

PBIs List:

1. Bring in multiple files into the election system - Effort: S 1 hours
2. Process multiple files into the IRV election system - Effort: S 2 hours
3. Process multiple files into the CPL election system - Effort: S 2 hours
4. A table that shows each round of the IRV Effort: M 4 hours
5. View what votes are added and what votes are decreased Effort S: 2 hours
6. Process multiple files into the PO election system - Effort: S 2 hours
7. Run the entire PO election - Effort: S: 2 hours
8. Fix potential bugs
- 9. PO election ballots are brought in via a .csv file**
- 10. A GUI to select files**
11. Candidate votes are accounted for
12. IRV ballots to have at least half the candidates ranked for it to be valid
13. A new file containing all of the invalidated votes
- 14. The PO election determines a single winner when there are no ties**
15. An unbiased system to break ties
16. The PO election winner and stats displayed on the screen

User Stories:

ID: 001
As an election official, I want to be able to bring in multiple files, so that I can bring in different files from different locations.
Acceptance Criteria: <ul style="list-style-type: none">- The user is able to provide multiple voting files for one election by a GUI- The user is able to provide multiple voting files for one election by a command line
Definition of Done: <ul style="list-style-type: none">- File names match what the user selected as files- Multiple files are able to be selected- Files selected exist in current directory- Code Passes all tests (unit testing, integration testing)- Documentation is complete
Effort: Small - 1 hour
PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 002
As an election official, I want the IRV files to be processed, so that the IRV election can be run.
Acceptance Criteria: <ul style="list-style-type: none">- The files provided from the election official are able to be processed with no error- The data in each file is stored and assigned properly- The ballots for each file is given to its respective candidate- The ballot count in each file is added to an overall ballot count- Display error if a file is unable to be processed- The IRV election can run properly with the processed files
Definition of Done: <ul style="list-style-type: none">- Files can be opened properly with error checking- Each file is correctly denoted as IRV- Ballots from each file are accounted for each candidate and the total number of ballots is increased with each file- Data (Ballot and candidate objects) is populated. Correctly matching the data in the file read in (this will be determined through testing)- The accumulation of all ballots from each file equals the correct total number of ballots- Errors are thrown when file format is incorrect or file can't open- Code Passes all tests (unit testing, integration testing)- Documentation is complete
Effort: Small - 2 hours

PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 003

As an election official, I want the CPL files to be processed, so that the CPL election can be run.

Acceptance Criteria:

- The files provided from the election official are able to be processed with no error
- The data in each file is stored and assigned properly
- The ballots for each file is given to its respective party
- The ballot count in each file is added to an overall ballot count
- Display error if a file is unable to be processed
- The CPL election can run properly with the processed files

Definition of Done:

- Files can be opened properly with error checking
- Each file is correctly denoted as CPL
- Ballots from each file are accounted for each candidate and the total number of ballots is increased with each file
- Data (Ballot, Candidate, and Party objects) is populated. Correctly matching the data in the file read in (this will be determined through testing)
- The accumulation of all ballots from each file equals the correct total number of ballots
- Errors are thrown when file format is incorrect or file can't open
- Code Passes all tests (unit testing, integration testing)
- Documentation is complete

Effort: Small - 2 hours

PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 004

As an election official, I want to see a table that shows each round of the IRV, so that the election results are understood.

Acceptance Criteria:

- A table is displayed with the results of each round of the IRV election
- The table is easy to understand
- The table is displayed to the terminal

Definition of Done:

- Table is properly formatted
- Table correctly displays each round of IRV and the correct stats for each round
- Table is displayed at the end of the election
- Table displays the changes in votes (additions and subtractions) of each candidate in

each round <ul style="list-style-type: none"> - Code Passes all tests (unit testing, integration testing) - Documentation is complete
Effort: Medium - 4 hours
PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 005
As an election official, I want to view what votes are added and what votes are subtracted for the IRV election, so that I can see the election process.
Acceptance Criteria: <ul style="list-style-type: none"> - Vote counts are properly tracked during the election - Vote counts calculated for each candidate for each round - A candidate's total votes are adjusted accordingly - Vote changes can be viewed by the election official
Definition of Done: <ul style="list-style-type: none"> - The IRV table at the end of the election displays the correct ballots before and after changes, and the correct number of ballots changed. - Showing votes being added or decreased in the election - Code Passes all tests (unit testing, integration testing)
Effort: Medium - 3 hours
PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 006
As an election official, I want the files to be processed, so that the PO election can be run.
Acceptance Criteria: <ul style="list-style-type: none"> - The files provided from the election official are able to be processed with no error - The data in each file is stored and assigned properly - The ballots for each file is given to its respective party - The ballot count in each file is added to an overall ballot count - Display error if a file is unable to be processed - The PO election can run properly with the processed files
Definition of Done: <ul style="list-style-type: none"> - Files can be opened properly with error checking - Each file is correctly denoted as PO - Ballots from each file are accounted for each candidate and the total number of ballots

<p>is increased with each file</p> <ul style="list-style-type: none"> - Data (Ballot, Candidateobjects) is populated. Correctly matching the data in the file read in (this will be determined through testing) - The accumulation of all ballots from each file equals the correct total number of ballots - Errors are thrown when file format is incorrect or file can't open - Code Passes all tests (unit testing, integration testing) - Documentation is complete is increased with each file
Effort: Small - 2 hours
PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 007
As an election official, I want the PO election to run correctly, so that a winner can be decided
<p>Acceptance Criteria:</p> <ul style="list-style-type: none"> - Show results of the PO election - A winner is chosen if there is a tie by a fair and random tie breaker - A winner is chosen by popularity vote - Display errors if system can't processed
<p>Definition of Done:</p> <ul style="list-style-type: none"> - Files can be opened properly with error checking - File(s) of correct format are read in correctly - Calling PO election algorithm - PO election results are calculated correctly - PO election determines a winner by popularity vote if there is no tie - PO election determines a winner by fair coin toss if there is a tie - Errors are thrown when file format is incorrect or a non election files is selected - Code Passes all tests (unit testing, integration testing)
Effort: Small - 2 hours
PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 008
As an election official, I want candidates' votes to be accounted for so that the integrity of the election holds.
<p>Acceptance Criteria:</p> <ul style="list-style-type: none"> - At least works in a 2 or more candidate election - Votes received match votes listed on ballots

Definition of Done: <ul style="list-style-type: none"> - Candidates are assigned their ballots correctly - All testing is complete - Documentation is complete
Effort: Small
PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 009
As an election official, I want IRV ballots to have at least half the candidates ranked for it to be valid, so that the election maintains its validity.
Acceptance Criteria: <ul style="list-style-type: none"> - The ballots with less than half the candidates ranked are invalid - The ballots with at least half the candidates ranked are valid, where half the candidates are at least the .5 point or above - The ballots will not be invalidated during the collection process - The invalid ballots will be removed from the election before the election progresses - Invalid ballots will be stored in a file for audit purposes
Definition of Done: <ul style="list-style-type: none"> - Each ballot is checked for number of rankings, if this number is less than half of the number of candidates, it is marked invalid - Invalid ballots are written to a file - Invalidated ballot file is created before any invalid ballots are found - Invalidation of ballots occurs during the processing of the files - Invalid ballots are removed from the election ballots, total ballots is decreased by 1, and the ballot is removed from the candidate or party - Documentation is complete - Code Passes all tests (unit testing, integration testing)
Effort: Small - 2 hours
PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 010
As an election official, I want to see a new file containing all of the invalidated votes after an IRV election completes, so that even unused ballots are accounted for.
Acceptance Criteria: <ul style="list-style-type: none"> - A file is created for the invalid ballots - All invalidated ballots through the election are found in the file - Invalid ballots are properly labeled to ensure accountability

Definition of Done:

- A file is created in the correct directory and properly named
- When processing a file, each invalid ballot is stored in the file
- Invalidated ballots found during processing match the ballots listed in the file
- The invalidation file is for IRV elections only
- Documentation is complete
- Code Passes all tests (unit testing, integration testing)

Effort: Small

PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 011

As an election official, I want the PO election to determine a single winner when there are no ties, so I can announce a winner.

Acceptance Criteria:

- There is no tie(s)
- There is only one winner at the end of the election
- The winner is determined by the rules of popularity vote

Definition of Done:

- A single winner is selected
- The PO election rules (popularity vote) are adhered to when determining a winner
- The winner will have the highest percentage of votes
- The election does not calculate any other values after the winner has been determined
- There is no tie(s) in the election
- Documentation is complete
- Code Passes all tests (unit testing, integration testing)

Effort: Medium - 4 hours

PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.

ID: 012

As an election official, I want an unbiased system to break ties for a PO election, so that election integrity is maintained.

Acceptance Criteria:

- There is a tie or ties
- The winner should be chosen using an unbiased and fair strategy

<ul style="list-style-type: none"> - The winner chosen for multiple runs of the same election ballots show the election integrity is maintained
<p>Definition of Done:</p> <ul style="list-style-type: none"> - A single winner is selected at the end of the election - The unbiased mechanism will be the fair coin toss and is implemented correctly to ensure fairness - A tie(s) occurred that triggered the fair coin toss - The winner will have the highest percentage of votes - Once a winner is determined, the election does not calculate any other value or attempt to select another winner - Documentation is complete - Code Passes all tests (unit testing, integration testing)
<p>Effort: Medium - 3 hours</p>
<p>PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.</p>

<p>ID: 013</p>
<p>As an election official, I want to see the PO election winner and stats displayed on the screen at the end of the election, so that I can see the results.</p>
<p>Acceptance Criteria:</p> <ul style="list-style-type: none"> - The PO stats are displayed on the screen at the end of the election with the correct information - The percentage of votes each candidate received is shown so constituents who voted know how well their candidate did - The PO winner is clearly shown as the winner - The format of the stats are easy to understand
<p>Definition of Done:</p> <ul style="list-style-type: none"> - The correct election winner is displayed on the screen and is clearly labeled as the winner - The correct PO stats types are used - The PO stats display the correct information - The election has fully finished - The percentage of votes for each candidate is displayed - The format is simple and easy to read and understand - Documentation is complete - Code Passes all tests (unit testing, integration testing)
<p>Effort: Small - 1 hour</p>
<p>PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.</p>

ID: 014

As an election official, I want to use a pop-up (GUI) window to select files for processing, so that I can choose the right file(s) for each election.

Acceptance Criteria:

- Election officials are able to select files by clicking on them
- Election officials are able to select multiple files for processing
- Files in the directory are listed out
- Files the election official selects are the files that are used in the election
- From a directory, where the window appears at the start of the program and allows me to type in a file name or search for file(s) on disk using my mouse or arrow keys

Definition of Done:

- The GUI for selecting files appears to the user when the program starts
- Lists the correct files
- User can select multiple files
- Files selected are the files used in the election
- GUI displays to user properly
- Documentation is complete
- Code Passes all tests (unit testing, integration testing)

Effort: Medium - 4 hours

PBI Author(s): Sidney N., Chiemeka N., Theodore C., Phuong L.