US01_intro

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0.1 First tutorial US01

0.2 First python code: the tip exercise

Basics : Given a state and a sentence about the serivce quality, calculate the final cost of a bill.

0.2.1 Identify the tax system in the USA

Raw data from wikipedia that need a cleaning

```
In [1]: rawTaxes = """Alabama         4%         13.5%
        Alaska         0%         7%
        Arizona         5.6%         10.725%
        Arkansas         6.5%         11.625%         1.5%+
        California         7.25%         10.25%
        Colorado         2.9%         10%
        Connecticut         6.35%         6.35%                                                    1%
        Delaware         0%         0%
        District of Columbia         5.75%         5.75%                  10%
        Florida         6%         7.5%                  9% (max)
        Georgia         4%         8%         4% (max)[40]
        Guam         4%         4%
        Hawaii         4.166%         4.712%
        Idaho         6%         8.5%                          [41]
        Illinois         6.25%         10.25%         1%+         8.25%+         1%+         1%+
        Indiana         7%         7%                  9% (max)
        Iowa[42]         6%         7%
        Kansas         6.5%         10.15%
        Kentucky         6%         6%
        Louisiana         5%         12%         7.0% (max)
        Maine         5.5%         5.5%                  8%
        Maryland         6%         6%
        Massachusetts         6.25%         6.25%                  7% (max)                        >
        Michigan         6%         6%
        Minnesota         6.875%         7.875%                 10.775% (max)
        Mississippi         7%         7.25%
        Missouri         4.225%         10.85%         1.225%
        Montana         0%         0%
        Nebraska         5.5%         7.5%                 9.5%
```

```
(Omaha)
Nevada        6.85%        8.25%
New Hampshire        0%        0%                9%
New Jersey        6.625%        12.875%
New Mexico        5.125%        8.688%
New York        4%        8.875%                                        > $110
North Carolina        4.75%        7.50%        2%        8.50% (max)
North Dakota [43]        5%        8%
Ohio[44]        5.75%        8%                Dine-in
Oklahoma        4.5%        11%
Oregon        0%        0%
Pennsylvania        6%        8%
Puerto Rico        10.5%        11.5%        1%
Rhode Island        7%        7%                8%
South Carolina        6%        9%                10.5%
South Dakota        4%        6%
Tennessee        7%        9.75%        4%+
Texas        6.25%        8.25%
Utah        5.95%        8.35%        3%
Vermont        6%        7%                9%+                        > $110
Virginia        5.3%        6%        2.5%        5.3%+
Washington        6.5%        10.4%                10% (max)
West Virginia        6%        7%
Wisconsin        5%        6.75%
Wyoming        4%        6%                                                """
splitRawTaxes = rawTaxes.split('\n')
```

Clean the data

In [2]:
```
stateTaxes = {}
for rawData in splitRawTaxes:
    if len(rawData) < 2:
        continue
    if 'Omaha' in rawData:
        continue
    stateTaxes.update({rawData.split('\t')[0].lower():float(rawData.split('\t')[1][:-1])

stateTaxes
```

Out[2]:
```
{'alabama': 0.04,
 'alaska': 0.0,
 'arizona': 0.055999999999999994,
 'arkansas': 0.065,
 'california': 0.0725,
 'colorado': 0.028999999999999998,
 'connecticut': 0.0635,
 'delaware': 0.0,
 'district of columbia': 0.0575,
```

```
'florida': 0.06,
'georgia': 0.04,
'guam': 0.04,
'hawaii': 0.04166,
'idaho': 0.06,
'illinois': 0.0625,
'indiana': 0.07,
'iowa[42]': 0.06,
'kansas': 0.065,
'kentucky': 0.06,
'louisiana': 0.05,
'maine': 0.055,
'maryland': 0.06,
'massachusetts': 0.0625,
'michigan': 0.06,
'minnesota': 0.06875,
'mississippi': 0.07,
'missouri': 0.042249999999999996,
'montana': 0.0,
'nebraska': 0.055,
'nevada': 0.06849999999999999,
'new hampshire': 0.0,
'new jersey': 0.06625,
'new mexico': 0.05125,
'new york': 0.04,
'north carolina': 0.0475,
'north dakota [43]': 0.05,
'ohio[44]': 0.0575,
'oklahoma': 0.045,
'oregon': 0.0,
'pennsylvania': 0.06,
'puerto rico': 0.105,
'rhode island': 0.07,
'south carolina': 0.06,
'south dakota': 0.04,
'tennessee': 0.07,
'texas': 0.0625,
'utah': 0.059500000000000004,
'vermont': 0.06,
'virginia': 0.053,
'washington': 0.065,
'west virginia': 0.06,
'wisconsin': 0.05,
'wyoming': 0.04}
```

0.2.2 Entries

Now that we have the tax system we get the data for the bill

```
In [3]: people = 4
        tip = 'pretty bad , very sorry...'
        bill = 30
        tax_state = 'new york'

        tips = {'bad':0.1,
                'average':0.15,
                'good':0.2
               }
```

0.2.3 2 methods to find the tip given

1 Method cut

```
In [4]: finalTip = 'average'
        for word in tip.split():
            if word.lower() in tips.keys():
                print('we found it:', word,'. The value is:',tips[word])
                finalTip = tips[word]
                break
        print('Tip is ', finalTip)
```

```
we found it: bad . The value is: 0.1
Tip is  0.1
```

2 Method compare

```
In [5]: finalTip = 'average'
        for word in tips.keys():
            if word in tip:
                print('we found it:', word,'. The value is:',tips[word])
                finalTip = tips[word]
                break
        print('Tip is ', finalTip)
```

```
we found it: bad . The value is: 0.1
Tip is  0.1
```

Now that we have the % we calculate the tip

```
In [6]: try:
            tip_amount = finalTip * bill
        except KeyError:
            print('The tip is ill written.')

        print('The tip is',tip_amount,'$')
```

```
The tip is 3.0 $
```

Then the tax impact on the bill

```
In [10]: tax_amount = stateTaxes[tax_state.lower()] * bill
         print('The tax is',tax_amount,'$')



         total = bill + tip_amount + tax_amount
```

```
The tax is 1.2 $
```

0.3 Finally we give the answer with the full and the individual price

```
In [8]: print('The total cost (',people,'people) is: ',total,'$')
```

```
The total cost ( 4 people) is:  34.2 $
```

```
In [9]: print('For one person, the cost is: ',total / people,'$')
```

```
For one person, the cost is:  8.55 $
```