CSCI251 Assignment 2

Creating the 2022 space election

CSCI251
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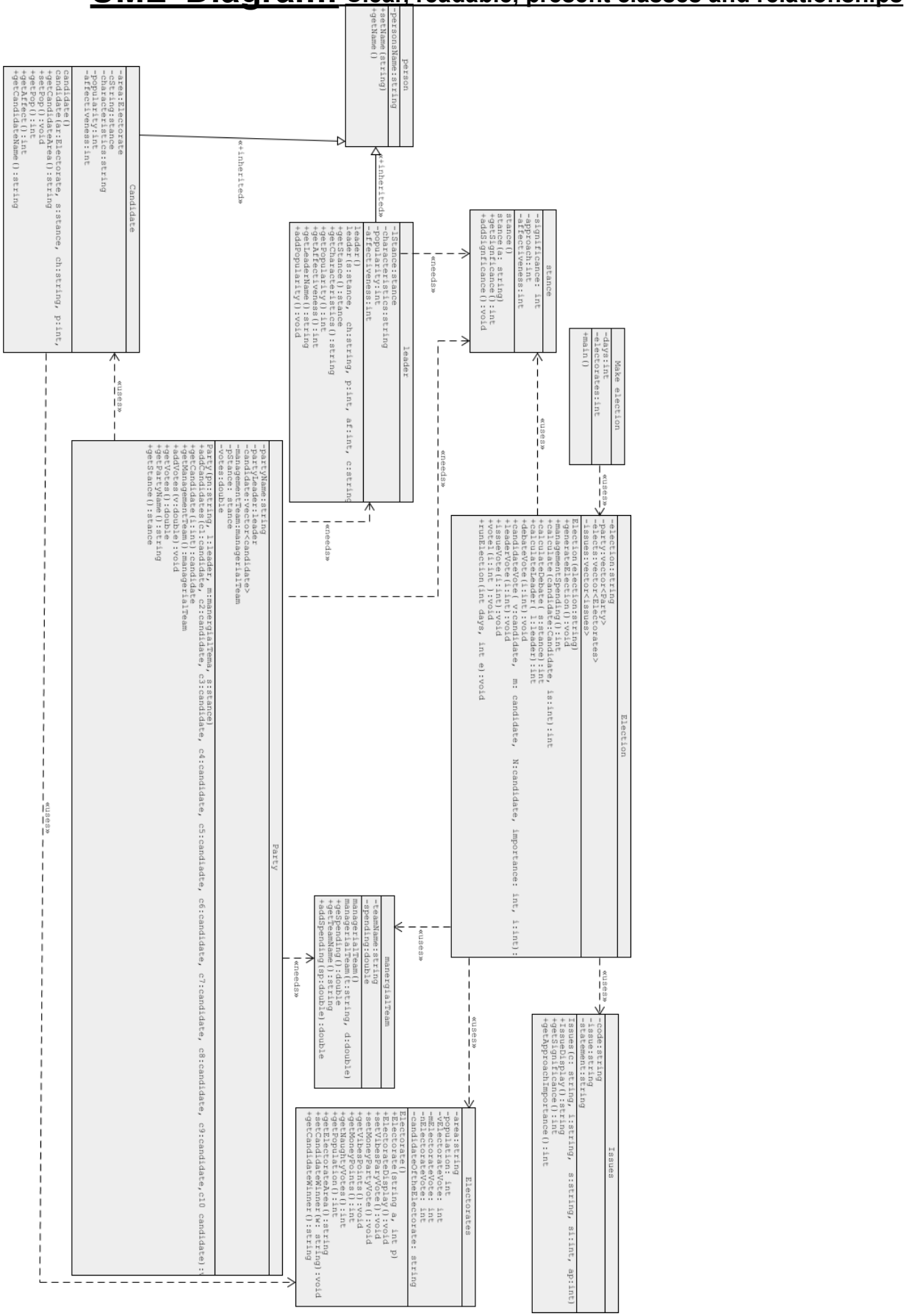
This is a C++ program that runs an election that randomly generates 1 of the 3 parties to be the new leading party of the galaxy. This happens through 7 events that have a 50% chance of happening each day for every electorate . Before running the program please input how many electorates you would like that is 1 - 10 inclusive and the number of campaign days you would like for it to go over that's in between 1 - 30 inclusive.

UML Diagram: Clear, readable, present classes and relationships



Issues basic Information

Issue: shows what party would be best to handle this issue.

Issue 1:
Code: 23
Issue: Economic
Statement: Missing socks: After extensive research it appears that all the left socks all seem to go missing.
Significance: 3
approachImportance: 2

Issue 2:
Code: 33
Issue: Environment
Statement: Surfing squirrels: The increase population of the surfing squirrels that have now traveled to australia to surf the top surf spots are now bring new disease to australia and its ocean ecosystem
Significance: 8
approachImportance: 10

Issue 3:
Code: 44
Issue: Economic
Statement: Hipster Kangaroos : Since the Kangaroos have taken a liking to the hipster culture, cafes are struggling with kangaroos arriving and not leaving till they get their iced latte.
Significance: 8
approachImportance: 10

Issue 4:
Code: 55
Issue: Naughty
Statement: Pooping Seagulls: Seagulls have now decided to start Pooping on people who will not share their chips leading to ongoing cleaning of park benches.
Significance: 10
approachImportance: 5

Issue 5:
Code: 77
Issue: Economic
Statement: OverDemand: Due to the sudden demand surge for toilet paper, mask and sanitizer they have now all been too many to create and are all cheaper than a slice of bread which could lead to another economic collapse.
Significance: 8
approachImportance: 8

Example of one issue being loaded:

```
// create issues
   //  load issue socks
   string i1C = "23";
   string i1T = "Economic";
   string i1S = "Missing socks: After extensive research  it appears that all the left socks all seem to go missing";
   // issue number, issue stance, statement, significance and approachImportance
   Issues i1(i1C, i1T, i1S, 3, 2);
   issues.emplace_back(i1);
```

Parties basic Information

Parties Involved: 3 parties, stance ranges
Vibes
Money
Naughty

How they are created

Party vParty("Vibes Party", lv, vMT, vS);

"Vibes Party" = team name.

lv = leader.
Leader is created by:
leader lv(vS, "Considerate, Fearless , Smart", 70, 99, "Big Z");
vMT = management team.

management team is created by:
managerialTeam vMT("Vibes management team", 5000);

vS = stance
Stance is created by
stance vS("Taking the environmental approach to this election");
The Stance significance will be randomly generated for 0 to 10.

Electorates *basic Information*

Electorates Report: Electorate characteristics and stance distribution
Mordor
The Shire
Rivendell
Cloud City
Spring field
Bikini Bottom
Quahog
Gotham
South Park
Coruscant

Example of creating mordor:
Electorates e1("Mordor", 5000);
(Name, population)

Report: Characteristics of other people, qualitative impacts
Leaders:
Vibes: Big Z

Money: Elon Musk

Naughty: Sheev Palpatine
Example of Leader being created:
leader lv(vS, "Considerate, Fearless , Smart", 70, 99, "Big Z");
vs = is the stance.
Characteristics.
Popularity.
Effectiveness.
name.

Report: Candidate characteristics and qualitative impact

Candidates:

Vibes:

Chicken Joe, Crush, Shaggy, Scooby-Doo, Garfield, Patrick Star, Austin Power, John Lennon, James franco.

Money:

Vladimir Putin, Jeff Bezos, Mr Burns, Donald Trump, Scott Morrison, Tony Abbot, Malcolm Turnbull, Boris Jognson, Theresa May, David Cameron.

Naughty:

Joffrey Baratheon, Sauron, Ozai, Benito Mussolini, Fumimaro Konoye, Engelbert DollfuSS, Getúlio Vargas, Ante Pavelic, Adof Hitler.

Example of candidate being created:

```
candidate cv1(e1, vS, "Chill, Cheerful, Optimistic", 40, 30, "Chicken Joe \t");
```

vs = is the stance.

Characteristics.

Popularity.

Effectiveness.

name.

Report: Characteristics of other people, qualitative impacts

Managerial Team of the Party

Example of creation:

```
managerialTeam vMT("Vibes management team", 5000);
```

Name and 5000 for the starting of their spending as that is the cost of getting started.

How the program runs

Creating the election
The C++ program starts off with generating the election class by giving the election a name e.g “2022 galaxy election”.

Loading the data
Once the election is then generated then it is time to load the data in.
This function of the election class will then load all the data into the newly created election object. This starts off by loading the 5 issues and creates a vector of the 5 issues. The issue constructor takes in three strings (code, issue and statement) then will take in 2 integers for its (significance and approachImportance).

Next it creates the 10 electorates and adds them to a Electorates vector. Each electorate is created with its Name and its Population.

Once the 10 electorates are created then it is possible to create the parties. First, each stance is created for each party. They are created by giving them an approach that is taken then it will randomly generate the significance of that stance.

Once the stances are created it is possible to create the 10 candidates. With each one being created with a certain electorate, the party stance , a string of their characteristics and two integers one for their popularity and another for their effectiveness.

Then the Leader is created and finally the management team. Once all fields of a party are created then it is possible to create a party with the Leader and management team. Once a party is created it is then possible to load all the candidates into the party.

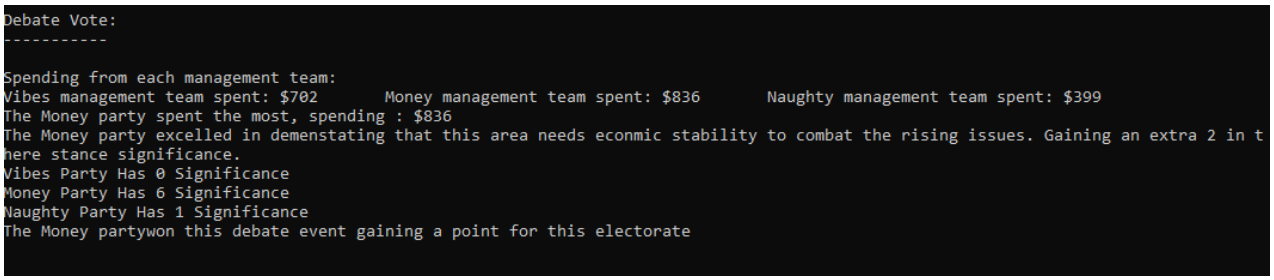
See Above UML to see what the data classes look like.

Run the election
When running the election it will take in two parameters of your choice (n) the first is the number of electorates from 1-10 inclusive and the next is (m) for the amount of days 1-30 inclusive. This will be tested to see if the inputs are correct and if not the program will close and ask you to try again.

With these parameters n and m it is possible two create two for loops; the first one is for each day until (m) then will print the final day of the election. Then for (n) electorates for loop will be inside the first for loop to print out each electorate for each day and also run their events.

Within this electorate loop it will call voting1 function for that electorate which consists of a 50% chance of each of the 7 events to happen. For each event that happens the winning party will gain a vote from that electorate.

Events: How to calculate the votes
<u>Debate:</u>
The debate event is randomly generated based on what party spent the most for this event, what is randomly generated each time this event is called. Then it takes the winner to boost the party's stance significance by 2. Then uses the parties stance to get a random distribution of two as stances always sway in significance. This new total will be compared to the other party's to see who won the debate.



Candidate:

Both of these are generated the same; it takes the randomly generated spending of the party's management team. The team who spent the most of their candidate then their popularity gets 5 more points giving them an advantage. To calculate the candidates' votes gained for each issue it gets both their popularity and effectiveness to work out their score. This is done by getting the value of the issue and adding its importance then adding popularity and effectiveness to create the mean then use a deviation of 5 to get the candidates score for each of the issues. This does this for every candidate and issue. Once done I calculate who gets the most votes and that Candidate gains a vote for that electorate.

Example:

```
Candidate event 2
------------------

For Vibes party the leader is  Big Z and the candidate is Crush
This is the first election they have been apart of, but they are well known and loved through the area.
For Money party the leader is Elon and the candidate is Jeff Bezos
This Candidate is well known through the area for creating new jobs.
For Naught party the leader is Sheev Palpatine and the candidate is Sauron
In this area he lost last election.


Spending from each management team:
Vibes management team spent: $303       Money management team spent: $993       Naughty management team spent: $806
The Money party spent the most, spending : $993
Due to the spending Jeff Bezos  gained 5 points in popularity

Candidates Popularity and Affectiveness for the area:
Vibes Party Candidate:   Crush                Popularity: 40         Affectiveness: 30
Money Party Candidate:   Jeff Bezos           Popularity: 50         Affectiveness: 33
Naughty Party Candidate: Sauron               Popularity: 13         Affectiveness: 24

Issues:                                 Seagulls        Demand  Kangroos        Socks   squirrels
Vibes Candidate: Crush                  70              83      83              80      81
Money Candidate: Jeff Bezos             83              96      96              93      94
Vibes Candidate: Sauron                 37              50      50              47      48
Crush                   Has 397 Votes
Jeff Bezos              Has 462 Votes
Sauron          Has 232 Votes
The winner is Jeff Bezos         Getting 1 point.
```

Leader:

Leader events are both the same and are randomly generated by the party spent the most for this event then adds 2 to their popularity if that management team spent the most. It Creates a standard deviation to get there final score by adding there effectiveness and popularity together then get a deviation of 2 for the final score. The Leader with the highest score gets a point for that electorate.

Example:

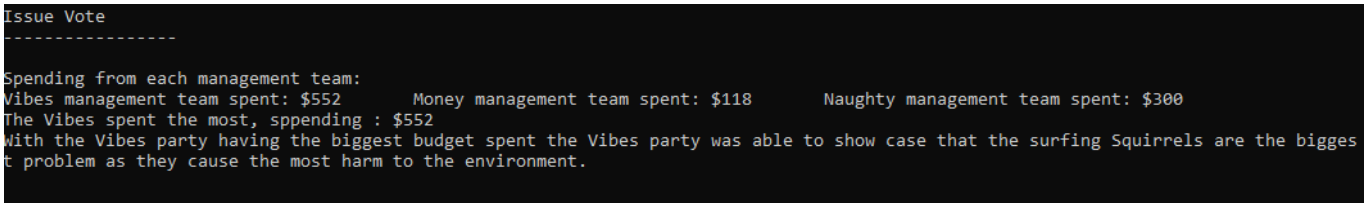
```
1st leader event
-----------------

Spending from each management team:
Vibes management team spent: $697       Money management team spent: $876       Naughty management team spent: $625
The Money party spent the most, spending : $876
The Money party leader excelled in demenstating that this area needs econmic stability to combat the rising issues. Gaining an extra
 2 in popularity
Big Z Has 166 points
Elon Musk Has 168 points
Sheev Palpatine Has 166 points
The Money party leader won this event gaining a point for this electorate
```

Issue:

The issue event is also randomly generated based on what party spent the most for this event.

Example



How Candidate Functions work (as this is the most complex):

For candidateVote:

This passes the candidates into the function then will get the issues approach Approach Importance and Significance then the importance of the general issue.

```
// candidates vote electorate
void Election::candidateVote(candidate v, candidate m, candidate N, int importance, int i)
{
   // changing the value depending on the importance
   //  seagull
   int sE = issues[0].getApproachImportance() + issues[0].getSignificance() + importance;
…
```

This then will find the party that spends the most randomly depending on whos management team spent the most of their $5000 budget. The management team that spent the most. Their candidate will double their popularity.

```
int topSpender = managementSpending();
….
.
```

This will then calculate how many points for the vibes candidate on the seagull issues

```
// seagull votes
 int calcSeV = calculate(v, sE);
…
```

Within the calculator function

This takes in the candidate and the issues added up value score and then will calculate and answer with getting the candidates popularity and effectiveness then adding it to issues end value then get its division randomly of 5.

```
// calculate the total votes for the candidate
int Election::calculate(candidate c, int is)
{
  // int voted;
   // how to calculate the votes using distribution
   int pop = c.getPop();
   int aff = c.getAffect();
   int issueCalc = is;

   int mean = (aff + pop + issueCalc);
   int diviation = 5;

   default_random_engine random_engine(time(NULL));
   normal_distribution<> dist(mean, diviation);
   int value = round(dist(random_engine));
   return value;
}
```

Once all are calculated then all the vibes candidates points will be added up to see if he win

```
 int vibesVotes = calcSeV + calcDeV + calcKaV + calcSoV + calcSqV;
```

Final day of the election: Winner determination process

At the end it will then show the parties again to show how their popularity, stance and spending has changed.

Before election

```
-----------------------------------
Party Name :            Vibes Party
Party stance Significance :     5
Management team spending:  $5000

Leader Name : Big Z
Leader popularity : 70
Leader effectiveness :99

Candidate Name : Chicken Joe
Candidate area : Mordor
Candidate popularity : 40
Candidate effectiveness : 30
-----------------------------------
```

After election

```
-----------------------------------
Party Name :            Vibes Party
Party stance Significance :     19
Management team spending:  $67528

Leader Name : Big Z
Leader popularity : 116
Leader effectiveness :99

Candidate Name : Chicken Joe
Candidate area : Mordor
Candidate popularity : 140
Candidate effectiveness : 30
-----------------------------------
```

Then the final loop will go through and see what party won what electorate by seeing what candidate got the most votes for that electorate, Then will see what party won the most electorates. If one party won more than 50% of the electorate that party wins the election. If no party does then it will be a hung government.

Example of final display of electorate votes for one electorate

```
Now to tally up all votes from every electorate to see what party won each electorate.
================================
Mordor Population is : 5000
--------------------------------
Total votes for each party for this electorate.
Vibes party votes:3
Money party votes:0
Naughty party votes:3
There has been a tie in the votes between the Naughty and vibes party so the points shall be split
Naughty party gained 0.5 from this electorate
Vibes party gained 0.5 from this electorate


==============================
The Shire Population is : 2000
------------------------------
Total votes for each party for this electorate.
Vibes party votes:0
Money party votes:5
Naughty party votes:0
The winner is Money party with candidate Jeff Bezos      having 5 votes


The vibes party has won 0.5 electorates
The money party has won 1 electorates
The naughty party has won 0.5 electorates
The Money Party Has won the election.
```