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In [1]: """examples of pythonic operations on energyplus objects"""
# try these out line by line in the python interpreter or in ipython

from idfreader import idfreader

iddfile = "../iddfiles/Energy+V7_0_0_036.idd"
fname = "../idf files/V_7_0/5ZoneSupRetPlenRAB.idf"

bunchdt, data, commdct = idfreader(fname, iddfile)

# give easy to remember names to objects that you are working on
zones = bunchdt['zone'].upper() # all the zones
surfaces = bunchdt['BUILDINGSURFACE:DETAILED'].upper() # all the surfaces

# first zone - zone0
zone0 = zones[0]
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In [3]: zone0
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Out[3]: EpBunch_1(obj=['Zone', 'PLENUM-1', '0', '0', '0', '0', '1', '1', '0.609600067',
'283.2'], objls=['key', 'Name', 'Direction_of_Relative_North', 'X_Origin', 'Y_Origin',
'Z_Origin', 'Type', 'Multiplier', 'Ceiling_Height', 'Volume', 'Floor_Area',
'Zone_Inside_Convection_Algorithm', 'Zone_Outside_Convection_Algorithm',
'Part_of_Total_Floor_Area'])
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In [4]: print zone0.Name
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PLENUM-1
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In [5]: zonenames = [zone.Name for zone in zones]
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In [6]: print zonenames
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['PLENUM-1', 'SPACE1-1', 'SPACE2-1', 'SPACE3-1', 'SPACE4-1', 'SPACE5-1', 'Sup-PLENUM-1']
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In [7]: zonevolumes = [zone.Volume for zone in zones]
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In [8]: print zonevolumes
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['283.2', '239.247360229', '103.311355591', '239.247360229', '103.311355591',
'447.682556152', '208.6']
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In [9]: # filter to get zones less than 150 m3
smallzones = [zn for zn in zones if float(zn.Volume) < 150]
#name and volume of small zones
namevolume = [(zn.Name, zn.Volume) for zn in smallzones]
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In [10]: print namevolume
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[('SPACE2-1', '103.311355591'), ('SPACE4-1', '103.311355591')]
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In [11]: # number of small zones
print len(smallzones)
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2
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In [12]: #let us rename the small zones
smallzones[0].Name = "FIRST-SMALL-ZONE"
smallzones[1].Name = "SECOND-SMALL-ZONE"
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smallzones[1].Name      SECOND SMALL ZONE
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In [13]: # now the zone names are:
zonenames = [zone.Name for zone in zones]
print zonenames

['PLENUM-1', 'SPACE1-1', 'FIRST-SMALL-ZONE', 'SPACE3-1', 'SECOND-SMALL-ZONE', 'SPACE5-1', 'Sup-PLENUM-1']
```

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In [ ]: # now we have a problem
# surfaces still refer to the old zone names
# see ex_referenced.py to see how to change those references

# future version will have a function that will automatically update the references.

# save to disk and look at the file
txt = str(data) # bunchdt is actually changing values in data
open("bfile.idf", 'w').write(txt)
# open the idf file and search for the string "SMALL"
```