Homework 5

insert your name and id here

In this homework, you're required to follow the basic tutorial of Seaborn (https://seaborn.pydata.org/tutorial/function_overview.html), and explore the (most) classical dataset of iris flower (https://en.wikipedia.org/wiki/Iris_flower_data_set).

Prior to start, please make sure that your Seaborn is upgraded to latest version. You can simply try:

In [1]:
```
pip install seaborn --upgrade
```

```
Requirement already satisfied: seaborn in /Users/cliffzhou/opt/anaconda3/lib/python
3.7/site-packages (0.11.1)
Requirement already satisfied: numpy>=1.15 in /Users/cliffzhou/.local/lib/python3.7/
site-packages (from seaborn) (1.19.4)
Requirement already satisfied: scipy>=1.0 in /Users/cliffzhou/opt/anaconda3/lib/pyth
on3.7/site-packages (from seaborn) (1.5.2)
Requirement already satisfied: pandas>=0.23 in /Users/cliffzhou/opt/anaconda3/lib/py
thon3.7/site-packages (from seaborn) (1.2.0)
Requirement already satisfied: matplotlib>=2.2 in /Users/cliffzhou/opt/anaconda3/li
b/python3.7/site-packages (from seaborn) (3.3.3)
Requirement already satisfied: pillow>=6.2.0 in /Users/cliffzhou/opt/anaconda3/lib/p
ython3.7/site-packages (from matplotlib>=2.2->seaborn) (7.0.0)
Requirement already satisfied: python-dateutil>=2.1 in /Users/cliffzhou/opt/anaconda
3/lib/python3.7/site-packages (from matplotlib>=2.2->seaborn) (2.8.1)
Requirement already satisfied: cycler>=0.10 in /Users/cliffzhou/opt/anaconda3/lib/py
thon3.7/site-packages (from matplotlib>=2.2->seaborn) (0.10.0)
Requirement already satisfied: kiwisolver>=1.0.1 in /Users/cliffzhou/opt/anaconda3/l
ib/python3.7/site-packages (from matplotlib>=2.2->seaborn) (1.1.0)
Requirement already satisfied: pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.0.3 in /Users/cl
iffzhou/opt/anaconda3/lib/python3.7/site-packages (from matplotlib>=2.2->seaborn)
(2.4.6)
Requirement already satisfied: six in /Users/cliffzhou/opt/anaconda3/lib/python3.7/s
ite-packages (from cycler>=0.10->matplotlib>=2.2->seaborn) (1.14.0)
Requirement already satisfied: setuptools in /Users/cliffzhou/opt/anaconda3/lib/pyth
on3.7/site-packages (from kiwisolver>=1.0.1->matplotlib>=2.2->seaborn) (46.0.0.post2
0200309)
Requirement already satisfied: pytz>=2017.3 in /Users/cliffzhou/opt/anaconda3/lib/py
thon3.7/site-packages (from pandas>=0.23->seaborn) (2019.3)
WARNING: You are using pip version 20.3.3; however, version 21.0.1 is available.
You should consider upgrading via the '/Users/cliffzhou/opt/anaconda3/bin/python -m
 pip install --upgrade pip' command.
Note: you may need to restart the kernel to use updated packages.
```

and then **restart the kernel**. Make sure the version is >= 0.11.1

In [2]:
```
import seaborn as sns
sns.__version__
```

Out[2]:
```
'0.11.1'
```

You can also use the following code to set the theme of images.

In [3]:
```
sns.set_theme()
```

Task 1: Load the Iris Dataset

Please follow the instructions below:

1. Download the "iris.csv" file from canvas, and use `pandas` to load the dataset
2. Delete (drop) the column named `Id` (note the capital letter **I** here). *Hint: you may find the "inplace" parameter useful in the `drop` method*.
3. Show the 10 random sampled observations (rows in the data)
4. Generate the descriptive statistics of the dataset (It's OK to only include numerical variables) *Hint: use the `describe` method*

```
In [ ]: # Write your code and comments here
```

Task 2: Using Seaborn to visualize the data

- Reproduce the three figures below using seaborn command. Be careful about the labels on the x or y axis (you should select the same variables in iris dataset)
- After each code block of generating figures, write a short paragraph in *Markdown* format about:

  1) what does the figure represent, for example, "it is a histogram that ....", and what does x label and y label refers to.

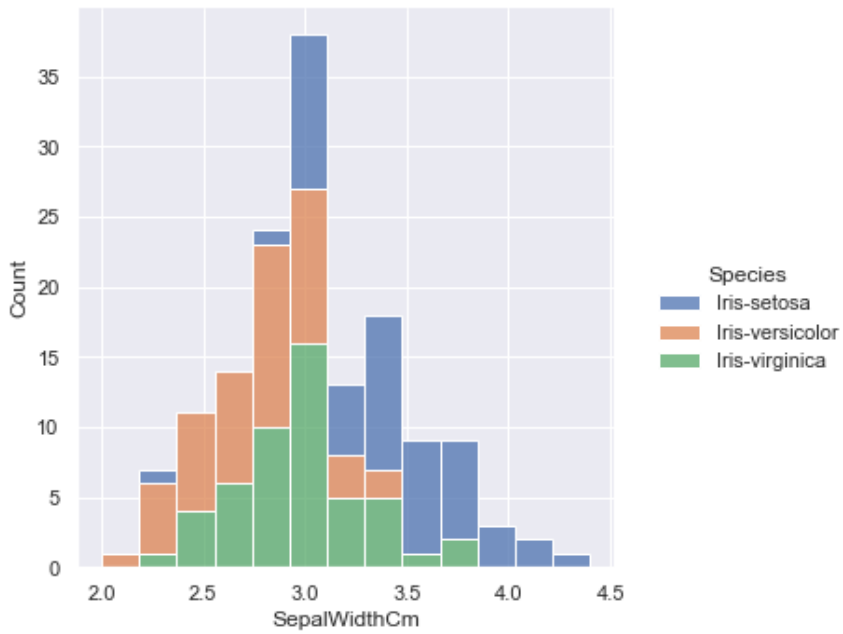
  2) what basic conclusion about the dataset you can draw from the figure. It does not have to be the rigorous conclusions -- some simple qualitative descriptions are enough. Just imagine you're writing a thesis about iris flower using the data!

Hint: All the useful codes are included in this basic tutorial (https://seaborn.pydata.org/tutorial/function_overview.html).

Figure 1

```
In [8]: # write down your code here
```

```
Out[8]: <seaborn.axisgrid.FacetGrid at 0x7fbe38d0ead0>
```



This is markdown -- delete and write your own the description here

Figure 2

In [9]:
```
# write down your code here
```

Out[9]:
```
<AxesSubplot:xlabel='PetalLengthCm', ylabel='Density'>
```

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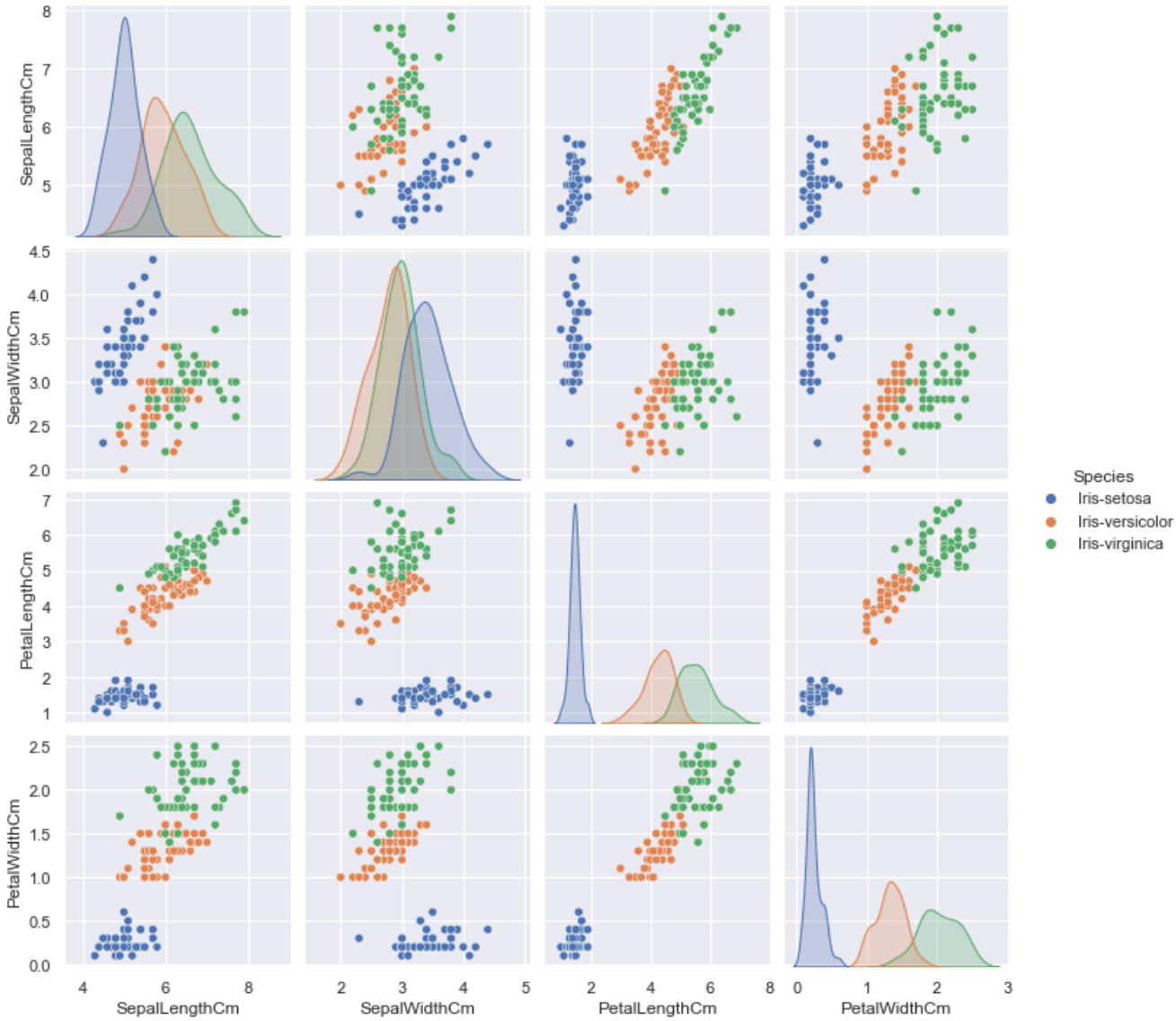
Figure 3

In [10]:
```
# write down your code here
```

Out[10]:
```
<seaborn.axisgrid.PairGrid at 0x7fbe391bf450>
```



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Optional Task (Not Graded)

Refer to the gallery (https://seaborn.pydata.org/examples/index.html) or other tutorials (https://seaborn.pydata.org/tutorial.html) on the website, and generate more fancy figures with this dataset!

In [ ]:
```
# write your code here
```