

Module	Description	Example	Script
core	dictionary, adding a new entry	<code>co['po'] = 'CO'</code>	g05/demo.py
core	dictionary, creating	<code>co = {'name':'Colorado', 'capital':'Denver'}</code>	g05/demo.py
core	dictionary, looking up a value	<code>name = ny['name']</code>	g05/demo.py
core	dictionary, making a list of	<code>list1 = [co,ny]</code>	g05/demo.py
core	dictionary, obtaining a list of keys	<code>names = super_dict.keys()</code>	g05/demo.py
core	f-string, using a formatting string	<code>print( f"PV of {payment} with T={year} and r={r} is \${p. . .</code>	g07/demo.py
core	file, closing	<code>fh.close()</code>	g02/demo.py
core	file, opening for reading	<code>fh = open('states.csv')</code>	g05/demo.py
core	file, opening for writing	<code>fh = open(filename,"w")</code>	g02/demo.py
core	file, output using print	<code>print("It was written during",year,file=fh)</code>	g02/demo.py
core	file, output using write	<code>fh.write("Where was this file was written?\n")</code>	g02/demo.py
core	file, reading one line at a time	<code>for line in fh:</code>	g05/demo.py
core	for, looping through a list	<code>for n in a_list:</code>	g04/demo.py
core	function, calling	<code>d1_ssq = sumsq(d1)</code>	g06/demo.py
core	function, calling with an optional argument	<code>sample_function( 100, 10, r=0.07 )</code>	g07/demo.py
core	function, defining	<code>def sumsq(values):</code>	g06/demo.py
core	function, defining with optional argument	<code>def sample_function(payment,year,r=0.05):</code>	g07/demo.py
core	function, returning a result	<code>return values</code>	g06/demo.py
core	list, appending an element	<code>a_list.append("four")</code>	g03/demo.py
core	list, create via comprehension	<code>cubes = [n**3 for n in a_list]</code>	g04/demo.py
core	list, creating	<code>a_list = ["zero","one","two","three"]</code>	g03/demo.py
core	list, determining length	<code>n = len(b_list)</code>	g03/demo.py
core	list, extending with another list	<code>a_list.extend(a_more)</code>	g03/demo.py
core	list, generating a sequence	<code>b_list = range(1,6)</code>	g04/demo.py
core	list, joining with spaces	<code>a_string = " ".join(a_list)</code>	g03/demo.py
core	list, selecting an element	<code>print(a_list[0])</code>	g03/demo.py
core	list, selecting elements 0 to 3	<code>print(a_list[:4])</code>	g03/demo.py
core	list, selecting elements 1 to 2	<code>print(a_list[1:3])</code>	g03/demo.py
core	list, selecting elements 1 to the end	<code>print(a_list[1:])</code>	g03/demo.py
core	list, selecting last 3 elements	<code>print(a_list[-3:])</code>	g03/demo.py
core	list, selecting the last element	<code>print(a_list[-1])</code>	g03/demo.py
core	list, sorting	<code>c_sort = sorted(b_list)</code>	g03/demo.py

Module	Description	Example	Script
core	list, summing	<code>tot_inc = sum(incomes)</code>	g08/demo.py
core	math, raising a number to a power	<code>a_cubes.append( n**3 )</code>	g04/demo.py
core	math, rounding a number	<code>rounded = round(ratio,2)</code>	g05/demo.py
core	string, concatenating	<code>name = s1+" "+s2+" "+s3</code>	g02/demo.py
core	string, converting to an int	<code>values.append( int(line) )</code>	g06/demo.py
core	string, creating	<code>filename = "demo.txt"</code>	g02/demo.py
core	string, including a newline character	<code>fh.write(name+"!\n")</code>	g02/demo.py
core	string, splitting on a comma	<code>parts = line.split(',')</code>	g05/demo.py
core	string, splitting on whitespace	<code>b_list = b_string.split()</code>	g03/demo.py
core	string, stripping blank space	<code>clean = [item.strip() for item in parts]</code>	g05/demo.py
csv	setting up a DictReader object	<code>reader = csv.DictReader(fh)</code>	g08/demo.py
json	importing the module	<code>import json</code>	g05/demo.py
json	using to print an object nicely	<code>print( json.dumps(list1,indent=4) )</code>	g05/demo.py
pandas	columns, dividing with explicit alignment	<code>normed2 = 100*states.div(pa_row,axis='columns')</code>	g09/demo.py
pandas	columns, listing names	<code>print( '\nColumns:', list(states.columns) )</code>	g09/demo.py
pandas	columns, renaming	<code>county = county.rename(columns={'B01001_001E':'pop'})</code>	g10/demo.py
pandas	columns, retrieving one by name	<code>pop = states['pop']</code>	g09/demo.py
pandas	columns, retrieving several by name	<code>print( pop[some_states]/1e6 )</code>	g09/demo.py
pandas	dataframe, selecting rows by list indexing	<code>print( low_to_high[ -5: ] )</code>	g09/demo.py
pandas	dataframe, selecting rows via query	<code>trimmed = county.query("state == '04' or state == '36'")</code>	g10/demo.py
pandas	dataframe, sorting by a column	<code>county = county.sort_values('pop')</code>	g10/demo.py
pandas	dataframe, using xs to select a subset	<code>print( county.xs('04',level='state') )</code>	g10/demo.py
pandas	general, displaying all rows	<code>pd.set_option('display.max_rows', None)</code>	g09/demo.py
pandas	general, importing the module	<code>import pandas as pd</code>	g09/demo.py
pandas	general, using qcut to create deciles	<code>dec = pd.qcut( county['pop'], 10, labels=range(1,11) )</code>	g10/demo.py
pandas	groupby, cumulative sum within group	<code>cumulative_inc = group_by_state['pop'].cumsum()</code>	g10/demo.py
pandas	groupby, descriptive statistics	<code>inc_stats = group_by_state['pop'].describe()</code>	g10/demo.py
pandas	groupby, iterating over groups	<code>for t,g in group_by_state:</code>	g10/demo.py
pandas	groupby, median of each group	<code>pop_med = group_by_state['pop'].median()</code>	g10/demo.py

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pandas	groupby, quantile of each group	pop_25th = group_by_state['pop'].quantile(0.25)	g10/demo.py
pandas	groupby, return group number	groups = group_by_state.ngroup()	g10/demo.py
pandas	groupby, return number within group	seqnum = group_by_state.cumcount()	g10/demo.py
pandas	groupby, return rank within group	rank_age = group_by_state['pop'].rank()	g10/demo.py
pandas	groupby, select first records	first2 = group_by_state.head(2)	g10/demo.py
pandas	groupby, select largest values	largest = group_by_state['pop'].nlargest(2)	g10/demo.py
pandas	groupby, select last records	last2 = group_by_state.tail(2)	g10/demo.py
pandas	groupby, size of each group	num_rows = group_by_state.size()	g10/demo.py
pandas	groupby, sum of each group	state = county.groupby('state')['pop'].sum()	g10/demo.py
pandas	index, creating with 3 levels	county = county.set_index(['state','county', 'NAME'])	g10/demo.py
pandas	index, listing names	print( '\nIndex (rows):', list(states.index) )	g09/demo.py
pandas	index, retrieving a row by name	pa_row = states.loc['Pennsylvania']	g09/demo.py
pandas	index, retrieving first rows by location	print( low_to_high.iloc[ 0:10 ] )	g09/demo.py
pandas	index, retrieving last rows by location	print( low_to_high.iloc[ -5: ] )	g09/demo.py
pandas	index, setting to a column	new_states = states.set_index('name')	g09/demo.py
pandas	index, setting to a column in place	states.set_index('name',inplace=True)	g09/demo.py
pandas	reading, csv data	states = pd.read_csv('state-data.csv')	g09/demo.py
pandas	reading, using dtype dictionary	county = pd.read_csv('county_pop.csv',dtype=fips)	g10/demo.py
pandas	series, retrieving an element	print( "\nFlorida's population:", pop['Florida']/1e6 )	g09/demo.py
pandas	series, sorting by value	low_to_high = normed['med_pers_inc'].sort_values()	g09/demo.py
scipy	calling newton's method	cr = opt.newton(find_cube_root,xinit,maxiter=20,args=[y. . .	g07/demo.py
scipy	importing the module	import scipy.optimize as opt	g07/demo.py