

Assignment 2

CSCI235

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Introduction:

This document describes my code on the political simulator for Assignment 2 of CSCI235, how the classes are set up, how the election works and the issues I use. Plus more :)

Issues:

Each of the five issues are identified using three different attributes in order to differentiate them.

Issue code: A 4 digit code starting at C100 and going up by increments of ten so that each issue has a unique and identifiable code.

Issue Type: The issue type is of the type Issues (Issues is a list of pre-defined issues that is initialised on startup) a unique value only defined to one issue. The Issues list is:

- Economy Falling
- Education Reform
- Unemployment
- Deforestation
- Medicare

Each one of these are allocated to one issue in order to give another defining value to the issue.

Description: This is pretty straight forward. The description is a description of the Issue and what will happen if the issue isn't addressed by the new elected government.

A code snippet of the creation of UNEMPLOYMENT_RISE in the code.

```
/*      Code used
//Issue Object
Issue Unemployment    (100, UNEMPLOYMENT_RISE,  "Unemployment is on the rise in  NSW. We need to
get people into jobs before this affects the economy.");

//Constructor used
Issue::Issue(int c, Issues t, string s){
    this-> IssueCode = c;
    this-> type = t;
    this-> description = s;
}
*/
```

```
-----
|      Issues Information      |
-----
| Issue Code:   110           |
-----
Issue Description:
More big companies are destorying
anciet australian land that we
cannot fix later on. This needs
to be addressed.
```

Parties and Stances:

Report: 3 parties, stance ranges

A Party is made up of many different attributes collected together we have

- Party Name (The name of the party)
- Leader (The leader of the party)
- Local Candidates (A list of all candidates in the party)
- Standard Deviation (The deviation of the stance which is generated)
- Stances (A list of all the parties stances)
- Management (The management team of the party)
- Votes (The total votes the party currently has)

Here are each of the attributes talked about in more detail

Party Name:

This is saved as a string and is hard coded into the party generation code. There is only 'Red Party', 'Blue Party', 'Green Party' each with different values.

Leader:

Leader is part of the class Leader (Which is inherited from Person). The class is very similar to the Candidates class the only difference being that Leader doesn't have a value for total votes nor the methods related to votes. This is because votes don't go towards a leader they go towards a party. Leader has:

- Character: A characteristic that helps them in certain events that occur
- Popularity: How popular a candidate is which goes up during certain event outcomes

Local Candidates:

Local Candidates is a vector (A list) of all the candidates that are part of that particular party. This is because each electorate will have one candidate from each party. This list is to keep track of all the candidates the party currently has (As this list will change depending on how many electorates are in this simulation) Candidates have all the same values as Leader except they have a value for Votes, so that we can keep track of all the votes they receive within an electorate.

Standard Deviation:

The standard deviation is a randomly generated integer that is used to create a random stance on each Issue. This is used to add some randomness to the code so that each party doesn't feel the same way everytime the code is run. Each stance starts in the middle of the graph (5,5) and will pick a stance within the deviation. For example,

If a party has a SD of 3. Then the coordinates can lie between (2 \longleftrightarrow 8, 2 \longleftrightarrow 8)

Stances:

A stance is made up of a few values we have:

- Approach: Which is a float that makes up one part of the coordinates
- Significance: Which is a float that makes up the other part of the coordinates
- Radius: Used to calculate the size of the electorate as a circle (To visualise it)
- RelatedIssue: The related issue that the stance is on.

Management Team:

The management team works on funding and keeping the election running throughout the campaign. When events occur different parties will need to spend money in order to 'compete' in the event. The team also spends money daily for things like rent, advertising and daily wages. If the team ever runs dry of money the leaders and candidates popularity decrease by 50 so that they can no longer compete in the election and they essentially lose.

Votes:

Votes is simply a variable to keep all the votes that party has received during the campaign which is used to determine the winning party at the end of the simulation.

Here is an example of the code used to make a party and the constructor used.

```
/*  
//The constructor used to create a party  
Party::Party(string name, Candidate leader, ManagerialTeam  
manage, unsigned int i){  
    this->partyName = name;  
    this->Leader = leader;  
    std::vector<Candidate> localCandidates;  
    this->standardDeviation = i;  
    std::vector<Stance> stances;  
    this->management = manage;  
    this->votes = 0;  
}  
  
Candidate Jake_McCoy("Red Party", "Jake", "McCoy",  
ENVIRONMENTAL_EXP);  
ManagerialTeam RedManagers(200000, 3, "Red Party");  
//SD is used to generate a random distribution for each party  
SD = randomGene.random_Int(1,5);  
Party Red_Party("Red party", Jake_McCoy, RedManagers, SD);  
  
*/
```

Party Information	
Party Name:	Red party
Party Leader:	Jake McCoy
Total Votes:	0
Issue Stances:	
Issue Code:100	
Approach:	5.000000
Significance:	5.000000
Issue Code:110	
Approach:	5.000000
Significance:	6.000000
Issue Code:120	
Approach:	6.000000
Significance:	6.000000
Issue Code:130	
Approach:	5.000000
Significance:	4.000000
Issue Code:140	
Approach:	5.000000
Significance:	5.000000

Electorates and Stances

Electorates are made up from heaps of different values to get our Electorate object. We have:

- Name (Name of the area)
- Code (Unique code for the area)
- geographicalArea (Geographical area of the electorate)
- Population (Population of the electorate)
- stanceList (A list of all the stances the electorate has)
- stanceDistrubition (Distrubition used to generate stance values)
- Candidates (List of candidates in the electorate)

For more specific information of the values here are the details of them

Name:

The name of the electorate should be unique to the electorate. These are hard coded in currently and are mostly used for display purposes.

Code:

A unique area code for each electorate for use of identification. These are hard coded currently as we only have 10 electorates so things like this can be hard coded

Geographical Area:

Just used for identifying the area each electorate is in. Since these are all NSW electorates the Geographical Area will always be NSW.

Population:

Used to describe the size of the electorate so we can see how many people the party needs to convince

Stance List:

A list of all the stances a particular electorate has on certain issues. The values of these stances are generated upon running the code.

Stance Distrubition:

The standard deviation is a randomly generated integer that is used to create a random stance on each Issue. This is used to add some randomness to the code so that each party doesn't feel the same way everytime the code is run. Each stance starts in the middle of the graph (5,5) and will pick a stance within the deviation. For example,

If a party has a SD of 3. Then the coordinates can lie between (2 \longleftrightarrow 8, 2 \longleftrightarrow 8)

Candidates:

A list of all the candidates within an electorate so that we can loop through all the candidates for when an event occurs in order to see who becomes more popular based on it.

Below in a code snippet on how a electorate is created and the constructor it uses:

```
/*  
Electorate Tomboye ("Tomboye", "NSW", 100, 1001, randomGene.random_Int(1,5));  
  
Electorate::Electorate(string n, string g, int c, unsigned int p, unsigned int d){  
    this->name = n;  
    this->code = "C" + to_string(c);  
    this->geographicalArea = g;  
    this->population = p;  
    vector<Stance> stanceList;  
    this->stanceDistrubition = d;  
    vector<Candidate> candidates;  
}  
*/
```

Electorate Information	
Name: Tomboye	
Code: C100	
Area: NSW	
Population: 6001	
Local Candidates	Party Name
- Noor Beevors	Red Party
- Ella Cole	Blue Party
- Angus Farley	Green Party

How is the winner determined?

The winning process:

The process of winning requires to win as many votes as possible from the electorates. Each electorate is worth 1 vote each. This is to make sure every electorate is equal no matter the size of the electorate

Each electorate will pick a party to vote for based on a couple of things:

- The popularity of the leader
- The popularity of the candidate
- How similar there stances are on each issue

Popularity will increase based on how the daily events of the electorate turn out. Say for example that a debate happens and one candidate knows more knowledge on the topic than the rest, his popularity will increase by 1.

Leader related events: Affects the popularity of the leader

Candidate related events: Affects the popularity of the candidate

Issue related events: Affects the stance values of the electorate

How to calculate the votes:

Depending on who is the most popular candidate and leader of the electorate is who wins the electorate's vote. All those votes get added to the party and then the party with the most votes wins.

An electorate vote works by:

- 1) Loop through all the candidates
- 2) Add up the candidates popularity times by 1.3 and add leaders popularity
(This is to equal out the candidates and leaders value wise as electorates are equally worried about their candidates and leader)
- 3) The most popular candidate + leader combo gets the total votes of the electorate
- 4) After going through all the electorates loop through each party
- 5) Party with the most votes wins

```
-----
Woonona
-----
Jake McCoy      1
Dua Lipa        2.6
-----
Samson Cox      6
Lil Bo Weep     2.6
-----
Zac Fletcher    1
Peggy Lee       6.5
-----
Blue Party won the votes of the people from Woonona

Red party       has a total of  0
Blue Party      has a total of 51558
Green Party     has a total of  0

Blue Party HAS WON THE ELECTION WITH A TOTAL OF 51558
```


Candidate Characteristics and their impacts

Candidate characteristics and qualitative impact

Candidates have two major characteristics that will have impacts during the campaign.

Popularity and Characteristics:

Popularity: On the previous page we talked about how the popularity characteristic works and affects the electorate. You should read the section titled '*The winning process*' to understand this value better.

Characteristics: There is a list of pre-written characteristics that a candidate can have. Not all of these are useful characteristics but some will help them in specific issue related events or debates. Characteristics include (but not limited to) ECONOMIC_EXP, HEALTHCARE_EXP and DEBATE_EXP. Depending on the event the candidate may get an advantage because of these characteristics.

How the candidate constructor look in the code

```
/*
```

```
Person::Person(string fName, string lName){  
    this->first_name = fName;  
    this->last_name = lName;  
    this->popularity = 0;  
}
```

```
Leader::Leader(string partyName, string fName, string lName, Characteristics c) :  
    Person(fName, lName){  
    this->character = c;  
    this->party = partyName;  
}
```

```
Candidate::Candidate(string partyName, string fName, string lName, Characteristics c) :  
    Leader(partyName, fName, lName, c){  
    this->totalVotes = 0;  
}  
*/
```

Characteristics of other people, qualitative impacts

Leaders are almost identical to how the candidate characteristics and popularity work but leaders get more of a chance to gain more popularity as each electorate gives them a chance to gain more popularity. Their popularity is used in the calculation of which candidate wins in each electorate and their stances are used in leader based events and the debate.

Managerial Teams work with the funding of the party and spend money on different events and daily spending like rent, advertising, paying employees etc. Managerial teams don't do a huge amount they mostly focus on the funding of the party

Events:

There is a list of seven events that can occur in a particular electorate on any day. Each event has its own chance of an event to occur. They do not all have an equal chance to be chosen ie. Local Appearance 30%, Press Release 15% this is picked after the initial chance of an event. When a particular party 'wins' an event the popularity increase is random (Not hugely only between 1 and 2). There are 4 types of events. There is a Debate, Candidate, Leader, Issue. Each affecting the election differently but ultimately all will help determine the winner of an election. Here are the events and what occurs in each of them:

Debate: Debates are very simple. We get each of the leaders and randomly pick how well they performed (0 → 100) and rank them from the best to worst. The best performing leader gets +2 to their popularity, middle performing doesn't get anything, worst performing gets a -2 to their popularity. If the person is well spoken their performance gets a 15% boost as they can talk better than the other candidates (As long as they don't really stuff up!). Here is what it looks like in the terminal

```
Jake McCoy made the best points (+2 popularity)
Original popularity: 4
New popularity: 6
Samson Cox made okay points but nothing special (No change in popularity)
Original popularity: 2
New popularity: 2
Zac Fletcher made awful points and tripped walking onto the stage (-2 popularity)
Original popularity: 2
New popularity: 0
```

All the below events have a random issue selected out of the five so the events don't always end up the same way.

Local Appearance: The local candidates walk amongst the people in an attempt to gain more votes. For this event we check all the candidates and their stances next to the electorates' stances seeing whose stance matches closest with the electorates. When we find this the people then realise that they like this particular candidate. This means their popularity increases amongst these people. The candidate's characteristics also will give them an edge in the event if their characteristic is relevant to the issue.

```
Electorate Woonona Events
Our candidates are walking amongst the public
Dua Lipa, Lil Bo Weep & Peggy Lee have been
talking to the locals and getting to know them one
on one. Especially to see what their stances are on
Deforestation
Peggy Lee understood the electorate and their
issues the most +1 popularity to Peggy Lee
```

Local Speech: The candidates gather at a local center and talk about issues relevant to the electorate. With this we check each candidate's stances and the electorates' stances to see whose stances are the most alike. With this value we then add popularity towards that particular candidate which means they are more likely to receive the votes of the people. The candidate's characteristics also will give them an edge in the event if their characteristic is relevant to the issue.

Electorate Braidwood Events
Each of our candidates are speaking to the public
Nathan Phillis, Hayden Phillis & Niel Phillis
have all given speeches about Education Reform
on one. Espically to see what their stances are on
Education Reform
Niel Phillis understood the electorate and their
issues the most +1 popularity to Niel Phillis

Press release: The party of each candidate releases a Press Release on a particular issue for the electorate to read over. The electorate then reads through the report and decides on which party wrote a more compelling report (Whose stances are most common towards theirs). This leader then receives more popularity. The leader's characteristics will affect their report if they are knowledgeable on the topic.

Electorate Woonona Events
A press release has been published.
The leaders of our political parties are talking
about Unemployment Rise and how they will work to
address this problem
Jake McCoy understood the electorate and their issues the most
+1 popularity to the leader Jake McCoy

Interview: Each leader of the 3 parties gives an interview to the press talking about a particular issue and how they plan on dealing with it. The electorate agrees on one of them being the most similar to the way they want the issue dealt with so the popularity of this leader increases. The characteristics of this leader (if relevant) will help persuade the electorate to agree with them.

Electorate Goulbourn Events
An interview is released with all our beloved leaders debating each other
about Education Reform and how they will work to address this problem
Zac Fletcher understood the electorate and their issues the most
+1 popularity to the leader Zac Fletcher

Issue Conference: The local electorate holds a conference to talk amongst themselves how they feel about a particular issue currently and how they feel about the issue. There is a 50% chance that either they will feel stronger about the particular issue (Increasing their Approach and Significance values) or less about the issue (Decreasing their Approach and Significance values).

Electorate Ulladulla Events

A conference is happening and talking about Unemployment Rise

Currently this is how the people are feeling:

Approach: 12

Significance: 12

After some careful thinking the electorate now relises they dont care about the issue as much

Approach: 10

Significance: 10

News Arctile: A local newspaper releases an article about a specific issue relevant to the electorate. There's a 50% chance the article is either positive or negative about the issue. A positive article means the electorate won't care about the issue as much or a negative article which increases their stance towards the issue.

A news article has just been released and it talks about Unemployment Rise

Currently this is how the people are feeling:

Approach: 8

Significance: 9

After some careful thinking the electorate now relises they dont care about the issue as much

Approach: 7

Significance: 8

UML Diagram

