In [31]:
```
import numpy as np
import pandas as pd
from sklearn.svm import SVC
import matplotlib.pyplot as plt
%matplotlib inline
```

In [33]:
```
data = pd.read_csv('files/data_02.csv')
data.head()
```

Out[33]:

	Weight	Height	Class
0	42.2	66	Dobermann
1	43.0	70	Dobermann
2	39.2	67	Dobermann
3	49.9	63	Rottweiler
4	39.5	65	German Shepherd

In [34]:
```
#Make class IDs
class_ids = {'Dobermann': 0, 'German Shepherd': 1, 'Rottweiler': 2}
data['Class ID'] = data['Class'].apply(lambda x: class_ids[x])
data.head()
```

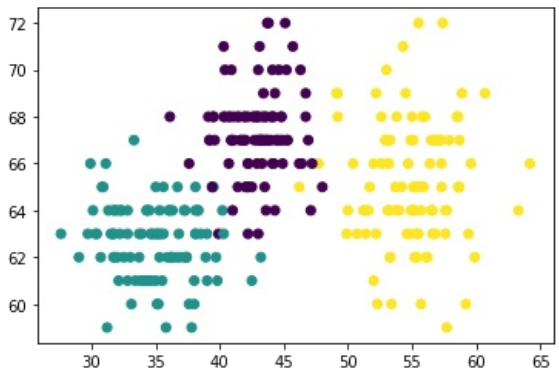
Out[34]:

	Weight	Height	Class	Class ID
0	42.2	66	Dobermann	0
1	43.0	70	Dobermann	0
2	39.2	67	Dobermann	0
3	49.9	63	Rottweiler	2
4	39.5	65	German Shepherd	1

In [35]:
```
#Scatter plot the data
fig, ax = plt.subplots()

ax.scatter(x=data['Weight'], y=data['Height'], c=data['Class ID'])
```

Out[35]:
```
<matplotlib.collections.PathCollection at 0x7fdc78137e80>
```



In [36]:
```
#Fit a model
model = SVC(kernel='linear')
x=data[['Weight', 'Height']]
y=data['Class ID']
model.fit(x, y)
```

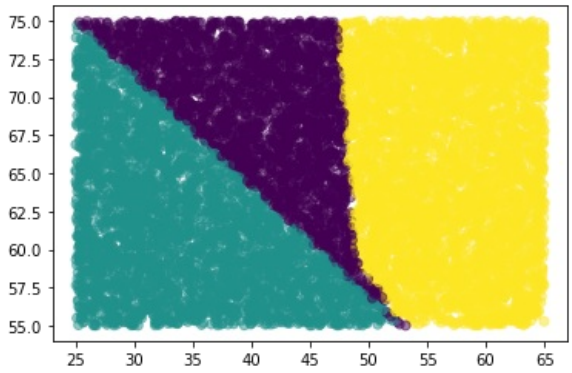
Out[36]:
```
SVC(kernel='linear')
```

In [37]:
```
#Map out the classification
X_test=np.random.rand(10000, 2)
X_test=X_test*(40, 20) + (25, 55)
y_pred = model.predict(X_test)
```

In [38]:
```
fig, ax = plt.subplots()

ax.scatter(x=X_test[:,0], y=X_test[:,1], c=y_pred, alpha=.5)
```

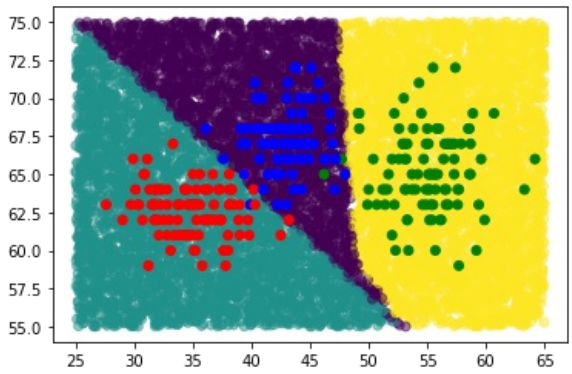
Out[38]:
```
<matplotlib.collections.PathCollection at 0x7fdc781282e0>
```



In [39]:
```
# Map with original data points
fig, ax = plt.subplots()

ax.scatter(x=X_test[:,0], y=X_test[:,1], c=y_pred, alpha=.5)
colors = ['b', 'r', 'g']
x=data['Weight']
y=data['Height']
c=data['Class ID'].apply(lambda x: colors[x])
ax.scatter(x=x, y=y, c=c)
```

Out[39]:
```
<matplotlib.collections.PathCollection at 0x7fdca365d5e0>
```



In [ ]: