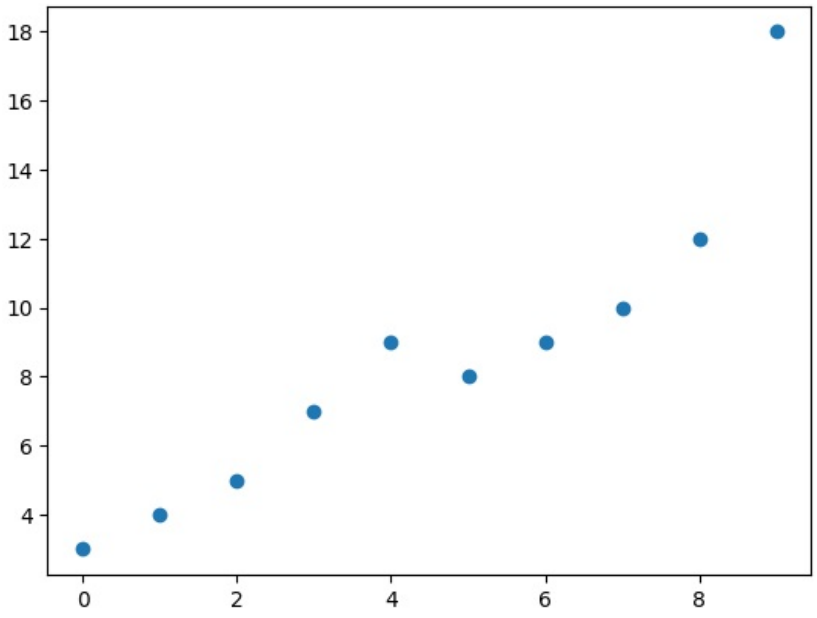
In [15]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
from sklearn.linear_model import LinearRegression
from sklearn.metrics import r2_score

x =  np.arange(0, 10)
#np.arange is a function provided by NumPy that generates sequences of numbers
y = [ 3,4,5,7,9,8,9,10,12,18 ]
print(x)
plt.scatter(x, y)
plt.show()

from sklearn.preprocessing import PolynomialFeatures
poly = PolynomialFeatures( degree = 2 )
#degree sets th degree of the polynomial function

poly_features = poly.fit_transform(x.reshape(-1, 1))
#reshape (-1,1) transform numpy array x from a 1D array to a 2D array
print(poly_features)

model = LinearRegression()
#Polynomial Regression is a Linear Model
model.fit(poly_features, y)
y_pred = model.predict(poly_features)
plt.title("Polynomial Regression Model")
plt.scatter(x, y)
plt.plot( x, y_pred, c= "black" )
plt.show()
```

```
[0 1 2 3 4 5 6 7 8 9]
```




```
[[ 1.  0.  0.]
 [ 1.  1.  1.]
 [ 1.  2.  4.]
 [ 1.  3.  9.]
 [ 1.  4. 16.]
 [ 1.  5. 25.]
 [ 1.  6. 36.]
 [ 1.  7. 49.]
 [ 1.  8. 64.]
 [ 1.  9. 81.]]
```