Quiz 2 - DSC 10, Fall 2026

Full Name:

TSN:

Quiz Time:

◯ 3:00	◯ 3:30	◯ 4:00	◯ 4:30
◯ 5:00	◯ 5:30	◯ 6:00	◯ 6:30
◯ 7:00	◯ 7:30	◯ 8:00	◯ 8:30

Instructions:

- This quiz consists of 3 questions. You have a total of 20 minutes to complete it.
- Please write **clearly** in the provided answer boxes; we will not grade work that appears elsewhere. Completely fill in bubbles and square boxes; if we cannot tell which option(s) you selected, you may lose points.

  ◯ A bubble means that you should only **select one choice**.

  ☐ A square box means you should **select all that apply**.
- If your answer is a string, make sure to put it in quotes. If your answer is a float, make sure to include a decimal point.
- You may use one handwritten sheet of notes. No calculators and no computers.
- Assume we have already run `import babypandas as bpd` and `import numpy as np`.

By signing below, you are agreeing that you will behave honestly and fairly during and after this quiz.

Signature:

Version A

Please do not open your quiz until instructed to do so.

Sujal, Austin, and Rishika cleared their schedules on October 3rd, only to realize that San Diego had become an oven that day, with temperatures crossing 100°F.

The DataFrame `oct3` contains information on 10 various San Diego locations on that date. It is indexed by `"Location"`. Its columns are `"Temp"` (int), the high temperature for the day; `"Elevation"` (int), the elevation in feet; and `"Coastal"` (bool), whether the location is coastal.

Location	Temp	Elevation	Coastal
Pacific Beach	90	20	True
UCSD	94	390	True
La Jolla	91	110	True
Mira Mesa	104	440	False
Clairemont	99	300	False
Downtown	97	50	True
Chula Vista	98	70	True
El Cajon	103	430	False
Santee	104	350	False
Poway	105	520	False

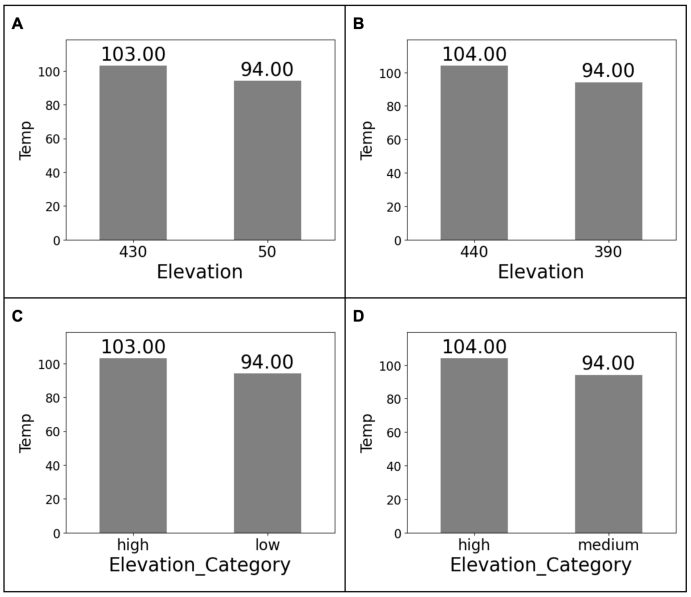
Question 1

Sujal wants to see whether locations at higher elevations are cooler. Assume that he has **already defined** a function called `elevation_category`, which takes in an integer elevation in feet and returns `"low"` when the elevation is at most 100, `"medium"` when it is greater than 100 and at most 400, and `"high"` otherwise.

a) Write one line of code to create a DataFrame `oct3_cat`, which contains every column in `oct3`, plus a new column named `"Elevation_Category"` with the appropriate categorical label, `"low"`, `"medium"`, or `"high"`.

b) Which bar chart is produced by the following code? Bar heights are labeled for your convenience.

```
(oct3_cat
 .drop(columns=["Coastal"])
 .take(2 * np.arange(3) + 1)
 .take(np.arange(2))
 .groupby("Elevation_Category")
 .mean()
 .plot(kind="bar", y="Temp"))
```



◯ A ◯ B

◯ C ◯ D

Question 2

For this question, assume `oct3_cat` was correctly created in Question 1.

a) Write one line of code that evaluates to a DataFrame containing the average temperature associated with each combination of values in the `"Elevation_Category"` and `"Coastal"` columns.

b) Determine the output of the code cell below.

```
legend = bpd.DataFrame().assign(
         Elevation_Category=["low", "medium", "high"],
         Color=["yellow", "orange", "red"])
oct3_cat.merge(legend, on="Elevation_Category").shape[0]
```

◯ 3 ◯ 9 ◯ 10 ◯ 13 ◯ 30

c) Determine the output of the code cell below.

```
legend2 = bpd.DataFrame().assign(
         Elevation_Category=["low", "medium", "medium", "high"],
         Color=["yellow", "orange", "red", "maroon"])
oct3_cat.merge(legend2, on="Elevation_Category").shape[0]
```

◯ 10 ◯ 12 ◯ 14 ◯ 16 ◯ 20

Question 3

a) Rishika makes a density histogram of the 10 values in the `"Temp"` column of `oct3`, shown on the previous page. She uses the argument `bins = np.arange(90, 110, 5)`. What is the **height of the tallest bar**?

b) Rishika then obtains a larger DataFrame of 200 locations. A density histogram of temperatures from this larger DataFrame of 200 locations has bins and heights given below. Assume all locations' temperatures fall between 80°F and 110°F, inclusive.

Bin	Height of Bar
$[80, 90)$	0.02
$[90, 95)$	0.04
$[95, 100)$	0.06
$[100, 110]$	X

What is the **value of** X?

c) **How many** of the 200 locations have a `"Temp"` in $[90, 100)$?

Reminders:

- **Write your TSN** on the front page and on the top right corner of page 3.
- If your answer is a string, make sure to put it in **quotes**.
- If your answer is a float, make sure to include a **decimal point**.
- Stay in your seat until the quiz is over. No leaving early.