In [1]:
```
import pandas as pd
import matplotlib.pyplot as plt
%matplotlib inline
```

In [8]:
```
ms = pd.read_csv('C:\pyt\Python-and-Statistics-in-Financial-Analysis-main\Lab Tasks and Home work Week-I\microsoft.csv')
ms['MA10'] = ms['Close'].rolling(10).mean()
ms['MA50'] = ms['Close'].rolling(50).mean()
ms = ms.dropna()
ms.head()
```

Out[8]:

	Date	Open	High	Low	Close	Adj Close	Volume	MA10	MA50
49	2015-03-13	40.700001	41.470001	40.610001	41.380001	38.443489	58007700	42.495	44.0034
50	2015-03-16	41.470001	41.639999	41.279999	41.560001	38.610714	35273500	42.263	43.9056
51	2015-03-17	41.369999	41.830002	41.150002	41.700001	38.740784	31587200	42.105	43.8044
52	2015-03-18	41.430000	42.830002	41.330002	42.500000	39.484009	43971800	42.049	43.7278
53	2015-03-19	42.259998	42.590000	42.220001	42.290001	39.288918	33879100	41.967	43.6606

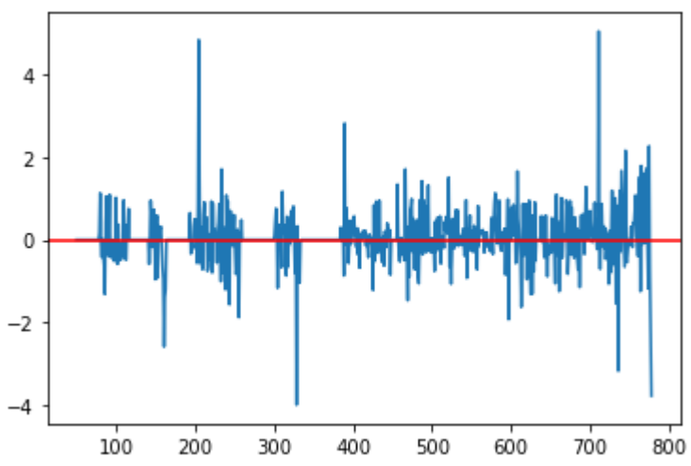
In [10]:
```
ms['Shares'] = [1 if ms.loc[ei, 'MA10']>ms.loc[ei, 'MA50'] else 0 for ei in ms.index]
ms.head()
```

Out[10]:

	Date	Open	High	Low	Close	Adj Close	Volume	MA10	MA50	Shares
49	2015-03-13	40.700001	41.470001	40.610001	41.380001	38.443489	58007700	42.495	44.0034	0
50	2015-03-16	41.470001	41.639999	41.279999	41.560001	38.610714	35273500	42.263	43.9056	0
51	2015-03-17	41.369999	41.830002	41.150002	41.700001	38.740784	31587200	42.105	43.8044	0
52	2015-03-18	41.430000	42.830002	41.330002	42.500000	39.484009	43971800	42.049	43.7278	0
53	2015-03-19	42.259998	42.590000	42.220001	42.290001	39.288918	33879100	41.967	43.6606	0

In [11]:
```
ms['Close1'] = ms['Close'].shift(-1)
ms['Profit'] = [ms.loc[ei, 'Close1'] - ms.loc[ei, 'Close'] if ms.loc[ei, 'Shares']==1 else 0
for ei in ms.index]
ms['Profit'].plot()
plt.axhline(y=0, color='red')
```

Out[11]: <matplotlib.lines.Line2D at 0x200c8362f70>



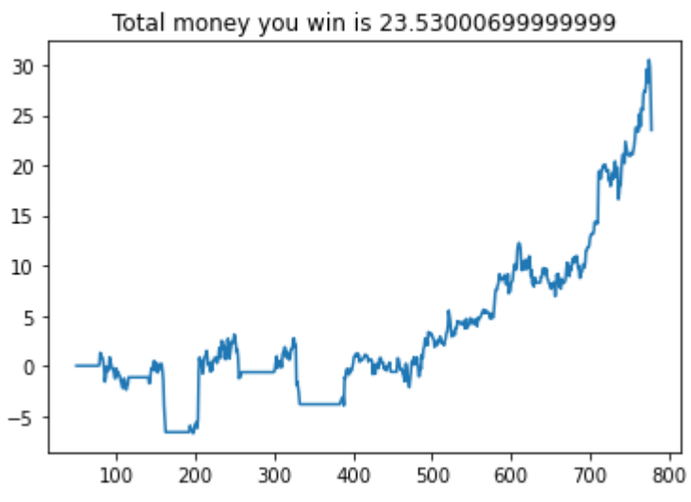
In [12]:
```
ms['wealth'] = ms['Profit'].cumsum()
ms.tail()
```

Out[12]:

	Date	Open	High	Low	Close	Adj Close	Volume	MA10	MA50	Shares	Close1	Profit
775	2018-01-30	93.300003	93.660004	92.099998	92.739998	92.306389	38635100	91.862	86.5244	1	95.010002	2.270004
776	2018-01-31	93.750000	95.400002	93.510002	95.010002	94.565781	48756300	92.349	86.7606	1	94.260002	-0.750000
777	2018-02-01	94.790001	96.070000	93.580002	94.260002	93.819290	47227900	92.765	86.9978	1	91.779999	-2.480003
778	2018-02-02	93.639999	93.970001	91.500000	91.779999	91.350883	47867800	92.943	87.1828	1	88.000000	-3.779999
779	2018-02-05	90.559998	93.239998	88.000000	88.000000	87.588554	51031500	92.582	87.2684	1	NaN	NaN

In [13]:
```
ms['wealth'].plot()
plt.title('Total money you win is {}'.format(ms.loc[ms.index[-2], 'wealth']))
```

Out[13]: Text(0.5, 1.0, 'Total money you win is 23.53000699999999')



In [ ]: