Supplementary Activity:

Using the CSV files provided and what we have learned so far in this module complete the following exercises:

In [25]:
```
%matplotlib inline
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd

fb_stocks = pd.read_csv('/content/fb_stock_prices_2018.csv', index_col='date', pars
earthquakes = pd.read_csv('/content/earthquakes.csv')
```

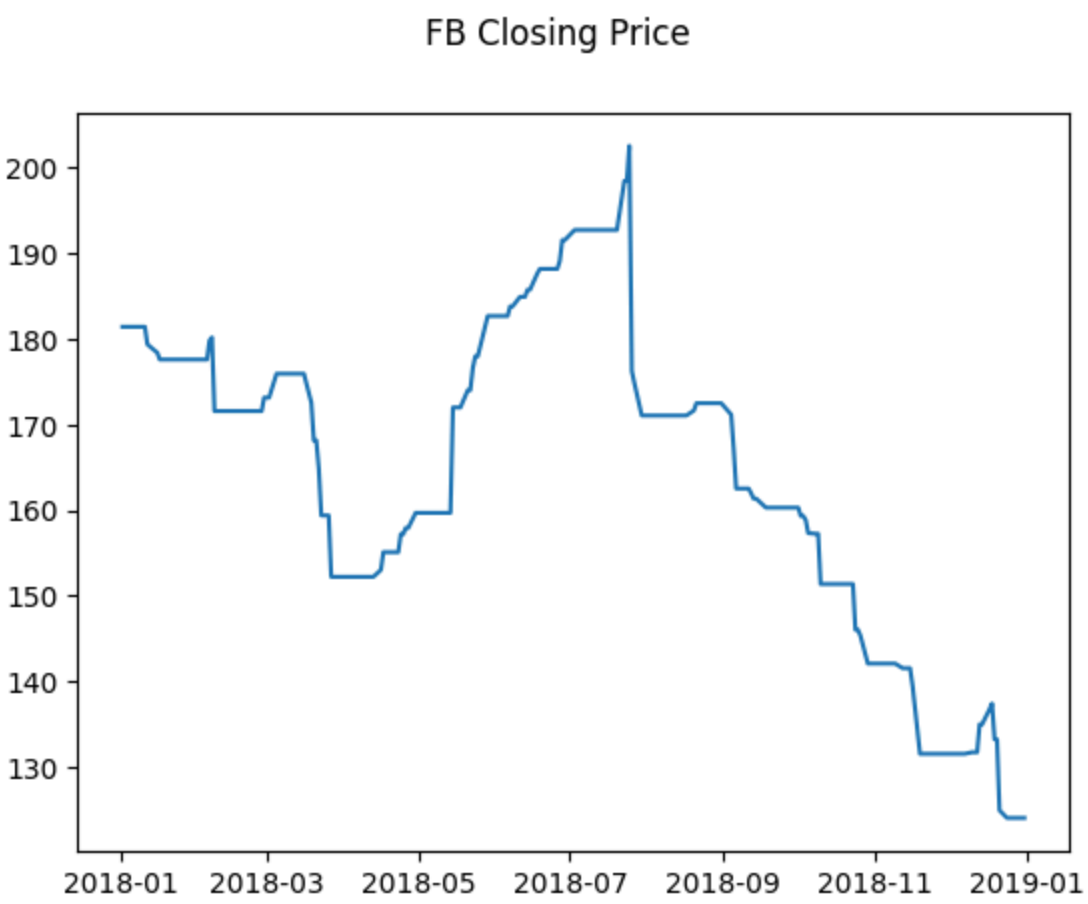
1. Plot the rolling 20-day minimum of the Facebook closing price with the pandas plot() method.

In [26]:
```
fb_stocks['close'].rolling('20D').min()
```

Out[26]:
```
date
2018-01-02    181.42
2018-01-03    181.42
2018-01-04    181.42
2018-01-05    181.42
2018-01-08    181.42
               ...
2018-12-24    124.06
2018-12-26    124.06
2018-12-27    124.06
2018-12-28    124.06
2018-12-31    124.06
Name: close, Length: 251, dtype: float64
```

In [28]:
```
plt.plot(fb_stocks['close'].rolling('20D').min())
plt.suptitle('FB Closing Price')
```

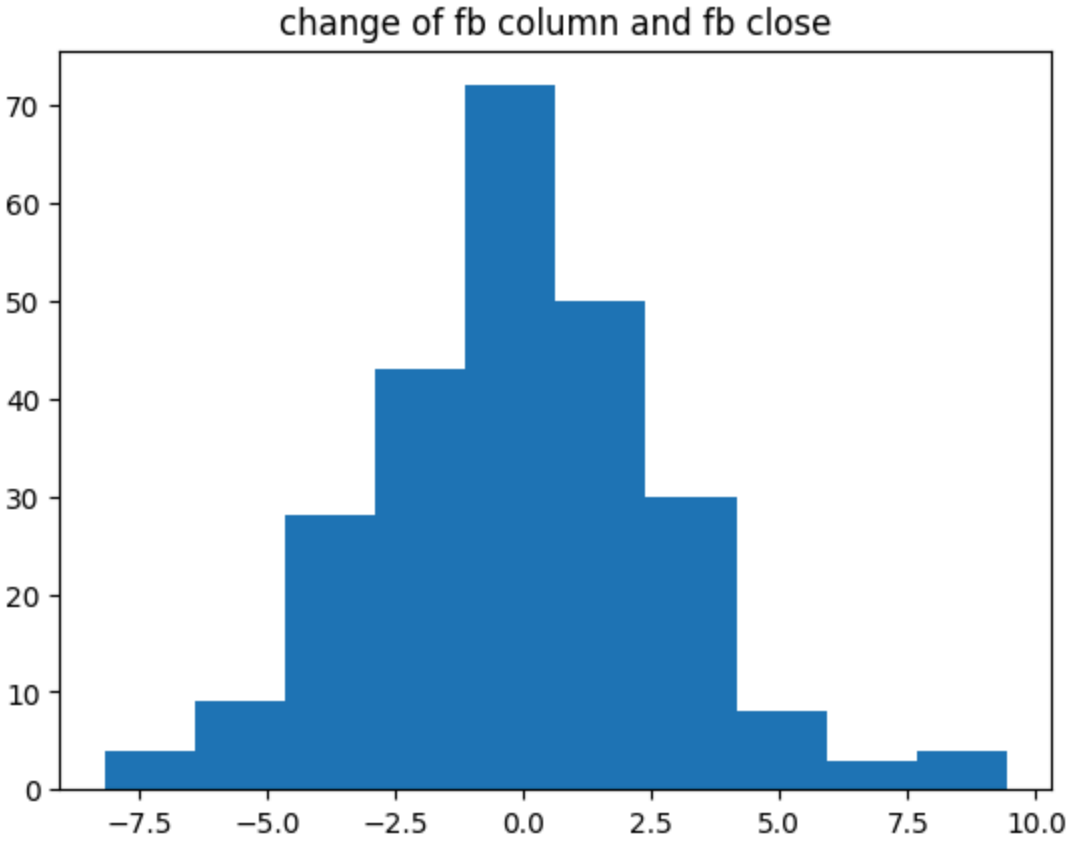
Out[28]:
```
Text(0.5, 0.98, 'FB Closing Price')
```



2. Create a histogram and KDE of the change from open to close in the price of Facebook stock.

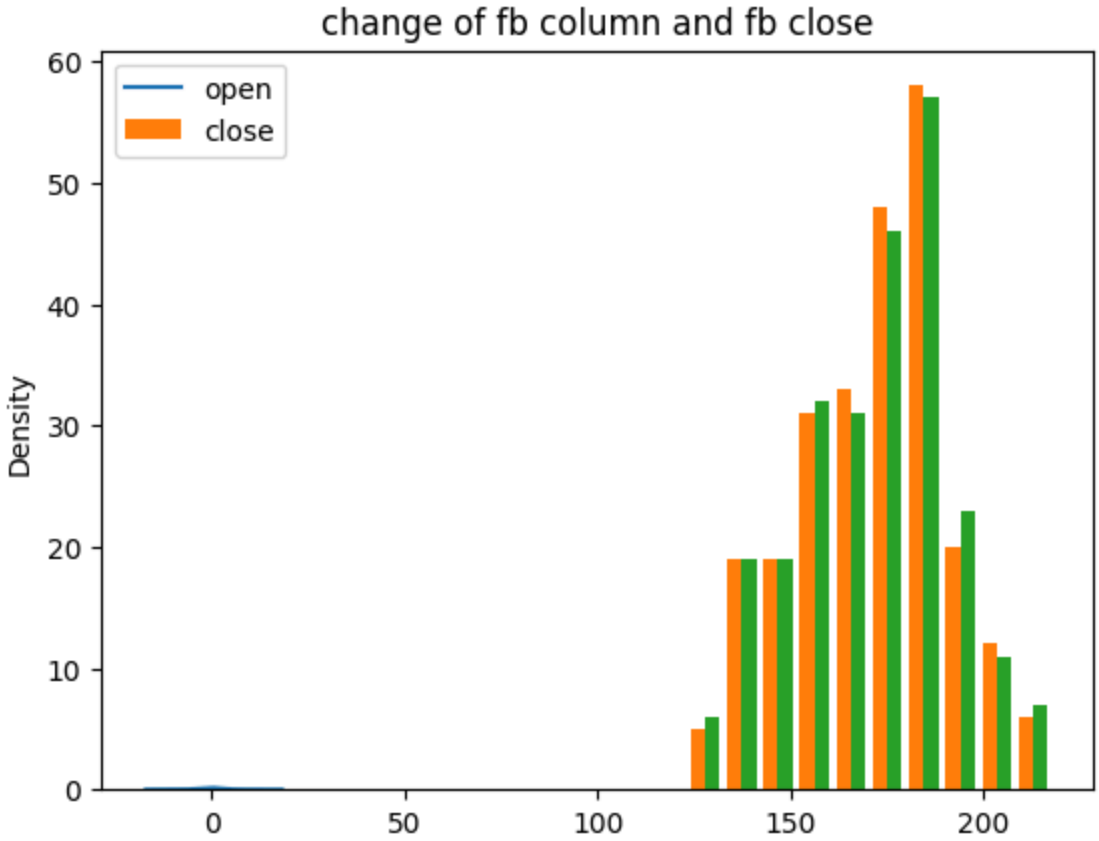
In [32]:
```
#Histogram
fb_histdiff = fb_stocks['open'] - fb_stocks['close']
plt.hist(fb_histdiff)
plt.title('change of fb column and fb close')
```

Out[32]:
```
Text(0.5, 1.0, 'change of fb column and fb close')
```



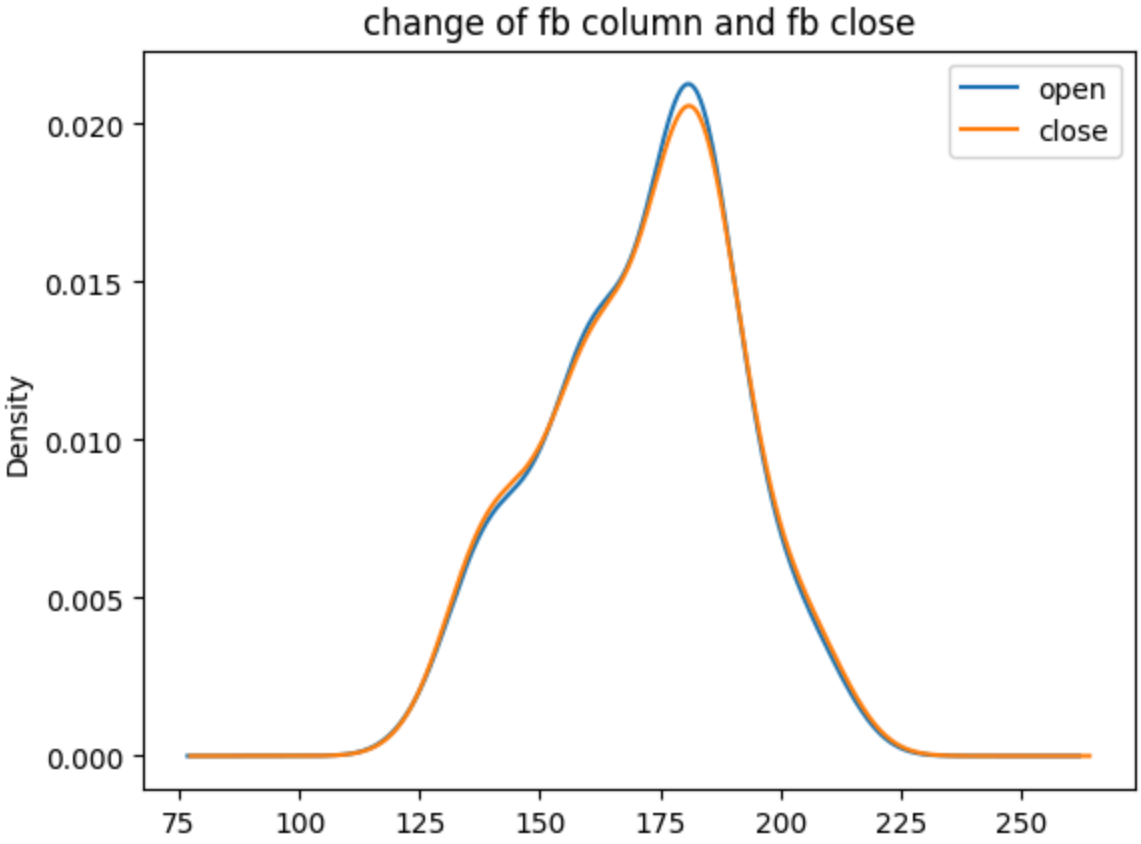
In [35]:
```
#KDE
fb_histdiff.plot(kind='kde')
plt.title('change of fb column and fb close')

plt.hist([fb_stocks['open'],fb_stocks['close']])
plt.legend(['open','close'])
plt.title('change of fb column and fb close')
```

Out[35]:
```
Text(0.5, 1.0, 'change of fb column and fb close')
```



In [36]:
```
fb_stocks.plot(y=['open','close'],kind='kde')
plt.title('change of fb column and fb close')
```

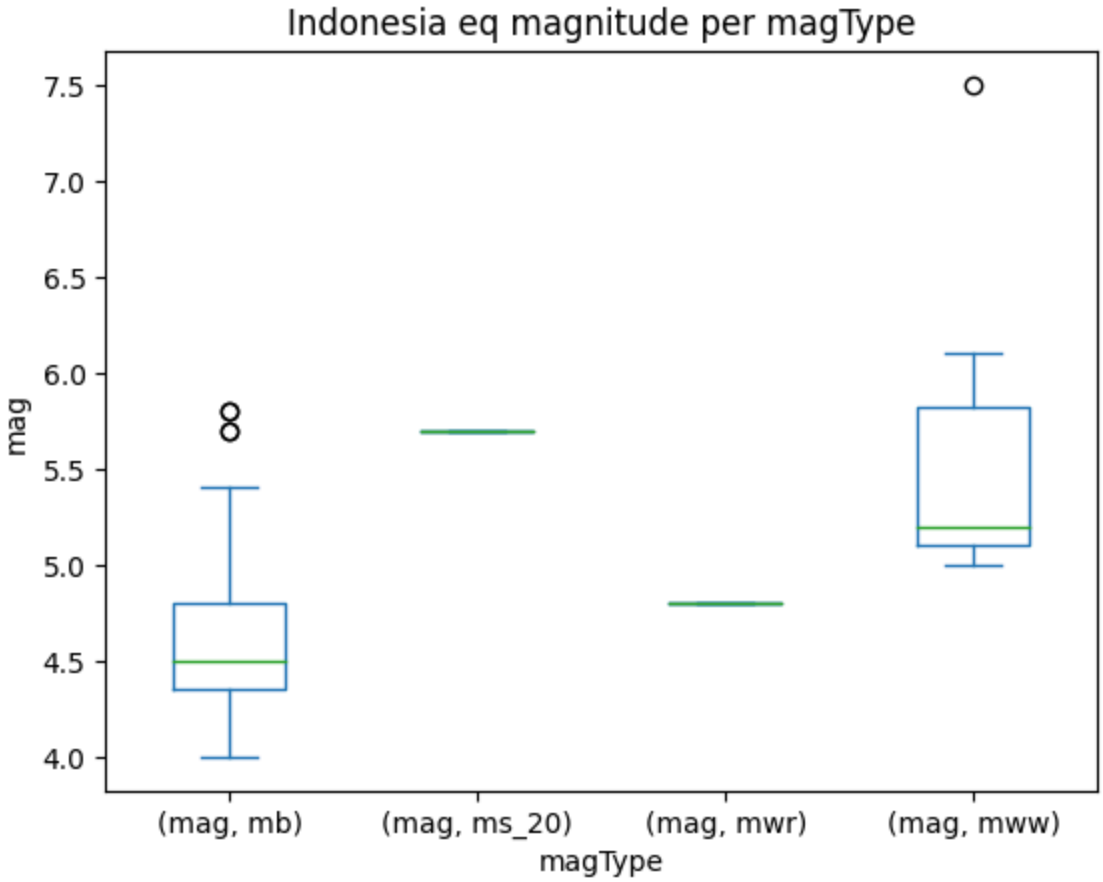
Out[36]:
```
Text(0.5, 1.0, 'change of fb column and fb close')
```



3. Using the earthquake data, create box plots for the magnitudes of each magType used in Indonesia.

In [31]:
```
eq_indonesia = earthquakes.query("parsed_place == 'Indonesia'")
eq_indonesia = eq_indonesia[['mag','magType']]
eq_indonesia = eq_indonesia.pivot(columns = 'magType')

eq_indonesia.plot(kind = 'box')
plt.xlabel('magType')
plt.ylabel('mag')
plt.title('Indonesia eq magnitude per magType' )
```

Out[31]:
```
Text(0.5, 1.0, 'Indonesia eq magnitude per magType')
```

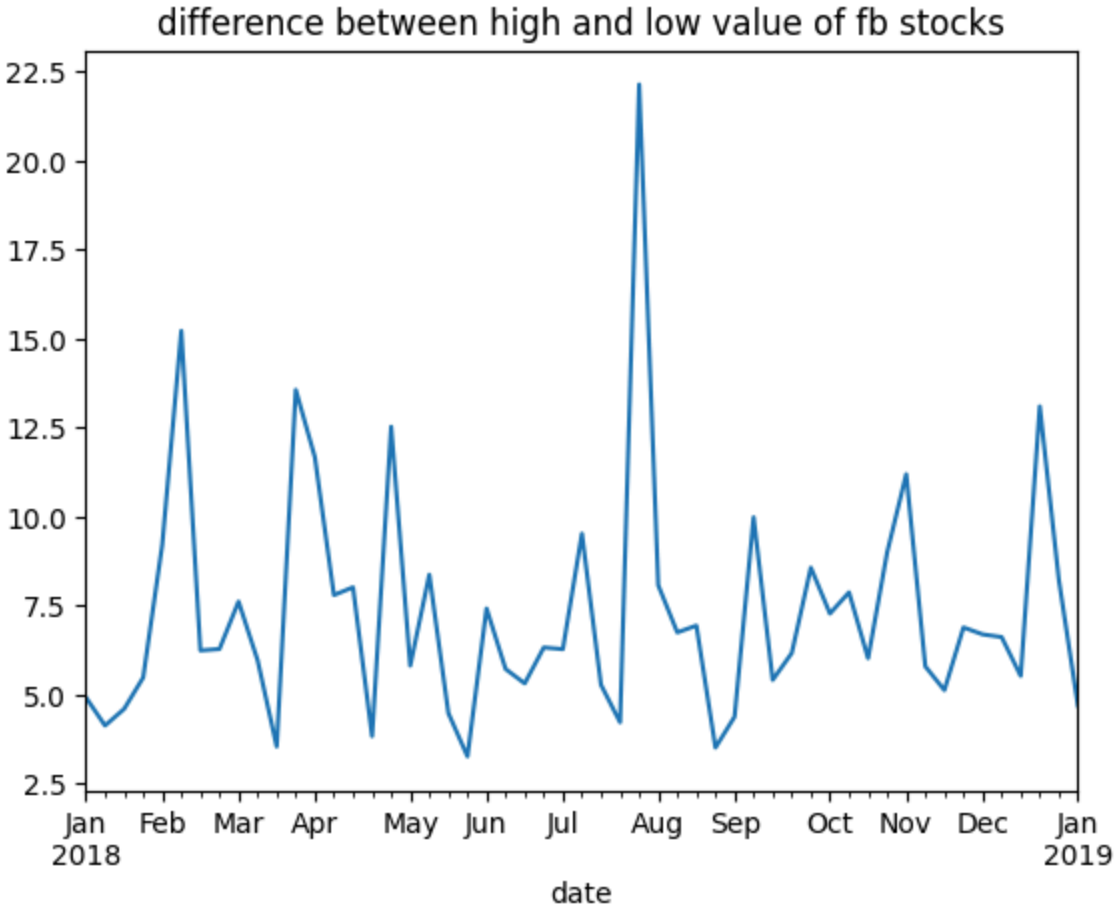


4. Make a line plot of the difference between the weekly maximum high price and the weekly minimum low price for Facebook. This should be a single

line.

In [30]:
```
fb_weekly = fb_stocks.resample('W').agg({
'high':'max',
'low':'mean'
})

fb_weekly['difference'] = fb_weekly['high'] - fb_weekly['low']

fb_weekly['difference'].plot()
plt.title('difference between high and low value of fb stocks')
```

Out[30]:
```
Text(0.5, 1.0, 'difference between high and low value of fb stocks')
```



5. Using matplotlib and pandas, create two subplots side-by-side showing the effect that after-hours trading has had on Facebook's stock price:

- The first subplot will contain a line plot of the daily difference between * that day's opening price and the prior day's closing price (be sure to review the Time series section of Aggregating Pandas DataFrames for an easy way to do this).
- The second subplot will be a bar plot showing the net effect this had monthly, using resample().
- Bonus #1: Color the bars according to whether they are gains in the stock price (green) or drops in the stock price (red).
- Bonus #2: Modify the x-axis of the bar plot to show the threeletter abbreviation for the month.

In [39]:
```
diff_stocks = fb_stocks['open'] - fb_stocks['close']
diff_stocks
```

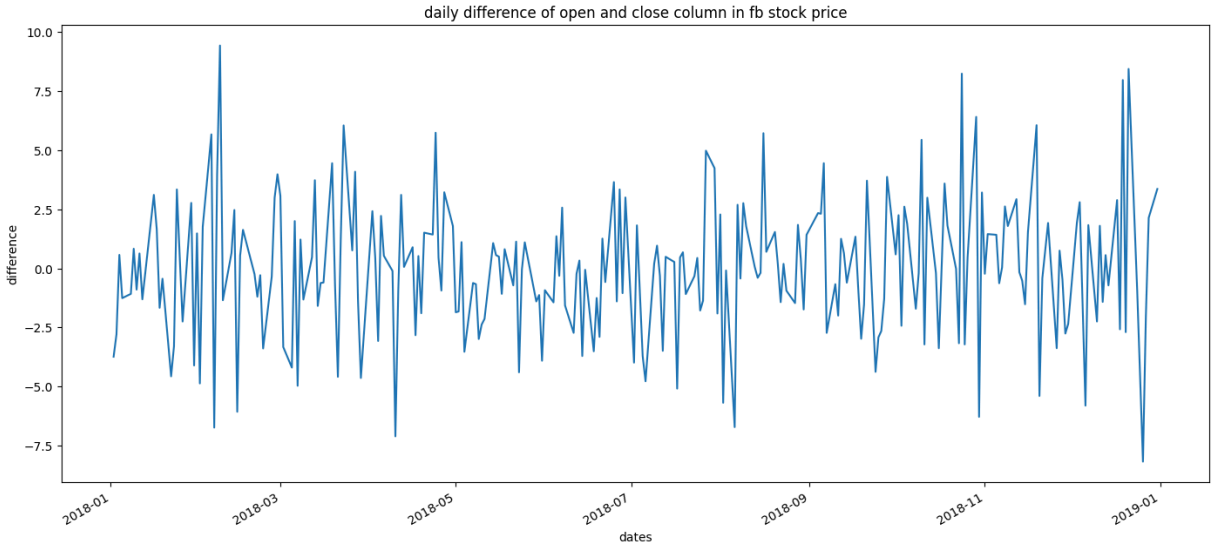
Out[39]:
```
date
2018-01-02   -3.74
2018-01-03   -2.79
2018-01-04    0.57
2018-01-05   -1.26
2018-01-08   -1.08
              ...
2018-12-24   -0.96
2018-12-26   -8.18
2018-12-27   -2.08
2018-12-28    2.14
2018-12-31    3.36
Length: 251, dtype: float64
```

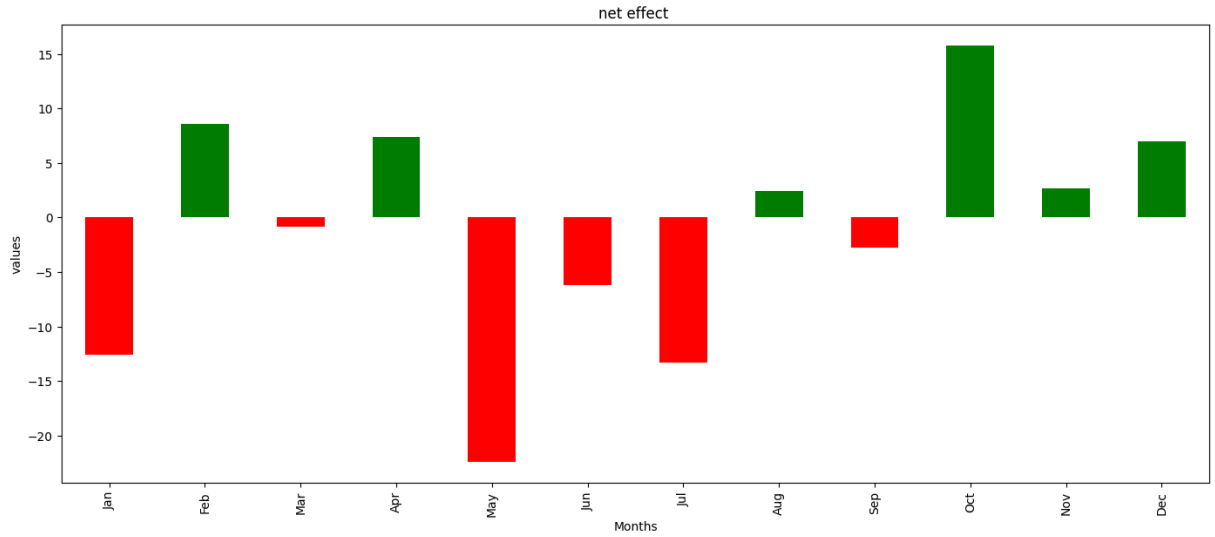
In [40]:
```
netEff = diff_stocks.resample('M').sum()
netEff
```

Out[40]:
```
date
2018-01-31   -12.5600
2018-02-28     8.5900
2018-03-31    -0.8400
2018-04-30     7.4147
2018-05-31   -22.4288
2018-06-30    -6.1646
2018-07-31   -13.3350
2018-08-31     2.4492
2018-09-30    -2.7450
2018-10-31    15.7650
2018-11-30     2.6700
2018-12-31     7.0000
Freq: M, dtype: float64
```

In [41]:
```
fig,ax = plt.subplots(2,1,figsize=(17,17))

diff_stocks.plot(ax = ax[0])
ax[0].set_title('daily difference of open and close column in fb stock price')
ax[0].set_ylabel('difference')
ax[0].set_xlabel('dates')

color = ['red','green','red','green','red','red','red','green','red','green','green
netEff.plot(kind='bar',ax = ax[1],color = color)
ax[1].set_title('net effect ')
ax[1].set_xlabel('Months')
ax[1].set_ylabel('values')
ax[1].set_xticklabels(netEff.index.strftime('%b')) # renaming the x axis with the f
```

```
Out[41]: [Text(0, 0, 'Jan'),
          Text(1, 0, 'Feb'),
          Text(2, 0, 'Mar'),
          Text(3, 0, 'Apr'),
          Text(4, 0, 'May'),
          Text(5, 0, 'Jun'),
          Text(6, 0, 'Jul'),
          Text(7, 0, 'Aug'),
          Text(8, 0, 'Sep'),
          Text(9, 0, 'Oct'),
          Text(10, 0, 'Nov'),
          Text(11, 0, 'Dec')]
```





Conclusion

In doing this activity, I learned that subplots provides a way to plot multiple plots on a single figure. Given the number of rows and columns , it returns a tuple (fig , ax), giving a single figure fig with an array of axes ax. Furthermore, we can customize our plots in the graph to make it visually appealing to the audience. Moreover, I learned as well that KDE is useful

when dealing with continuous data or when you want to explore if your date follows a normal distribution.