Weight Prediction with the help of Gender and Height

In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.preprocessing import LabelEncoder
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score
import warnings
warnings.simplefilter("ignore")
```

In [2]:
```
dataset = pd.read_csv("weight-height.csv")
```

In [3]:
```
dataset.head()
```

Out[3]:

	Gender	Height	Weight
0	Male	73.847017	241.893563
1	Male	68.781904	162.310473
2	Male	74.110105	212.740856
3	Male	71.730978	220.042470
4	Male	69.881796	206.349801

In [4]:
```
dataset.shape
```

Out[4]:
```
(10000, 3)
```

In [5]:
```
dataset.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 10000 entries, 0 to 9999
Data columns (total 3 columns):
 #   Column  Non-Null Count  Dtype  
---  ------  --------------  -----  
 0   Gender  10000 non-null  object 
 1   Height  10000 non-null  float64
 2   Weight  10000 non-null  float64
dtypes: float64(2), object(1)
memory usage: 234.5+ KB
```

In [6]:
```
dataset.describe()
```

Out[6]:

	Height	Weight
count	10000.000000	10000.000000
mean	66.367560	161.440357

	Height	Weight
std	3.847528	32.108439
min	54.263133	64.700127
25%	63.505620	135.818051
50%	66.318070	161.212928
75%	69.174262	187.169525
max	78.998742	269.989699

In [7]:
```
dataset.count()
```

Out[7]:
```
Gender    10000
Height    10000
Weight    10000
dtype: int64
```

In [8]:
```
dataset.isnull().sum()
```

Out[8]:
```
Gender    0
Height    0
Weight    0
dtype: int64
```

In [9]:
```
dataset["Gender"] = LabelEncoder().fit_transform(dataset["Gender"])
```

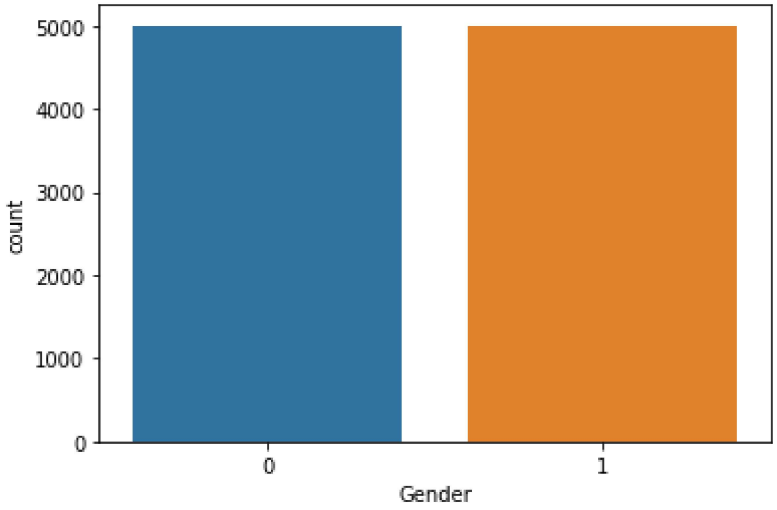
In [10]:
```
dataset.head()
```

Out[10]:

	Gender	Height	Weight
0	1	73.847017	241.893563
1	1	68.781904	162.310473
2	1	74.110105	212.740856
3	1	71.730978	220.042470
4	1	69.881796	206.349801

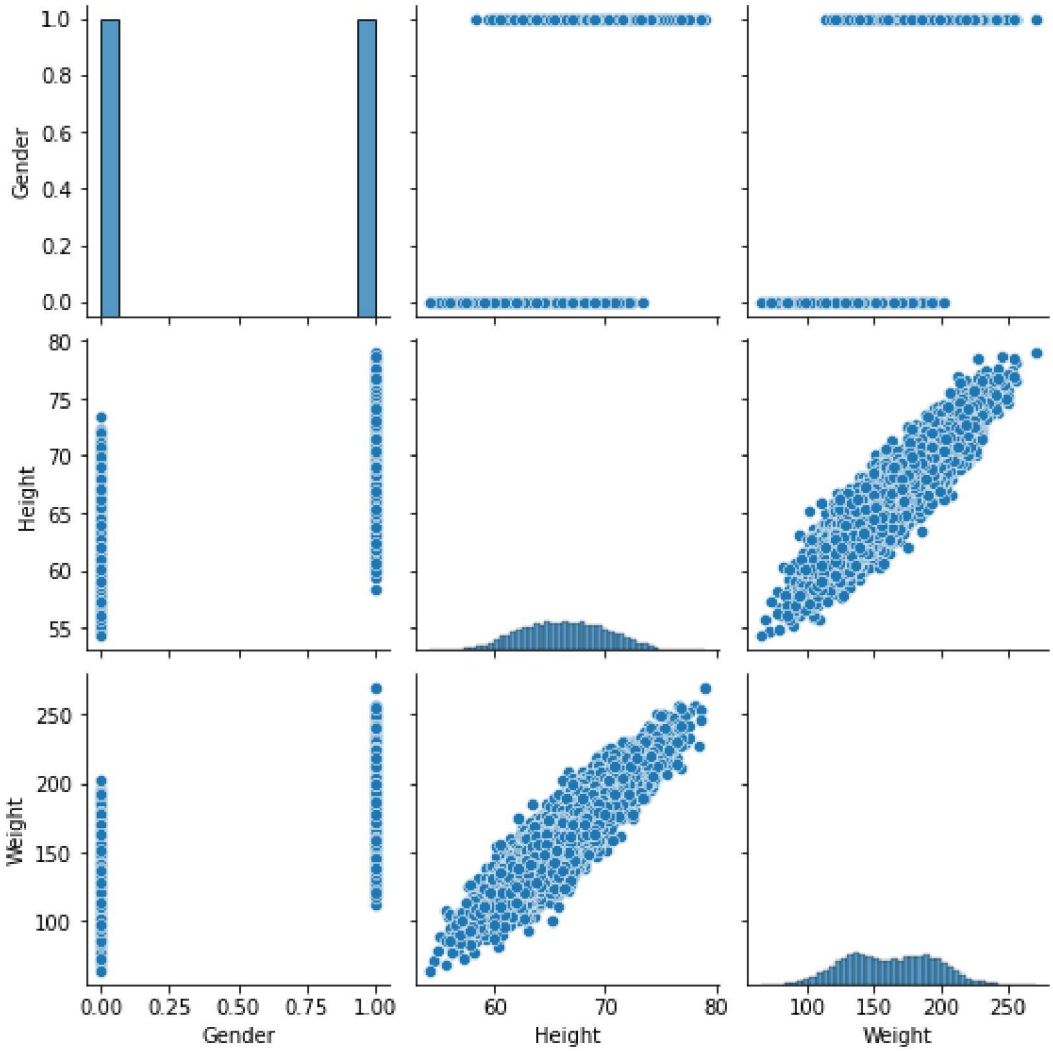
In [11]:
```
sns.countplot(x="Gender",data=dataset)
```

Out[11]:
```
<AxesSubplot:xlabel='Gender', ylabel='count'>
```



In [12]:
```
sns.pairplot(dataset)
```

Out[12]:
```
<seaborn.axisgrid.PairGrid at 0x20e19430fa0>
```



In [13]:
```
dataset.columns
```

Out[13]:
```
Index(['Gender', 'Height', 'Weight'], dtype='object')
```

In [14]:
```
X = dataset.drop(columns="Weight",axis=1)
Y = dataset["Weight"]
```

In [15]:
```
X.head()
```

Out[15]:

	Gender	Height
0	1	73.847017
1	1	68.781904
2	1	74.110105
3	1	71.730978
4	1	69.881796

In [16]:
```
X_train,X_test,Y_train,Y_test = train_test_split(X,Y,test_size=0.25,random_state=0)
```

In [17]:
```
X_train.head()
```

Out[17]:

	Gender	Height
2967	1	68.058837
700	1	69.760095
3481	1	71.702360
1621	1	71.096113
800	1	72.215035

In [18]:
```
X_test.head()
```

Out[18]:

	Gender	Height
9394	0	64.723877
898	1	67.272171
2398	1	74.520972
5906	0	65.880014
2343	1	64.846301

In [19]:
```
Y_train.head()
```

Out[19]:
```
2967    187.779075
700     187.812062
3481    214.787698
1621    210.821194
800     204.937760
Name: Weight, dtype: float64
```

In [20]:
```
Y_test.head()
```

Out[20]:
```
9394    138.085796
898     187.363366
2398    216.533191
```

```
5906    131.761443
2343    157.718438
Name: Weight, dtype: float64
```

In [21]:
```
X.shape,X_test.shape,X_train.shape
```

Out[21]:
```
((10000, 2), (2500, 2), (7500, 2))
```

In [22]:
```
model = LinearRegression()
```

In [23]:
```
model.fit(X_train,Y_train)
```

Out[23]:
```
▾ LinearRegression

LinearRegression()
```

In [24]:
```
prediction = model.predict(X_test)
```

In [25]:
```
score = r2_score(prediction,Y_test)
```

In [26]:
```
score
```

Out[26]:
```
0.8905030905575755
```

In [27]:
```
new_data = [[0,74]]
weight = model.predict(new_data)
weight
print(weight*0.45)
```

```
[88.77203159]
```

In [ ]:
```

```