In [1]:
```
# Polynomial Regression

# Importing the libraries
import os
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

In [2]:
```
os.chdir("D:/My ML Simulations/My_ML_Work/Part 2 - Regression/Section 6 - Polynomial Regression")
```

In [3]:
```
# Importing the dataset
dataset = pd.read_csv('Position_Salaries.csv')
X = dataset.iloc[:, 1:2].values
y = dataset.iloc[:, 2].values
```

In [4]:
```
# Splitting the dataset into the Training set and Test set
"""from sklearn.model_selection import train_test_split
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.2, random_state = 0)"""
```

Out[4]:
```
'from sklearn.model_selection import train_test_split\nX_train, X_test, y_train, y_test = train_test_split(X, y, test_size = 0.
2, random_state = 0)'
```

In [5]:
```
# Feature Scaling
"""from sklearn.preprocessing import StandardScaler
sc_X = StandardScaler()
X_train = sc_X.fit_transform(X_train)
X_test = sc_X.transform(X_test)"""
```

Out[5]:
```
'from sklearn.preprocessing import StandardScaler\nsc_X = StandardScaler()\nX_train = sc_X.fit_transform(X_train)\nX_test = sc_
X.transform(X_test)'
```

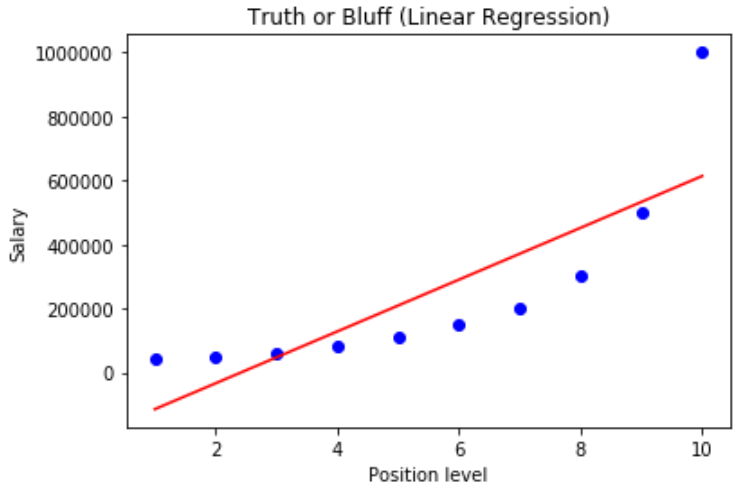
In [6]:
```
# Fitting Linear Regression to the dataset
from sklearn.linear_model import LinearRegression
lin_reg = LinearRegression()
lin_reg.fit(X, y)
```

Out[6]:
```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

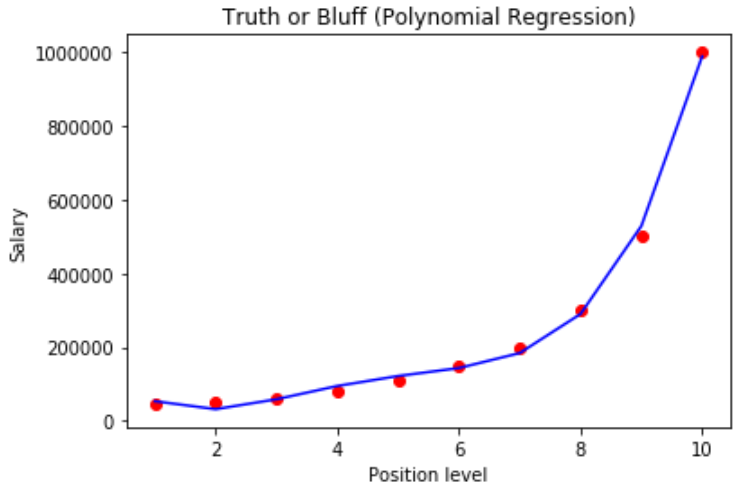
In [38]:
```
# Fitting Polynomial Regression to the dataset
from sklearn.preprocessing import PolynomialFeatures
poly_reg = PolynomialFeatures(degree = 4)
X_poly = poly_reg.fit_transform(X)
poly_reg.fit(X_poly, y)
lin_reg_2 = LinearRegression()
lin_reg_2.fit(X_poly, y)
```

Out[38]:
```
LinearRegression(copy_X=True, fit_intercept=True, n_jobs=None, normalize=False)
```

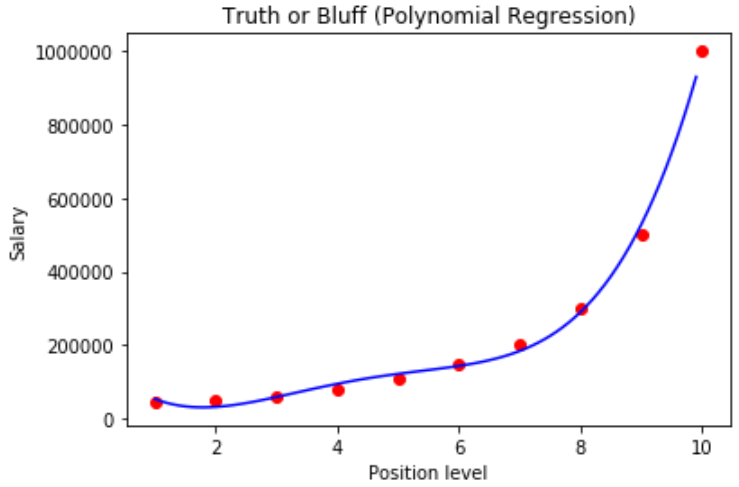
In [39]:
```
# Visualising the Linear Regression results
plt.scatter(X, y, color = 'blue')
plt.plot(X, lin_reg.predict(X), color = 'red')
plt.title('Truth or Bluff (Linear Regression)')
plt.xlabel('Position level')
plt.ylabel('Salary')
plt.show()
```



In [40]:
```
# Visualising the Polynomial Regression results
plt.scatter(X, y, color = 'red')
plt.plot(X, lin_reg_2.predict(poly_reg.fit_transform(X)), color = 'blue')
plt.title('Truth or Bluff (Polynomial Regression)')
plt.xlabel('Position level')
plt.ylabel('Salary')
plt.show()
```



In [41]:
```
# Visualising the Polynomial Regression results (for higher resolution and smoother curve)
X_grid = np.arange(min(X), max(X), 0.1)
X_grid = X_grid.reshape((len(X_grid), 1))
plt.scatter(X, y, color = 'red')
plt.plot(X_grid, lin_reg_2.predict(poly_reg.fit_transform(X_grid)), color = 'blue')
plt.title('Truth or Bluff (Polynomial Regression)')
plt.xlabel('Position level')
plt.ylabel('Salary')
plt.show()
```



In [42]:
```
# Predicting a new result with Linear Regression
lin_reg.predict([[6.5]])
```

Out[42]:
```
array([330378.78787879])
```

In [36]:
```
# Predicting a new result with Polynomial Regression
lin_reg_2.predict(poly_reg.fit_transform([[6.5]]))
```

Out[36]:
```
array([158862.45265153])
```