In [1]:
```
import pandas as pd
import numpy as np
```

In [3]:
```
df=pd.read_csv("C:/Users/User11/Desktop/Shivam/ML/Social_Network_Ads.csv",usecols=['Age','EstimatedSalary','Purchased'])
df.head()
```

Out[3]:

	Age	EstimatedSalary	Purchased
0	19	19000	0
1	35	20000	0
2	26	43000	0
3	27	57000	0
4	19	76000	0

In [4]:
```
from sklearn.model_selection import train_test_split as tts
```

In [6]:
```
x_train,x_test,y_train,y_test=tts(df.drop('Purchased',axis=1),df['Purchased'],test_size=0.3,random_state=0)
```

In [7]:
```
x_train.shape
```

Out[7]:
```
(280, 2)
```

In [8]:
```
x_test.shape
```

Out[8]:
```
(120, 2)
```

In [9]:
```
from sklearn.preprocessing import StandardScaler
scalar= StandardScaler()
```

In [11]:
```
scalar.fit(x_train)
```

Out[11]:
```
StandardScaler()
```

In [12]:
```
x_train_scaled=scalar.fit_transform(x_train)
```

In [13]:
```
x_test_scaled=scalar.fit_transform(x_test)
```

In [15]:
```
scalar.mean_
```

Out[15]:
```
array([3.71666667e+01, 6.95916667e+04])
```

In [17]:
```
x_train
```

Out[17]:

	Age	EstimatedSalary
92	26	15000
223	60	102000
234	38	112000
232	40	107000
377	42	53000
...	...	...
323	48	30000
192	29	43000
117	36	52000
47	27	54000
172	26	118000

280 rows × 2 columns

In [18]:
```
x_train_scaled
```

```
[ 1.38586284,  1.97207259],
[ 1.28782302, -1.35361793],
[-0.28081405, -0.28361322],
[-0.47689368,  1.24909623],
[-0.77101313,  1.07558195],
[ 0.99370357, -1.06442747],
[ 0.30742485,  0.29476771],
[ 0.99370357,  0.75747245],
[-0.67297331, -1.49821316],
[-0.67297331,  0.03449629],
[ 0.50350449,  1.71180097],
[ 2.07214155,  0.17909152],
[-1.94749093, -0.74631796],
[-0.18277423,  1.39369146],
[ 0.40546467,  0.58395817],
[ 0.89566375, -1.1511846 ],
[-1.1631724 , -0.775237  ],
[ 0.20938504,  0.23692961],
[ 0.79762394, -0.31253226],
[ 2.07214155, -0.80415605],
```

In [19]:
```
x_train_scaled=pd.DataFrame(x_train_scaled,columns=x_train.columns)
```

In [20]:
```
x_test_scaled=pd.DataFrame(x_test_scaled,columns=x_test.columns)
```

In [21]:
```
x_train_scaled
```

Out[21]:

	Age	EstimatedSalary
0	-1.163172	-1.584970
1	2.170181	0.930987
2	0.013305	1.220177
3	0.209385	1.075582
4	0.405465	-0.486047
...	...	...
275	0.993704	-1.151185
276	-0.869053	-0.775237
277	-0.182774	-0.514966
278	-1.065133	-0.457127
279	-1.163172	1.393691

280 rows × 2 columns

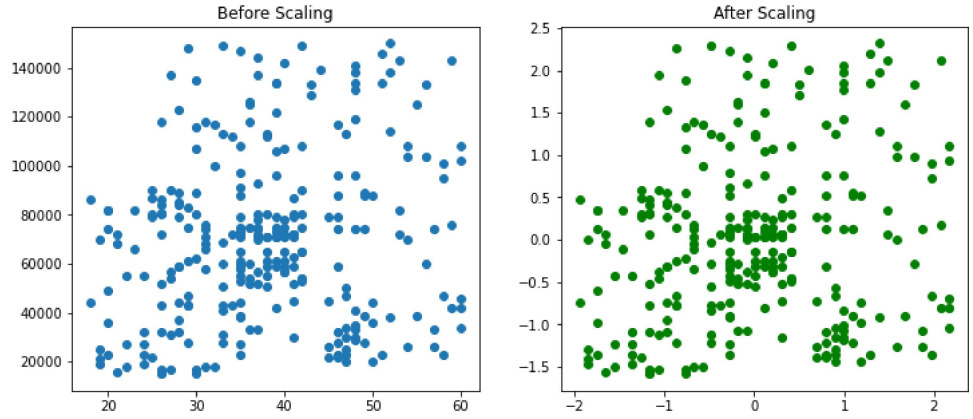
In [22]:
```
import matplotlib.pyplot as plt
```

In [25]:
```
fig, (ax1,ax2)=plt.subplots(ncols=2,figsize=(12,5))

ax1.scatter(x_train['Age'],x_train['EstimatedSalary'])
ax1.set_title('Before Scaling')

ax2.scatter(x_train_scaled['Age'],x_train_scaled['EstimatedSalary'],color='green')
ax2.set_title('After Scaling')
```

Out[25]: Text(0.5, 1.0, 'After Scaling')

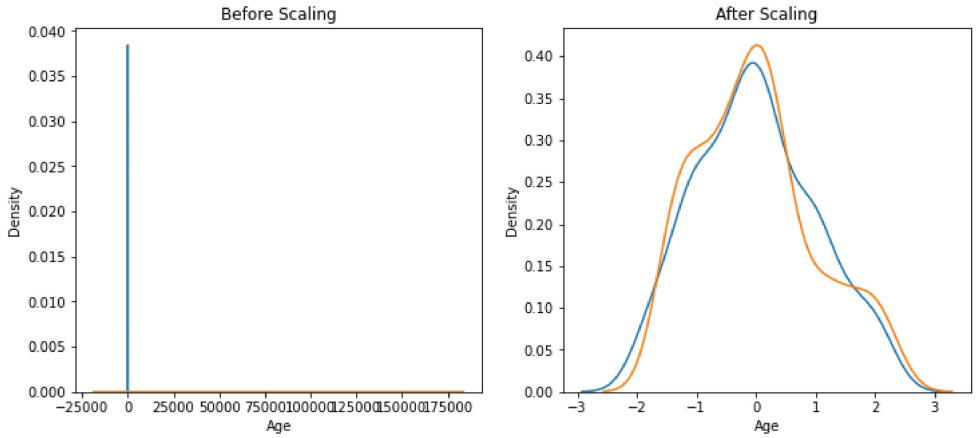


In [26]:
```
import seaborn as sns
fig, (ax1,ax2)=plt.subplots(ncols=2,figsize=(12,5))

ax1.set_title('Before Scaling')
sns.kdeplot(x_train['Age'],ax=ax1)
sns.kdeplot(x_train['EstimatedSalary'],ax=ax1)

ax2.set_title('After Scaling')
sns.kdeplot(x_train_scaled['Age'],ax=ax2)
sns.kdeplot(x_train_scaled['EstimatedSalary'],ax=ax2)
```

Out[26]: <AxesSubplot:title={'center':'After Scaling'}, xlabel='Age', ylabel='Density'>



In [ ]: