

Use Case Document

for

Project Aegis

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Use Case Table

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Name	Use a fair Random Number Generator to Determine Tie Breaker
ID	VS_001
Description	In the event that there's a tie between two or more people, randomly generate a number from 0 to "x" where "x" is the number of people. Each person is randomly assigned a number from 0 to "x" and a fair RNG will randomly choose a winner.
Actors	Election Official
Organization Benefits	Saves time and money by choosing a winner immediately opposed to hosting another election.
Frequency of Use	Every time there is a tie between two or more people.
Triggers	There is a tie between two or more parties and the user selects "Randomly Select Winner".
Preconditions	There is a tie between two or more people.
Postconditions	Someone has been selected as the winner.
Main Course	<ol style="list-style-type: none"> 1. There exists a tie between two or more people 2. The system randomly and consecutively assigns integers starting from 0 to all corresponding candidates 3. System randomly chooses and displays the winner
Alternate Courses	
Exceptions	

Name	Audit File
ID	VS_002
Description	A file that is outputted along with the election results as proof that there was no tampering. The structure of the file is strict and shows all the steps in the progress of the election program.
Actors	Election Official
Organization Benefits	Maintains the integrity of the election results by providing all of the steps taken in the program in order to validate the validity of the result provided by the program.
Frequency of Use	Every use of the program.
Triggers	On completion of election results.
Preconditions	The election results are completed.
Postconditions	An audit file is output that follows the standards and shows the steps.
Main Course	<ol style="list-style-type: none"> 1. The election results have been calculated. (EX 1) 2. The system produces an audit file which is stored into the directory of the program. (EX 2)
Alternate Courses	
Exceptions	<p>EX1: The program failed to calculate the election results.</p> <ol style="list-style-type: none"> 1. The audit file is still available to output. <p>EX2: The PC is out of storage</p> <ol style="list-style-type: none"> 1. An error will show that the PC doesn't have enough storage to save the audit file. 2. Exit program

Name	Run OPL
ID	VS_003
Description	Run the OPL in for the voting system
Actors	Election Official
Organization Benefits	The OPL approach allows for votes to both count towards a desired party as well as a desired candidate. This gives the voter a better representation of their vote in an election and a better representation of elected officials where a vote occurs.
Frequency of Use	Anytime an election has taken place and an elected official requests the results under OPL. Only needs to be run once for results to be delivered.
Triggers	An election official requests the results of an election.
Preconditions	An election official makes a request for results of an election, with ballot information stored in a file. The election official has been prompted for and entered a file name. The file is headed with OPL as the option.
Postconditions	The results are computed and sent to show election results.
Main Course	<ol style="list-style-type: none"> 1. System has processed a valid csv file (EX1) 2. System calculates the results of the election following the OPL system 3. Results are displayed on the screen
Alternate Courses	
Exceptions	EX1: The file is invalid <ol style="list-style-type: none"> 1. The system will inform the user to rerun the program and to input a valid file.

Name	Run IR
ID	VS_004
Description	Run the IR in for the voting system
Actors	Election Official
Organization Benefits	The IR approach
Frequency of Use	Anytime an election has taken place and an elected official requests the results under IR. Needs to be run until elimination round results in winners.
Triggers	An election official requests the results of an election.
Preconditions	<p>An election official makes a request for results of an election, with ballot information stored in a file.</p> <p>The election official has been prompted for and entered a file name.</p> <p>The file is headed with IR as the option.</p>
Postconditions	The results are computed and sent to show election results.
Main Course	<ol style="list-style-type: none"> 1. System has processed a valid csv file (EX1) 2. System calculates the results of the election following the OPL system (AC2) 3. Results are displayed on the screen
Alternate Courses	<p>AC1 is results of elimination, occurring when election results are not completely calculated.</p> <ol style="list-style-type: none"> 1. Display results 2. Prompt for running calculations again for second elimination round, user is brought to MC2
Exceptions	<p>EX1: The file is invalid</p> <ol style="list-style-type: none"> 1. The system will inform the user to rerun the program and to input a valid file.

Name	Group Independent Parties into One
ID	VS_005
Description	A feature in open party listing which groups the independents into a group.
Actors	Election Official
Organization Benefits	Used in Open Party Listing type elections to easily categorize independents.
Frequency of Use	Every time the OPL system is used
Triggers	The OPL system is being ran and there is at least two independents parties
Preconditions	The OPL system is being ran and there is at least two independent parties
Postconditions	All of the independent parties are grouped into one party for the consideration of the program.
Main Course	<ol style="list-style-type: none"> 1. System checks if there are multiple independent parties (AC1) 2. System automatically groups them into one group
Alternate Courses	AC1 There are no independent parties <ol style="list-style-type: none"> 1. System continues program
Exceptions	

Name	Show Election Results
ID	VS_006
Description	Once a user has provided and processed a file containing voter information, results should be displayed in an appropriate fashion. This shows the winners of an election as well as how these results came about in terms of vote distribution.
Actors	Election Officials
Organization Benefits	Displays a detailed overview of the statistics as well as the overall result of the election.
Frequency of Use	Every time the program is ran
Triggers	The program has finished calculating results.
Preconditions	There exists an election and the program is ending.
Postconditions	The results of the elections are output on the display.
Main Course	<ol style="list-style-type: none"> 1. The program finishes running correctly. 2. The program prints the results to the screen.
Alternate Courses	
Exceptions	

Name	Force Tiebreaker Result
ID	VS_007
Description	The user chooses the output of a tie.
Actors	Tester
Organization Benefits	They're able to easily check for each case/outcome and verify that the program is running smoothly instead of leaving it to chance to choose the outcome. This saves them time.
Frequency of Use	Any time the user wants to check the outcome of a tie.
Triggers	There is a tie between two or more people and the flag "--forceTie" to manually choose the winner has been passed in the command line.
Preconditions	There is a tie between two or more people and the flag "--forceTie" has been passed in the command line..
Postconditions	The winner of the tie has been successfully chosen by the user.
Main Course	<ol style="list-style-type: none"> 1. The system notifies the user that there is a tie. 2. System displays the participants of the tie and prompts the user to choose a winner. (AC1) 3. User selects a winner. (EX1)
Alternate Courses	AC1 The flag "--forceTie" to select winner hasn't been passed in the command line <ol style="list-style-type: none"> 1. System randomly picks the winner of the tie.
Exceptions	EX1 User inputs invalid name/number. <ol style="list-style-type: none"> 1. System notifies the user an invalid person was chosen. 2. Return user to MC2

Name	Print Everything
ID	VS_008
Description	Prints out every step taking for debugging purposes. More in depth than audit.
Actors	Testers, Developers
Organization Benefits	Allow testers to see if any part of the election process does not function as intended. This will primarily be logic errors.
Frequency of Use	Anytime a tester wishes to find the source of a logic error.
Triggers	The tester adds "--printAll" to the command line when running the program
Preconditions	The command "--printAll" has been passed in the command line
Postconditions	All steps taken by the program will print out, along with any pertinent data.
Main Course	<ol style="list-style-type: none"> 1. The system verifies that the user wants to print out all data with a Y/N prompt (AC1) 2. The user selects "Y" (AC2) 3. The information is outputted to an extra data file located in the same directory.
Alternate Courses	AC1 The command was improperly passed to the command line <ol style="list-style-type: none"> 1. The system does not print out any extra data AC2 The user selects "N" <ol style="list-style-type: none"> 2. The system does not output any extra data
Exceptions	

Name	Time Taken
ID	VS_09
Description	Displays the amount of time taken from start to end of the program.
Actors	Testers, Developers
Organization Benefits	Allows testers to validate if the program meets the requirement of one hundred thousand ballots in eight minutes.
Frequency of Use	When a tester/developer wishes to see the amount of time taken to run the program.
Triggers	The flag "--timeTaken" is triggered in the command line that enables it when running the program.
Preconditions	Running the program with the flag triggered.
Postconditions	The time taken to run the program is displayed along with other data.
Main Course	<ol style="list-style-type: none"> 1. User enables a flag that shows the time taken. (AC1) 2. Program is run. 3. Time taken is displayed along with results.
Alternate Courses	AC1: the flag was not set <ol style="list-style-type: none"> 1. The program is ran normally
Exceptions	

Name	Media File
ID	VS_010
Description	On a complete run of an election's results, the results should be provided to the media for reporting. From this a media file containing the winner(s) information and relevant ballot count will be provided to the media.
Actors	Election Official
Organization Benefits	As it would be beneficial to provide the public to gain access to the results of an election, providing a media file with relevant information would allow for news of the results to be provided to said public.
Frequency of Use	A media file should be produced and after any election.
Triggers	On completion of election results.
Preconditions	The election results are completed.
Postconditions	A media file is produced with relevant candidate and ballot distribution information.
Main Course	<ol style="list-style-type: none"> 1. User is notified that the election results have been calculated and prompts the user to output the media file. (EX 1) 2. Media file is output into the directory of the program. (EX2)
Alternate Courses	
Exceptions	<p>EX1: The program failed to calculate the election results.</p> <ol style="list-style-type: none"> 1. The media file is outputted with either default or with current information. <p>EX2: The PC is out of storage</p> <ol style="list-style-type: none"> 1. An error will show that the PC doesn't have enough storage to save the audit file. 2. Exit program.