CSCI 5801
P2 - Product Backlog (updated 4/10/20)

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PBI 1: Fix droop and plurality algorithms

(1.Shana wants the droop and plurality algorithms as described in project #1.)

As a product owner,
I want the Voting System to be bug free,
So that I can run elections fairly.

Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.

Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team)

- All election functions work and are tested

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - I think this is Large. I know there is a lot of work, but I think that we can get it done with one or two people working on it in about two days. I think our issue before was that too many people were working on the same files and we were under a high time constraint.>
<Hailin - I think 2 days are extremely optimistic. Debugging and testing will take a lot longer time than putting down codes. Plus most of us are not going to be able to put in 10+hr days>

(1.Shana wants the droop and plurality algorithms as described in project #1.)

1-1: Fix Audit Record

As an election official, I want to be able to see a record of all the actions while running the election, So I can recreate and audit the election results. Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.
Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team) ● Logger is implemented and tested
Effort: Small, Medium, Large, Extra Large (estimate of effort and time) <Bryan - I think this is medium. I don't understand the difference between a singleton class and the other classes we are using. Otherwise I would mark this as small because most of the code is there, it just needs to be put into the proper class. Other items probably need to be updated.> <Josh - I think this might be larger because we've never implemented it before so we haven't tested it yet or know if it'll break anything else.> <Colin - I agree with medium. Even though we haven't implemented it before there a plenty of tutorials available on how to do it that we could reference> Hailin - Medium

(Source: 1.Shana wants the droop and plurality algorithms as described in project #1.)

1-2: Fix droop record

As a product owner,
I want the Voting System's STV election to be able to record when a candidate receives the first ballot,
So that I can break ties when I run an STV election.

Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.

Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team)

- Candidate first ballot number is implemented and tested

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - I think this is small. This is the get one method for STV election working.>
<Hailin - Coding part is not as simple as just updating a method. There is a bit of logic to where and how to implement a global counter. Also testing will require a lot of time. I think it is a medium.>
<Colin - It depends on what we do in the next PBI, after that code is rewritten it might be easier to add this feature>

(Source: 1.Shana wants the droop and plurality algorithms as described in project #1.)

1-3: Fix droop algorithm

As an election official, I want the Voting System's STV election algorithm to work without major bugs So that I can run an STV election and get correct results. Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.
Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team) ● Voting System STV election functionality passes unit tests ● STV election passes system integration tests
Effort: Small, Medium, Large, Extra Large (estimate of effort and time) <Bryan - I think this is medium. However, this is dependent on getting the entire class completed which is not done. > <Hailin - This is a class with many methods. Debugging and testing will take a long time. Large is appropriate, if not Extra Large> <Colin - I think this is large, I think we need to start over on the STV election, I think if we make some significant changes to some of the data structures we are using we could simplify the STV election implementation> Colin: What is your idea? -Hailin

(Source: 1.Shana wants the droop and plurality algorithms as described in project #1.)

1-4: Fix result display

As a product owner, I want voting system's result display function to show results accurately So that I can view election results. Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.
Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team) ● Results display function is tested
Effort: Small, Medium, Large, Extra Large (estimate of effort and time) <Bryan - I agree that this is small. The code is written so we just need to test that the displays

are correct.>

PBI 2: Graphical user interface for user input

All user input should have a graphical user interface. (Josh)

As an election official, I want to have a graphical user interface for user input, So I know exactly where and how to select the type of election, input the number of seats, and specify ballot file(s).
Acceptance Criteria: ● The user is presented with a GUI for inputting requirements to run an election ● Accepts plurality and STV elections ● Accepts any positive integer of seats ● Accepts any valid ballot files specified ● Works on CSELabs machines Definition of Done: ● Passes all regression tests ● Passes testing per acceptance criteria items ● Approved by product owner ● Able to show feature in demo
Effort: Small, Medium, Large, Extra Large (estimate of effort and time) <Bryan - I agree that this is large. I know that Colin has done some work, but I am not sure how much would be needed to get this started.> <Colin - I agree, this is large. I have kind of a template that we could try to fit our code into, but it might be a lot of debug work to get it going, especially trying to get a makefile built up so it builds on CSE labs machines>

PBI 3: Graphical User interface for selecting files from a directory

Users should be able to search for files on the disk and be able to select files from a directory structure. A graphical user interface is needed that is easy to use. (Josh)

As a election official,
I want to have a graphical user interface to search for files on the disk and select files from a directory structure,
So I can find and load ballot files into the system without knowing how to write file paths or use the command line.

Acceptance Criteria:

- When inputting ballot files, the user is presented with a GUI to select the file
- Accepts multiple ballot files
- Works on CSELabs machines

Definition of Done:

- Passes all regression tests
- Passes testing per acceptance criteria items
- Approved by product owner
- Able to show feature in demo

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - I think this is part of the item above. Large, but same as above. If we can get the one above we should be able to get this one.>
<Josh - Large or medium just to implement searching for files? Unsure if there are prebuilt things we can use to search for files, maybe requires some research?>
<Colin - either large or medium - There could be some tutorials available on how to do this, as I am sure selecting a file is a fairly common operateration.>

3-1: Select files from other directories

As a election official,
I want to be able to search for files on the disk and select files from a directory structure,
So I can use ballot files not already in the src directory.

Acceptance Criteria:

- Accepts ballot files not in src directory
- Accepts multiple ballot files
- Works on CSELabs machines

Definition of Done:

- Passes all regression tests
- Passes testing per acceptance criteria items
- Approved by product owner
- Able to show feature in demo

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

PBI 4: Deal with invalid ballots

The election officials have been told by their higher ups that when using droop, the ballots need to have at least half of the candidates ranked for the ballot to be valid. The ballots will no longer be invalidated at the point of collection but will need to be done when the election is run with the software system. The system must be able to account for all ballots that have been invalidated. A report should be run to disk that stores all of the ballots that are invalidated

4-1: Add ability to find invalid ballots

As an election official, I want STV ballots to be validated at election run time by the software, So that ballots need to have at least half of the candidates ranked for the ballot to be valid. Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.
Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team) ● Ballots with less than half of the candidates ranked for the ballot are put in invalid ballot list ● Function is implemented and tested
Effort: Small, Medium, Large, Extra Large (estimate of effort and time) <Bryan - I think this is somewhere between small and medium. I think this would be a change to the ballot file processor and we could convert our logger object into the invalidator recorder.>

4-2: Save invalid ballots to a file

As an election official,
I want invalidated STV ballots to be stored on the disk,
So that all invalidated ballots can be accounted for.

Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.

Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team)

- Invalidated ballots are stored in a file on disc
- Function is implemented and tested

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - I think this is somewhere between small and medium. I think this would be a change to the ballot file processor and we could convert our logger object into the invalidator recorder.>

PBI 5: Graphical user interface to name invalidated ballot file and save

The election officials should be able to name the invalidated file whatever they like and store it wherever they like. They would like to have a graphical user interface to name the file and save it

5-1: Give the system a file name to use to store invalid ballots

As an election official,
I want to be able to name the invalidated file and specify location to store it,
So that I can find the invalidated file.

Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.

Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team)

- Add an option to user interface to name and store invalidated ballot file
- Function is implemented and tested

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - This is a medium. I can see how to pass the file name through the voting_info to file processor to the invalidator logger, but not sure how to add the file in other directories.>

5-2: Use graphical interface to specify invalidated ballot file names

As an election official,
I want to have a graphical user interface to specify invalidated ballot file name and path,
So that I can specify invalidated ballot filename and path with ease.

Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.

Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team)

- Add graphical user interface option for specifying name and path of invalidated ballot file
- Function is implemented and tested

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - I think anything with a graphical user interface is medium to large.>

PBI 6: Create a short election report and print

6-1: Save short election report to a file

As an election official, I want a short report with the date, type of election, candidates involved, number of seats, and winners of the election so that the election certification officials can view the results.
Acceptance and Done Criteria: ● A file is created after the election has been run which has the date, type of election, candidates involved, the number of seats, and the winners of the election.
Effort: Small, Medium, Large, Extra Large (estimate of effort and time) <Bryan - We can discuss, but I didn't feel like this needed to be split up. To me it sounds like the summary that we print to the screen at the end of the election run just print the screen to a file. I marked medium because I am sure sure if there are other concerns I am missing.> <Josh - This seems really short to me - just redirecting the results display to and ostream object instead of std::out (or we could just have results display take an ostream object and pass it std::out when we want it to print to screen). The part I'm not sure about is actually physically(?) printing the file - can we just use any system application to print a .txt file it creates or we actually have to set up working with a printer?>

6-2: Print the short election report

As an election official,
I want the short election report to be printed,
So that the election certification officials can view the results.

Acceptance and Done Criteria:

- A file is created after the election has been run which has the date, type of election, candidates involved, the number of seats, and the winners of the election.
- The file can be printed from the voting system.

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - unsure how to print.>
<Josh - This seems really short to me - just redirecting the results display to and ostream object instead of std::out (or we could just have results display take an ostream object and pass it std::out when we want it to print to screen). The part I'm not sure about is actually physically(?) printing the file - can we just use any system application to print a .txt file it creates or we actually have to set up working with a printer?>

PBI 7: Graphical system to cast ballots

7-1: Demo of GUI system to cast ballots

As an election official, I want a graphical user interface to cast a ballot, So that votes can be sent to the voting system directly without a ballot file. Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.
Acceptance Criteria: ● The user is presented with a GUI for casting a ballot ● Ballot is sent to voting system to be processed Definition of Done: ● Passes all regression tests ● Able to show feature in demo
Effort: Small, Medium, Large, Extra Large (estimate of effort and time) <Bryan - I agree that this is large. We need to update the ballot processor to have more items for error checking / handling and we need to add user displays and interfaces.>

7-2: Remote casting of ballots

As an election official,
I want the Voting System to work as a backend to the Vote casting GUI,
So that ballots can be cast on remote machines and counted on a central server.

Note: We are interested in functionality and not the individual tasks for the PBI. Keep this in mind.

Acceptance and Done Criteria (conditions that have to be fulfilled to ensure the story is complete; conditions that hold for review ready by the team)
Acceptance Criteria:

- The voting system can add ballots in real time
- The voting system can be forced to stop accepting ballots
- An election can be run once the system is no longer accepting ballots

Definition of Done:

- Passes all regression tests
- Able to show feature in demo

Effort: Small, Medium, Large, Extra Large (estimate of effort and time)

<Bryan - I agree that this is large. We need updated ballot processor, error handling, user GUI and methods to tell the system when we are done collecting ballots.>

Notes

1. Shana wants the droop and plurality algorithms as described in project #1. - Priority1
2. All user input should have a graphical user interface. (Josh)
3. Users should be able to search for files on the disk and be able to select files from a directory structure. A graphical user interface is needed that is easy to use. (Josh)
4. The election officials have been told by their higher ups that when using droop, the ballots need to have at least half of the candidates ranked for the ballot to be valid. The ballots will no longer be invalidated at the point of collection but will need to be done when the election is run with the software system. The system must be able to account for all ballots that have been invalidated. A report should be run to disk that stores all of the ballots that are invalidated. (Hailin) -Priority 2: 2-1 Priority 3: 2-2
5. The election officials should be able to name the invalidated file whatever they like and store it wherever they like. They would like to have a graphical user interface to name the file and save it. (Hailin)
6. The audit file is stored in case of an election challenge and was part of project 1. Now the election officials want in addition to the audit report, a short report that can be printed and given to the election certification officials. The report should have the date, type of election (i.e. droop or plurality), the candidates, the number of seats, and the winners of the election. This means if there were “winners” taken from the “losers” list that did not reach droop or were determined by a coin toss, that they are on the winners list that is given to the officials. Only the pertinent information is on this report. You do not provide the losers list. (Bryan) -Priority 4: 3
7. The election officials would like to have the ballots input on the screen directly into the program. They would like to be able to do this for one machine originally and eventually have the voting machines send the information directly to the system in real time. They want a graphical user interface that looks nice and is easy to use. They want a prototype of this type of system based on our own system. You would be creating the front end and running the election by inputting ballots on a single machine that is currently running our software. You need a way stop the election to run the results (Colin)

Independent
Negotiable
Valuable
Estimable
Small
Testable