In [1]:

```
import numpy as np
```

In [16]:

```
np.random.seed(0)
x= np.random.rand(100)
y = 2*x + 4 + np.random.randn(100)*0.1
```

In [17]:

```
c = np.random.randn()
m = np.random.randn()
```

In [20]:

```
max_iter = 2000
alpha = 0.01
thresh = 0.01
n = len(x)
for i in range(max_iter):
    ni = i
    y_pred = m*x+c
    D_m = 2*sum(x*(y_pred-y))/n
    D_c = 2*sum(y_pred-y)/n
    m = m-alpha*D_m
    c = c-alpha*D_c

    mse = np.mean((y-y_pred)**2)
    if(mse<=thresh):
        break

print(ni)
print(f'parameters are')
print(f'slope:{m}')
print(f'intercept:{c}')
y_pred = []
for i in range(0,len(x)):
    predicted = x[i]*m + c
    y_pred.append(predicted)
```
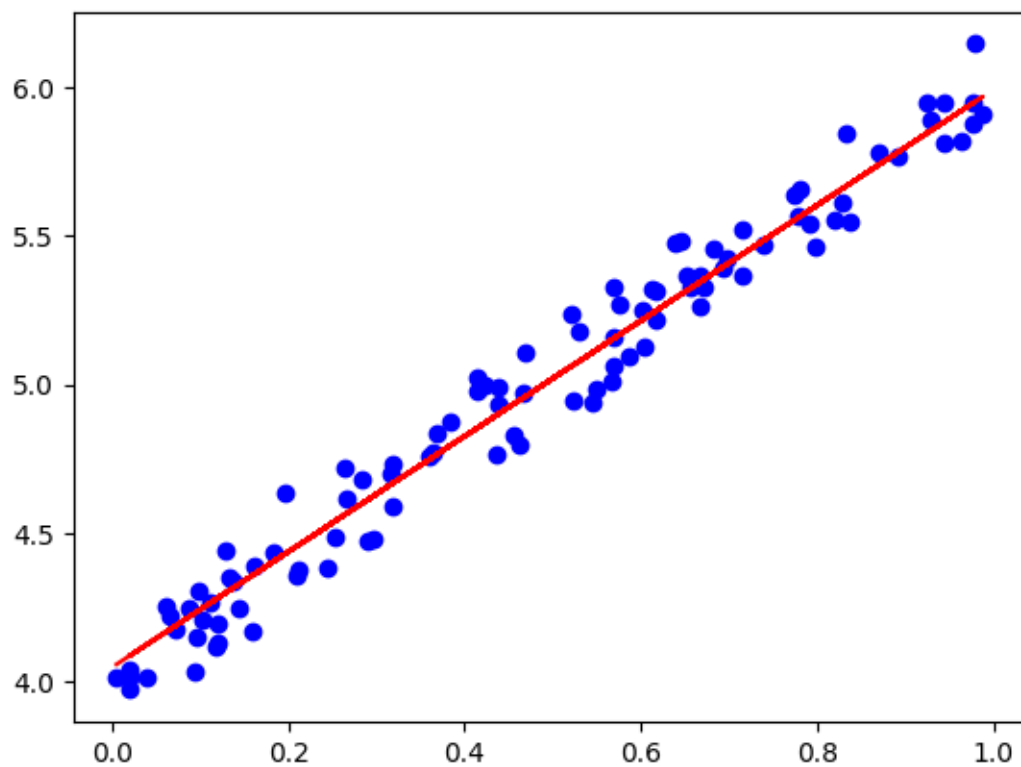
```
1999
parameters are
slope:1.942965307226195
intercept:4.047922844639471
```

In [21]:

```
import matplotlib.pyplot as plt
plt.scatter(x,y,color="blue")
plt.plot(x,y_pred,color="red")
```

Out[21]:

```
[<matplotlib.lines.Line2D at 0x14ed1cb4ef0>]
```


In [ ]:

In [ ]: