VirtuOx CIGNA Database

Kinetix Solutions

This report contains the information regarding a web scrapping project

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Consumer Request

VirtuOx request a way to get information from the webpage "http://cigna.benefitnation.net/cigna/SearchResult.aspx?txtAddress=&zip=33706&radius=150&searchType=phys&searchName=&city=&state=&ccn=Y&lang=&gender=&hplan=&hca=&hden=&hphm=&hvis=&productplan=OA&netid=&NPOid=&ResidentZipCode=&Pspec=&role=S&Sspec=PL " which contains physicians contact information within the CIGNA data base. The consumer wanted the physicians' names, their practice names, address and phone numbers from all 43k plus zip codes in the United States of America

Solution Approach

The solution to this problem is software based. I used a high level language Python 2.7.12 using PyCharm Edu 3.0. The program first gets information of all USA zip codes from a file and stores in a data structure called list. It then uses a loop to go through all the stored zip codes replacing the zip section "&zip=33706" using "'&zip=%d' %x", with **x** being the variable that contains the zip code. Each loop changes the url, which changes the generated list of physicians within 150miles of their zip code.

The list is then collecting using a web scrapping technique. This involves getting information from respective HTML tags such as <table></table>, <tr></tr> and <td></td> that has the information required.

The information was stored in the data structure in accordance to the consumer's requests. This was then stored in an excel/csv file.

Processing information from over 43k zip codes takes a long time and any internet disruptions will cause a halt in the processing of the required information. To solve this problem, I broke down the process to get the information 1000 zip codes at a time. This cuts down the time greatly in getting the information. The data was split in over 43 files and the next task was to combine all the contacts in one file, edit it, remove duplicate files and rearrange the data alphabetically.

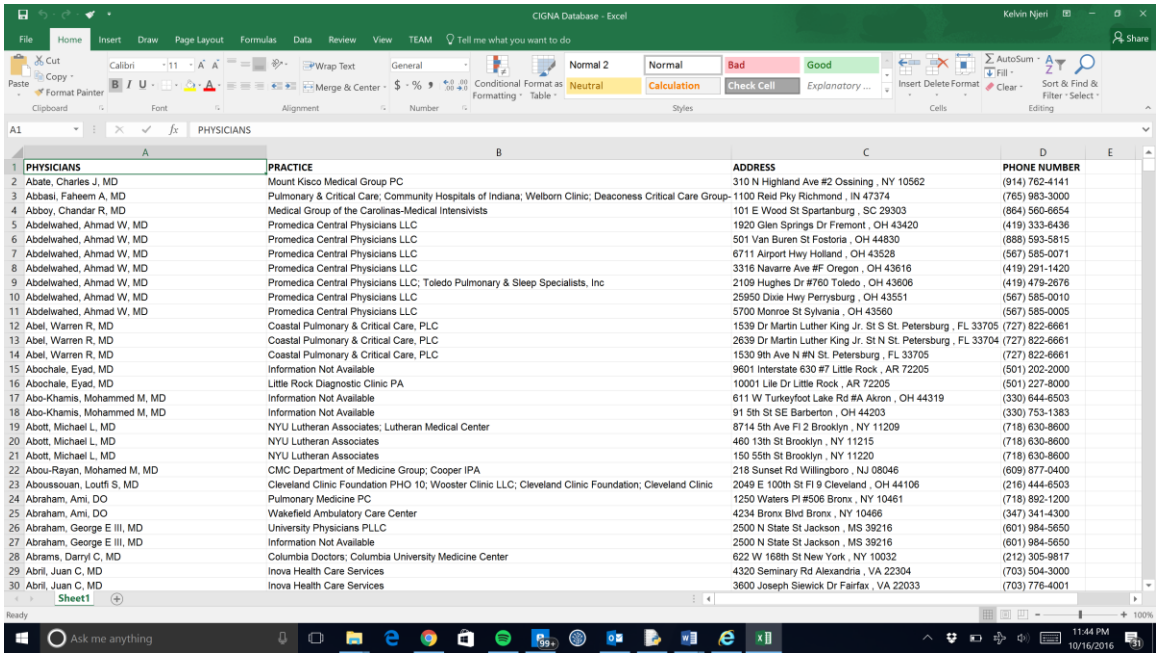
Program Code

```
# Kinetix Solutions, Inc
# VIRTOUX Screen Scrapper request
# author: Kelvin Njeri
# kelvin@kinetixsolutions.com
# IDLE: PyCharm 3.0 (python 2.7.12)
# The purpose of this script is to extract data from a
# generated list of contact information in a web page

# necessary imports
import csv
import urllib2
from xlwt import *
import xlrd

try:
   from bs4 import BeautifulSoup
except ImportError:
   from BeautifulSoup import BeautifulSoup

# storing information on a file of type xlxs
book = Workbook()

# storing 1000 USA zip codes
with open('codes.txt') as f:
   lines = f.readlines()

zips = []
for x in range(1000):
   zips.append(lines[x])

# extracting and storing data in a list of list
def extractData(line, contact):
   try:
      for row in line:
         list_of_cells = []
         for cell in row.find_all('td')[1:]:
            data = cell.text.replace(u'\xa0', '')
            data.replace(u'\xae', '')
            data.replace('\n', '')
            data.replace('\t', '')
            data.lstrip()
            data.rstrip()
            data.encode('utf-8')
            list_of_cells.append(data)
         contact.append(list_of_cells)  # created lists of lists
         #print "number of contacts collected = %d" % len(contact)
   except Exception as p:
      print p
      pass
```

```
# loops through every zip code in the search option
for x in zips:
    contact = []  # stores primary contact information
    physician = []
    practice = []
    address = []
    sheet = book.add_sheet(x)
    z = int(x)
    print "Accessing information in zipcode = %s" % x
    link =
'http://cigna.benefitnation.net/cigna/SearchResult.aspx?txtAddress=&zip=%s&radius=150&s
earchType=phys&searchName=&city=&state=&ccn=Y&lang=&gender=&hplan=&hca=&hde
n=&hphm=&hvis=&productplan=OA&netid=&NPOid=&ResidentZipCode=&Pspec=&role=S
&Sspec=PL' % z

    try:  # use of beautiful soup feature
        http = urllib2.urlopen(link)
        soup = BeautifulSoup(http, "html5lib")
    except urllib2.HTTPError:
        pass #clears out invalid URLs
    except Exception as he:
        print (he)
        exit()
    except AttributeError as se:
        print (se)
        exit()
    oddLine = soup.find_all('tr', {'class': 'resultslistitem'})
    evenLine = soup.find_all('tr', {'class': 'gridAlter'})
    extractData(oddLine, contact)
    extractData(evenLine, contact)

    for x in contact:
        p = x[0]
        j = x[3]
        a = x[4]
        print (p, j, a)

    for x in contact:
        physician.append(x[0])
        practice.append(x[3])
        address.append(x[4])

    for n in range(len(contact)):
        sheet.write(n, 0, physician[n])
        sheet.write(n, 1, practice[n])
        sheet.write(n, 2, address[n])

    book.save("cigna 1-1000.xlxs") #sample file name
```

Python File: Screen Scrapper.py

Database



PHYSICIANS	PRACTICE	ADDRESS	PHONE NUMBER
Abate, Charles J, MD	Mount Kisco Medical Group PC	310 N Highland Ave #2 Ossining , NY 10562	(914) 762-4141
Abbasi, Faheem A, MD	Pulmonary & Critical Care; Community Hospitals of Indiana; Welborn Clinic; Deaconess Critical Care Group-	1100 Reid Pky Richmond , IN 47374	(765) 983-3000
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Abou-Rayan, Mohamed M, MD	CMC Department of Medicine Group; Cooper IPA	218 Sunset Rd Willingboro , NJ 08046	(609) 877-0400
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Abraham, George E III, MD	Information Not Available	2500 N State St Jackson , MS 39216	(601) 984-5650
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Figure 1: Sample Output

Excel file: CIGNA Database