

Part 1: Using wget

In []:

```
# download the data from a URL
# source: https://archive.ics.uci.edu/ml/datasets/Arrhythmia
# alternate URL: https://lazyprogrammer.me/course_files/arrhythmia.data
#!wget --no-check-certificate https://archive.ics.uci.edu/ml/machine-learning-databases,
!wget https://lazyprogrammer.me/course_files/arrhythmia.data
```

```
--2020-04-26 07:33:37-- https://lazyprogrammer.me/course_files/arrhythmia.data
Resolving lazyprogrammer.me (lazyprogrammer.me)... 104.31.80.48, 104.31.81.48, 2606:470
0:3035::681f:5130, ...
Connecting to lazyprogrammer.me (lazyprogrammer.me)|104.31.80.48|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 402355 (393K)
Saving to: 'arrhythmia.data'
```

```
arrhythmia.data      100%[=====>] 392.92K  1.09MB/s    in 0.4s
```

```
2020-04-26 07:33:38 (1.09 MB/s) - 'arrhythmia.data' saved [402355/402355]
```

In []:

```
# list files in current directory
!ls
```

```
arrhythmia.data  sample_data
```

In []:

```
# check if the data has a header
!head arrhythmia.data
```

```
75,0,190,80,91,193,371,174,121,-16,13,64,-2,?,63,0,52,44,0,0,32,0,0,0,0,0,0,0,44,20,36,
0,28,0,0,0,0,0,0,52,40,0,0,0,60,0,0,0,0,0,0,52,0,0,0,0,0,0,0,0,0,56,36,0,0,32,0,0,
0,0,0,0,48,32,0,0,0,56,0,0,0,0,0,0,80,0,0,0,0,0,0,0,0,0,40,52,0,0,28,0,0,0,0,0,0,
0,48,48,0,0,32,0,0,0,0,0,0,52,52,0,0,36,0,0,0,0,0,0,52,48,0,0,32,0,0,0,0,0,0,56,4
4,0,0,32,0,0,0,0,0,-0.2,0.0,6.1,-1.0,0.0,0.0,0.6,2.1,13.6,30.8,0.0,0.0,1.7,-1.0,0.6,0.
0,1.3,1.5,3.7,14.5,0.1,-5.2,1.4,0.0,0.0,0.0,0.8,-0.6,-10.7,-15.6,0.4,-3.9,0.0,0.0,0.0,0.
0,-0.8,-1.7,-10.1,-22.0,0.0,0.0,5.7,-1.0,0.0,0.0,-0.1,1.2,14.1,22.5,0.0,-2.5,0.8,0.0,0.
0,0.0,1.0,0.4,-4.8,-2.7,0.1,-6.0,0.0,0.0,0.0,0.0,-0.8,-0.6,-24.0,-29.7,0.0,0.0,2.0,-6.4,
0.0,0.0,0.2,2.9,-12.6,15.2,-0.1,0.0,8.4,-10.0,0.0,0.0,0.6,5.9,-3.9,52.7,-0.3,0.0,15.2,-
8.4,0.0,0.0,0.9,5.1,17.7,70.7,-0.4,0.0,13.5,-4.0,0.0,0.0,0.9,3.9,25.5,62.9,-0.3,0.0,9.0,
-0.9,0.0,0.0,0.9,2.9,23.3,49.4,8
56,1,165,64,81,174,401,149,39,25,37,-17,31,?,53,0,48,0,0,0,24,0,0,0,0,0,0,64,0,0,0,24,
0,0,0,0,0,32,24,0,0,0,40,0,0,0,0,0,48,0,0,0,0,0,0,0,0,0,44,20,0,0,24,0,0,0,0,
0,0,0,60,0,0,0,20,0,0,0,0,0,0,24,52,0,0,16,0,0,0,0,0,0,32,52,0,0,20,0,0,0,0,0,0,4
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0,28,0,0,0,0,0,0,-0.6,0.0,7.2,0.0,0.0,0.0,0.4,1.5,17.2,26.5,0.0,0.0,5.5,0.0,0.0,0.0,0.1,
1.7,17.6,29.5,0.3,-1.6,0.9,0.0,0.0,0.0,-0.3,0.4,-1.5,1.3,0.1,-6.4,0.0,0.0,0.0,0.0,-0.3,-
1.6,-15.3,-25.5,-0.3,0.0,4.2,-0.9,0.0,0.0,0.4,0.7,8.3,12.3,0.2,0.0,2.2,0.0,0.0,0.0,-0.2,
0.8,6.6,11.7,0.4,0.0,1.0,-8.8,0.0,0.0,0.5,-0.6,-21.6,-26.8,0.4,0.0,2.6,-7.9,0.0,0.0,0.8,
2.0,-16.4,1.2,0.0,0.0,5.8,-7.7,0.0,0.0,0.9,3.8,-5.7,27.7,-0.2,0.0,9.5,-5.0,0.0,0.0,0.5,
2.6,11.8,34.6,-0.4,0.0,11.0,-2.4,0.0,0.0,0.4,2.6,21.6,43.4,-0.5,0.0,8.5,0.0,0.0,0.0,0.2,
2.1,20.4,38.8,6
54,0,172,95,138,163,386,185,102,96,34,70,66,23,75,0,40,80,0,0,24,0,0,0,0,0,20,56,52,0,
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0,0,0,0,0,48,20,56,24,32,0,0,0,0,0,0,44,88,0,0,28,0,0,0,0,0,44,76,0,0,28,0,0,0,0,
0,0,0,44,72,0,0,24,0,0,0,0,0,1.0,0.0,4.5,-2.8,0.0,0.0,0.3,2.5,-2.2,19.8,0.8,-0.4,6.4,-
1.3,0.0,0.0,0.7,2.7,14.2,37.9,-0.2,-0.6,4.4,0.0,0.0,0.0,0.5,0.2,24.7,26.2,-1.0,-5.3,1.8,
0.0,0.0,0.0,-0.5,-2.5,-8.0,-28.5,0.5,0.0,1.7,-2.7,0.0,0.0,-0.2,1.0,-9.4,-1.2,0.4,0.0,4.
```

9,0.0,0.0,0.0,0.6,1.4,31.3,42.7,-0.8,0.0,0.7,-3.8,6.5,0.0,0.3,-3.3,18.7,-13.6,-0.9,0.0,
2.2,-4.1,7.4,0.0,0.5,-2.4,20.9,-2.6,0.0,0.0,5.8,-4.1,4.0,-0.5,0.4,0.3,20.4,23.3,0.7,0.0,
10.0,-5.7,0.0,0.0,0.5,2.2,-3.0,20.7,1.3,0.0,11.1,-3.4,0.0,0.0,0.4,3.4,11.5,48.2,0.9,0.0,
9.5,-2.4,0.0,0.0,0.3,3.4,12.3,49.0,10
55,0,175,94,100,202,380,179,143,28,11,-5,20,?,71,0,72,20,0,0,48,0,0,0,0,0,0,0,0,64,36,0,0,
36,0,0,0,0,0,0,20,52,48,0,0,56,0,0,0,0,0,0,64,32,0,0,0,72,0,0,0,0,0,0,0,0,60,12,0,0,44,0,
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0,0.4,1.5,24.5,36.8,-0.4,-0.4,1.6,-2.2,0.0,0.0,-1.0,-0.9,-1.5,-9.2,-0.4,-8.2,1.8,0.0,0.
0,0.0,-0.7,-1.7,-23.4,-35.6,0.9,0.0,3.2,-0.4,0.0,0.0,0.7,1.2,9.4,18.0,-0.1,0.0,5.1,-2.5,
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9,0.0,0.0,-0.5,2.9,-12.7,18.0,0.7,0.0,9.0,-7.9,0.0,0.0,0.1,4.1,7.6,51.0,0.4,0.0,15.0,-5.
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75,0,190,80,88,181,360,177,103,-16,13,61,3,?,?,0,48,40,0,0,28,0,0,0,0,0,0,0,40,24,0,0,2
4,0,0,0,0,0,52,36,0,0,0,60,0,0,0,0,0,48,28,0,0,0,56,0,0,0,0,0,0,48,36,0,0,28,0,0,
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0,32,0,0,0,0,0,0,0.0,5.2,-1.4,0.0,0.0,0.9,2.3,9.6,31.6,0.1,0.0,1.6,-0.5,0.0,0.0,1.9,
1.7,2.6,18.9,0.2,-3.8,1.2,0.0,0.0,0.0,1.0,-0.6,-7.7,-13.4,-0.1,-3.4,0.8,0.0,0.0,0.0,-1.
4,-1.5,-7.0,-17.8,-0.1,0.0,4.4,-1.3,0.0,0.0,-0.1,1.1,8.2,16.5,0.6,-1.6,0.0,0.0,0.0,0.0,
1.4,0.3,-3.5,-1.9,0.0,-5.7,0.0,0.0,0.0,0.0,-0.4,-0.5,-25.0,-30.0,-0.2,0.0,1.6,-6.0,0.0,
0.0,-0.7,2.1,-12.4,8.6,-0.5,0.0,8.5,-10.2,0.0,0.0,-1.0,4.7,-4.0,43.0,-0.2,0.0,15.2,-7.8,
0.0,0.0,-0.1,4.9,16.2,63.2,-0.2,0.0,9.1,-0.9,0.0,0.0,-0.2,2.9,21.7,48.9,-0.4,0.0,13.1,-
3.6,0.0,0.0,-0.1,3.9,25.4,62.8,7
13,0,169,51,100,167,321,174,91,107,66,52,88,?,84,0,36,48,0,0,20,0,0,0,0,0,20,44,36,0,
0,44,0,0,0,0,0,24,64,0,0,0,48,0,0,0,0,0,44,36,0,0,0,52,0,0,0,0,0,0,28,64,0,0,16,0,
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0,0,0,24,32,60,0,0,44,0,0,0,0,0,52,40,0,0,36,0,0,0,0,0,44,40,0,0,32,0,0,0,0,0,0,
20,36,56,0,0,40,0,0,0,0,0,0.5,0.0,2.7,-6.4,0.0,0.0,0.9,1.7,-10.5,7.1,0.1,-1.2,19.1,-2.
3,0.0,0.0,1.4,4.3,36.7,84.8,-0.4,-2.3,21.7,0.0,0.0,0.7,2.6,66.7,95.8,-0.2,-9.0,3.2,
0.0,0.0,0.0,-1.1,-2.9,-14.1,-39.0,0.5,0.0,1.8,-12.9,0.0,0.0,0.4,-0.4,-38.7,-42.1,-0.1,-
1.6,19.9,-0.7,0.0,0.0,1.0,3.3,40.4,65.4,0.4,0.0,6.7,-24.4,0.0,0.0,-1.2,0.4,-61.2,-59.9,
0.9,-0.5,11.9,-43.3,0.0,0.0,0.8,3.4,-111.4,-95.1,2.0,-0.8,19.8,-48.4,0.0,0.0,1.6,8.7,-11
4.5,-72.8,2.0,0.0,31.0,-25.7,0.0,0.0,0.8,5.9,29.2,85.8,0.6,0.0,19.5,-11.4,0.0,0.0,0.8,3.
3,20.1,49.1,0.0,-0.6,12.2,-2.8,0.0,0.0,0.9,2.2,13.5,31.1,14
40,1,160,52,77,129,377,133,77,77,49,75,65,?,70,0,44,0,0,0,24,0,0,0,0,0,0,40,32,0,0,24,
0,0,0,0,0,0,44,28,0,0,24,0,0,0,0,0,44,16,0,0,0,48,0,0,0,0,0,36,0,0,0,0,0,0,0,0,
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0,24,0,0,0,0,0,0,-0.5,0.0,1.8,0.0,0.0,0.0,0.2,1.0,3.9,10.5,-0.1,0.0,7.6,-1.1,0.0,0.0,0.
5,1.4,13.5,22.7,0.0,0.0,5.9,-0.5,0.0,0.0,0.3,0.6,12.2,15.0,0.1,-4.6,0.6,0.0,0.0,0.0,-0.
4,-0.9,-9.7,-14.7,0.2,-2.1,0.0,0.0,0.0,0.0,-0.3,0.4,-3.7,-1.4,-0.2,0.0,6.8,-0.9,0.0,0.0,
0.7,0.7,14.2,17.1,1.3,0.0,1.3,-11.5,0.0,0.0,-0.3,1.7,-30.9,-13.9,1.7,0.0,2.3,-17.5,0.0,
0.0,-0.6,4.5,-46.3,-1.3,1.1,0.0,3.7,-11.0,0.0,0.0,-0.5,4.1,-19.8,21.2,0.1,0.0,7.7,-6.4,
0.0,0.0,0.4,1.9,1.4,15.4,0.0,0.0,7.4,-2.5,0.0,0.0,0.4,1.3,9.3,18.9,-0.4,0.0,6.5,0.0,0.0,
0.0,0.4,1.0,14.3,20.5,1
49,1,162,54,78,0,376,157,70,67,7,8,51,?,67,0,44,36,0,0,24,0,0,0,0,0,0,52,32,0,0,28,0,
0,0,0,0,0,56,28,0,0,24,0,0,0,0,0,48,32,0,0,0,56,0,0,0,0,0,52,0,0,0,0,0,0,0,0,
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4,0,0,0,0,0,-0.3,0.0,4.1,-1.1,0.0,0.0,0.8,1.0,7.1,13.7,-0.3,0.0,8.4,-1.5,0.0,0.0,0.6,
0.7,19.4,22.9,0.0,0.0,4.4,-0.8,0.0,0.0,-0.3,-0.6,11.2,6.9,0.1,-6.3,1.3,0.0,0.0,0.0,-0.6,
-0.8,-13.1,-17.9,0.1,-0.8,0.0,0.0,0.0,0.0,0.6,0.7,-2.0,2.9,-0.2,0.0,6.3,-1.2,0.0,0.0,0.
2,0.3,14.7,16.8,0.7,0.0,0.5,-7.3,0.0,0.0,0.2,-0.1,-15.5,-16.4,0.9,0.0,0.7,-8.9,0.0,0.0,
0.6,2.5,-20.5,4.0,0.8,0.0,2.1,-9.0,0.0,0.0,0.6,3.8,-16.1,21.1,0.1,0.0,6.6,-4.1,0.0,0.0,
0.3,1.4,4.7,14.2,-0.2,0.0,8.5,-2.7,0.0,0.0,0.1,0.8,14.5,20.9,-0.3,0.0,8.2,-1.9,0.0,0.0,
0.1,0.5,15.8,19.8,1
44,0,168,56,84,118,354,160,63,61,69,78,66,84,64,0,40,0,0,0,20,0,0,0,0,0,0,44,12,0,0,2
8,0,0,0,0,0,36,8,0,0,20,0,0,0,0,0,40,12,0,0,0,44,0,0,0,0,0,0,0,0,0,0,0,0,0,0,
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0,24,0,0,0,0,0,0.1,0.0,2.3,0.0,0.0,0.0,0.4,1.0,4.6,11.6,1.2,0.0,5.4,-0.7,0.0,0.0,1.8,
2.8,11.4,31.0,1.1,0.0,3.0,-0.4,0.0,0.0,1.4,1.8,5.3,17.9,-0.7,-3.9,0.5,0.0,0.0,0.0,-1.1,-

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1.9,-7.5,-20.4,-0.5,0.0,0.0,0.0,0.0,0.0,-0.6,-0.5,0.0,-3.4,1.1,0.0,4.2,-0.5,0.0,0.0,1.6,
2.3,7.2,22.8,0.5,0.0,0.9,-5.5,0.0,0.0,-0.7,1.0,-14.5,-5.3,0.7,0.0,1.2,-6.4,0.0,0.0,-0.5,
2.6,-13.9,10.0,1.5,0.0,2.4,-10.3,0.0,0.0,0.3,6.8,-19.3,43.2,0.8,0.0,7.9,-7.3,0.0,0.0,0.
9,6.5,5.7,62.9,0.1,0.0,9.3,-3.8,0.0,0.0,0.8,3.8,15.1,48.5,0.1,0.0,7.0,-1.3,0.0,0.0,0.6,
2.1,12.5,30.9,1
50,1,167,67,89,130,383,156,73,85,34,70,71,?,63,0,44,40,0,0,28,0,0,0,0,0,0,56,24,0,0,3
2,0,0,0,0,0,0,72,0,0,0,28,0,0,0,0,0,56,28,0,0,0,60,0,0,0,0,0,28,56,0,0,16,0,0,0,
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6,0,0,44,0,0,0,0,0,-0.1,0.0,3.5,-2.0,0.0,0.0,0.4,1.3,3.7,13.5,0.0,0.0,9.9,-0.8,0.0,0.
0,1.2,1.2,26.8,35.2,0.0,0.0,8.3,0.0,0.0,0.0,0.8,0.3,29.8,32.0,0.1,-6.1,1.1,0.0,0.0,0.0,-
0.6,-1.2,-15.5,-24.1,0.0,0.0,0.6,-4.1,0.0,0.0,-0.1,0.8,-10.6,-4.9,-0.2,0.0,8.9,0.0,0.0,
0.0,0.8,0.7,26.7,30.2,0.1,0.0,1.3,-5.4,1.9,0.0,0.2,0.8,-5.2,2.1,0.8,0.0,4.4,-8.5,0.0,0.
0,0.8,3.9,-10.8,25.0,0.4,0.0,4.3,-7.3,0.0,0.0,1.1,4.0,-8.9,27.9,-0.5,0.0,7.0,-3.2,0.0,0.
0,1.1,1.3,13.2,22.3,-0.5,0.0,10.9,-2.5,0.0,0.0,1.0,1.0,23.8,29.6,-0.5,-0.6,10.8,-1.7,0.
0,0.0,0.8,0.9,20.1,25.1,10

```

```

In [ ]: # check the data
import pandas as pd
df = pd.read_csv('arrhythmia.data', header=None)

```

```

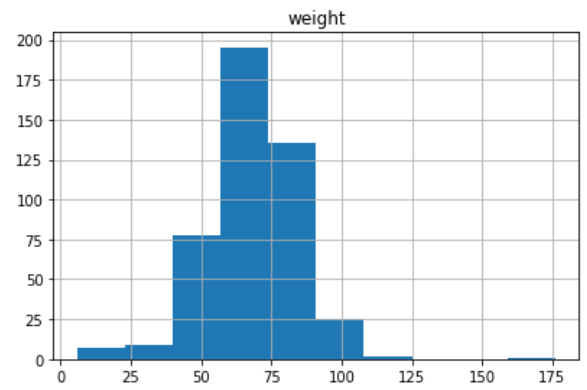
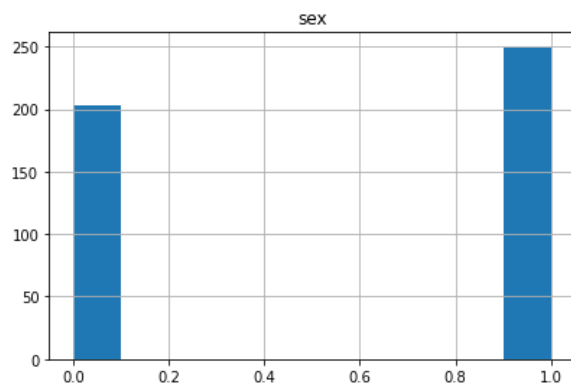
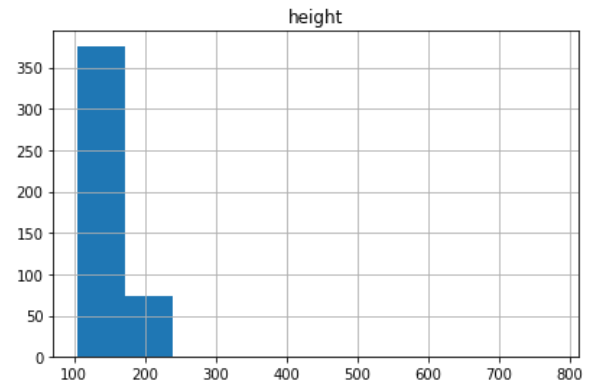
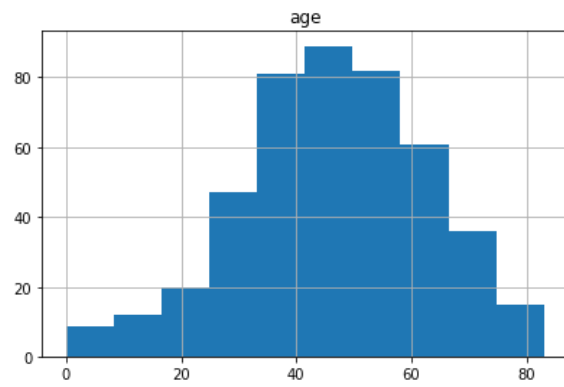
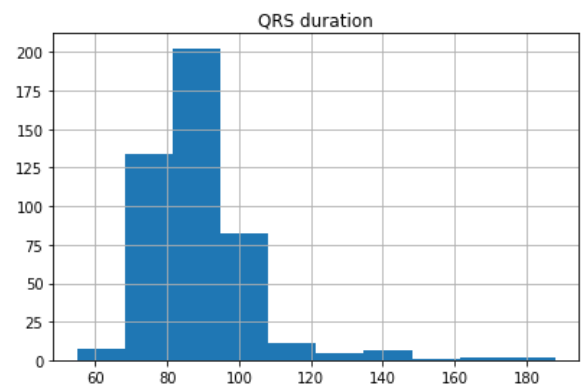
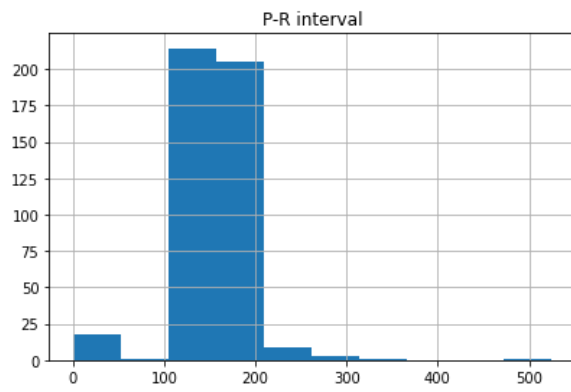
In [ ]: # since the data has many columns, take just the first few and name them (as per the doc
data = df[[0,1,2,3,4,5]]
data.columns = ['age', 'sex', 'height', 'weight', 'QRS duration', 'P-R interval']

```

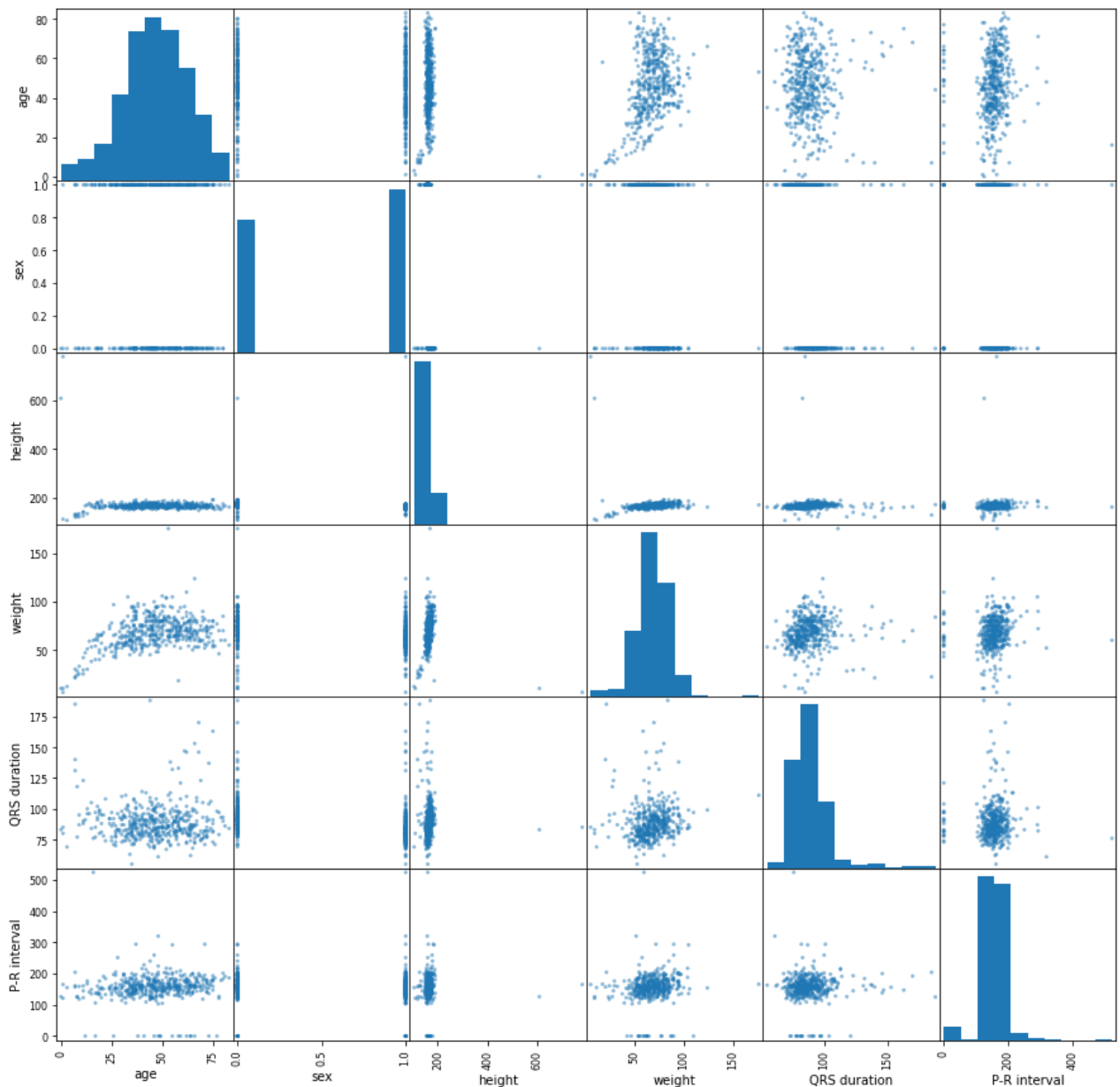
```

In [ ]: import matplotlib.pyplot as plt
plt.rcParams['figure.figsize'] = [15, 15] # make the plot bigger so the subplots don't
data.hist(); # use a semicolon to suppress return value

```



```
In [ ]: from pandas.plotting import scatter_matrix
scatter_matrix(data);
```



Part 2: Using tf.keras

```
In [ ]: # use keras get_file to download the auto MPG dataset
# source: https://archive.ics.uci.edu/ml/datasets/Auto+MPG
#url = 'https://archive.ics.uci.edu/ml/machine-learning-databases/auto-mpg/auto-mpg.data'

### alternate URL
url = 'https://raw.githubusercontent.com/lazyprogrammer/machine_learning_examples/master'
```

```
In [ ]: # Install TensorFlow

import tensorflow as tf
print(tf.__version__)
```

2.2.0-rc2

In []:

```
# check out the documentation for other arguments
tf.keras.utils.get_file('auto-mpg.data', url)
```

Downloading data from https://raw.githubusercontent.com/lazyprogrammer/machine_learning_examples/master/tf2.0/auto-mpg.data
 32768/30286 [=====] - 0s 1us/step

Out[]: '/root/.keras/datasets/auto-mpg.data'

In []:

```
!head /root/.keras/datasets/auto-mpg.data
```

```
18.0  8  307.0    130.0    3504.    12.0  70  1      "chevrolet chevelle mali
bu"
15.0  8  350.0    165.0    3693.    11.5  70  1      "buick skylark 320"
18.0  8  318.0    150.0    3436.    11.0  70  1      "plymouth satellite"
16.0  8  304.0    150.0    3433.    12.0  70  1      "amc rebel sst"
17.0  8  302.0    140.0    3449.    10.5  70  1      "ford torino"
15.0  8  429.0    198.0    4341.    10.0  70  1      "ford galaxie 500"
14.0  8  454.0    220.0    4354.     9.0  70  1      "chevrolet impala"
14.0  8  440.0    215.0    4312.     8.5  70  1      "plymouth fury iii"
14.0  8  455.0    225.0    4425.    10.0  70  1      "pontiac catalina"
15.0  8  390.0    190.0    3850.     8.5  70  1      "amc ambassador dpl"
```

In []:

```
# unless you specify an alternative path, the data will go into /root/.keras/datasets/
df = pd.read_csv('/root/.keras/datasets/auto-mpg.data', header=None, delim_whitespace=True)
df.head()
```

Out[]:

	0	1	2	3	4	5	6	7	8
0	18.0	8	307.0	130.0	3504.0	12.0	70	1	chevrolet chevelle malibu
1	15.0	8	350.0	165.0	3693.0	11.5	70	1	buick skylark 320
2	18.0	8	318.0	150.0	3436.0	11.0	70	1	plymouth satellite
3	16.0	8	304.0	150.0	3433.0	12.0	70	1	amc rebel sst
4	17.0	8	302.0	140.0	3449.0	10.5	70	1	ford torino

Part 3: Upload the file yourself

In []:

```
# another method: upload your own file

##### PLEASE NOTE: IT DOES NOT MATTER WHICH FILE YOU UPLOAD
##### YOU CAN UPLOAD ANY FILE YOU WANT
##### IN FACT, YOU ARE ENCOURAGED TO EXPLORE ON YOUR OWN

# if you must, then get the file from here:
# https://raw.githubusercontent.com/lazyprogrammer/machine_learning_examples/master/tf2

from google.colab import files
uploaded = files.upload()
```

Choose Files

No file chosen

Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to enable.

Saving daily-minimum-temperatures-in-me.csv to daily-minimum-temperatures-in-me.csv

In []:

uploaded

```
Out[ ]: {'daily-minimum-temperatures-in-me.csv': b'"Date","Daily minimum temperatures in Melbour
ne, Australia, 1981-1990"\r\n"1981-01-01",20.7\r\n"1981-01-02",17.9\r\n"1981-01-03",18.8
\r\n"1981-01-04",14.6\r\n"1981-01-05",15.8\r\n"1981-01-06",15.8\r\n"1981-01-07",15.8\r
\n"1981-01-08",17.4\r\n"1981-01-09",21.8\r\n"1981-01-10",20.0\r\n"1981-01-11",16.2\r\n"1
981-01-12",13.3\r\n"1981-01-13",16.7\r\n"1981-01-14",21.5\r\n"1981-01-15",25.0\r\n"1981-
01-16",20.7\r\n"1981-01-17",20.6\r\n"1981-01-18",24.8\r\n"1981-01-19",17.7\r\n"1981-01-2
0",15.5\r\n"1981-01-21",18.2\r\n"1981-01-22",12.1\r\n"1981-01-23",14.4\r\n"1981-01-24",1
6.0\r\n"1981-01-25",16.5\r\n"1981-01-26",18.7\r\n"1981-01-27",19.4\r\n"1981-01-28",17.2
\r\n"1981-01-29",15.5\r\n"1981-01-30",15.1\r\n"1981-01-31",15.4\r\n"1981-02-01",15.3\r
\n"1981-02-02",18.8\r\n"1981-02-03",21.9\r\n"1981-02-04",19.9\r\n"1981-02-05",16.6\r\n"1
981-02-06",16.8\r\n"1981-02-07",14.6\r\n"1981-02-08",17.1\r\n"1981-02-09",25.0\r\n"1981-
02-10",15.0\r\n"1981-02-11",13.7\r\n"1981-02-12",13.9\r\n"1981-02-13",18.3\r\n"1981-02-1
4",22.0\r\n"1981-02-15",22.1\r\n"1981-02-16",21.2\r\n"1981-02-17",18.4\r\n"1981-02-18",1
6.6\r\n"1981-02-19",16.1\r\n"1981-02-20",15.7\r\n"1981-02-21",16.6\r\n"1981-02-22",16.5
\r\n"1981-02-23",14.4\r\n"1981-02-24",14.4\r\n"1981-02-25",18.5\r\n"1981-02-26",16.9\r
\n"1981-02-27",17.5\r\n"1981-02-28",21.2\r\n"1981-03-01",17.8\r\n"1981-03-02",18.6\r\n"1
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03-07",11.4\r\n"1981-03-08",16.3\r\n"1981-03-09",16.1\r\n"1981-03-10",11.8\r\n"1981-03-1
1",12.2\r\n"1981-03-12",14.7\r\n"1981-03-13",11.8\r\n"1981-03-14",11.3\r\n"1981-03-15",1
0.6\r\n"1981-03-16",11.7\r\n"1981-03-17",14.2\r\n"1981-03-18",11.2\r\n"1981-03-19",16.9
\r\n"1981-03-20",16.7\r\n"1981-03-21",8.1\r\n"1981-03-22",8.0\r\n"1981-03-23",8.8\r\n"19
81-03-24",13.4\r\n"1981-03-25",10.9\r\n"1981-03-26",13.4\r\n"1981-03-27",11.0\r\n"1981-0
3-28",15.0\r\n"1981-03-29",15.7\r\n"1981-03-30",14.5\r\n"1981-03-31",15.8\r\n"1981-04-0
1",16.7\r\n"1981-04-02",16.8\r\n"1981-04-03",17.5\r\n"1981-04-04",17.1\r\n"1981-04-05",1
8.1\r\n"1981-04-06",16.6\r\n"1981-04-07",10.0\r\n"1981-04-08",14.9\r\n"1981-04-09",15.9
\r\n"1981-04-10",13.0\r\n"1981-04-11",7.6\r\n"1981-04-12",11.5\r\n"1981-04-13",13.5\r
\n"1981-04-14",13.0\r\n"1981-04-15",13.3\r\n"1981-04-16",12.1\r\n"1981-04-17",12.4\r\n"1
981-04-18",13.2\r\n"1981-04-19",13.8\r\n"1981-04-20",10.6\r\n"1981-04-21",9.0\r\n"1981-0
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7.4\r\n"1981-04-27",9.9\r\n"1981-04-28",9.3\r\n"1981-04-29",9.9\r\n"1981-04-30",7.4\r
\n"1981-05-01",8.6\r\n"1981-05-02",11.9\r\n"1981-05-03",14.0\r\n"1981-05-04",8.6\r\n"198
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-09",10.7\r\n"1981-05-10",8.1\r\n"1981-05-11",10.1\r\n"1981-05-12",10.6\r\n"1981-05-13",
5.3\r\n"1981-05-14",6.6\r\n"1981-05-15",8.5\r\n"1981-05-16",11.2\r\n"1981-05-17",9.8\r
\n"1981-05-18",5.9\r\n"1981-05-19",3.2\r\n"1981-05-20",2.1\r\n"1981-05-21",3.4\r\n"1981-
05-22",5.4\r\n"1981-05-23",9.6\r\n"1981-05-24",11.5\r\n"1981-05-25",12.3\r\n"1981-05-2
6",12.6\r\n"1981-05-27",11.0\r\n"1981-05-28",11.2\r\n"1981-05-29",11.4\r\n"1981-05-30",1
1.8\r\n"1981-05-31",12.8\r\n"1981-06-01",11.6\r\n"1981-06-02",10.6\r\n"1981-06-03",9.8\r
\n"1981-06-04",11.2\r\n"1981-06-05",5.7\r\n"1981-06-06",7.1\r\n"1981-06-07",2.5\r\n"1981
-06-08",3.5\r\n"1981-06-09",4.6\r\n"1981-06-10",11.0\r\n"1981-06-11",5.7\r\n"1981-06-1
2",7.7\r\n"1981-06-13",10.4\r\n"1981-06-14",11.4\r\n"1981-06-15",9.2\r\n"1981-06-16",6.1
\r\n"1981-06-17",2.7\r\n"1981-06-18",4.3\r\n"1981-06-19",6.3\r\n"1981-06-20",3.8\r\n"198
1-06-21",4.4\r\n"1981-06-22",7.1\r\n"1981-06-23",4.8\r\n"1981-06-24",5.8\r\n"1981-06-2
5",6.2\r\n"1981-06-26",7.3\r\n"1981-06-27",9.2\r\n"1981-06-28",10.2\r\n"1981-06-29",9.5
\r\n"1981-06-30",9.5\r\n"1981-07-01",10.7\r\n"1981-07-02",10.0\r\n"1981-07-03",6.5\r\n"1
981-07-04",7.0\r\n"1981-07-05",7.4\r\n"1981-07-06",8.1\r\n"1981-07-07",6.6\r\n"1981-07-0
8",8.3\r\n"1981-07-09",8.9\r\n"1981-07-10",4.6\r\n"1981-07-11",6.8\r\n"1981-07-12",5.7\r
\n"1981-07-13",6.1\r\n"1981-07-14",7.0\r\n"1981-07-15",7.2\r\n"1981-07-16",6.3\r\n"1981-
07-17",8.8\r\n"1981-07-18",5.0\r\n"1981-07-19",7.4\r\n"1981-07-20",10.1\r\n"1981-07-21",
12.0\r\n"1981-07-22",9.0\r\n"1981-07-23",8.9\r\n"1981-07-24",9.8\r\n"1981-07-25",9.0\r
\n"1981-07-26",9.2\r\n"1981-07-27",7.7\r\n"1981-07-28",8.0\r\n"1981-07-29",6.1\r\n"1981-
07-30",3.5\r\n"1981-07-31",3.2\r\n"1981-08-01",5.7\r\n"1981-08-02",7.7\r\n"1981-08-03",
9.0\r\n"1981-08-04",10.0\r\n"1981-08-05",6.2\r\n"1981-08-06",6.9\r\n"1981-08-07",6.5\r
\n"1981-08-08",6.8\r\n"1981-08-09",7.0\r\n"1981-08-10",5.2\r\n"1981-08-11",3.0\r\n"1981-
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\n"1981-08-21",7.4\r\n"1981-08-22",7.9\r\n"1981-08-23",3.9\r\n"1981-08-24",6.6\r\n"1981-
08-25",4.6\r\n"1981-08-26",7.0\r\n"1981-08-27",6.0\r\n"1981-08-28",5.5\r\n"1981-08-29",
8.1\r\n"1981-08-30",5.5\r\n"1981-08-31",6.2\r\n"1981-09-01",8.0\r\n"1981-09-02",10.3\r
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\r\n"1990-10-01",11.3\r\n"1990-10-02",10.5\r\n"1990-10-03",9.9\r\n"1990-10-04",11.0\r\n"1990-10-05",14.0\r\n"1990-10-06",9.2\r\n"1990-10-07",9.8\r\n"1990-10-08",6.0\r\n"1990-10-09",9.8\r\n"1990-10-10",9.2\r\n"1990-10-11",11.8\r\n"1990-10-12",10.3\r\n"1990-10-13",7.5\r\n"1990-10-14",7.7\r\n"1990-10-15",15.8\r\n"1990-10-16",14.6\r\n"1990-10-17",10.5\r\n"1990-10-18",11.3\r\n"1990-10-19",10.9\r\n"1990-10-20",6.4\r\n"1990-10-21",10.9\r\n"1990-10-22",9.0\r\n"1990-10-23",10.9\r\n"1990-10-24",12.4\r\n"1990-10-25",11.6\r\n"1990-10-26",13.3\r\n"1990-10-27",14.4\r\n"1990-10-28",18.4\r\n"1990-10-29",13.6\r\n"1990-10-30",14.9\r\n"1990-10-31",14.8\r\n"1990-11-01",15.4\r\n"1990-11-02",11.8\r\n"1990-11-03",13.0\r\n"1990-11-04",11.1\r\n"1990-11-05",12.5\r\n"1990-11-06",18.3\r\n"1990-11-07",19.2\r\n"1990-11-08",15.4\r\n"1990-11-09",13.1\r\n"1990-11-10",11.5\r\n"1990-11-11",8.6\r\n"1990-11-12",12.6\r\n"1990-11-13",13.8\r\n"1990-11-14",14.6\r\n"1990-11-15",13.2\r\n"1990-11-16",12.3\r\n"1990-11-17",8.8\r\n"1990-11-18",10.7\r\n"1990-11-19",9.9\r\n"1990-11-20",8.3\r\n"1990-11-21",15.0\r\n"1990-11-22",12.2\r\n"1990-11-23",10.5\r\n"1990-11-24",11.1\r\n"1990-11-25",13.0\r\n"1990-11-26",12.9\r\n"1990-11-27",8.8\r\n"1990-11-28",14.7\r\n"1990-11-29",14.7\r\n"1990-11-30",12.7\r\n"1990-12-01",13.3\r\n"1990-12-02",13.2\r\n"1990-12-03",16.2\r\n"1990-12-04",17.3\r\n"1990-12-05",20.5\r\n"1990-12-06",20.2\r\n"1990-12-07",19.4\r\n"1990-12-08",15.5\r\n"1990-12-09",14.1\r\n"1990-12-10",11.0\r\n"1990-12-11",11.1\r\n"1990-12-12",14.0\r\n"1990-12-13",11.4\r\n"1990-12-14",12.5\r\n"1990-12-15",13.4\r\n"1990-12-16",13.6\r\n"1990-12-17",13.9\r\n"1990-12-18",17.2\r\n"1990-12-19",14.7\r\n"1990-12-20",15.4\r\n"1990-12-21",13.1\r\n"1990-12-22",13.2\r\n"1990-12-23",13.9\r\n"1990-12-24",10.0\r\n"1990-12-25",12.9\r\n"1990-12-26",14.6\r\n"1990-12-27",14.0\r\n"1990-12-28",13.6\r\n"1990-12-29",13.5\r\n"1990-12-30",15.7\r\n"1990-12-31",13.0\r\n\r\nDaily minimum temperatures in Melbourne, Australia, 1981-1990\r\n\r\n\r\n}
```

```
In [ ]: # file is uploaded to the current directory
        !ls
```

```
arrhythmia.data  daily-minimum-temperatures-in-me.csv  sample_data
```

```
In [ ]: # open the file
        # the last few lines are junk
        df = pd.read_csv('daily-minimum-temperatures-in-me.csv', error_bad_lines=False)
        df.head()
```

```
b'Skipping line 3653: expected 2 fields, saw 3\r\n'
```

```
Out[ ]:      Date  Daily minimum temperatures in Melbourne, Australia, 1981-1990
```

0	1981-01-01	20.7
1	1981-01-02	17.9
2	1981-01-03	18.8
3	1981-01-04	14.6
4	1981-01-05	15.8

```
In [ ]: # upload a Python file with some useful functions (meant for fake_util.py)
        from google.colab import files
        uploaded = files.upload()
```

No file chosen Upload widget is only available when the cell has been executed in the current browser session. Please rerun this cell to enable.
Saving fake_util.py to fake_util.py

```
In [ ]: from fake_util import my_useful_function
        my_useful_function()
```

```
hello world
```

```
In [ ]:
```

```
!pwd
```

```
/content
```

Part 4: Access files from Google Drive

```
In [ ]:
```

```
# Access files from your Google Drive  
from google.colab import drive  
drive.mount('/content/gdrive')
```

```
In [ ]:
```

```
# Check current directory - now gdrive is there  
!ls
```

```
In [ ]:
```

```
# What's in gdrive?  
!ls gdrive
```

```
In [ ]:
```

```
# Whoa! Look at all this great VIP content!  
!ls '/content/gdrive/My Drive/'
```