Task List (numbers are the overall section/idea, letters are the individual tasks of each section):

1. Bringing in multiple files for the elections DONE
   a. Reads in files successfully   DONE
      i. `Unit tests for if it reads in all the headers correctly
   b. If a file doesn't exist, handles this case   DONE
      i. Unit tests for handling a nonexistent file
   c. Processes ballots and counts votes   DONE
      i. Unit testing for right counts of votes
   d. Integration/System testing DONE
2. Running IR Election
   a. Processes multiple headers
      i. Unit testing for correctly reading info from files
   b. Get rid of any invalid ballots before count DONE
      i. Unit testing for removing invalid ballots
   c. Counts the votes from all the files after being read (no ties)
      i. Unit testing for correctly counting/redistributing votes and finding winner (no ties)
   d. Integration/System testing
3. Running CPL Election
   a. Processes multiple headers
      i. Unit testing for correctly reading info from files
   b. Get rid of any invalid ballots before count
      i. Unit testing for removing invalid ballots
   c. Counts the votes from all the files after being read (no ties)
      i. Unit testing for correctly counting votes and distributing seats (no ties)
   d. Check for more seats than candidates
      i. Unit testing for correctly identifying this situation
   e. Correctly distribute seats to second place party
      i. Unit testing for identifying second place party and giving them a seat
   f. Integration/System testing
4. Run PO Election
   a. Bring in multiple files for PO
      i. Unit testing for correctly reading info from files
   b. Count and determine a winner for PO (no ties)
      i. Unit testing for finding a winner (no ties)
   c. Integration/System testing
5. Tie breakers in elections
   a. IR if two or more candidates get chosen as winner
      i. Unit testing for coin-toss winner system

b. CPL if there isn't an even distribution of seats
    i. Unit testing for coin tossing who gets the extra seat (making sure it's random)
c. Integration/System testing

6. Creating the Audit File
    a. Audit adds every step of an election as it runs and updates counts correctly <mark style="background:#00FF00">DONE</mark>
        i. Unit testing for writing to file for IRV <mark style="background:#00FF00">DONE</mark>
        ii. Unit testing for writing to file for CPL <mark style="background:#00FF00">DONE</mark>
        iii. Unit testing for writing to file for PO
    b. Header of the file correctly names the election, if multiple, adds an indicator that it's a different election <mark style="background:#00FF00">DONE</mark>
        i. Unit testing for creation of audit header for IRV <mark style="background:#00FF00">DONE</mark>
        ii. Unit testing for creation of audit header for CPL <mark style="background:#00FF00">DONE</mark>
        iii. Unit testing for creation of audit header for PO
    c. Integration/System testing <mark style="background:#00FF00">DONE</mark>

Sprint Backlog

<mark style="background:#FF0000">On Backlog</mark>

<mark style="background:#FFFF00">In Progress</mark>

<mark style="background:#00FF00">Completed</mark>

<mark style="background:#FFFF00">PBI #1</mark>
User: As the election official, I want a table to be displayed after an IRV election that shows each round of the IRV election so that it can clearly be seen how all the votes were distributed.
Acceptance Criteria: ● An IRV election is successfully run and a winner is found ● A table displayed at the end that shows how all the votes were distributed throughout the election.
Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.
Effort: Hard
PBI Authors: team 3 (Naren)

PBI #2

User: As the election official, I want a closed party list election to check and handle when there are more seats available than candidates in an election, so that there is a way to account for the extra seats and they don't get lost

Acceptance Criteria:
- A CPL election is successfully ran
- If more seats that candidates, gives a seat to second place party candidate

Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.

Effort: medium

PBI Authors: team 3

PBI #3

User: As an election official, I want the election system to account for any ties between candidates so that the results are fair between candidates.

Acceptance Criteria:
- If there is a tie between any candidates, one candidate should be randomly selected as the winner.
- Use a coin-toss simulation to select a winner
- Break ties between more than just 2 candidates

Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.

Effort: medium

PBI Authors: team 3

PBI #4

User: As an election official, I want an understandable audit file that walks through the process of an election as it occurs so that it's easy to see how votes were distributed.

Acceptance Criteria:
- Everytime a ballot is counted, the votes are documented in the audit file

● A file is created with all the election details
Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.
Effort: small
PBI Authors: team 3

PBI #5
User: As the election official, I want an audit file with a specific name that corresponds to the election type so that it is easy to organize and determine what audit file corresponds to which election
Acceptance Criteria: ● Election is ran successfully and an audit file is created with the date and type of election ● If multiple same type of elections in a day, indicated by 1, 2, …. for each new election ● All info is documented in the audit file
Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.a
Effort: small
PBI Authors: team 3

PBI #6
User: As the election official, I want the system to be able to handle multiple files so that I don't need to do any additional work to convert all ballots to one file.
Acceptance Criteria: ● Program takes more than one ballot and counts votes from all files
Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.
Effort: small
PBI Authors: team 3

PBI #7

User: As the election official, I want to process the headers of Instant Runoff ballots so that I can handle having multiple ballots.

Acceptance Criteria:
- All files with ballots are made available.
- The header of the IRV files are looked at to collect information

Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.

Effort: small

PBI Authors: team 3

PBI #8

User: As the election official, I want to process the headers of Closed Party List ballots so that I can handle having multiple ballots.

Acceptance Criteria:
- All files with ballots are made available.
- The header of the CPL files are looked at to collect information

Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.

Effort: small

PBI Authors: team 3

PBI #9

User: As the election official, I want to identify invalid ballots so that there aren't any errors in calculations for elections and winners

Acceptance Criteria:
- An election has started and files have been input to the election
- If there is an invalid ballot, system deletes it and continues on with other calculations

Definition of Done:
Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.

Effort: medium
PBI Authors: team 3

PBI #10
User: As the election official, I want to calculate the results of an election using popularity only, so that a winner through popular vote can be found.
Acceptance Criteria: ● System correctly finds a winner in popularity systems ● System calculates percent of votes that winner has
Definition of Done: Election system passes tests for various elections, regardless of the number of files used and whether or not there are any ties. All required files regarding the election and its results are also created.
Effort: medium
PBI Authors: team 3