x],y+[new_y],c=classes+[prediction[0]])
plt.text(x=new_x-1.7,y=new_y-0.7,s=f"new point,class:{prediction[0]}")
plt.show()
```



In [18]:
```
import pandas as pd

data = {'Age': [20, 22, 23, 25, 27, 28, 29, 30, 31, 32],
        'Experience': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10],
        'Rank': [1, 2, 3, 4, 5, 6, 7, 8, 9, 10],
        'Nationality': ['UK', 'USA', 'N', 'UK', 'USA', 'N', 'UK', 'USA', 'N', '
        'Go': ['YES', 'NO', 'YES', 'NO', 'YES', 'NO', 'YES', 'NO', 'YES', 'NO']

df = pd.DataFrame(data)
df.to_csv('python1.csv', index=False)
print(pd.read_csv('python1.csv'))
```

```
   Age  Experience  Rank Nationality   Go
0   20           1     1          UK  YES
1   22           2     2         USA   NO
2   23           3     3           N  YES
3   25           4     4          UK   NO
4   27           5     5         USA  YES
5   28           6     6           N   NO
6   29           7     7          UK  YES
7   30           8     8         USA   NO
8   31           9     9           N  YES
9   32          10    10          UK   NO
```

In [21]:
```
import matplotlib.pyplot as plt
import pandas
from sklearn import tree
from sklearn.tree import DecisionTreeClassifier
import matplotlib.pyplot as plt
df=pandas.read_csv("python1.csv")
print(df)
d={'UK':0,'USA':1,'N':2}
df['Nationality']=df['Nationality'].map(d)
d={'YES':1,'NO':0}
df['Go']=df['Go'].map(d)
features=['Age','Experience','Rank','Nationality']
x=df[features]
y=df['Go']
dtree=DecisionTreeClassifier()
dtree=dtree.fit(x,y)
tree.plot_tree(dtree,feature_names=features)
plt.show()
```

```
   Age  Experience  Rank Nationality   Go
0   20           1     1          UK  YES
1   22           2     2         USA   NO
2   23           3     3           N  YES
3   25           4     4          UK   NO
4   27           5     5         USA  YES
5   28           6     6           N   NO
6   29           7     7          UK  YES
7   30           8     8         USA   NO
8   31           9     9           N  YES
9   32          10    10          UK   NO
```

In [ ]: