Quiz 3

Graded

Student

Rey Stone

Total Points

17 / 20 pts

Question 1

Question 1 **11** / 11 pts

1.1 **Question 1a** **4** / 4 pts

Question 1 (4 pts)

Correct answer:

```
menu[(menu['Calories'] >= 150) &
(menu['Category'] == 'Breakfast')]
```

✔ **– 0 pts** Correct

1.2 **Question 1bi** **1** / 1 pt

Question 1bi (1 pt)

Correct answer:

Qualitative Ordinal

✔ **– 0 pts** Correct

1.3 **Question 1bii** **1** / 1 pt

Question 1bii (1 pt)

Correct answer:

Quantitative Discrete

✔ **– 0 pts** Correct

1.4 **Question 1biii** **1** / 1 pt

Question 1biii (1 pt)

Correct answer:

Qualitative Nominal

✔ **– 0 pts** Correct

1.5 **Question 1ci** **1** / 1 pt

Question 1ci (1 pt)

Correct answer:

Scatter plot

✔ **– 0 pts** Correct

1.6 **Question 1cii** **1** / 1 pt

Question 1cii (1 pt)

Correct answer:

Bar chart

✔ **– 0 pts** Correct

1.7 Question 1ciii 1 / 1 pt

Question 1ciii (1 pt)

Correct answer:

Violin plot

✔ – 0 pts Correct

1.8 Question 1civ 1 / 1 pt

Question 1civ (1 pt)

Correct answer:

Side-by-side violin plot

✔ – 0 pts Correct

Question 2

Question 2 3 / 6 pts

2.1 Question 2a 3 / 3 pts

Question 2a (3 pt)

Correct answer:

Mon, Tue, Wed, Thu, Fri

✔ – 0 pts Correct

2.2 Question 2b 0 / 3 pts

Question 2b (3 pts)

Correct answer:

The Tuesday distribution is skewed right

The Thursday distribution has outliers

✔ – 1.5 pts Missing one of the correct options

✔ – 1.5 pts Marked one of the wrong options

Question 3

Question 3 3 / 3 pts

Question 3 (3 pts)

Correct answer:

Mean Median Mode

✔ – 0 pts Correct

Write **clearly** and **in the box**:

Name: Rey Stone	**Student ID:** 11104637

Quiz Rules:

DO NOT TURN THIS PAGE OVER UNTIL THE QUIZ BEGINS.

- All cell phones must be stored in your backpack. If you have a cell phone anywhere on your body or at your desk during this quiz you will receive a 0 on this quiz.
- You are allowed a two-sided 8.5" x 11" crib sheet with hand-written (not typed) notes
- You are allowed a calculator
- You are allowed to use the Data Wrangling with Pandas Cheatsheet from the Canvas Modules
- **No tablets, smartphones, smartwatches or any other electronic devices allowed.**
- No collaboration with other students is allowed during this quiz.
- **Show all work and simplify your answers!**
- You have **15 minutes** for this quiz.

Once the quiz begins you can use this extra space for your work if you need more space.

1. You decide to study the food served at the Alferd Packer Grill (APC) on CU's campus.

You gather data on all the menu items served at the APC over the last 12 months and put the data into a DataFrame called `menu`.

Here are the first 5 rows of the `menu` DataFrame:

	Item	Month	Category	Priority	Calories	Servings
0	Scrambled Eggs	Jan	Breakfast	High	200	5420
1	Veggie Fajita Burrito	Jan	Lunch & Dinner	Med	145	926
2	Black Beans	Feb	Sides	Low	84	1354
3	Chocolate Chip Cookie	Apr	Desserts	High	469	8729
4	Bacon	Sep	Breakfast	Med	200	4398

The `menu` DataFrame contains 5 columns:

- **Item**: The name of the item on the menu
- **Month**: The month of the year that the item was served
  qual nom
- **Category**: The category of food (either Breakfast, Lunch & Dinner, Soups, Sides or Desserts)
  qual ord
- **Priority**: The priority that Campus Dining Services puts on making the item
  quant cont.
- **Calories**: The number of calories per serving of the item.
  quant dis
- **Servings**: The number of servings served to students in the month.

(a) (4 pts) Write Python code using Pandas functions to select all the rows in the `menu` DataFrame that are Breakfast items with at least 150 Calories. Write your code directly in the box provided below.

```
breakfast_150 = menu.query('(Category == Breakfast) & (Calories ≥ 150)')
```

(b) (3 pts) Identify the feature type of the following variables from the `menu` DataFrame:

i. `Priority` - low, med, high
- ○ Quantitative Discrete
- ○ Quantitative Continuous
- ● Qualitative Ordinal
- ○ Qualitative Nominal

ii. `Servings` - # of servings (countable)
- ● Quantitative Discrete
- ○ Quantitative Continuous
- ○ Qualitative Ordinal
- ○ Qualitative Nominal

iii. `Category` - no order (brkfst, lunch, din)
- ○ Quantitative Discrete
- ○ Quantitative Continuous
- ○ Qualitative Ordinal
- ● Qualitative Nominal

(c) (4 pts) You decide to try to answer the following questions.

For the next 4 parts, choose which kind of visualization would be the **best choice out of the options given** to answer it.

Choose only one answer for each question.

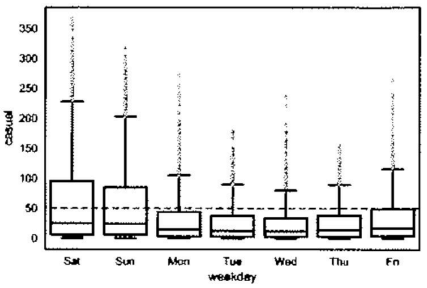
i. Is there an association between `Calories` and `Servings`?
- ● Scatter Plot
- ○ Bar Chart
- ○ Overlaid Histograms
- ○ ~~Pie Chart~~
- ○ Side-by-side violin plots

ii. What is the distribution of the `Category` variable?
- ○ Line Plot
- ○ Boxplot
- ● Bar Chart
- ○ Histogram
- ○ Scatter Plot

iii. What is the distribution of the `Calories` variable?
- ○ Line Plot
- ● Violin plot
- ○ ~~Bar Chart~~
- ○ ~~Side-by-side box plots~~
- ○ ~~Scatter Plot~~

iv. How do the distributions of calories per plate vary between the high priority and low priority desserts?
- ○ Scatter Plot
- ○ Bar Chart
- ○ Line Plot
- ● Side-by-side violin plots

2. (6 pts)
Shown on the right is a summary of data from a bike sharing system in Washington D.C.
Riders were classified as either casual riders or registered riders. Here are boxplots of the distribution of the number of casual riders based on days of the week.



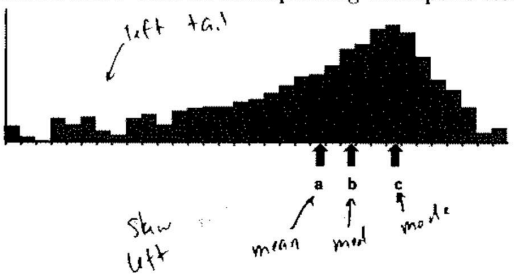
(a) Which days of the week frequently (at least 75% of the time) had less than or equal to 50 casual riders? **Select all days that apply.**

☐ Sat ☐ Sun ☑ Mon ☑ Tue ☑ Wed ☑ Thu ☑ Fri

(b) Which of the following are conclusions that we can make using only the boxplots shown in this figure? **Select all that apply.**

☐ the Tuesday distribution is skewed right
☑ the Thursday distribution has outliers
☐ the Monday distribution is unimodal
☐ the Wednesday distribution is symmetric
☑ The mean of the Friday distribution is indicated by the middle line in its boxplot.
☐ none of these

3. (3 pts) Use the histogram below to match each letter shown below with its corresponding descriptive statistic.



avg

(a) ○ Median	● Mean	○ Mode	
(b) ● Median	◎ Mean	○ Mode	
(c) ○ Median	○ Mean	● Mode	"most often"

END OF QUIZ