```
07 Computational graph.mp4
08 Derivatives with a computation graph.mp4
09 Logistic Regression Gradient Descent.mp4
10 Gradient descent on m Examples.mp4
11 Vectorization.mp4
12 More Vectorization Examples.mp4
13 Vectorizing Logistic Regression.mp4
14 Vectorizing Logistic Regression's Gradient Output.mp4
15 Broadcasting in python.mp4
16 A note on python:numpy vectors.mp4
17 Explanation of logistic regression cost function.mp4
18 Quick tour of Jupyter:iPython notebooks.mp4
19 Pieter Abbeel interview.mp4
Logistic Regression with a Neural Network mindset v5.pdf
Logistic+Regression+with+a+Neural+Network+mindset+v5-Copy1.ipynb
MyNote_Logistic Regression with Neural Network Mindset.ipynb
Python Basics With Numpy v3.pdf
Quiz.pdf
Hansen@Hansens-MacBook-Pro:~/Desktop/Machine Learning/Coursera_Course/Neural Networks and Deep Learni
ng 1 of DLai/Lecture Videos/Week2 $ " mv Logistic+Regression+with+a+Neural+Network+mindset+v5-Copy1.i
nb My_Note Logistic Regression with a Neural Network mindset v5.ipynb
usage: mv [-f | -i | -n] [-v] source target
       mv [-f | -i | -n] [-v] source ... directory
Hansen@Hansens-MacBook-Pro:~/Desktop/Machine Learning/Coursera_Course/Neural Networks and Deep Learni
ng 1 of DLai/Lecture Videos/Week2 $ " ls
01 Binary classification.mp4
02 Logistic regression.mp4
03 Logistic regression cost function.mp4
04 Gradient Descent.mp4
05 Derivatives.mp4
06 More derivative examples.mp4
07 Computational graph.mp4
08 Derivatives with a computation graph.mp4
09 Logistic Regression Gradient Descent.mp4
10 Gradient descent on m Examples.mp4
11 Vectorization.mp4
12 More Vectorization Examples.mp4
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Logistic Regression with a Neural Network mindset v5.pdf
Logistic+Regression+with+a+Neural+Network+mindset+v5-Copy1.ipynb
MyNote_Logistic Regression with Neural Network Mindset.ipynb
Python Basics With Numpy v3.pdf
Quiz.pdf
Hansen@Hansens-MacBook-Pro:~/Desktop/Machine Learning/Coursera_Course/Neural Networks and Deep Learni
ng 1 of DLai/Lecture Videos/Week2 $ " cd
Hansen@Hansens-MacBook-Pro:~ $ " clear

Hansen@Hansens-MacBook-Pro:~ $ " ipython
Python 3.6.4 |Anaconda, Inc.| (default, Jan 16 2018, 12:04:33)
Type 'copyright', 'credits' or 'license' for more information
IPython 6.2.1 -- An enhanced Interactive Python. Type '?' for help.

In [1]: import numpy as np

In [2]: np.squeeze()
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-2-c5986a7939bf> in <module>()
----> 1 np.squeeze()

TypeError: squeeze() missing 1 required positional argument: 'a'
```

```
In [3]: np.squeeze?
Signature: np.squeeze(a, axis=None)
Docstring:
Remove single-dimensional entries from the shape of an array.

Parameters
----------
a : array_like
    Input data.
axis : None or int or tuple of ints, optional
    .. versionadded:: 1.7.0

    Selects a subset of the single-dimensional entries in the
    shape. If an axis is selected with shape entry greater than
    one, an error is raised.

Returns
-------
squeezed : ndarray
    The input array, but with all or a subset of the
    dimensions of length 1 removed. This is always `a` itself
    or a view into `a`.

Raises
------
ValueError
    If `axis` is not `None`, and an axis being squeezed is not of length 1

See Also
--------
expand_dims : The inverse operation, adding singleton dimensions
reshape : Insert, remove, and combine dimensions, and resize existing ones

Examples
--------
>>> x = np.array([[[0], [1], [2]]])
>>> x.shape
(1, 3, 1)
>>> np.squeeze(x).shape
(3,)
>>> np.squeeze(x, axis=0).shape
(3, 1)
>>> np.squeeze(x, axis=1).shape
Traceback (most recent call last):
...
ValueError: cannot select an axis to squeeze out which has size not equal to one
>>> np.squeeze(x, axis=2).shape
(1, 3)
File:      ~/anaconda3/lib/python3.6/site-packages/numpy/core/fromnumeric.py
Type:      function

In [4]: assert?
Object `assert` not found.

In [5]: assert?
Object `assert` not found.

In [6]: import pandas as pd

In [7]: import matplotlib.pyplot as plt

In [8]: %matplotlib
Using matplotlib backend: MacOSX

In [9]: from pandas import Series, DataFrame

In [10]: ls
Applications/         Library/              Public/               experiments/
```

```
Creative Cloud Files/ MDIGB0_ideal.xbgf     PycharmProjects/      nohup.out
Desktop/              Mathematica/          amber_test/           requirement.txt
Developer/            Movies/               anaconda3/            seaborn-data/
Documents/            Music/                android/              solarized/
Downloads/            Parallels/            bin/                  texput.log
Dropbox/              Pictures/             curl

In [11]: obj = Series([4.5, 7.2, -5.3, 3.6], index = ['d', 'b', 'a', 'c'])

In [12]: obj
Out[12]:
d    4.5
b    7.2
a   -5.3
c    3.6
dtype: float64

In [13]: obj2 = obj.reindex(['a', 'b', 'c', 'd', 'e'])

In [14]: pbj2
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-14-effb3f23719d> in <module>()
----> 1 pbj2

NameError: name 'pbj2' is not defined

In [15]: obj2
Out[15]:
a   -5.3
b    7.2
c    3.6
d    4.5
e    NaN
dtype: float64

In [16]: obj2.add?
Signature: obj2.add(other, level=None, fill_value=None, axis=0)
Docstring:
Addition of series and other, element-wise (binary operator `add`).

Equivalent to ``series + other``, but with support to substitute a fill_value for
missing data in one of the inputs.

Parameters
----------
other : Series or scalar value
fill_value : None or float value, default None (NaN)
    Fill missing (NaN) values with this value. If both Series are
    missing, the result will be missing
level : int or name
    Broadcast across a level, matching Index values on the
    passed MultiIndex level

Returns
-------
result : Series

See also
--------
Series.radd
File:      ~/anaconda3/lib/python3.6/site-packages/pandas/core/ops.py
Type:      method

In [17]: frame = DataFrame(np.random.randn(4,3), columns = list('bde'), index = ['Utah', 'Ohio', 'Tex
    ...: as', 'Oregon'])

In [18]: frame
```

```
Out[18]:
              b         d         e
Utah    0.336903 -0.227071  0.257796
Ohio   -0.303296 -0.960838  0.856424
Texas   1.455450  0.153515 -1.526398
Oregon  0.849172  0.550337 -1.748060

In [19]: obj = Series(range(4), indes = list('dabc'))
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-19-124d5c3a9fea> in <module>()
----> 1 obj = Series(range(4), indes = list('dabc'))

TypeError: __init__() got an unexpected keyword argument 'indes'

In [20]: obj = Series(range(4), index = list('dabc'))

In [21]: obj
Out[21]:
d    0
a    1
b    2
c    3
dtype: int64

In [22]: obj.sort_index()
Out[22]:
a    1
b    2
c    3
d    0
dtype: int64

In [23]: obj = Series([4, 7, -3, 2])

In [24]: obj.order()
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-24-033d35042ce9> in <module>()
----> 1 obj.order()

~/anaconda3/lib/python3.6/site-packages/pandas/core/generic.py in __getattr__(self, name)
   3612             if name in self._info_axis:
   3613                 return self[name]
-> 3614             return object.__getattribute__(self, name)
   3615
   3616     def __setattr__(self, name, value):

AttributeError: 'Series' object has no attribute 'order'

In [25]: obj.argsort()
Out[25]:
0    2
1    3
2    0
3    1
dtype: int64

In [26]: obj
Out[26]:
0    4
1    7
2   -3
3    2
dtype: int64

In [27]: obj.sort_values()
Out[27]:
```

```
2   -3
3    2
0    4
1    7
dtype: int64

In [28]: frame = DataFrame({'b': [4.3, 7, -3, 2], 'a': [0, 1, 0, 1], 'c': [-2, 5, 8, -2.5]})

In [29]: frame
Out[29]:
   a    b    c
0  0  4.3 -2.0
1  1  7.0  5.0
2  0 -3.0  8.0
3  1  2.0 -2.5

In [30]: frame.rank(axis = 1)
Out[30]:
     a    b    c
0  2.0  3.0  1.0
1  1.0  3.0  2.0
2  2.0  1.0  3.0
3  2.0  3.0  1.0

In [31]: frame
Out[31]:
   a    b    c
0  0  4.3 -2.0
1  1  7.0  5.0
2  0 -3.0  8.0
3  1  2.0 -2.5

In [32]: frame.rank?
Signature: frame.rank(axis=0, method='average', numeric_only=None, na_option='keep', ascending=True,
pct=False)
Docstring:
Compute numerical data ranks (1 through n) along axis. Equal values are
assigned a rank that is the average of the ranks of those values

Parameters
----------
axis : {0 or 'index', 1 or 'columns'}, default 0
    index to direct ranking
method : {'average', 'min', 'max', 'first', 'dense'}
    * average: average rank of group
    * min: lowest rank in group
    * max: highest rank in group
    * first: ranks assigned in order they appear in the array
    * dense: like 'min', but rank always increases by 1 between groups
numeric_only : boolean, default None
    Include only float, int, boolean data. Valid only for DataFrame or
    Panel objects
na_option : {'keep', 'top', 'bottom'}
    * keep: leave NA values where they are
    * top: smallest rank if ascending
    * bottom: smallest rank if descending
ascending : boolean, default True
    False for ranks by high (1) to low (N)
pct : boolean, default False
    Computes percentage rank of data

Returns
-------
ranks : same type as caller
File:      ~/anaconda3/lib/python3.6/site-packages/pandas/core/generic.py
Type:      method

In [33]: df = DataFrame(np.random.randn(4,3), index = ['a', 'a', 'b', 'b'])
```

```
In [34]: df
Out[34]:
          0         1         2
a -0.050542 -0.731597  0.607711
a -0.702671 -0.363744  0.465368
b -0.255866 -0.308999 -0.248827
b  0.369449 -0.659152 -1.476499

In [35]: df.ix['b']
/Users/Hansen/anaconda3/bin/ipython:1: DeprecationWarning:
.ix is deprecated. Please use
.loc for label based indexing or
.iloc for positional indexing

See the documentation here:
http://pandas.pydata.org/pandas-docs/stable/indexing.html#ix-indexer-is-deprecated
  #!/Users/Hansen/anaconda3/bin/python
Out[35]:
          0         1         2
b -0.255866 -0.308999 -0.248827
b  0.369449 -0.659152 -1.476499

In [36]: df = DataFrame([[1.4, np.nan], [7.1, -4.5], [np.nan, np.nan], [0.75, -1.3]], index = list('a
    ...: bcd'), columns = ['one', 'two'])
    ...:
    ...:
    ...:

In [37]: df
Out[37]:
    one  two
a  1.40  NaN
b  7.10 -4.5
c   NaN  NaN
d  0.75 -1.3

In [38]: df.sum()
Out[38]:
one    9.25
two   -5.80
dtype: float64

In [39]: df.sum(axis = 1)
Out[39]:
a    1.40
b    2.60
c    0.00
d   -0.55
dtype: float64

In [40]: df.sum(axis, skipna=0)
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-40-08d29c4f0f97> in <module>()
----> 1 df.sum(axis, skipna=0)

NameError: name 'axis' is not defined

In [41]: df.sum(axis=1, skipna=0)
Out[41]:
a     NaN
b    2.60
c     NaN
d   -0.55
dtype: float64

In [42]: df.idxmax()
```

```
Out[42]:
one    b
two    d
dtype: object

In [43]: df.cumsum()
Out[43]:
    one  two
a  1.40  NaN
b  8.50 -4.5
c   NaN  NaN
d  9.25 -5.8

In [44]: ls
Applications/         Library/              Public/               experiments/
Creative Cloud Files/ MDIGB0_ideal.xbgf     PycharmProjects/      nohup.out
Desktop/              Mathematica/          amber_test/           requirement.txt
Developer/            Movies/               anaconda3/            seaborn-data/
Documents/            Music/                android/              solarized/
Downloads/            Parallels/            bin/                  texput.log
Dropbox/              Pictures/             curl

In [45]: import scapy
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
<ipython-input-45-e4a5a665a6d9> in <module>()
----> 1 import scapy

ModuleNotFoundError: No module named 'scapy'

In [46]: import scrapy
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
<ipython-input-46-40a98f9a83be> in <module>()
----> 1 import scrapy

ModuleNotFoundError: No module named 'scrapy'

In [47]: import Scapy
---------------------------------------------------------------------------
ModuleNotFoundError                       Traceback (most recent call last)
<ipython-input-47-71751e8468a8> in <module>()
----> 1 import Scapy

ModuleNotFoundError: No module named 'Scapy'

In [48]: df
Out[48]:
    one  two
a  1.40  NaN
b  7.10 -4.5
c   NaN  NaN
d  0.75 -1.3

In [49]: df.type
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-49-37b31d4b92d5> in <module>()
----> 1 df.type

~/anaconda3/lib/python3.6/site-packages/pandas/core/generic.py in __getattr__(self, name)
   3612             if name in self._info_axis:
   3613                 return self[name]
-> 3614             return object.__getattribute__(self, name)
   3615
   3616     def __setattr__(self, name, value):

AttributeError: 'DataFrame' object has no attribute 'type'
```

```
In [50]: df.type()
---------------------------------------------------------------------------
AttributeError                            Traceback (most recent call last)
<ipython-input-50-b1a68fcb0857> in <module>()
----> 1 df.type()

~/anaconda3/lib/python3.6/site-packages/pandas/core/generic.py in __getattr__(self, name)
   3612             if name in self._info_axis:
   3613                 return self[name]
-> 3614             return object.__getattribute__(self, name)
   3615
   3616     def __setattr__(self, name, value):

AttributeError: 'DataFrame' object has no attribute 'type'

In [51]: df
Out[51]:
    one  two
a  1.40  NaN
b  7.10 -4.5
c   NaN  NaN
d  0.75 -1.3

In [52]: df.fillna(0)
Out[52]:
    one  two
a  1.40  0.0
b  7.10 -4.5
c  0.00  0.0
d  0.75 -1.3

In [53]: from numpy import nan as NA

In [54]: data = Series([1, NA, 3.5, NA, 7])

In [55]: data.dropna()
Out[55]:
0    1.0
2    3.5
4    7.0
dtype: float64

In [56]: data
Out[56]:
0    1.0
1    NaN
2    3.5
3    NaN
4    7.0
dtype: float64

In [57]: data.dropna?
Signature: data.dropna(axis=0, inplace=False, **kwargs)
Docstring:
Return Series without null values

Returns
-------
valid : Series
inplace : boolean, default False
    Do operation in place.
File:      ~/anaconda3/lib/python3.6/site-packages/pandas/core/series.py
Type:      method

In [58]: data.dropna(thresh = 3)
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
```

```
<ipython-input-58-be9fbd611410> in <module>()
----> 1 data.dropna(thresh = 3)

~/anaconda3/lib/python3.6/site-packages/pandas/core/series.py in dropna(self, axis, inplace, **kwargs
)
   2984         if kwargs:
   2985             raise TypeError('dropna() got an unexpected keyword '
-> 2986                             'argument "{0}"'.format(list(kwargs.keys())[0]))
   2987
   2988         axis = self._get_axis_number(axis or 0)

TypeError: dropna() got an unexpected keyword argument "thresh"

In [59]: data.dropna(3)
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-59-eac06adcbbec> in <module>()
----> 1 data.dropna(3)

~/anaconda3/lib/python3.6/site-packages/pandas/core/series.py in dropna(self, axis, inplace, **kwargs
)
   2986                             'argument "{0}"'.format(list(kwargs.keys())[0]))
   2987
-> 2988         axis = self._get_axis_number(axis or 0)
   2989
   2990         if self._can_hold_na:

~/anaconda3/lib/python3.6/site-packages/pandas/core/generic.py in _get_axis_number(self, axis)
    355                 pass
    356         raise ValueError('No axis named {0} for object type {1}'
--> 357                          .format(axis, type(self)))
    358
    359     def _get_axis_name(self, axis):

ValueError: No axis named 3 for object type <class 'pandas.core.series.Series'>

In [60]: data = Series(np.random.randn(10), index = [['a', 'a', 'a', 'b', 'b', 'b', 'c', 'c', 'd', 'd
    ...: '],[1, 2, 3, 1, 2, 3, 1, 2, 2, 3]])

In [61]: data
Out[61]:
a  1    0.507375
   2   -1.801769
   3   -0.116943
b  1   -0.414369
   2   -0.118149
   3    0.464446
c  1   -0.325197
   2    1.056168
d  2    0.796155
   3   -1.210679
dtype: float64

In [62]: data.index
Out[62]:
MultiIndex(levels=[['a', 'b', 'c', 'd'], [1, 2, 3]],
           labels=[[0, 0, 0, 1, 1, 1, 2, 2, 3, 3], [0, 1, 2, 0, 1, 2, 0, 1, 1, 2]])

In [63]: data.unstack
Out[63]:
<bound method Series.unstack of a  1    0.507375
   2   -1.801769
   3   -0.116943
b  1   -0.414369
   2   -0.118149
   3    0.464446
c  1   -0.325197
   2    1.056168
```

```
d  2    0.796155
   3   -1.210679
dtype: float64>

In [64]: data.unstack()
Out[64]:
          1         2         3
a  0.507375 -1.801769 -0.116943
b -0.414369 -0.118149  0.464446
c -0.325197  1.056168       NaN
d       NaN  0.796155 -1.210679

In [65]: data = Series(np.random.randn(10), index = [['a', 'a', 'a', 'b', 'b', 'b', 'c', 'c', 'd', 'd
    ...: '],[1, 2, 3, 1, 2, 3, 1, 2, 2, 3], ['i','ii','iii','i','ii','iii','i','ii','iii']])
---------------------------------------------------------------------------
ValueError                                Traceback (most recent call last)
<ipython-input-65-18078c3cf5f2> in <module>()
----> 1 data = Series(np.random.randn(10), index = [['a', 'a', 'a', 'b', 'b', 'b', 'c', 'c', 'd', 'd'
],[1, 2, 3, 1, 2, 3, 1, 2, 2, 3], ['i','ii','iii','i','ii','iii','i','ii','iii']])

~/anaconda3/lib/python3.6/site-packages/pandas/core/series.py in __init__(self, data, index, dtype, n
ame, copy, fastpath)
    170
    171             if index is not None:
--> 172                 index = _ensure_index(index)
    173
    174             if data is None:

~/anaconda3/lib/python3.6/site-packages/pandas/core/indexes/base.py in _ensure_index(index_like, copy
)
   4200         if len(converted) > 0 and all_arrays:
   4201             from .multi import MultiIndex
-> 4202             return MultiIndex.from_arrays(converted)
   4203         else:
   4204             index_like = converted

~/anaconda3/lib/python3.6/site-packages/pandas/core/indexes/multi.py in from_arrays(cls, arrays, sort
order, names)
   1144         for i in range(1, len(arrays)):
   1145             if len(arrays[i]) != len(arrays[i - 1]):
-> 1146                 raise ValueError('all arrays must be same length')
   1147
   1148         from pandas.core.categorical import _factorize_from_iterables

ValueError: all arrays must be same length

In [66]: data = Series(np.random.randn(10), index = [['a', 'a', 'a', 'b', 'b', 'b', 'c', 'c', 'd', 'd
    ...: '],[1, 2, 3, 1, 2, 3, 1, 2, 2, 3], ['i','ii','iii','i','ii','iii','i','ii','iii','i']])

In [67]: data
Out[67]:
a  1  i     -0.458199
   2  ii     0.047962
   3  iii   -1.227472
b  1  i     -1.555049
   2  ii     0.367850
   3  iii    1.087283
c  1  i      0.918684
   2  ii    -1.605237
d  2  iii    1.236710
   3  i     -0.966134
dtype: float64

In [68]: data.index()
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-68-e615eec1a442> in <module>()
----> 1 data.index()
```

```
TypeError: 'MultiIndex' object is not callable

In [69]: data.index
Out[69]:
MultiIndex(levels=[['a', 'b', 'c', 'd'], [1, 2, 3], ['i', 'ii', 'iii']],
           labels=[[0, 0, 0, 1, 1, 1, 2, 2, 3, 3], [0, 1, 2, 0, 1, 2, 0, 1, 1, 2], [0, 1, 2, 0, 1, 2,
 0, 1, 2, 0]])

In [70]: data.unstack()
Out[70]:
            i        ii       iii
a 1 -0.458199       NaN       NaN
  2       NaN  0.047962       NaN
  3       NaN       NaN -1.227472
b 1 -1.555049       NaN       NaN
  2       NaN  0.367850       NaN
  3       NaN       NaN  1.087283
c 1  0.918684       NaN       NaN
  2       NaN -1.605237       NaN
d 2       NaN       NaN  1.236710
  3 -0.966134       NaN       NaN

In [71]:
```