A picture containing graphical user interface, text

Description automatically generated

**COMP10082 Foundations of Comp & Tech**

**Programming Strand - Documentation**

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A diagram of a project

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![A screenshot of a computer

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| --- | --- | --- | --- | --- | --- | --- |
| **Test ID** | **Test** | **Test Steps** | **Expected Result** | **Actual Result** | **Result** | **Screenshot Reference** |
| Test1 | Test displayMainMenu Execution | 1. Run the displayMainMenu() function  2. Check the terminal for the menu output | The main menu should display in the terminal | No output was displayed due to missing execution code | Fail | [**Test01.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test01.png) |
| Notes: The terminal did not display the expected output from the displayMainMenu() function because the execution code if \_\_name\_\_ == "\_\_main\_\_": main() was missing.  Solution: Added the execution code to fix the issue. | | | | | | |
| Test2 | Test List and Dictionary | 1. Create lists and dictionaries  2. Run the code and check for output | No errors should occur when accessing the list and dictionary | Encountered a NameError due to incorrect variable name | Fail | [**Test02.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test02.png) |
| Notes: A NameError occurred when trying to access a variable name that was defined incorrectly. The original variable name was not recognized by the program.  Solution: Replaced the variable name with mp\_list and the code worked as expected. | | | | | | |
| Test3 | Test Main Menu Navigation | 1. Create main menu with MP, Party, and Constituency options  2. Select an option and navigate to the sub-menu | The main menu should display with options, and selecting one should navigate to the respective sub-menu | The menu displayed correctly, and selection led to the expected sub-menu | Pass | [**Test03.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test03.png) |
| Notes: The main menu was created with the options: MP, Party, and Constituency. After selecting an option, the program successfully navigated to the corresponding sub-menu, as expected. | | | | | | |
| Test4 | Test File Reading without Encoding | 1. Add with open('EditedData.csv', newline='') in the readFile function  2. Run the program | The file should be read without encoding errors | Encountered UnicodeDecodeError due to missing encoding, unable to read the file correctly | Fail | [**Test04.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test04.png) |
| Notes: The program failed with a UnicodeDecodeError due to incorrect encoding being used when reading the file.  Solution: Encoding was not specified, which led to errors. | | | | | | |
| Test5 | Test File Reading with Encoding | 1. Add with open('EditedData.csv', newline='', encoding='ISO-8859-1') in the readFile function  2. Run the program | The file should be read without encoding errors | File was read successfully after applying ISO-8859-1 encoding | Pass | [**Test05.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test05.png) |
| Notes: The error was resolved by setting the encoding to 'ISO-8859-1', allowing the file to be read correctly without errors. | | | | | | |
| Test6 | Test Constituency Initialization | 1. Create a check for constituency\_name in constituency\_dict  2. Try to add a new Constituency with constituency\_name | The Constituency object should be created without errors | Encountered TypeError due to missing totalVoters argument | Fail | [**Test06i.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test06i.png)  [**Test06ii.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test06ii.png) |
| Notes: The Constituency class constructor required both name and totalVoters as parameters. When only name was provided, a TypeError occurred because totalVoters was missing.  Solution: Removed the totalVoters parameter from the constructor since it was not required, and the code worked as expected. | | | | | | |
| Test7(a) | Allow User to Search by First or Last Name | 1. Update logic to allow user input of either first or last name to find a candidate.  2. Test the search functionality with input. | The user should be able to retrieve candidate details using either the first or last name. | Encountered AttributeError: 'MP' object has no attribute 'name' due to incorrect access to the MP object attributes. | Fail | [**Test7(a).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test7(a).png) |
| Test7(b) | Fix AttributeError | 1. Correct the attribute access to mp.firstName and mp.lastName.  2. Test the functionality again. | The user should be able to retrieve candidate details. | Encountered TypeError: 'str' object is not callable because mp.firstName() and mp.lastName() were treated as methods instead of attributes. | Fail | [**Test7(b).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test7(b).png) |
| Test7(c) | Fix TypeError and Complete Search Logic | 1. Remove parentheses when accessing mp.firstName and mp.lastName.  2. Update to check if candidate\_name in (mp.firstName, mp.lastName):.  3. Test functionality again. | The user should now be able to retrieve candidate details using either the first or last name. | Successfully allowed users to retrieve candidate details by either first or last name. The program functioned as expected after correcting the logic to treat mp.firstName and mp.lastName as attributes instead of methods. | Pass | [**Test07(c).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test07(c).png) |
| Notes:  7(a): The error was due to an incorrect reference to an attribute name that did not exist on the MP object.  7(b): The TypeError occurred because mp.firstName() and mp.lastName() were treated as methods instead of attributes.  7(c): The issue was resolved by treating mp.firstName and mp.lastName as attributes. Updated the logic to check against candidate\_name using tuple containment, which worked successfully. | | | | | | |
| Test8(a) | Update Main to Calculate Candidate Votes | 1. Update the main function to calculate votes by printing mp.firstName, mp.lastName, and mp.votes.  2. Run the program and verify the output. | The program should print the correct number of votes for each candidate. | The program printed 0 votes for each candidate, indicating that the mp.votes attribute was not properly updated or initialized. | Fail | [**Test8(a).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test8(a).png) |
| Test8(b) | Fix Vote Calculation | 1. Replace mp.votes with mp.votesCast.  2. Test the program again to see if it correctly prints the votes for each candidate. | The program should now print the correct vote count for each candidate. | After replacing mp.votes with mp.votesCast, the program successfully printed the correct number of votes for each candidate. | Pass | [**Test8(b).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test8(b).png) |
| Notes:  8(a): The error occurred because the mp.votes attribute was not properly initialized or updated, which resulted in the vote count being displayed as 0.  8(b): The issue was resolved by using the correct attribute mp.votesCast instead of mp.votes, which correctly represented the candidate’s votes. | | | | | | |
| Test9 | Fix Total Votes Calculation for Party and MPs in a party | 1. Ensure that AddMP is called unconditionally.  2. Combine conditions logically and handle totalVoters correctly.3. Run the program to check the total vote counts. | The total votes for the party and its MPs should be calculated correctly. | Initially, the total votes for the party and its MPs were incorrect due to fault in combining conditions and improper handling of totalVoters. After the fix, the program correctly calculated the total votes. | Pass | [**Test09.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test09.png) |
| Notes: The output for the total votes of a party and its MPs was incorrect due to improper conditions and handling of totalVoters.  Solution: The issue was resolved by calling AddMP unconditionally and combining conditions logically to ensure that the totalVoters were properly accounted for in the calculations. | | | | | | |
| Test10 | Fix Total Voters in Constituency | 1. Navigate to Choice 2, Sub-choice 1 to check total voters.  2. Check that the total voters are correctly displayed.  3. Update the Constituency class constructor to accept totalVoters and ensure it is added to the dictionary. | The total voters for the constituency should display correctly, not as 0. | Initially, the total voters displayed as 0 due to the Constituency class constructor not accepting totalVoters. After updating the constructor to include totalVoters and adding it to the dictionary, the correct number of total voters was displayed. | Pass | [**Test10.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test10.png) |
| Notes: The total voters displayed as 0 due to missing handling of the totalVoters attribute in the Constituency class.  Solution: The fix involved updating the Constituency class constructor to accept totalVoters and adding it to the dictionary to ensure the correct value was displayed. | | | | | | |
| Test11 | Fix Case Sensitivity for Name Input | 1. Enter a candidate name with a lowercase first letter, e.g., lee instead of Lee.  2. Test the program to verify that the candidate can be found despite case differences.  3. Update the name search by adding .lower() to make the input case-insensitive. | The program should successfully find candidates regardless of case differences in input. | Initially, entering a lowercase name (e.g., lee) resulted in “candidate not found” due to case sensitivity. After adding .lower() to the search logic, the program successfully found candidates regardless of case (e.g., lee or Lee). | Pass | [**Test11.png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test11.png) |
| Notes: The program was case-sensitive when matching candidate names, causing issues when the input name was entered with a lowercase first letter (e.g., lee).  Solution: The fix was adding .lower() to the candidate name search, making the input case-insensitive and ensuring it correctly matched names regardless of case. | | | | | | |
| Test12(a) | Add Gender to Candidate Details Output | 1. Modify the program to include gender when viewing candidate details.2. Run the program and check the output. | The candidate’s gender should be displayed correctly. | The gender was displayed as “unknown” for all candidates | Fail | [**Test12(a).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test12(a).png) |
| Test12(b) | Fix Gender Column Name Mismatch | 1. Correct the column name in the readFile function to match the CSV file (Member gender).2. Run the program again to verify the gender output. | The candidate’s gender should now display correctly based on the data in the CSV file. | After correcting the column name to match the CSV file, the gender of candidates was displayed correctly in the output, resolving the issue. | Pass | [**Test12(b).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test12(b).png) |
| Notes: The gender was displayed as “unknown” for all candidates because the readFile function referenced the column as Member Gender, but the actual column name in the CSV file was Member gender.  Solution: The mismatch was resolved by updating the column reference in the readFile function to match the exact column name in the CSV file. | | | | | | |
| T13a | Display Party Votes Pie Chart | 1. Add functionality to display a pie chart showing party votes.2. Run the program to generate the chart. | The pie chart should display party votes correctly. | Encountered the error NameError: name 'party\_votes' is not defined because the variable party\_votes was not initialized or properly passed into the function generating the pie chart. | Fail | [**Test13(a).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test13(a).png) |
| T13b | Fix Pie Chart Display Issue | 1. Ensure that the party\_votes variable is correctly initialized and passed to the pie chart function.  2. Run the program to generate the pie chart. | The pie chart should display correctly with party vote data. | No errors were encountered, but the pie chart did not display. | Fail | [**Test13(b).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test13(b).png) |
| T13c | Fix Pie Chart Display Issue | 1. Ensure that the pie chart function is called properly in the code.  2. Run the program to generate and display the pie chart. | The pie chart should display correctly with party vote data. | Pie chart displayed successfully. | Pass | [**Test13(c).png**](https://olympus.ntu.ac.uk/N1338382/votingAnalysisProject/blob/main/testingScreenshots/Test13(c).png) |
| Notes: The pie chart was not displaying because the function responsible for displaying the chart was not being called. Once the function call was added, the pie chart displayed as expected. | | | | | | |

The code is well-organized with clear object-oriented principles, using classes to represent and manage data effectively. I find the structure easy to understand and maintain.

I feel confident about the overall readability of the code, especially with my use of descriptive variable and function names. The structure of the MP, Party, and Constituency classes is logically separated, which makes it easy to follow the flow.

I also noticed that some parts of the code, like saveStatistics, could benefit from clearer formatting when saving data to a text file. Right now, it’s readable, but I could use better spacing or headers to make it more user-friendly.

The pie chart was something I added at the last minute to make the project look better and show the party distribution more clearly. Given the limited time I had, I think I did well with it. The pie chart was created successfully using matplotlib and gives a helpful visual of the data.

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