Regex with Pandas and Named Groups

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*You are currently looking at **version 1.0** of this notebook. To download notebooks and datafiles, as well as get help on Jupyter notebooks in the Coursera platform, visit the Jupyter Notebook FAQ course resource.*

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1 Working with Text Data in pandas

```
In [1]: import pandas as pd

        time_sentences = ["Monday: The doctor's appointment is at 2:45pm.",
                          "Tuesday: The dentist's appointment is at 11:30 am.",
                          "Wednesday: At 7:00pm, there is a basketball game!",
                          "Thursday: Be back home by 11:15 pm at the latest.",
                          "Friday: Take the train at 08:10 am, arrive at 09:00am."]

        df = pd.DataFrame(time_sentences, columns=['text'])
        df
```

Out[1]:

	text
0	Monday: The doctor's appointment is at 2:45pm.
1	Tuesday: The dentist's appointment is at 11:30...
2	Wednesday: At 7:00pm, there is a basketball game!
3	Thursday: Be back home by 11:15 pm at the latest.
4	Friday: Take the train at 08:10 am, arrive at ...

```
In [2]: # find the number of characters for each string in df['text']
        df['text'].str.len()
```

```
Out[2]: 0    46
        1    50
        2    49
        3    49
        4    54
        Name: text, dtype: int64
```

```
In [3]: # find the number of tokens for each string in df['text']
        df['text'].str.split().str.len()

Out[3]: 0     7
        1     8
        2     8
        3    10
        4    10
        Name: text, dtype: int64

In [4]: # find which entries contain the word 'appointment'
        df['text'].str.contains('appointment')

Out[4]: 0     True
        1     True
        2    False
        3    False
        4    False
        Name: text, dtype: bool

In [5]: # find how many times a digit occurs in each string
        df['text'].str.count(r'\d')

Out[5]: 0    3
        1    4
        2    3
        3    4
        4    8
        Name: text, dtype: int64

In [6]: # find all occurances of the digits
        df['text'].str.findall(r'\d')

Out[6]: 0                   [2, 4, 5]
        1                [1, 1, 3, 0]
        2                   [7, 0, 0]
        3                [1, 1, 1, 5]
        4    [0, 8, 1, 0, 0, 9, 0, 0]
        Name: text, dtype: object

In [7]: # group and find the hours and minutes
        df['text'].str.findall(r'(\d?\d):(\d\d)')

Out[7]: 0               [(2, 45)]
        1              [(11, 30)]
        2               [(7, 00)]
        3              [(11, 15)]
        4    [(08, 10), (09, 00)]
        Name: text, dtype: object
```

```
In [8]: # replace weekdays with '???'
        df['text'].str.replace(r'\w+day\b', '???')

Out[8]: 0          ???: The doctor's appointment is at 2:45pm.
        1       ???: The dentist's appointment is at 11:30 am.
        2          ???: At 7:00pm, there is a basketball game!
        3         ???: Be back home by 11:15 pm at the latest.
        4    ???: Take the train at 08:10 am, arrive at 09:...
        Name: text, dtype: object

In [9]: # replace weekdays with 3 letter abbrevations
        df['text'].str.replace(r'(\w+day\b)', lambda x: x.groups()[0][:3])

Out[9]: 0          Mon: The doctor's appointment is at 2:45pm.
        1       Tue: The dentist's appointment is at 11:30 am.
        2          Wed: At 7:00pm, there is a basketball game!
        3         Thu: Be back home by 11:15 pm at the latest.
        4    Fri: Take the train at 08:10 am, arrive at 09:...
        Name: text, dtype: object

In [10]: # create new columns from first match of extracted groups
         df['text'].str.extract(r'(\d?\d):(\d\d)')

/opt/conda/lib/python3.6/site-packages/ipykernel_launcher.py:2: FutureWarning: currently extract
```

Out[10]:

	0	1
0	2	45
1	11	30
2	7	00
3	11	15
4	08	10

```
In [11]: # extract the entire time, the hours, the minutes, and the period
         df['text'].str.extractall(r'((\d?\d):(\d\d) ?([ap]m))')
```

Out[11]:

		0	1	2	3
match					
0	0	2:45pm	2	45	pm
1	0	11:30 am	11	30	am
2	0	7:00pm	7	00	pm
3	0	11:15 pm	11	15	pm
4	0	08:10 am	08	10	am
	1	09:00am	09	00	am

```
In [12]: # extract the entire time, the hours, the minutes, and the period with group names
         df['text'].str.extractall(r'(?P<time>(?P<hour>\d?\d):(?P<minute>\d\d) ?(?P<period>[ap]m
```

Out[12]:

	match	time	hour	minute	period
0	0	2:45pm	2	45	pm
1	0	11:30 am	11	30	am
2	0	7:00pm	7	00	pm
3	0	11:15 pm	11	15	pm
4	0	08:10 am	08	10	am
	1	09:00am	09	00	am

In [ ]: