Python Challenge: Election-Analysis

Saturday, September 25, 2021 11:06 AM

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# -*- coding: UTF-8 -*-
""" Homework Challenge Solution."""
# Add our dependencies.
import csv
import os
from typing import ValuesView
# Add a variable to load a file from a path. Changed ".." because it is loaded in resources
file_to_load = os.path.join("Resources", "election_results.csv")
# Add a variable to save the file to a path.
file_to_save = os.path.join("analysis", "election_analysis.txt")
# Initialize a total vote counter.
total_votes = 0
# Candidate Options and candidate votes.
candidate_options = []
candidate_votes = {}
# 1: Create a county list and county votes dictionary.
county_list = []
county_votes_dict= {}
# Track the winning candidate, vote count and percentage
winning_candidate = ""
winning_count = 0
winning_percentage = 0
# 2: Track the largest county and county voter turnout.
largest_county = ""
largest_count = 0
largest_percentage=0
# Read the csv and convert it into a list of dictionaries
with open(file_to_load) as election_data:
    reader = csv.reader(election_data)
    # Read the header
    header = next(reader)
    # For each row in the CSV file.

    for row in reader:
        # Add to the total vote count
        total_votes = total_votes + 1
        # Get the candidate name from each row.
        candidate_name = row[2]
        # 3: Extract the county name from each row.
        county = row[1]

        # If the candidate does not match any existing candidate add it to the candidate list
        if candidate_name not in candidate_options:
            # Add the candidate name to the candidate list.
            candidate_options.append(candidate_name)
            # And begin tracking that candidate's voter count.
            candidate_votes[candidate_name] = 0
        # Add a vote to that candidate's count
        candidate_votes[candidate_name] += 1

 # 4a: Write an if statement that checks that the county does not match any existing county in the county list.
        if county not in county_list:
            # 4b: Add the existing county to the list of counties.
            county_list.append(county)

            # 4c: Begin tracking the county's vote count.
            county_votes_dict[county] = 0

        # 5: Add a vote to that county's vote count.
        county_votes_dict[county] += 1

# Save the results to our text file.
with open(file_to_save, "w") as txt_file:
    # Print the final vote count (to terminal)
    election_results = (
        f"\nElection Results\n"
        f"-------------------------\n"
        f"Total Votes: {total_votes:,}\n"
        f"-------------------------\n\n"
        f"County Votes:\n")
    print(election_results, end="")
    txt_file.write(election_results)

    # 6a: Write a for loop to get the county from the county dictionary.
    for county,voters in county_votes_dict.items():
```

Suggestion:
For Automated Input/Output: Create version control ability to read/write without overlap

Suggestion :
Can incoporate additional values for national output while keeping the county structure in place, if the congressional election commission wanted to expand the audit.

Suggestion :
Ensure key index values are unique (ex. ballot id) to ensure we are not counting value more than once. In this dataset we assumed 1 row = 1 vote, but datasets can contain bad/repeat values.

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    # 6b: Retrieve the county vote count.
    county_votes = county_votes_dict.get(county)

    # 6c: Calculate the percentage of votes for the county.
    vote_percentage = float(county_votes) / float(total_votes) * 100

     # 6d: Print the county results to the terminal.
    county_results=(
    f"{county}: {vote_percentage:.1f}% ({county_votes:,})\n")
    print(county_results)

     # 6e: Save the county votes to a text file.
    txt_file.write(county_results)

     # 6f: Write an if statement to determine the winning county and get its vote count.
    if (county_votes > largest_count) and (vote_percentage > largest_percentage):
        largest_count = county_votes
        largest_county = county
        largest_percentage = vote_percentage

# 7: Print the county with the largest turnout to the terminal.
winning_county_summary = (
    f"-------------------------\n"
    f"Largest County Turnout: {largest_county}\n"
   #f"Winning Vote Count: {largest_count:,}\n"
   # f"Winning Percentage: {largest_percentage:.1f}%\n"
    f"-------------------------\n")
print(winning_county_summary)


# 8: Save the county with the largest turnout to a text file.
txt_file.write(winning_county_summary)

# Save the final candidate vote count to the text file.
for candidate_name in candidate_votes:

    # Retrieve vote count and percentage
    votes = candidate_votes.get(candidate_name)
    vote_percentage = float(votes) / float(total_votes) * 100
    candidate_results = (
        f"{candidate_name}: {vote_percentage:.1f}% ({votes:,})\n")
    # Print each candidate's voter count and percentage to the terminal.
    print(candidate_results)

    #  Save the candidate results to our text file.
    txt_file.write(candidate_results)
    # Determine winning vote count, winning percentage, and candidate.
    if (votes > winning_count) and (vote_percentage > winning_percentage):
        winning_count = votes
        winning_candidate = candidate_name
        winning_percentage = vote_percentage

# Print the winning candidate (to terminal)
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)

# Save the winning candidate's name to the text file
txt_file.write(winning_candidate_summary)
```