#17.1

#Training a Linear Classifier

#load libraries

from sklearn.svm import LinearSVC

from sklearn import datasets

from sklearn.preprocessing import StandardScaler

import numpy as np

#Create the Datasets

# Load the iris dataset

iris = datasets.load\_iris()

# Create features

features = iris.data[:100,:2]

# Create target

target = iris.target[:100]

#Display original data

#print("Features: ", features)

#print ("Target: ", target)

#create standardizer

standardizer=StandardScaler()

features\_standardized = standardizer.fit\_transform(features)

#create support vector classifier

svc=LinearSVC(C=1.0)

#Train Model

model = svc.fit(features\_standardized, target)

from matplotlib import pyplot as plt

color=["black" if c==0 else "lightgrey" for c in target]

plt.scatter(features\_standardized[:,0],features\_standardized[:,1], c=color)

#create hyperplane

w=svc.coef\_[0]

a=-w[0]/w[1]

xx=np.linspace(-2.5,2.5)

yy=a\*xx-(svc.intercept\_[0])/w[1]

plt.plot(xx,yy)

plt.axis("off"), plt.show();