9/5/12

PSYC 2300 Assignment 1 Solutions and Rubric

Question 1

For degrees from the College of Arts and Sciences, what is the average number of CUs required to graduate? Is this more or less than the average for the other three schools combined?

Question 1

```
]: ### YOUR CODE HERE
college_cu = np.mean(data.query("School == 'SAS'").Course_Units)
print(f'Avg CUs to graduate College of Arts & Sciences = {college_cu}')

other_cu = np.mean(data.query("School != 'SAS'").Course_Units)
print(f'Avg CUs to graduate other schools = {other_cu}')

if college_cu > other_cu:
    print('More CUs College of Arts and Sciences than other schools.')
elif college_cu == other_cu:
    print('Same CUs College of Arts and Sciences and other schools.')
else:
    print('Less CUs College of Arts and Sciences than other schools.')
```

```
Avg CUs to graduate College of Arts & Sciences = 34.44230769230769
Avg CUs to graduate other schools = 37.11764705882353
Less CUs College of Arts and Sciences than other schools.
```

2.5 points:

- + 0.5 Work shown.
- + 1 Correct average CUs College.
- + 1 Correct comparison to other schools.
    - Note: full credit if students combined other schools either by lumping all together or by averaging the averages of each other school

Question 2

How many departments with a class size of under 30 offer a PhD program? How many departments with a class size over 50 do not?

Question 2 ¶

```
### YOUR CODE HERE
u30_phd = len(data.query("Class_Size < 30.0 & PhD == 1").index)
print(f'{u30_phd} departments with class size of under 30 offer PhD programs.')

o50_phd = len(data.query("Class_Size > 50.0 & PhD == 0").index)
print(f'{o50_phd} departments with class size of over 50 do not offer PhD programs.')
```

```
7 departments with class size of under 30 offer PhD programs.
3 departments with class size of over 50 do not offer PhD programs.
```

2.5 points:

- + 0.5 Work shown.
- + 1 Correct answer class size under 30.
- + 1 Correct answer class size over 50.

Question 3

For each school, what percentage of the programs offer an introductory course?

Question 3

```
### YOUR CODE HERE
for s in data.School.unique():
    school_data = data[data.School == s]
    prcnt = len(school_data[school_data.Intro_101 == 1].index) / len(school_data.index)
    print(f'{100*prcnt}% of programs in {s} offer an introductory course.')
```

```
53.84615384615385% of programs in SAS offer an introductory course.
37.5% of programs in SEAS offer an introductory course.
71.42857142857143% of programs in WHARTON offer an introductory course.
100.0% of programs in NURSING offer an introductory course.
```

2.5 points:

- + 0.5 Work shown.
- + 1 One school correct answer.
- +1 All schools correct answer.

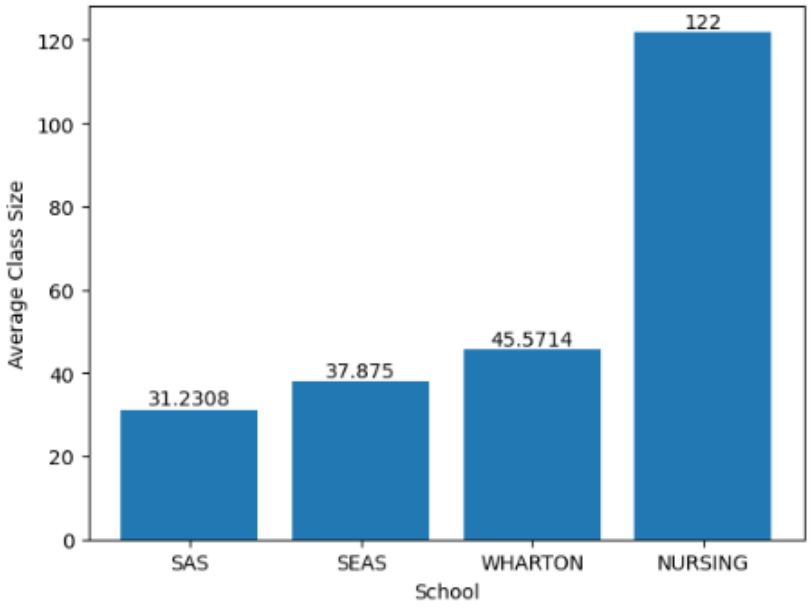
Question 4

Make a bar chart that plots the school on the x-axis and the average class size on the y-axis. Make sure to label your axes.

Question 4

```
: ### YOUR CODE HERE
vals = []
for s in data.School.unique():
    school_data = data[data.School == s]
    vals.append(np.mean(school_data.Class_Size))

fig, ax = plt.subplots()
bars = ax.bar([1, 2, 3, 4], vals)
ax.bar_label(bars)
ax.set(xlabel='School', ylabel='Average Class Size', xticks=[1, 2, 3, 4], xticklabels=data.School.unique())
plt.show()
```



2.5 points:

- + 0.5 Work shown.
- + 0.5 Axes labeled.
- + 0.5 Bar chart (as opposed to a scatter plot, line graph).
- + 0.5 Correct answer one school.
- + 0.5 Correct answer all schools.