3.5.5 Determine the Winning Candidate

You have now helped Tom find all the candidates' names, the number of votes that each candidate received, and the percentage of votes for each candidate. Now Seth would like Tom to walk you through how to determine the winning candidate, vote count, and percentage. For this you will need to use a decision statement to compare the number of votes each candidate received.

We have tabulated all the votes and calculated the vote percentages. Your final task is to determine the winning candidate by the number and percentage of votes.

When we loop through the vote counts, we can:

- Use an `if` statement to check if the first vote count for a candidate is greater than zero.
- If the statement is true, then that vote count will be equal to the "winning count."
- At the same time, we can set that candidate's percentage of the vote equal to the "winning percentage."

- Then we can select the candidate as the "winning candidate" from the `candidate_options` list.

To do all of this, we will first need to:

- Declare a variable that holds an empty string value for the winning candidate.
- Declare a variable for the "winning count" equal to zero.
- Declare a variable for the "winning_percentage" equal to zero.

Add the following code before the `with open()` statement:

```
# Winning Candidate and Winning Count Tracker
winning_candidate = ""
winning_count = 0
winning_percentage = 0
```

Next, we will create an `if` statement inside the `for` loop and do the following:

- Determine if the vote count that was calculated is greater than the `winning_count`.
- If the vote count is greater than the `winning_count` and the percentage is greater than the `winning_percentage`, set the `winning_count` equal to the `votes` and set the `winning_percentage` equal to the `vote_percentage`.
- Set the `winning_count` equal to the variable, `candidate_name`, in the `for` loop.

Add the following code inside the `for` loop where we iterated through the `candidate_options` list.

```
# Determine winning vote count and candidate
# 1. Determine if the votes are greater than the winning count.
```

```
if (votes > winning_count) and (vote_percentage > winning_percentage):
     # 2. If true then set winning_count = votes and winning_percent =
     # vote_percentage.
     winning_count = votes
     winning_percentage = vote_percentage
     # 3. Set the winning_candidate equal to the candidate's name.
     winning_candidate = candidate_name
```

Your code should look like this:

```
# Determine the percentage of votes for each candidate by looping through th
# Iterate through the candidate list.
for candidate_name in candidate_votes:
    # Retrieve vote count of a candidate.
    votes = candidate_votes[candidate_name]
    # Calculate the percentage of votes.
    vote_percentage = float(votes) / float(total_votes) * 100

    #  To do: print out each candidate's name, vote count, and percentage of
    # votes to the terminal.

    # Determine winning vote count and candidate
    # Determine if the votes is greater than the winning count.
    if (votes > winning_count) and (vote_percentage > winning_percentage):
         # If true then set winning_count = votes and winning_percent =
         # vote_percentage.
         winning_count = votes
         winning_percentage = vote_percentage
         # And, set the winning_candidate equal to the candidate's name.
         winning_candidate = candidate_name

#  To do: print out the winning candidate, vote count and percentage to
#   terminal.
```

Finally, we will add a print statement that prints each candidate's name, their vote count, and their percentage of votes. We'll also add a print statement that prints the winning candidate, winning vote count, and winning percentage.

Add the following code **before** the `if` statement, where it says `# To do: print out each candidate's name, vote count, and percentage of votes to the terminal.` To print out each candidate's name, vote count, and percentage of votes while we check the vote on a newline.

```
# To do: print out each candidate's name, vote count, and percentage of
# votes to the terminal.
print(f"{candidate_name}: {vote_percentage:.1f}% ({votes:,})\n")
```

If we run the file, the output will be:

```
Charles Casper Stockham: 23.0% (85,213)

Diana DeGette: 73.8% (272,892)

Raymon Anthony Doane: 3.1% (11,606)
```

Next, add the following code after the `if` statement and aligned with the `for` loop, `for candidate in candidate_votes`, to print out the winning candidate summary.

```
winning_candidate_summary = (
    f"-------------------------\n"
    f"Winner: {winning_candidate}\n"
    f"Winning Vote Count: {winning_count:,}\n"
    f"Winning Percentage: {winning_percentage:.1f}%\n"
    f"-------------------------\n")
print(winning_candidate_summary)
```

Run the file. Your output should have printed out the following results:

```
Charles Casper Stockham: 23.0% (85,213)
```

```
Diana DeGette: 73.8% (272,892)

Raymon Anthony Doane: 3.1% (11,606)

-------------------------
Winner: Diana DeGette
Winning Vote Count: 272,892
Winning Percentage: 73.8%
-------------------------
```

Congratulations on completing the election audit!

FINDING

Your results should tell you that Diane DeGette was the winner of the election with 73.8% of the vote and 272,892 votes.

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