

# Programming and Data Structures with Python

## Lecture 08, 11 January 2021

In [1]:

```
y = x + 1
```

```
-----  
-----  
NameError                                Traceback (most  
  recent call last)  
<ipython-input-1-4ffa4a2638ab> in <module>  
----> 1 y = x + 1  
  
NameError: name 'x' is not defined
```

In [4]:

```
flist = 7  
flist.append(10)
```

```
-----  
-----  
AttributeError                            Traceback (most  
  recent call last)  
<ipython-input-4-3d981bd582a1> in <module>  
      1 flist = 7  
----> 2 flist.append(10)  
  
AttributeError: 'int' object has no attribute 'append'
```

## Dictionaries

- Accumulate counts
- For example, count the frequency of words in a sentence

In [5]:

```
def frequency(s):  
    # s is a list of strings  
    wordfreq = {}  
    for w in s:  
        if w in wordfreq.keys():  
            wordfreq[w] = wordfreq[w] + 1  
        else: # First time we saw w  
            wordfreq[w] = 1  
    return(wordfreq)
```

In [9]:

```
line = input()  
sentence = line.split()  
print(sentence)
```

```
the quick brown fox jumps over the lazy dog  
['the', 'quick', 'brown', 'fox', 'jumps', 'over', 'the',  
'lazy', 'dog']
```

In [10]:

```
d = frequency(sentence)
```

In [11]:

```
d
```

Out[11]:

```
{'the': 2,  
'quick': 1,  
'brown': 1,  
'fox': 1,  
'jumps': 1,  
'over': 1,  
'lazy': 1,  
'dog': 1}
```

**Example** Populating a dictionary in a loop

In [26]:

```
newd = {}  
i = 0  
for w in sentence:  
    newd[w] = i  
    i = i+1
```

In [28]:

```
newd # Last position of each word in the sentence
```

Out[28]:

```
{'the': 6,  
 'quick': 1,  
 'brown': 2,  
 'fox': 3,  
 'jumps': 4,  
 'over': 5,  
 'lazy': 7,  
 'dog': 8}
```

In [18]:

```
l = list(d.keys())
```

In [19]:

```
l[5]
```

Out[19]:

```
'over'
```

In [21]:

```
d.values()
```

Out[21]:

```
dict_values([2, 1, 1, 1, 1, 1, 1, 1])
```

In [23]:

```
l = sorted(d.keys())
```

In [24]:

```
l[5]
```

Out[24]:

```
'over'
```

In [25]:

```
sorted(d) # {'the':2, ..., 'dog':1}
```

Out[25]:

```
['brown', 'dog', 'fox', 'jumps', 'lazy', 'over', 'quick',  
'the']
```