Team 4
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User Enters Number of Seats

Name	User Enters Number of Seats
ID	UC_01
Description	The user inputs the number of seats that need to be filled in this election.
Actors	Election Official, Programmer
Organizational Benefits	Allows the voting algorithm to be able to fill the proper number of seats for the election.
Frequency of Use	Once
Triggers	The system prompts the user to input the number of seats for the election.
Preconditions	● The system has not prompted the user for the number of seats yet ● There is currently no value stored in the system for the number of seats to be filled in the election
Postconditions	● A value greater than 0 is stored in the system for the number of seats to be filled in the election
Main Course	1. The user types the number of seats that should be filled in the election 2. The user hits the ENTER key 3. The system processes the input (see EX1) 4. The input value for the number of seats is validated and stored in the system
Alternate Courses	None
Exceptions	EX1: Invalid User Input 1. The system displays in the interface that an invalid value was entered and that an integer greater than 0 should be entered 2. Return to Step 1 of the Main Course

User Selects Voting Algorithm

Name	User Selects Voting Algorithm
ID	UC_02
Description	The user indicates which voting algorithm that should be used for this election.
Actors	Election Official, Programmer
Organizational Benefits	Allows the system to know which voting algorithm to run so that the election results are tallied in the appropriate manner.
Frequency of Use	Once
Triggers	The system prompts the user to select the voting algorithm that should be used for the election.
Preconditions	● The system has not prompted the user to select the voting algorithm that should be used yet ● There is currently no value stored in the system for the voting algorithm that should be used for the election
Postconditions	● A value corresponding to the plurality algorithm or a value corresponding to the STV algorithm is stored in the system for the voting algorithm that should be used
Main Course	1. The user types the value corresponding to Plurality or the value corresponding to STV to indicate what voting algorithm should be used for the election 2. The user hits the ENTER key 3. The system processes the input (see EX1) 4. The input value for the voting algorithm choice is validated and stored in the system
Alternate Courses	None
Exceptions	EX1: Invalid User Input 1. The system displays in the interface that an invalid value was entered and that the value corresponding to Plurality or the value corresponding to STV should be entered 2. Return to Step 1 of the Main Course

User Enters Ballot Files

Name	User Enters Ballot Files

ID	UC_03
Description	The user inputs the file paths for the ballot CSV files that hold the ballots to be tallied for this election and adds them to the list of files that the system needs to process.
Actors	Election Official, Programmer
Organizational Benefits	Allows the user to indicate which ballot files should be processed by the voting algorithm so that the election results are valid. Also allows for ballots to be distributed across multiple files.
Frequency of Use	Once
Triggers	The system prompts the user to input the ballot CSV files that should be tallied in the election.
Preconditions	● The system has not prompted the user to enter the file paths of ballot CSV files that should be tallied in the election yet ● There are currently no values stored in the system for valid file paths of ballot CSV files that should be tallied in the election
Postconditions	● At least one value for a valid file path of a ballot CSV file that should be tallied in the election is stored in the system ● No invalid file paths are stored in the system as files that should be tallied in the election ● No non CSV files are stored in the system as files that should be tallied in the election
Main Course	1. The user types the names of file paths of ballot CSV files that should be tallied in the election (separated by a single space character) 2. The user hits the ENTER key 3. The system processes the input file names (see EX1) 4. The input values for the file paths of ballot CSV files are validated and added to the list of ballot CSV files that need to be tallied in the election stored in the system
Alternate Courses	None
Exceptions	EX1: Invalid User Input 1. The system displays in the interface that invalid file paths were entered 2. The system displays in the interface which file paths that were entered were invalid 3. Return to Step 1 of the Main Course

User Runs Voting Algorithm

Name	User Runs Voting Algorithm
ID	UC_04
Description	The user tells the system to run the voting algorithm which runs the election, displays the results summary, and generates and saves an audit file for the election.
Actors	Election Official, Programmer
Organizational Benefits	Allows for a fast tallying of the ballots for an election in what would otherwise be a slow and tedious process that could be prone to human error or the accidental introduction of bias.
Frequency of Use	Once per election
Triggers	The user indicates they want to run the voting algorithm via a text command.
Preconditions	None
Postconditions	● Election results summary displayed in the interface to the user ● Audit file for the election generated and saved in the top level of the program ● User notified in the interface of the generation and location of the saved audit file for the election
Main Course	1. The system processes the user input command (see EX1) 2. The system confirms the run text command and begins the running process 3. The system prompts the user for the number of seats to be filled in the election (see UC_01) 4. The system prompts the user to select the voting algorithm to use for the election (see UC_02) 5. The system prompts the user to input the file paths of the ballot CSV files which contain the ballots that must be tallied in the election (see UC_03) 6. The system displays to the user the election parameters it has entered for the election 7. The system prompts the user to confirm the election parameters 8. The system processes the user input (see EX2) 9. The parameters are confirmed and the system runs the indicated voting algorithm with the specified parameters and concurrently begins generating the election audit file 10. When the algorithm finishes running the audit file is saved in the same directory as the program executable 11. The system notifies the user of the generation and location of the saved audit file for the election 12. The system displays the election results summary

Alternate Courses	ALT1: The User Displays the Help Window 1. The user can display the help window at any time during steps 3-5 (see UC_06) 2. If this happens, the system will display the help information in the interface 3. The system will then resume where it left off in the running process
Exceptions	EX1: Invalid User Input 1. The system notifies the user that it does not recognize the text command given 2. The system continues to display whatever was displayed in the interface at the time of the invalid command EX2: User Cancels Election 1. User realizes election parameters are incorrect and does not confirm them 2. The system does not run the election, forgets the election parameters previously set, and restarts back at the initial startup screen

Programmer Runs Test of Voting Algorithm

Name	User Runs Voting Algorithm
ID	UC_05
Description	The user tells the system to run the voting algorithm which runs the election, displays the results summary, and generates and saves an audit file for the election.
Actors	Programmer
Organizational Benefits	Allows for testing to be done on the system and ensure that the system is calibrated properly
Frequency of Use	Once per election
Triggers	The programmer indicates they want to run a voting algorithm test via a text command.
Preconditions	None
Postconditions	● Election results summary displayed in the interface to the user ● Audit file for the election generated and saved in the top level of the program ● User notified in the interface of the generation and location of the saved audit file for the election
Main Course	1. The system processes the programmer input command (see EX1) 2. The system confirms the run text command and begins the running process

	3. The system prompts the programmer for the number of seats to be filled in the election (see UC_01) 4. The system prompts the programmer to select the voting algorithm to use for the election (see UC_02) 5. The system prompts the programmer to input the file paths of the ballot CSV files which contain the ballots that must be tallied in the election (see UC_03) 6. The system asks the programmer if they would like to turn off the shuffle ballots option 7. The programmer indicates their choice via a text command 8. The system processes the programmer input command (see EX2) 9. The system displays to the user the election parameters it has entered for the election 10. The system prompts the user to confirm the election parameters 11. The system processes the user input (see EX3) 12. The parameters are confirmed and the system runs the indicated voting algorithm with the specified parameters and concurrently begins generating the election audit file 13. When the algorithm finishes running the audit file is saved in the same directory as the program executable 14. The system notifies the user of the generation and location of the saved audit file for the election 15. The system displays the election results summary
Alternate Courses	ALT1: The Programmer Displays the Help Window 1. The programmer can display the help window at any time during steps 3-7 (see UC_06) 2. If this happens, the system will display the help information in the interface 3. The system will then resume where it left off in the running process
Exceptions	EX1: Invalid User Input 1. The system notifies the user that it does not recognize the text command given 2. The system continues to display whatever was displayed in the interface at the time of the invalid command EX2: Invalid User Input 1. The system notifies the programmer that it does not recognize the text command given 2. The system resumes again from step 6 of the main course EX3: User Cancels Election 1. User realizes election parameters are incorrect and does not confirm them 2. The system does not run the election, forgets the election parameters previously set, and restarts back at the initial startup screen

User Displays Help Window

Name	User Displays Help Window
ID	UC_06
Description	The user opens up the help window which contains information on how to use and interact with the different elements of the system.
Actors	Election Official, Programmer
Organizational Benefits	Gives the user a guide to how to use the system so that if they forget how to do something help is only a click away.
Frequency of Use	As many times as the user wants prior while the voting algorithm is not running.
Triggers	The user indicates they want to display the help window via a text command.
Preconditions	● The system is has not run the voting algorithm yet
Postconditions	● The help window is displayed in the interface
Main Course	1. The system processes the user input command (see EX1) 2. The system displays the help window information in the interface
Alternate Courses	None
Exceptions	EX1: Invalid User Input 1. The system notifies the user that it does not recognize the text command given 2. The system continues to display whatever was displayed in the interface at the time of the invalid command