HW6 Check-In 2 (Written)

STUDENT NAME

Search students by name or email...

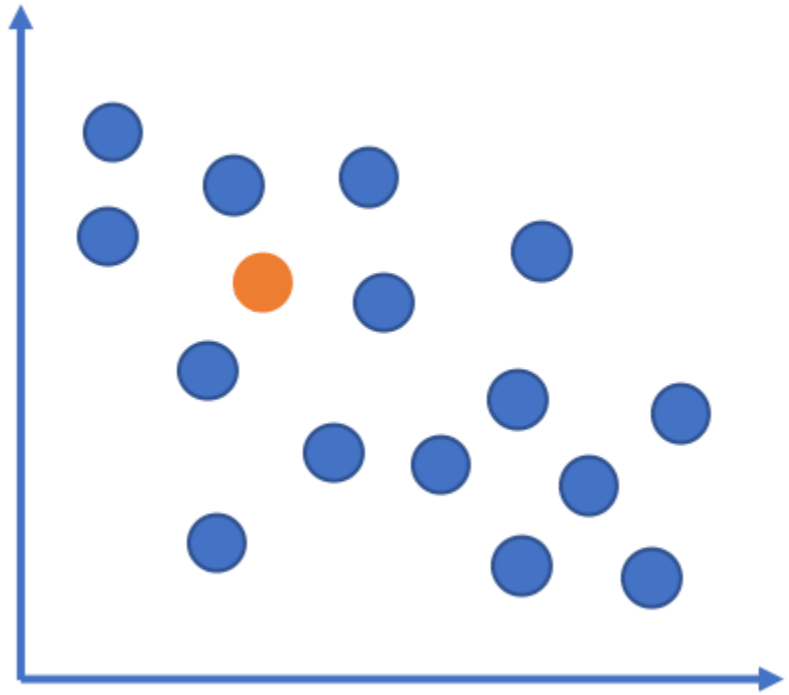
Q1 Visual Variables

6 Points

In the following images, what visual variable helps you identify the outlier the most?

Q1.1 VV1

2 Points

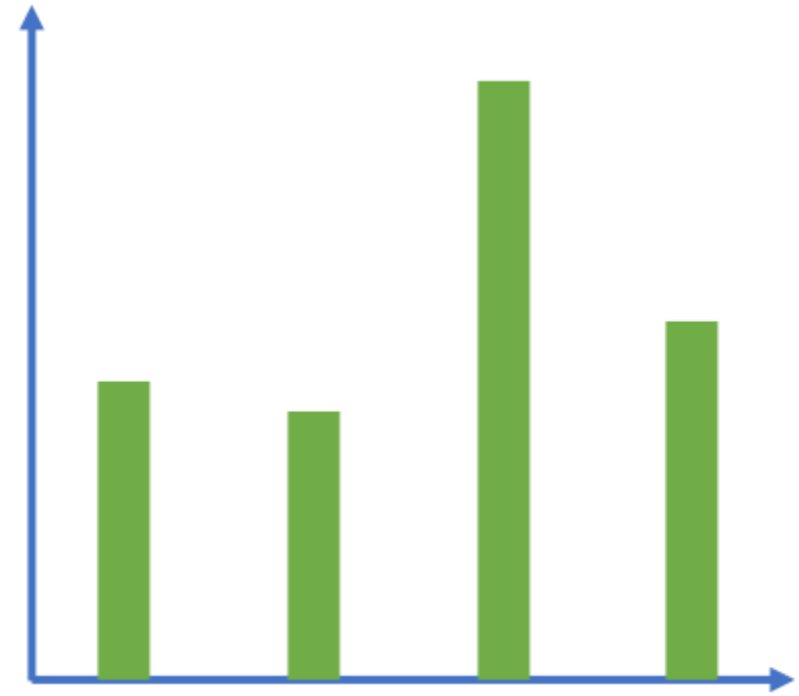


- Color
- Value
- Position
- Length
- Shape
- Orientation

Submit

Q1.2 VV2

2 Points

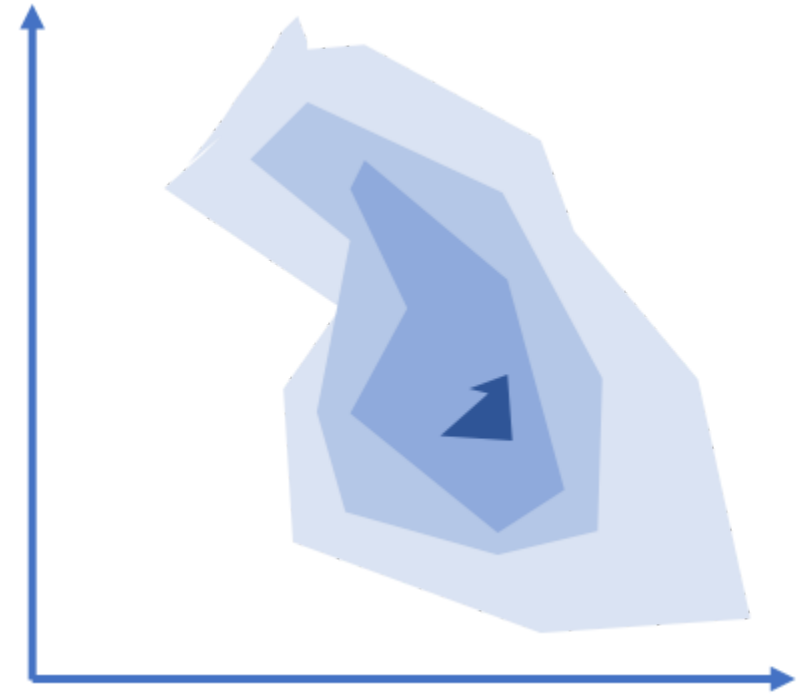


- Color
- Value
- Position
- Length
- Shape
- Orientation

Submit

Q1.3 VV3

2 Points



- ○ Color
- ○ Value
- ○ Position
- ○ Length
- ○ Shape
- ○ Orientation

Submit

Q2 Selecting the Visualization

8 Points

Given the description of the data below, what visualization(s) could you use? Select all that apply.

Q2.1 Selection1

2 Points

Graph Midterm 1 numerical grades on the x-axis and Midterm 2 numerical grades on the y axis.

- [ ] Histogram
- [ ] Pie Chart
- [ ] Scatterplot
- [ ] Line Plot
- [ ] Box and Whiskers
- [ ] Bar Chart
- [ ] Colored Scatterplot
- [ ] Scatterplot Matrix
- [ ] Bubble plot

Submit

Q2.2 Selection2

2 Points

Graph the end-of-semester letter grades, Midterm 1 numerical scores, and Midterm 2 numerical scores.

- [ ] Histogram
- [ ] Pie Chart
- [ ] Scatterplot
- [ ] Line Plot
- [ ] Box and Whiskers
- [ ] Bar Chart
- [ ] Colored Scatterplot
- [ ] Scatterplot Matrix
- [ ] Bubble plot

Submit

Q2.3 Selection3

2 Points

Counts of the numbers of A's, B's, C's, etc in the class.

- [ ] Histogram
- [ ] Pie Chart
- [ ] Scatterplot
- [ ] Line Plot
- [ ] Box and Whiskers
- [ ] Bar Chart
- [ ] Colored Scatterplot
- [ ] Scatterplot Matrix
- [ ] Bubble plot

Submit

Q2.4 Selection4

2 Points

The end-of-semester scores of the students by recitation section.

- [ ] Histogram
- [ ] Pie Chart
- [ ] Scatterplot
- [ ] Line Plot
- [ ] Box and Whiskers
- [ ] Bar Chart
- [ ] Colored Scatterplot
- [ ] Scatterplot Matrix
- [ ] Bubble plot

Submit

Q3 Simulation Events

6 Points

Assume we've written a basic simulation that makes a square move around the screen, and we store the square's left, right, top, and bottom coordinates in data. We want to add user interaction to this simulation, by using events.

Q3.1 Mouse events

3 Points

Which Boolean expression, when added to mousePressed(data, event), would only evaluate to True when the user clicks inside the square?

- (data["left"] <= data["x"] <= data["right"]) and (data["top"] <= data["y"] <= data["bottom"])
- (data["left"] <= data["x"] <= data["right"]) or (data["top"] <= data["y"] <= data["bottom"])
- (data["left"] <= event.x <= data["right"]) and (data["top"] <= event.y <= data["bottom"])
- (data["left"] <= event.x <= data["right"]) or (data["top"] <= event.y <= data["bottom"])

Submit

Q3.2 Key events

3 Points

Which Boolean expression, when added to keyPressed(data, event), would only evaluate to True when the user clicks a number key?

- 0 <= data["char"] <= 9
- data["char"] in "0123456789"
- 0 <= event.char <= 9
- event.char in "0123456789"

Submit

Q4 Monte Carlo Methods

10 Points

For each of the following questions, use *Monte Carlo methods* to find the answer to the given question. You can use the monteCarlo(trials) function from the notes to average results over 100,000 trials; you just need to update the runTrial() function for each question.

Please submit your answer as a decimal probability (1 = 100%, 0.5 = 50%), and round your answer for each question to have only 2 digits after the decimal point.

Q4.1 MC 1

3 Points

What are the odds that, if you roll a die twice, the second roll will be either 1 larger or 1 smaller than the first? For example, you could roll a 4 and then a 5, or a 4 and then a 3.

Enter your answer here

Submit

Q4.2 MC 2

3 Points

Pick a random odd number between 1 and 99. What are the odds that that number is a multiple of 7?

Hint: make a list of all odd numbers between 1 and 99, then use random.choice()

Enter your answer here

Submit

Q4.3 MC 3

4 Points

Make a list with six values (two "red", two "green", two "blue") and shuffle it. What are the odds that the first two values in the list are both "red"?

Hint: use the destructive function random.shuffle()

Enter your answer here

Submit

Q5 BFS for Block Stacking

10 Points

Use the informationless states in the block stacking slides from the AI lecture for the following two subquestions.

Q5.1 Visited Nodes

5 Points

With a starting state of S7 and goal state of S4, what nodes in the block stacking graph get visited? Assume the nodes get added to the to_visit list in numerical order (e.g., starting at S1, we would add S2, S3, and S4 to the to_visit list in that order).

Enter your answer here

Submit

Q5.2 Actions

5 Points

What actions (e.g. pick up the green block, put down the blue block) will get executed after the search completes?

Enter your answer here

Submit

Q6 AI Tools and AI Agents

5 Points

Suppose you wanted to build a tour guide robot that gave tours around CMU.

Give one reason that the tour guide robot would be an AI Agent?

Enter your answer here

Give one reason that the robot would be like an AI Tool?

Enter your answer here

Submit

Submit Assignment

/