

Use cases

Specify file name

Run voting system for OPL

Run voting system for CPL

Create Audit file for OPL

Create Audit file for CPL

Display voting results

Create voting result text file for OPL

Create voting result text file for CPL

Name	Specify file name
ID	UC_001
Description	A user is able to give a file name, which is a comma delimited text file, and the system can detect if the file exists.
Actors	Any users who use this system are the actors, for example, it could be programmers, testers and election officials.
Organizational Benefits	The system can easily check if the file exists in the current directory, which is helpful that the system does not have to recognize input files by itself.
Frequency of Use	It is used every time if some actors would like to use this system to create audit files. Thus, the frequency could be 100%.
Triggers	Every time a user would like to open this voting system.
Preconditions	The input file exists and does not have any format and number errors. In addition, the whole voting system has been completely programmed and can be put to use.
Postconditions	A valid file name has been given and the voting system is able to find it in the current directory and prepared to open it.
Main Course	<ol style="list-style-type: none"> 1. System prompts the user to give a file name. 2. System check if the file exists. (see EX1)
Alternate Courses	There are no alternate courses in this use case, since what the users should do is just to provide a file name which can be processed by the system, no alternate actions are allowed.
Exceptions	EX1 Users give a file which does not exist. <ol style="list-style-type: none"> 1. Pop up a message "The file does not exist" in the command line.

Name	Run Voting System for OPL
ID	UC_002
Description	The system is able to read the input OPL file given by the users and process all the data in that file.
Actors	The voting system itself
Organizational Benefits	Since it is the main part of this voting system, we think it benefits all the users and it is necessary for the next following steps. For instance, the system can not create an audit file or display the results without running this voting system.
Frequency of Use	It is used under the situation where the users give a valid input file name, then the system will automatically read the file and process it.
Triggers	After users provide a valid file name and press "enter".
Preconditions	The file name which is given by users exists and is correct.
Postconditions	The whole data in the input file is read and processed by the system. Moreover, some data

	has been stored in the local database or some data buffer.
Main Course	<ol style="list-style-type: none"> 1. The user specifies an input file 2. The system reads in the first line and determines that the voting method is OPL (EX1). 3. The system reads in the second, third and fourth line and determines how many seats there are in this election, the number and total ballots and the number of candidates. 4. The system goes through each ballot and determines which votes correlate to which candidates. 5. The system processes all of the votes to determine a winner (AC1). 6. The system displays the results on the user's screen (EX2).
Alternate Courses	AC1: There is a tie between parties. <ol style="list-style-type: none"> 1. System does a coin flip and randomly chooses the candidates involved. 2. Winner is decided if the coin flip values matches a candidate.
Exceptions	EX1: The voting method is CPL <ol style="list-style-type: none"> 1. See Run voting system for CPL. EX2: System displays the results on the user's screen. <ol style="list-style-type: none"> 1. See Display voting results.

Name	Run Voting System for CPL
ID	UC_003
Description	The system reads that the input file is in CPL format and then reads the rest of the file, then processes the data according to the CPL voting method.
Actors	System
Organizational Benefits	The organization will be able to analyze election results for elections that use the Closed-Party-Listing voting method.
Frequency of Use	Used when the input file's first line specifies that the voting method for the data is CPL.
Triggers	When the user specifies the name of the file that has the voting data and when the voting method used is specified as CPL in the file.
Preconditions	The user has specified the input file and it exists.
Postconditions	The data is analyzed and winners are determined.
Main Course	<ol style="list-style-type: none"> 1. The user specifies an input file. 2. The system reads in the first line and determines that the voting method is CPL (EX1). 3. The system goes through each party and candidate to determine which votes correlate to which party. 4. The system processes all of the votes to determine a winner (AC1). 5. The system displays the results on the user's screen (EX2).
Alternate Courses	AC1: There is a tie between parties. <ol style="list-style-type: none"> 1. System does a coin flip and randomly assigns a value to parties involved. 2. Winner is decided if the coin flip value matches the party's value.
Exceptions	EX1: The voting method is OPL.

	<ol style="list-style-type: none"> 1. See Run voting system for OPL. <p>EX2: System displays the results on the user's screen.</p> <ol style="list-style-type: none"> 2. See Display voting results.
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Name	Create Audit file for OPL
ID	UC_004
Description	After running the system for OPL, all the information will be gathered into the audit file by the system.
Actors	System
Organizational Benefits	The winner(s) and information about the election (e.g. type of election, number of seats) can be easily summarized and extracted from the audit file.
Frequency of Use	Whenever the system is run, the audit file will be generated by the system.
Triggers	User types in the command line "auditfile_OPL".
Preconditions	The system finished being run.
Postconditions	An audit file of OPL will be generated.
Main Course	<ol style="list-style-type: none"> 1. System creates an empty txt format file. (See AC1, EX1) 2. System opens the file. 3. System outputs the following into the file. 1st Line: OPL for open party listing 2th Line: Number of Seats 3rd Line: Number of Ballots 4th Line: Number of Candidates 4. System outputs the candidates and their order in their party (one per line) following the 6th line with [] into the file. 5. System outputs the ballots on per line into the file and commas are used to separate the positions. 6. System finishes writing to the file and closes the file.
Alternate Courses	<p>AC1 System outputs the results in an existing file.</p> <ol style="list-style-type: none"> 1. System finds the file exists and opens the file. 2. System empties the file. 3. Return to Main Course 3.
Exceptions	<p>EX1 System fails to create a file.</p> <ol style="list-style-type: none"> 1. Pop up the message "Fail to create files." in the command line.

Name	Create Audit file for CPL
ID	UC_005
Description	After running the system for CPL, all the information will be gathered into the audit file by the system.
Actors	System
Organizational	The winner(s) and information about the election (e.g. type of election, number of seats) can

Benefits	be easily summarized and extracted from the audit file.
Frequency of Use	Whenever the system is run, the audit file will be generated by the system.
Triggers	User types in the command line "auditfile_CPL".
Preconditions	The system finished being run.
Postconditions	An audit file of CPL will be generated.
Main Course	<ol style="list-style-type: none"> 1. System creates an empty txt format file. (See AC1) 2. System opens the file. 3. System outputs the following into the file. 1st Line: CPL for closed party listing 2nd Line: Number of Parties 3d Line: Parties in Order of Ballot Ordering 4th Line: Number of Seats 5th Line: Number of Ballots 6th Line: Number of Candidates 4. System outputs the candidates (one per line) following the 4th line with [] into the file. 5. System outputs the ballots on per line into the file and commas are used to separate the positions. 6. System finishes writing to the file and closes the file.
Alternate Courses	AC1 System outputs the results in an existing file. <ol style="list-style-type: none"> 1. System finds the file exists and opens the file. 2. System empties the file. 3. Return to Main Course 3.
Exceptions	EX1 System fails to create a file. <ol style="list-style-type: none"> 1. Pop up the message "Fail to create files. " in the command line.

Name	Display voting results
ID	UC_006
Description	The system will display the voting results of the election onto the user's screen. Results include the winners, how many votes they obtained, how many votes each party obtained, and the total amount of votes cast.
Actors	System
Organizational Benefits	Provides the organization with clear results of the voting process. Displaying voting results will allow the organization to see who won and how many votes each party/candidate received.
Frequency of Use	This will be used each time the system finishes analyzing the input data about the election.
Triggers	The user runs the voting system and it completes the voting process.
Preconditions	The voting system has run to the end successfully.
Postconditions	The results of the election are displayed on the user's screen.
Main Course	<ol style="list-style-type: none"> 1. The voting system runs to completion. 2. Data is taken from the voting process and is displayed on the user's screen (AC1/AC2). 3. User closes the program (EX1/EX2)

Alternate Courses	AC1: Program ran an OPL voting process. <ol style="list-style-type: none"> The displayed data shows the candidates that won first, and then other statistics such as party vote count and total votes. AC2: Program ran a CPL voting process. <ol style="list-style-type: none"> The displayed data shows the parties and the candidates from the party that won first, and then other statistics such as total votes.
Exceptions	EX1: User wants to create an audit file. <ol style="list-style-type: none"> See Create audit file for OPL/CPL EX2: User wants to create a text file of the displayed results. <ol style="list-style-type: none"> See Create voting result text file for OPL/CPL

Name	Create voting result text file for OPL
ID	UC_007
Description	Will create a text file that comprise the result of voting for OPL.
Actors	People Who want to create a result text file for OPL
Organizational Benefits	Help people to see the OPL voting result anytime from the text file created after clear results of the voting process generated.
Frequency of Use	Everytime users want to create a text file for the voting result from OPL
Triggers	A command line
Preconditions	OPL voting result needs to be clearly calculated, and displayed on the screen.
Postconditions	A corresponding text file has been created.
Main Course	<ol style="list-style-type: none"> A command line of creating OPL results entered, thus the file was created in a determinate location. (Ex1&Ex2) Terminate the program
Alternate Courses	None
Exceptions	Ex1: Command not correct: <ol style="list-style-type: none"> Error shows up: Enter again Ex2: Out of memory: <ol style="list-style-type: none"> Error shows up: out of memory

Name	Create voting result text file for CPL
ID	UC_008
Description	Will create a text file that comprise the result of voting for CPL.
Actors	People Who want to create a result text file for CPL
Organizational Benefits	Help people to see the CPL voting result anytime from the text file created after clear results of the voting process generated.

Frequency of Use	Everytime users want to create a text file for the voting result from OPL
Triggers	A command line
Preconditions	CPL voting results need to be clearly calculated, and displayed on the screen.
Postconditions	A corresponding text file has been created.
Main Course	<ol style="list-style-type: none"> 1. A command line of creating CPL results entered, thus the file was created in a determinate location. (Ex1&Ex2) 2. Terminate the program
Alternate Courses	None
Exceptions	<p>Ex1: Command not correct:</p> <ol style="list-style-type: none"> 1. Error shows up: Enter again <p>Ex2: Out of memory:</p> <ol style="list-style-type: none"> 1. Error shows up: out of memory