In [ ]:

Time Shifting

Sometimes you may need to shift all your data up or down along the time series index, in fact, a lot of pandas built-in methods do this under the hood. This isn't something we won't do often in the course, but its definitely good to know about this anyways!

In [34]:
```python
import pandas as pd

import matplotlib.pyplot as plt
%matplotlib inline
```

In [35]:
```python
df = pd.read_csv('time_data/walmart_stock.csv',index_col='Date')
df.index = pd.to_datetime(df.index)
```

In [36]:
```python
df.head()
```

Out[36]:

Date	Open	High	Low	Close	Volume	Adj Close
2012-01-03	59.970001	61.060001	59.869999	60.330002	12668800	52.619235
2012-01-04	60.209999	60.349998	59.470001	59.709999	9593300	52.078475
2012-01-05	59.349998	59.619999	58.369999	59.419998	12768200	51.825539
2012-01-06	59.419998	59.450001	58.869999	59.000000	8069400	51.459220
2012-01-09	59.029999	59.549999	58.919998	59.180000	6679300	51.616215

In [37]:
```python
df.tail()
```

Out[37]:

Date	Open	High	Low	Close	Volume	Adj Close
2016-12-23	69.430000	69.750000	69.360001	69.540001	4803900	69.032411
2016-12-27	69.300003	69.820000	69.250000	69.699997	4435700	69.191240
2016-12-28	69.940002	70.000000	69.260002	69.309998	4875700	68.804087
2016-12-29	69.209999	69.519997	69.120003	69.260002	4298400	68.754456
2016-12-30	69.120003	69.430000	68.830002	69.120003	6889500	68.615479

.shift() forward

In [38]:
```python
df.shift(1).head()
```

Out[38]:

Date	Open	High	Low	Close	Volume	Adj Close
2012-01-03	NaN	NaN	NaN	NaN	NaN	NaN
2012-01-04	59.970001	61.060001	59.869999	60.330002	12668800.0	52.619235
2012-01-05	60.209999	60.349998	59.470001	59.709999	9593300.0	52.078475
2012-01-06	59.349998	59.619999	58.369999	59.419998	12768200.0	51.825539
2012-01-09	59.419998	59.450001	58.869999	59.000000	8069400.0	51.459220

In [39]:
```python
# You will lose that last piece of data that no longer has an index!
df.shift(1).tail()
```

Out[39]:

Date	Open	High	Low	Close	Volume	Adj Close
2016-12-23	71.239998	71.239998	69.209999	69.589996	12106800.0	69.082042
2016-12-27	69.430000	69.750000	69.360001	69.540001	4803900.0	69.032411
2016-12-28	69.300003	69.820000	69.250000	69.699997	4435700.0	69.191240
2016-12-29	69.940002	70.000000	69.260002	69.309998	4875700.0	68.804087
2016-12-30	69.209999	69.519997	69.120003	69.260002	4298400.0	68.754456

shift() backwards

In [40]:
```python
df.shift(-1).head()
```

Out[40]:

Date	Open	High	Low	Close	Volume	Adj Close
2012-01-03	60.209999	60.349998	59.470001	59.709999	9593300.0	52.078475
2012-01-04	59.349998	59.619999	58.369999	59.419998	12768200.0	51.825539
2012-01-05	59.419998	59.450001	58.869999	59.000000	8069400.0	51.459220
2012-01-06	59.029999	59.549999	58.919998	59.180000	6679300.0	51.616215
2012-01-09	59.430000	59.709999	58.980000	59.040001	6907300.0	51.494109

In [41]:
```python
df.shift(-1).tail()
```

Out[41]:

Date	Open	High	Low	Close	Volume	Adj Close
2016-12-23	69.300003	69.820000	69.250000	69.699997	4435700.0	69.191240
2016-12-27	69.940002	70.000000	69.260002	69.309998	4875700.0	68.804087
2016-12-28	69.209999	69.519997	69.120003	69.260002	4298400.0	68.754456
2016-12-29	69.120003	69.430000	68.830002	69.120003	6889500.0	68.615479
2016-12-30	NaN	NaN	NaN	NaN	NaN	NaN

Shifting based off Time String Code

Using tshift()

In [42]:
```python
# Shift everything forward one month
shubham=df.tshift(periods=1,freq='M').head()
```

```
C:\Users\Shubham kumawat\AppData\Local\Temp\ipykernel_42872\1728879483.py:2: FutureWarning: tshift is deprecate
d and will be removed in a future version. Please use shift instead.
  shubham=df.tshift(periods=1,freq='M').head()
```

In [43]:
```python
dir(shubham)
```

Out[43]:
```
['Close',
 'High',
 'Low',
 'Open',
 'T',
 'Volume',
 '_AXIS_LEN',
 '_AXIS_ORDERS',
 '_AXIS_TO_AXIS_NUMBER',
 '_HANDLED_TYPES',
 '__abs__',
 '__add__',
 '__and__',
 '__annotations__',
 '__array__',
 '__array_priority__',
 '__array_ufunc__',
 '__array_wrap__',
 '__bool__',
 '__class__',
 '__contains__',
 '__copy__',
 '__deepcopy__',
 '__delattr__',
 '__delitem__',
 '__dict__',
 '__dir__',
 '__divmod__',
 '__doc__',
 '__eq__',
 '__finalize__',
 '__floordiv__',
 '__format__',
 '__ge__',
 '__getattr__',
 '__getattribute__',
 '__getitem__',
 '__getstate__',
 '__gt__',
 '__hash__',
 '__iadd__',
 '__iand__',
 '__ifloordiv__',
 '__imod__',
 '__imul__',
 '__init__',
 '__init_subclass__',
 '__invert__',
 '__ior__',
 '__ipow__',
 '__isub__',
 '__iter__',
 '__itruediv__',
 '__ixor__',
 '__le__',
 '__len__',
 '__lt__',
 '__matmul__',
 '__mod__',
 '__module__',
 '__mul__',
 '__ne__',
 '__neg__',
 '__new__',
 '__nonzero__',
 '__or__',
 '__pos__',
 '__pow__',
 '__radd__',
 '__rand__',
 '__rdivmod__',
 '__reduce__',
 '__reduce_ex__',
 '__repr__',
 '__rfloordiv__',
 '__rmatmul__',
 '__rmod__',
 '__rmul__',
 '__ror__',
 '__round__',
 '__rpow__',
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 '__rxor__',
 '__setattr__',
 '__setitem__',
 '__setstate__',
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 '__sub__',
 '__subclasshook__',
 '__truediv__',
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 '__xor__',
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 '_add_numeric_operations',
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 '_agg_examples_doc',
 '_agg_summary_and_see_also_doc',
 '_align_frame',
 '_align_series',
 '_append',
 '_arith_method',
 '_as_manager',
 '_attrs',
 '_box_col_values',
 '_can_fast_transpose',
 '_check_inplace_and_allows_duplicate_labels',
 '_check_inplace_setting',
 '_check_is_chained_assignment_possible',
 '_check_label_or_level_ambiguity',
 '_check_setitem_copy',
 '_clear_item_cache',
 '_clip_with_one_bound',
 '_clip_with_scalar',
 '_cmp_method',
 '_combine_frame',
 '_consolidate',
 '_consolidate_inplace',
 '_construct_axes_dict',
 '_construct_axes_from_arguments',
 '_construct_result',
 '_constructor',
 '_constructor_sliced',
 '_convert',
 '_count_level',
 '_data',
 '_dir_additions',
 '_dir_deletions',
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 '_drop_axis',
 '_drop_labels_or_levels',
 '_ensure_valid_index',
 '_find_valid_index',
 '_flags',
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 '_get_column_array',
 '_get_index_resolvers',
 '_get_item_cache',
 '_get_label_or_level_values',
 '_get_numeric_data',
 '_get_value',
 '_getitem_bool_array',
 '_getitem_multilevel',
 '_gotitem',
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 '_info_axis_number',
 '_info_repr',
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 '_iset_not_inplace',
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 '_reindex_with_indexers',
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 '_repr_fits_vertical_',
 '_repr_html_',
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 '_reset_cacher',
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 '_set_item_mgr',
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 'applymap',
 'asfreq',
 'asof',
 'assign',
 'astype',
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 'attrs',
 'axes',
 'backfill',
 'between_time',
 'bfill',
 'bool',
 'boxplot',
 'clip',
 'columns',
 'combine',
 'combine_first',
 'compare',
 'convert_dtypes',
 'copy',
 'corr',
 'corrwith',
 'count',
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 'cummin',
 'cumprod',
 'cumsum',
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 'isnull',
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 'itertuples',
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 'notnull',
 'nsmallest',
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 'pipe',
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 'pivot_table',
 'plot',
 'pop',
 'pow',
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 'quantile',
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 'rank',
 'rdiv',
 'reindex',
 'reindex_like',
 'rename',
 'rename_axis',
 'reorder_levels',
 'replace',
 'resample',
 'reset_index',
 'rfloordiv',
 'rmod',
 'rmul',
 'rolling',
 'round',
 'rpow',
 'rsub',
 'rtruediv',
 'sample',
 'select_dtypes',
 'sem',
 'set_axis',
 'set_flags',
 'set_index',
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 'slice_shift',
 'sort_index',
 'sort_values',
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 'stack',
 'std',
 'style',
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 'sum',
 'swapaxes',
 'swaplevel',
 'tail',
 'take',
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 'to_csv',
 'to_dict',
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 'to_feather',
 'to_gbq',
 'to_hdf',
 'to_html',
 'to_json',
 'to_latex',
 'to_markdown',
 'to_numpy',
 'to_parquet',
 'to_period',
 'to_pickle',
 'to_records',
 'to_sql',
 'to_stata',
 'to_string',
 'to_timestamp',
 'to_xarray',
 'to_xml',
 'transform',
 'transpose',
 'truediv',
 'truncate',
 'tz_convert',
 'tz_localize',
 'unstack',
 'update',
 'value_counts',
 'values',
 'var',
 'where',
 'xs']
```

In [ ]:

That is it for now!