

In [1]:

```
import pandas as pd
import numpy as np
from matplotlib import pyplot as plt
import datetime as dt
%matplotlib inline
from sklearn.metrics import r2_score
```

In [21]:

```
revenue_data = {'Week 1': 2320, 'Week 2': 4280, 'Week 3': 7360, 'Week 4': 5464, 'Week 5': 10968, 'Week 6': 12520, 'Week 7': 13544, 'Week 8': 19184, 'Week 9': 25280, 'Week 10': 23200, 'Week 11': 21960, 'Week 12': 28216, 'Week 13': 20184}
```

In [36]:

```
#converting dictionary to dataframe. 'orient = index' makes the week column the index but 'reset_index()'
#changes it back to a regular column
revenue = pd.DataFrame.from_dict(revenue_data, orient = 'index').reset_index()
revenue.columns = ['week', 'weekly_revenue']
revenue
```

Out[36]:

	week	weekly_revenue
0	Week 1	2320
1	Week 2	4280
2	Week 3	7360
3	Week 4	5464
4	Week 5	10968
5	Week 6	12520
6	Week 7	13544
7	Week 8	19184
8	Week 9	25280
9	Week 10	23200
10	Week 11	21960
11	Week 12	28216
12	Week 13	20184

In [38]:

```
#for regression
x = list(range(1,14))
y = revenue.weekly_revenue
```

In [40]:

```
model = np.polyfit(x, y, 1)
predict = np.poly1d(model)
```

In [41]:

```
predicted_revenue = predict(x)
```

In [46]:

```
#chart shows existing data and regression line
ax = plt.subplot()
plt.scatter(x, y)
plt.plot(x, predicted_revenue, color = 'red')
plt.xlabel('Number of weeks')
plt.ylabel('Revenue (US$)')
plt.title('Weekly revenue')
```

Out[46]:

```
Text(0.5, 1.0, 'Weekly revenue')
```



In [51]:

```
#predicting future revenue
x_future = list(range(13,18))
y_future = predict(x_future)
```

In [52]:

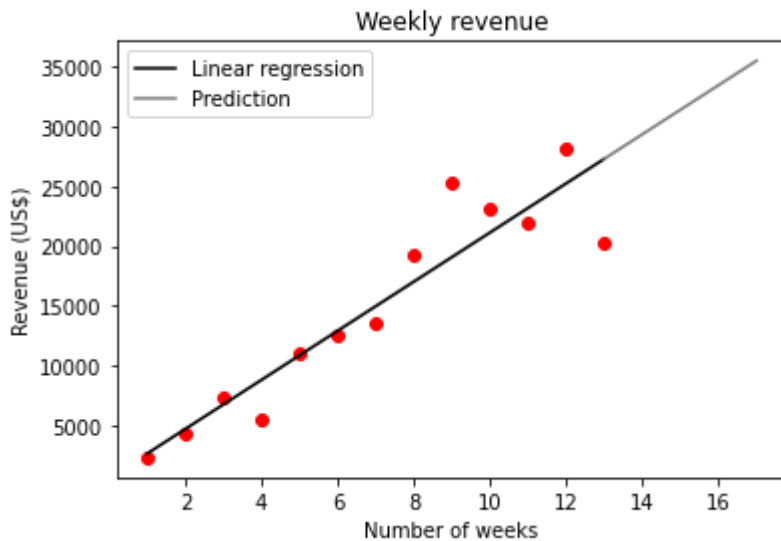
```
model_future = np.polyfit(x_future, y_future, 2)
predict_future = np.poly1d(model_future)
```

In [53]:

```
future_revenue = predict_future(x_future)
```

In [59]:

```
#chart shows existing data and future regression line
plt.scatter(x, y, color = 'red')
plt.plot(x, predicted_revenue, color = 'black', label = 'Linear regression')
plt.plot(x_future, future_revenue, color = 'grey', label = 'Prediction')
plt.legend()
plt.xlabel('Number of weeks')
plt.ylabel('Revenue (US$)')
plt.title('Weekly revenue')
plt.savefig('weekly revenue.jpg')
```



In [57]:

```
#prediction for 4 weeks' time
predict_future(17)
```

Out[57]:

35496.263736263725

In [58]:

```
#checking R2 score - model is a good fit
r2_score(y, predict(x))
```

Out[58]:

0.8625135183828527

In []: