Python

1. How to create files from Jupyter

While working with the Jupyter Notebook, sometimes you need to create a file (e.g. a `.py` file). Let's see how we can do it via Jupyter Notebook.

To write a file, we can simply type `%%writefile myfile` within a Jupyter cell and then start writing the file. For example, the command below will create a new file called `myfile.py`:

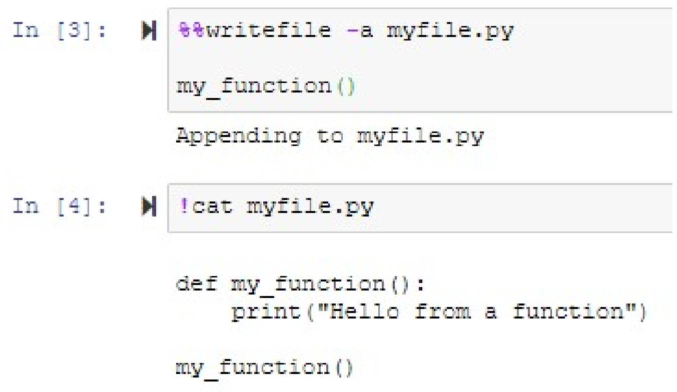
```
%%writefile myfile.py
def my_function():
    print("Hello from a function")
```

If we want to see the content of the file, we can type `!cat myfile.py`.

Let's say that we want to add something to our file. We can use the parameter `-a` that comes from the append. For example, if we want to add `my_function()` to our file:

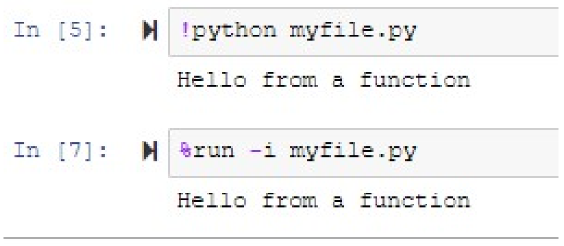
```
%%writefile -a myfile.py
my_function()
```

As you can see, we added `my_function()` to the `myfile.py`:



```
In [3]:  %%writefile -a myfile.py

         my_function()

         Appending to myfile.py

In [4]:  !cat myfile.py


         def my_function():
             print("Hello from a function")

         my_function()
```

To run the script, we can simply use the `!python myfile.py` command or type `%run -i myfile.py`:



```
In [5]:  !python myfile.py

         Hello from a function

In [7]:  %run -i myfile.py

         Hello from a function
```

2. How to get values by row based on column name

Let's assume that you want to get the corresponding value of a pandas `DataFrame` according to a reference column. For example:

```
import pandas as pd
df = pd.DataFrame.from_dict({"V1": [66, 57, 79,75], "V2": [41,85,94,71],
                              "V3":[19,3,38,58], "Selection":['V1','V3',
'V2','V3']})
df
```

```
   V1  V2  V3 Selection
0  66  41  19        V1
1  57  85   3        V3
2  79  94  38        V2
3  75  71  58        V3
```

We want to get a new column according to the `Selection` column, where the first value will be the corresponding value of the `V1` column, the second value will be the corresponding value of the `V3` column, and so on.

The `lookup` function:

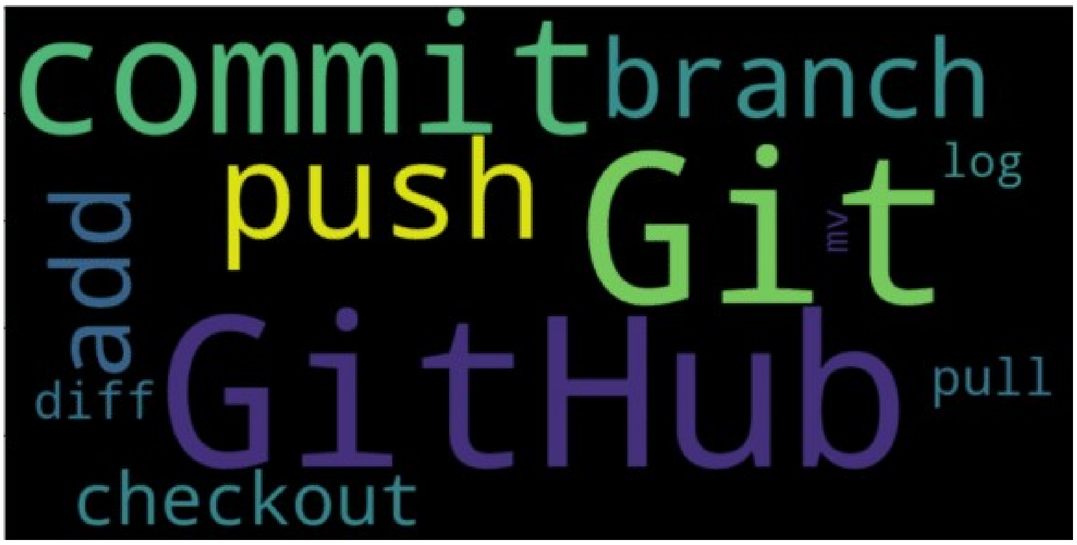
```
df['Value'] = df.lookup(df.index, df.Selection)
df
```

```
   V1  V2  V3 Selection  Value
0  66  41  19        V1     66
1  57  85   3        V3      3
2  79  94  38        V2     94
3  75  71  58        V3     58
```

3. How to create word clouds from dictionaries

Sometimes we want to create custom word clouds by defining the frequencies of the words.

```
import matplotlib.pyplot as plt
from wordcloud import WordCloud
# assume that this is the dictionary, feel free to change it
word_could_dict = {'Git':100, 'GitHub':100, 'push':50, 'pull':10, 'commit':80,
                    'add':30, 'diff':10, 'mv':5, 'log':8, 'branch':30,
'checkout':25}
wordcloud = WordCloud(width = 1000, height = 500).generate_from_
frequencies(word_could_dict)
plt.figure(figsize=(15,8))
plt.imshow(wordcloud)
```



4. How to check if a pandas df column contains a specific value

Let’s try to see if the character `a` exists in any pandas `DataFrame` column.

```
import pandas as pd
df = pd.DataFrame({"A"  : ["a", "b", "c"], "B" : ["d", "e", "f"], "C" : ["x",
"y" , "a"]})
df
```

```
   A  B  C
0  a  d  x
1  b  e  y
2  c  f  a
```

We can simply type:

```
(df=='a').any()
```

```
A     True
B    False
C     True
```

5. How to write multiple pandas DataFrames to Excel tabs

Let's assume that you have many pandas `DataFrames` and you want to save them to a single Excel file of many worksheets (tabs). Let's see how we can do it:

```
# create the xlswriter and give a name to the final excel
# for example Final.xlsx

writer = pd.ExcelWriter('Final.xlsx', engine='xlsxwriter')

# it is convenient to store the pandas dataframes in a
# dictionary, where the key is the worksheet name that you want to give
# and the value is the data frame
df_dict = {'My_First_Tab': df1, 'My_Second_Tab': df2,
        'My_Third_Tab':df3, 'My_Forth_Tab':df4}
#iterate over the data frame of dictionaries
for my_sheet, dframe in  df_dict.items():
    dframe.to_excel(writer, sheet_name = my_sheet, index=False)

# finaly you have to save the writer
# and the Final.xlsx has been created
writer.save()
```

R

6. How to get values by row based on column name

Similarly to what we did in Python:

```
set.seed(5)
df<-as.data.frame(matrix(sample(1:100,12),ncol=3))
df$Selection<-c("V1","V3","V2","V3")
```

```
df
```

```
  V1 V2 V3 Selection
1 66 41 19        V1
2 57 85  3        V3
3 79 94 38        V2
4 75 71 58        V3
```

We apply the following trick:

```
df$Value<-as.numeric(df[cbind(seq_len(nrow(df)),
match(df$Selection,names(df)))])
df
```

```
  V1 V2 V3 Selection Value
1 66 41 19        V1    66
2 57 85  3        V3     3
3 79 94 38        V2    94
4 75 71 58        V3    58
```

7. dplyr join on multiple columns

`dplyr` allows us to join two `DataFrames` on more than a single column. All you have to do is to add the columns within `by` (e.g. `by = c("x1" = "x2", "y1" = "y2")`). For example:

```
library(dplyr)
set.seed(5)
df1 <- tibble(
    x1 = letters[1:10],
    y1 = LETTERS[11:20],
    a = rnorm(10)
)
df2 <- tibble(
    x2 = letters[1:10],
    y2 = LETTERS[11:20],
    b = rnorm(10)
)
df<-df1%>%inner_join(df2, df2, by = c("x1" = "x2", "y1" = "y2"))
df
```

```
# A tibble: 10 x 4
   x1    y1          a      b

 1 a     K     -0.841   1.23
 2 b     L      1.38   -0.802
 3 c     M     -1.26   -1.08
 4 d     N      0.0701 -0.158
 5 e     O      1.71   -1.07
 6 f     P     -0.603  -0.139
 7 g     Q     -0.472  -0.597
 8 h     R     -0.635  -2.18
 9 i     S     -0.286   0.241
10 j     T      0.138  -0.259
```

8. Feature engineering with dates

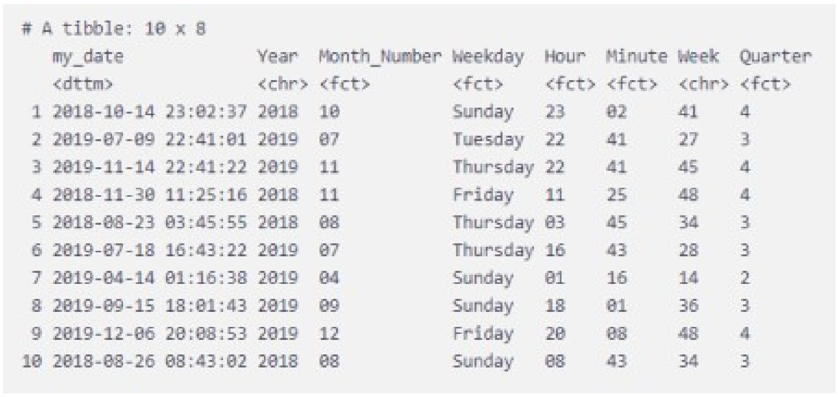
When we get the `DateTime` of the events, we can generate some features for machine learning models. For example, we can generate the:

- Year
- Month
- Weekday
- Hour
- Minute
- Week of the year
- Quarter

Let's see how we can generate these features in R from a `DateTime` object. I would suggest converting some features like weekdays, months, hours, etc. to factors for machine learning purposes. Better yet, you should create more features like:

- A boolean called `isWeekend` taking `1` for weekends and `0` otherwise.
- The period of the day (e.g. `Morning`, `Afternoon`, `Evening`).

```
library(tidyverse)
set.seed(5)
df<- tibble(my_date = lubridate::as_datetime( runif(10, 1530000000,
1577739600)))
df%>%mutate(Year = format(my_date, '%Y'), Month_Number =
as.factor(format(my_date, '%m')),
            Weekday = as.factor(weekdays(my_date)), Hour
=as.factor(format(my_date, '%H')),
            Minute =as.factor(format(my_date, '%M')), Week =(format(my_date,
'%W')),
            Quarter = lubridate::quarter(my_date, with_year = T))
```



```
# A tibble: 10 x 8
   my_date             Year  Month_Number Weekday  Hour  Minute Week  Quarter
   <dttm>              <chr> <fct>        <fct>    <fct> <fct>  <chr> <fct>
 1 2018-10-14 23:02:37 2018  10           Sunday   23    02     41    4
 2 2019-07-09 22:41:01 2019  07           Tuesday  22    41     27    3
 3 2019-11-14 22:41:22 2019  11           Thursday 22    41     45    4
 4 2018-11-30 11:25:16 2018  11           Friday   11    25     48    4
 5 2018-08-23 03:45:55 2018  08           Thursday 03    45     34    3
 6 2019-07-18 16:43:22 2019  07           Thursday 16    43     28    3
 7 2019-04-14 01:16:38 2019  04           Sunday   01    16     14    2
 8 2019-09-15 18:01:43 2019  09           Sunday   18    01     36    3
 9 2019-12-06 20:08:53 2019  12           Friday   20    08     48    4
10 2018-08-26 08:43:02 2018  08           Sunday   08    43     34    3
```

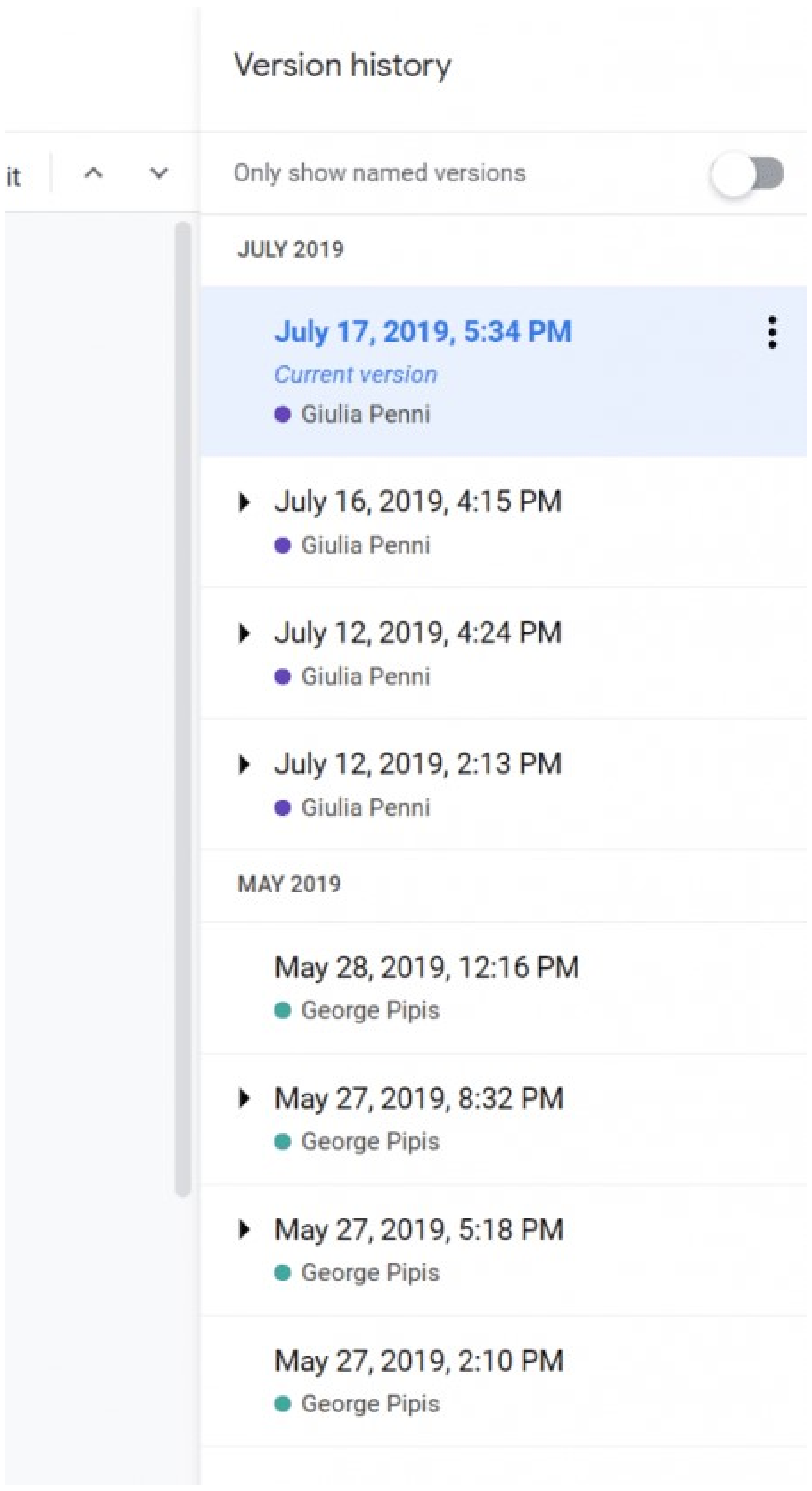
Google Spreadsheets

9. Version control in Google Docs and spreadsheets

Most data scientists are familiar with Git and GitHub, which are version control tools. However, many people are not aware of the version history in Google documents, spreadsheets, and presentations. Let me show you an example of version history in Google Docs:

- Open your Google document.
- At the top, click File–>Version history.

On the left, you will see the date of the changes as well as the names of the authors. For example, on July 16, 2019, at 4:15 p.m., Giulia Penni made a change:



July 17, 2019, 5:34 PM
Current version
● Giulia Penni

July 16, 2019, 4:15 PM
● Giulia Penni

July 12, 2019, 4:24 PM
● Giulia Penni

July 12, 2019, 2:13 PM
● Giulia Penni

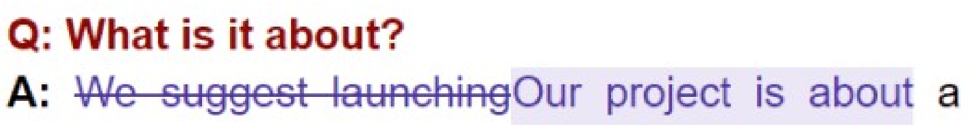
May 28, 2019, 12:16 PM
● George Pipis

May 27, 2019, 8:32 PM
● George Pipis

May 27, 2019, 5:18 PM
● George Pipis

May 27, 2019, 2:10 PM
● George Pipis

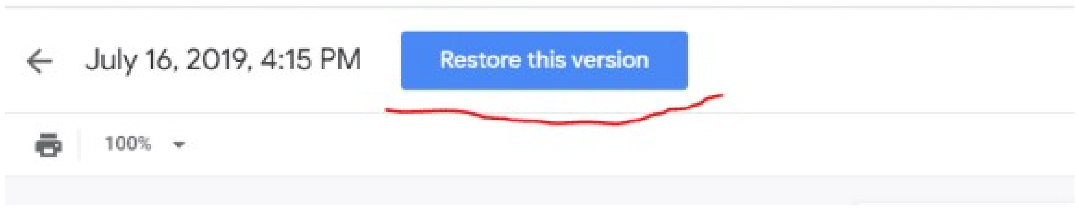
You can click on any change, and you will see the changes as they are displayed below:



Q: What is it about?

A: ~~We suggest launching~~Our project is about a

Finally, you can restore the previous state by clicking on the "Restore this version" button:



Linux

10. How to copy a folder in Linux

When you're working with Linux operating systems like servers, etc., you need to copy-paste folders using the command line. If you want to copy a folder from one destination to another, you can run the following `bash` command:

```
cp -R /some/dir/ /some/other/dir/
```

- If `/some/other/dir/` doesn't exist, it will be created.
- `-R` means `copy directories recursively`. You can also use `-r` since it's case-insensitive.