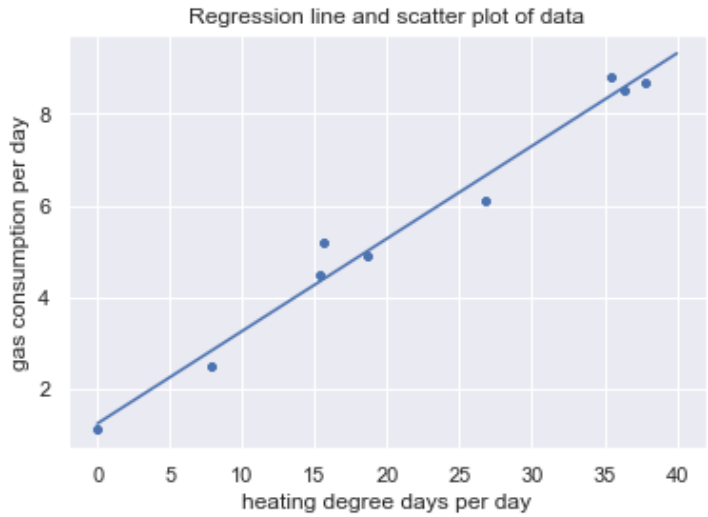
In [1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
sns.set()
from sklearn.linear_model import LinearRegression
x=[15.6,26.8,37.8,36.4,35.5,18.6,15.3,7.9,0]
y=[5.2,6.1,8.7,8.5,8.8,4.9,4.5,2.5,1.1]
x1=np.array(x).reshape(-1,1)
y1=np.array(y).reshape(-1,1)

lm= LinearRegression(copy_X=True, fit_intercept=True, n_jobs=1, normalize=
False)
lm.fit(x1,y1)
print("w0 result is ",float(lm.intercept_))
print("w1 result is ",float(lm.coef_))
x_test = np.linspace(0, 40, 50).reshape(-1,1)
y_pred=lm.predict(x_test)

sns.scatterplot(x=x,y=y)
plt.plot(x_test,y_pred)
plt.xlabel("heating degree days per day")
plt.ylabel("gas consumption per day")
plt.title("Regression line and scatter plot of data")
plt.show()
```

```
w0 we calculate is  1.2323541661203574
w1 we calculate is  0.20221151369219592
```



In [4]:
```
x=[15.6,26.8,37.8,36.4,35.5,18.6,15.3,7.9,0]
y=[5.2,6.1,8.7,8.5,8.8,4.9,4.5,2.5,1.1]
def w1(x,y):
    list1=[]
    list2=[]
    list3=[]
    for i in x:
        list1.append(i-np.mean(x))
        list2.append((i-np.mean(x))**2)
    for j in y:
        list3.append(j-np.mean(y))
    return list1,list2,list3

list1,list2,list3=w1(x,y)
list4=map(lambda x, y: x*y , list1,list3)
w1=sum(list4)/sum(list2)
w0=np.mean(y)-w1*np.mean(x)

print("w0 result is ",w0)
print("w1 result is ",w1)
```

```
w0 result is  1.23235416612
w1 result is  0.202211513692
```