Pamantasan ng Lungsod ng Maynila
(University of the City of Manila)
Intramuros, Manila

COLLEGE OF ENGINEERING & TECHNOLOGY
COMPUTER ENGINEERING DEPARTMENT

COURSE PROJECT #2
(Group Work)
DATA SCIENCE

Submitted by:

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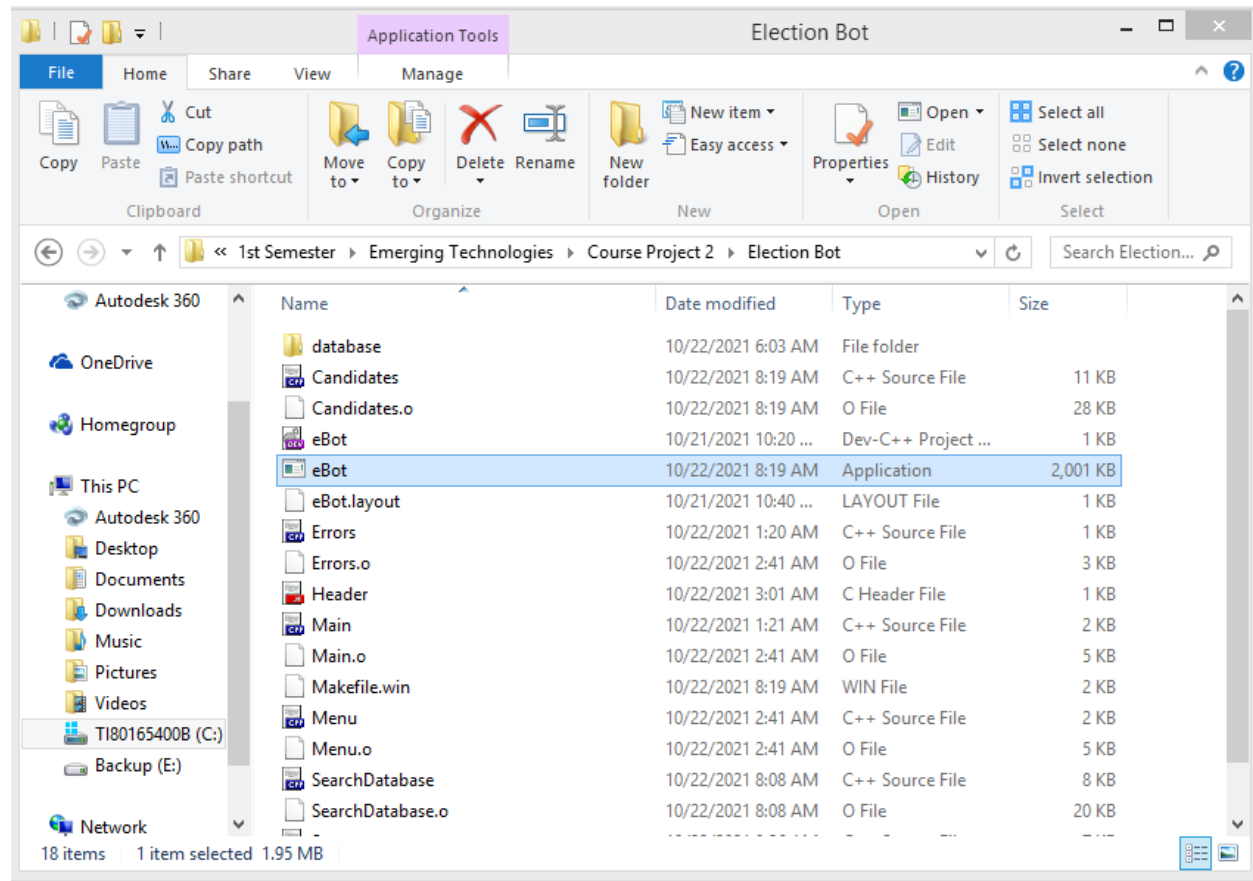# User Manual

Setting Up Election Bot - eBot

Figure 1: Finding the eBot application in the zip file containing the whole project

Setting up the application for to test and use is straightforward. In the zip folder containing all the files created for the project, there is an application or .exe file named "eBot" with 2001 KB of memory or 2.001 MB of memory. Running this application will enable the user to run the whole program easily and without much fuss. Compared to compiling and running the whole project in Dev C++, running the application is easier and has less waiting time.

Main Menu

In starting up the program, after the greetings, the bot immediately flashes to the "main menu" of the system. As seen in Figure 2, it offers four (4) choices: Presidential Candidates, Presidential Surveys and Polls, Help and Exit.
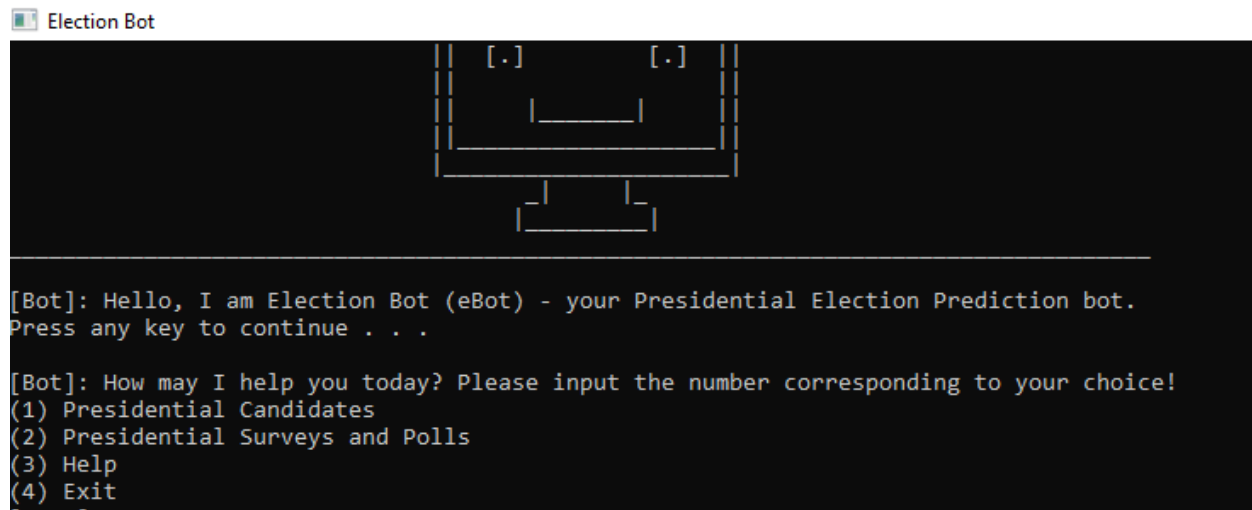

Figure 2: eBot Main Menu

Presidential Candidates would give the user of the list of candidates that are well-known and the group believes would most likely pass the screening done by the Commission on Elections. There are a total of 11 candidates as seen in Figure 3 below.
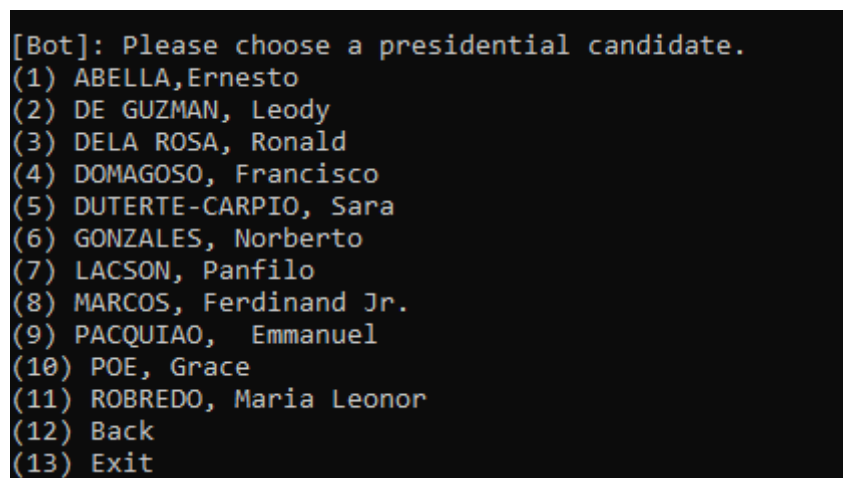

Figure 3: eBot Presidential Candidates

Presidential Polls and Surveys, on the other hand, presents the summarized results of the latest presidential election polls/surveys that the three sources used by the group have conducted. The three (3) sources

used are Pulse Asia, Manila Bulletin Polls (Facebook, Twitter, Website) and finally, "Kalye" or street surveys. It also cover percentages of winning for Facebook and Twitter.

Figure 4: eBot Presidential Surveys and Polls

Help enables the user to use the bot to its full potential. To avoid any confusion and learn how the bot works, it's advised for the user to read and follow the guidelines given by eBot.

Figure 5: eBot Help

Finally, if you want to exit the program, just click 4. Closing remarks are replied politely by the system accompanied with a virtual smile from the system.

Figure 6: eBot Exit

Functions

The system "eBot" has two main functions: (1) Calculate the chances of a candidate winning the Presidential elections; (2) Depict the outcome of Pulse Asia, Manila Bulletin and "Kalye" surveys comprehensively.

As seen in our case process documentation, we have considered different up to date sources in determining the chances of a person running of presidency winning the presidential seat. We incorporated Facebook followers, Twitter followers and engagement, Pulse Asia survey results, Manila Bulletin polls (Facebook, Twitter and Website) results and "Kalye" or street survey results in our formula.

However, it should be noted that the overall chances of winning calculation would only show up on a candidate's results if and only if they manage to be present in all of the polls as well as have an account in both social media platforms – Facebook and Twitter. Failure to accomplish one of the provided criteria would only have the program present separate computations for the polls they did qualify for.

The candidates that are included in our system are depicted in Figure 3. They are arranged in alphabetical order.

There are 9 notable "well-known" candidates that filed for their candidacy last October 1-8. These are:

1. Ernesto Abella
2. Leody De Guzman
3. Ronald "Bato" de la Rosa
4. Francisco "Isko Moreno" Domagoso
5. Norberto Gonzales
6. Panfilo "Ping" Lacson
7. Ferdinand "Bongbong" Marcos Jr.
8. Maria Leonor "Leni" Robredo
9. Emmanuel "Manny Pacquiao

On the other hand, Grace Poe and Sara Duterte-Carpio are included in the list because they were mentioned in Pulse Asia as first choice Presidential candidates in the last Pulse Asia survey on September. Although they haven't been able to file for candidacy in the period previously allotted, considering the substitution laws, the final candidate list to be included in the 2022 elections ballot can only be presented on November 15, 2021.

A sample run in Figure 7 can be seen below wherein a candidate doesn't satisfy all the conditions preset beforehand, therefore they only got individual chances on winning for every platform or poll they qualified for in return.

```
[Bot]: About ABELLA,Ernesto
Name: Ernesto 'Ernie' Corpuz Abella
Party List: Independent
Facebook Followers: 1,800
Twitter Followers: 739 [Fake Followers: 33.7% (HIGH)]
Press any key to continue . . .

CHANCES OF WINNING
First Category
Facebook: 0.00540375    Press any key to continue . . .

Second Category
Twitter Followers: 0.0138436
Twitter Engagement Score: 71
Twitter (Followers & Engagement Score): 35.5069 Press any key to continue . . .


Third Category
Pulse Asia: Not Included       Press any key to continue . . .

Fourth Category
Manila Bulletin: Not Included  Press any key to continue . . .

Fifth Category
Kalye: Not Included      Press any key to continue . . .
```

Figure 7: Candidate – unable to fulfil all criteria

On the other hand, in Figure 8, when the candidate managed to satisfy all the criteria set in the formula – with them having both a Twitter and Facebook account along with being included to all the polls cited by the group, a sixth category would be shown – summarizing their aggregated more deterministic chances of winning the Presidential elections.

```
[Bot]: About DOMAGOSO, Francisco
Name: Francisco 'Isko' Moreno Domagoso
Party List: Aksyon Demokratiko
Facebook Followers: 5,400,060
Twitter Followers: 534,979
Press any key to continue . . .

CHANCES OF WINNING
First Category
Facebook: 16.2114        Press any key to continue . . .

Second Category
Twitter Followers: 17.5149
Twitter Engagement Score: 48
Twitter ( Followers & Engagement Score): 32.7575        Press any key to continue . . .

Third Category
Pulse Asia: 13  Press any key to continue . . .

Fourth Category
Manila Bulletin (Facebook): 2
Manila Bulletin (Twitter): 4.6
Manila Bulletin (Twitter): 4.6
Manila Bulletin (Facebook, Twitter, & Website): 3.3     Press any key to continue . . .

Fifth Category
Kalye: 16.1441  Press any key to continue . . .

Sixth Category
Overall result: 14.6913 Press any key to continue . . .
```

Figure 8: Candidate – fulfilled all criteria

There are enough error checks in place in every input the user enters. The system checks if they're entering within the acceptable list of characters, if the user is not entering any input, and if the answer isn't within the choices provided by eBot.

The formulas used in this program is depicted in the following table along with their respective notes and descriptions.

	Formula	Output	Notes
Facebook	(Candidate's followers/Total followers of all 11 candidates) * 100	Percentage of winning in Facebook in terms of followers	This isn't an accurate measure of popularity or winning by any means. Especially since there isn't any tool available to identify which accounts are bot/spam in the platform. Furthermore, as mentioned earlier, followers don't translate to votes.
Twitter	[{(Candidate's followers/Total followers of all candidates listed here with Twitter accounts) * 100} * .50] + (Engagement Score * .50)]	Percentage of winning in Twitter in terms of followers and engagement.	This isn't an accurate measure of popularity or winning by any means alone. Although there are tools available to identify the candidate's engagement in comparison to other account with the same amount of followers as well as identify how much of these followers are real to begin with, there are too few Filipinos on

			the platform in comparison to Facebook.
Manila Bulletin	(result on Facebook poll *.50) + (result on Twitter poll * .25) + (result on website poll * .25)	Overall percentage of winning according to the polls done by Manila Bulletin in 3 different platforms.	Considering the amount of users that reacted to the poll in Facebook alone, it made the result in that platform the one with the heaviest count in the overall percentage of winning.
Kalye Survey	(result/2137) * 100	Percentage of winning according to street survey.	As mentioned earlier, this survey alone couldn't serve as a real measurement to predict the outcome of next year polls due to the limited amount of respondents interviewed. Furthermore, it only covers the sentiments of those living in the NCR and Region 4.
Pulse Asia	-	Results as depicted in the latest percentages given by Pulse	As one of the most reputable research groups in the country, the results of this poll

		Asia.	can and does reflect the general public's sentiment to the elected candidates.
Overall Chances of Winning	(Computed percentage for Facebook * .15) + (Computed percentage for Twitter * .15) + [{(Overall computed percentage for Manila Bulletin * .70) + (Computed percentage for Kalye Survey * .30)} * .30] + (Results in Pulse Asia * .40)	Overall percentage of winning a candidate has considering all the data gathered by the group	Note that the results of this can only count if the candidate satisfies or is present in all the polls and social media platforms in this table. Facebook and Twitter has similar percentage because both have weaknesses that complement each other. Facebook has a larger Filipino user base compared to Twitter but, due to the lack of tools available to determine the amount of fake followers along with authentic user engagement, online presence can be manipulated for

			propaganda. On the other hand, Twitter has more transparent analytics, however there are too few users using the site compared to Facebook.
			Other surveys and polls makes up 30% of the overall percentage. They're valid results, however it's not as reputable as Pulse Asia results are.
			Pulse Asia has the heaviest weight overall, since it's a trusted research group with clear results and sound methodological analysis.

Table 1. Formula used in the program

Test Run with Output

Setting Up Election Bot - eBot

Name	Date modified	Type	Size
database	10/22/2021 6:03 AM	File folder	
Candidates.cpp	10/22/2021 8:19 AM	C++ Source File	11 KB
Candidates.o	10/22/2021 8:19 AM	O File	28 KB
eBot.dev	10/21/2021 10:20 PM	Dev-C++ Project F...	1 KB
eBot.exe	10/22/2021 8:33 AM	Application	2,002 KB
eBot.layout	10/21/2021 10:40 PM	LAYOUT File	1 KB
Errors.cpp	10/22/2021 1:20 AM	C++ Source File	1 KB
Errors.o	10/22/2021 2:41 AM	O File	3 KB
Header.h	10/22/2021 3:01 AM	C Header File	1 KB
Main.cpp	10/22/2021 1:21 AM	C++ Source File	2 KB
Main.o	10/22/2021 2:41 AM	O File	5 KB
Makefile.win	10/22/2021 8:36 AM	WIN File	2 KB
Menu.cpp	10/22/2021 2:41 AM	C++ Source File	2 KB
Menu.o	10/22/2021 2:41 AM	O File	5 KB
SearchDatabase.cpp	10/22/2021 8:08 AM	C++ Source File	8 KB
SearchDatabase.o	10/22/2021 8:08 AM	O File	20 KB
Surveys.cpp	10/22/2021 8:33 AM	C++ Source File	7 KB
Surveys.o	10/22/2021 8:33 AM	O File	27 KB

Figure 9: Finding the eBot application in the zip file containing the whole project

Setting up the application for to test and use is straightforward. In the zip folder containing all the files created for the project, there is an application or .exe file named "eBot" with 2001 KB of memory or 2.001 MB of memory. Running this application will enable the user to run the whole program easily and without much fuss. Compared to compiling and running the whole project in Dev C++, running the application is easier and has less waiting time.

Main Menu

In starting up the program, after the greetings, the bot immediately flashes to the "main menu" of the system. As seen in Figure 10, it offers four (4) choices: Presidential Candidates, Presidential Surveys and Polls, Help and Exit.
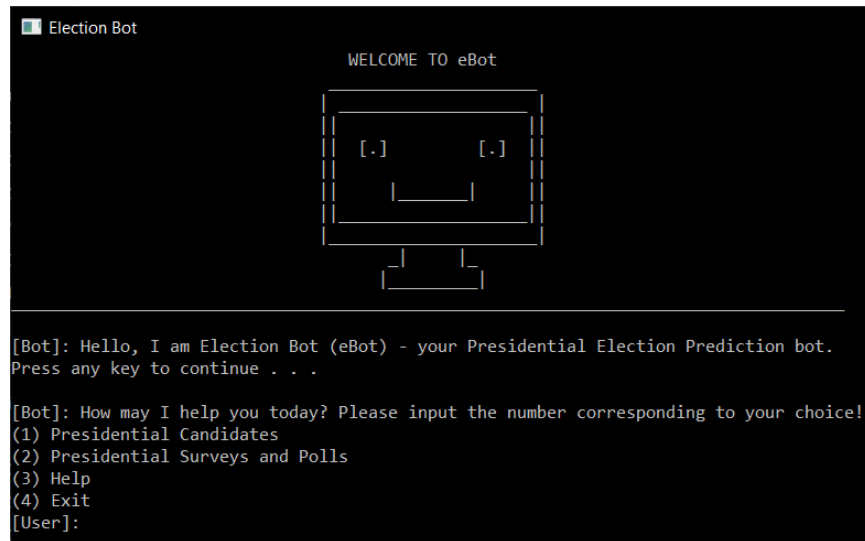

Figure 10: eBot Main Menu

Presidential Candidates would give the user of the list of candidates that are well-known and the group believes would most likely pass the screening done by the Commission on Elections. There are a total of 11 candidates as seen in Figure 11 below.
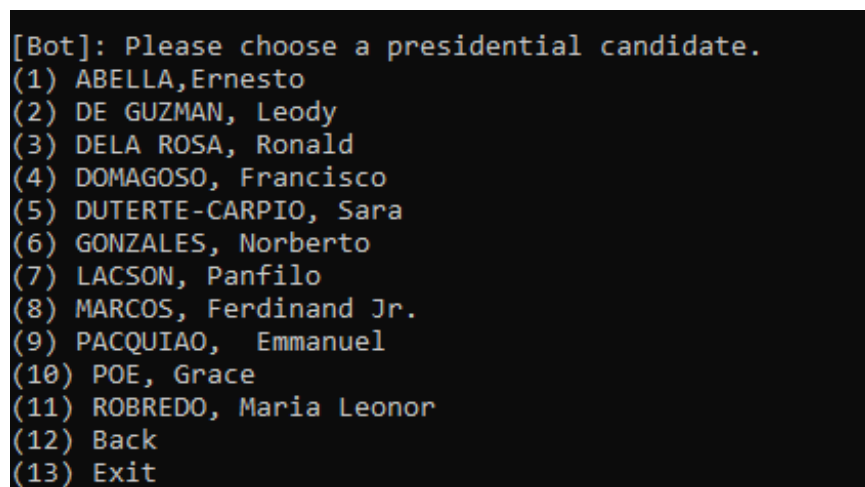

Figure 11: eBot Presidential Candidates

Presidential Polls and Surveys, on the other hand, presents the summarized results of the latest presidential election polls/surveys that the three sources used by the group have conducted. The three (3) sources used are Pulse Asia, Manila Bulletin Polls (Facebook, Twitter, Website) and finally, "Kalye" or street surveys. It also cover percentages of winning for Facebook and Twitter.


```
[Bot]: Please choose a presidential survey.
(1) Pulse Asia
(2) Other Surveys and Polls
(3) Facebook Followers
(4) Twitter Followers and Engagements
(5) Back
(6) Exit
```

Figure 12: eBot Presidential Surveys and Polls

Help enables the user to use the bot to its full potential. To avoid any confusion and learn how the bot works, it's advised for the user to read and follow the guidelines given by eBot.


```
[Bot]: Election Bot (eBot) is a logical chatbot that allows you to view the different presidential candidates and their
chances of winning the 2022 National Elections.
Press any key to continue . . .

[Bot]: If you want to view the different presidential candidates, please enter 1.
Press any key to continue . . .

[Bot]: If you want to view the different presidential surveys and polls, please enter 2.
Press any key to continue . . .

[Bot]: If you want to exit, please enter 4.
Press any key to continue . . .

Bot: In general, you just need to enter the number corresponding to choices available unless it's stated otherwise! Pres
s any key to continue . . .
```

Figure 13: eBot Help

Finally, if you want to exit the program, just click 4. Closing remarks are replied politely by the system accompanied with a virtual smile from the system.

Figure 14: eBot Exit

Functions

The system "eBot" has two main functions: (1) Calculate the chances of a candidate winning the Presidential elections; (2) Depict the outcome of Pulse Asia, Manila Bulletin and "Kalye" surveys comprehensively.

As seen in our case process documentation, we have considered different up to date sources in determining the chances of a person running of presidency winning the presidential seat. We incorporated Facebook followers, Twitter followers and engagement, Pulse Asia survey results, Manila Bulletin polls (Facebook, Twitter and Website) results and "Kalye" or street survey results in our formula.

However, it should be noted that the overall chances of winning calculation would only show up on a candidate's results if and only if they manage to be present in all of the polls as well as have an account in both social media platforms – Facebook and Twitter. Failure to accomplish one of the provided criteria would only have the program present separate computations for the polls they did qualify for.

The candidates that are included in our system are depicted in Figure 3. They are arranged in alphabetical order.

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A sample run in Figure 15 can be seen below wherein a candidate doesn't satisfy all the conditions preset beforehand, therefore they only got individual chances on winning for every platform or poll they qualified for in return.

```
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Name: Ernesto 'Ernie' Corpuz Abella
Party List: Independent
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CHANCES OF WINNING
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Third Category
Pulse Asia: Not Included        Press any key to continue . . .

Fourth Category
Manila Bulletin: Not Included   Press any key to continue . . .

Fifth Category
Kalye: Not Included     Press any key to continue . . .
```

Figure 15: Candidate – unable to fulfil all criteria

On the other hand, in Figure 16, when the candidate managed to satisfy all the criteria set in the formula – with them having both a Twitter and Facebook account along with being included to all the polls cited by the group, a sixth category would be shown – summarizing their aggregated more deterministic chances of winning the Presidential elections.

```
[Bot]: About DOMAGOSO, Francisco
Name: Francisco 'Isko' Moreno Domagoso
Party List: Aksyon Demokratiko
Facebook Followers: 5,400,060
Twitter Followers: 534,979 [Fake Followers: 37.6% (HIGH)]
Press any key to continue . . .

CHANCES OF WINNING
First Category
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Fifth Category
Kalye: 16.1441  Press any key to continue . . .

Sixth Category
Overall result: 14.6913 Press any key to continue . . .
```

Figure 16: Candidate – fulfilled all criteria

There are enough error checks in place in every input the user enters. The system checks if they're entering within the acceptable list of characters, if the user is not entering any input, and if the answer isn't within the choices provided by eBot.

The formulas used in this program is depicted in the Table 6 along with their respective notes and descriptions.

Source Code

learner.h

```
#include <iostream>
#include <fstream>
#include <sstream>
#include <string>
#include <stdint.h>
#include <sstream>
#include <typeinfo>
#include <algorithm>
#include <ctype.h>
#include <limits>
```

Learner.h contains all the libraries used in the system. It's the cpp file continuously being included and called in the other six (6) cpp file.

main.cpp

```
#include "learner.h"

using namespace std;
void mainmenu(string& name);

void goodbye(){
      cout << "[Bot]: Goodbye! I hope that was informative!" << endl;
      cout << "\t\t          _____\n";
      cout << "\t\t         | _____ |\n";
      cout << "\t\t         ||    _           _  ||\n";
      cout << "\t\t         ||   | |         | |  ||\n";
      cout << "\t\t         ||    _____       ||\n";
      cout << "\t\t         ||    |_|_|_|_|      ||\n";
      cout << "\t\t         ||_____||\n";
      cout << "\t\t         |_____|\n";
      cout << "\t\t              _|         |_\n";
      cout << "\t\t             |_____|\n";
      cout <<
"_____\n\n";
      system("pause");
      exit(0);
}
int main (){
      system ("title Election Bot");
      string username;
      cout << "\t\t          _____\n";
      cout << "\t\t         | _____ |\n";
      cout << "\t\t         ||                 ||\n";
      cout << "\t\t         ||   [.]       [.] ||\n";
      cout << "\t\t         ||                 ||\n";
      cout << "\t\t         ||    |_____|    ||\n";
      cout << "\t\t         ||_____||\n";
      cout << "\t\t         |_____|\n";
      cout << "\t\t              _|         |_\n";
      cout << "\t\t             |_____|\n";
      cout <<
"_____\n\
n";
```

```
      cout << "[Bot]: Hello, I am Election Bot (eBot) - your Presidential
Election Prediction bot.\n";

      system("pause");

      mainmenu();

      return(0);
```

This cpp file contains the greeting remarks (opening and closing) of eBot.

errors.cpp

```cpp
#include "Header.h"
using namespace std;
void error_check(int answer){
    if (isdigit(answer)==false){
        cin.clear();
        cin.ignore(numeric_limits<streamsize>::max(), '\n');
    }
}
void error()
{    cout << "\n[Bot]: Unfortunately, eBot can't understand your answer :(
Please retry and input the corresponding number of your choice. Thank
you!";
}
```

This cpp file contains the error checking void files that every input is being tested into again and again in order to verify validity.

menu.cpp

```cpp
#include "Header.h"

using namespace std;

void error_check(int answer);
void error();
void goodbye();
void candidates();
void surveys();

void help ()
{
      cout << "\n[Bot]: Election Bot (eBot) is a logical chatbot that
allows you to view the different presidential candidates and their chances
of winning the 2022 National Elections." <<endl;
      system ("pause");
      cout << "\n[Bot]: If you want to view the different presidential
candidates, please enter 1." <<endl;
      system ("pause");
      cout << "\n[Bot]: If you want to view the different presidential
surveys and polls, please enter 2." <<endl;
      system ("pause");
      cout << "\n[Bot]: If you want to exit, please enter 4." <<endl;
      system ("pause");
      cout << "\nBot: In general, you just need to enter the number
corresponding to choices available unless it's stated otherwise! ";
      system ("pause");
}

void mainmenu()
{
      int answer, choice;
      MENU:
            cout << "\n[Bot]: How may I help you today? Please input the
number corresponding to your choice!";
            cout << "\n(1) Presidential Candidates\n(2) Presidential
Surveys and Polls\n(3) Help\n(4) Exit" << endl;
            cout << "[User]: "; cin >> answer;

      error_check(answer);
      switch (answer)
      {
            case 1:
                candidates();
                  goto MENU;
                  break;
            case 2:
                  surveys();
                  goto MENU;
                  break;
            case 3:
                  help();
                  goto MENU;
```

```
            break;
        case 4:
            goodbye();
            exit(0);
            break;
        default:
            error();
            goto MENU;
    }
}
```

This cpp file contains the logic and loop of the whole system. It's where eBot asks the user if they want to check out the chances of winning for each user one by one or look at the results of the surveys used by the group in their calculations. This is also where the help is located.

Candidates.cpp

```cpp
void candidates()
{
     int answer;
     CANDIDATES:
          cout << "\n[Bot]: Please choose a presidential
candidate." << endl;
          cout << "(1) ABELLA,Ernesto\n(2) DE GUZMAN, Leody\n(3)
DELA ROSA, Ronald\n(4) DOMAGOSO, Francisco\n(5) DUTERTE-CARPIO,
Sara\n(6) GONZALES, Norberto\n(7) LACSON, Panfilo\n(8) MARCOS,
Ferdinand Jr.\n(9) PACQUIAO,  Emmanuel\n(10) POE, Grace\n(11)
ROBREDO, Maria Leonor\n(12) Back\n(13) Exit" <<endl;
cout << "[User]: ";
          cin >> answer;
          error_check(answer);
          switch (answer)
          {
               case 1:
                    abella();
                    break;
               case 2:
                    de_guzman();
                    break;
               case 3:
                    dela_rosa();
                    break;
               case 4:
                    domagoso();
                    break;
               case 5:
                    duterte_carpio();
                    break;
               case 6:
                    gonzales();
                    break;
               case 7:
                    lacson();
                    break;
               case 8:
                    marcos();
                    break;
               case 9:
                    pacquiao();
```

This cpp file contains each candidate's profile and void function once the Presidential Candidates option in the menu is selected.

SearchDatabase.cpp

```cpp
#include "Header.h"

using namespace std;

int getFBfollowers(string userInput, float Total);
int getTfollowers(string userInput, float Total);
int engagementScore(string userInput, float tfollowers);
void twitter(string userInput, float tfollowers, float
tengagements);

float fb_percentage, twt_percentage, pasia_percentage,
mnlbulletin_percentage, kalye_percentage, surveys_percentage;

int totalFBfollowers(string userInput){ //searching facebook
database
    ifstream ffollowers ( "database/facebookfollowers.txt" );

    string totalfollowers = "Total";
    string sum;
    string response;
    float total;
        while (getline(ffollowers, sum, '|')) {
        getline(ffollowers, response);
        if(totalfollowers == sum) {
            stringstream tf(response);
            tf >> total;
            getFBfollowers(userInput, total);
            ffollowers.close();
            return 1;
            }
        }

    // we couldn't find the phrase, so we'll need to go to the
other function
    // After you are done with the file always close it.
    ffollowers.close();
    return 0;
}
```

This cpp file primarily contains the backend of the whole system. All void functions responsible for searching the databases and fetching responses are located in this file.

Surveys.cpp

```cpp
void surveys ()
{
      int answer;
      SURVEYS:
            cout << "\n[Bot]: Please choose a presidential survey."
<<endl;
            cout << "(1) Facebook Followers\n(2) Twitter Followers
and Engagements \n(3) Pulse Asia\n(4) Manila Bulletin\n(5)
Kalye\n(6) Back\n(7) Exit" <<endl;
            cout << "[User]: ";
            cin >> answer;
            error_check(answer);
            switch (answer)
                  case 1:
                        facebookFollowers();
                        break;
                  case 2:
                        twitterFollowers();
                        break;
                  case 3:
                        pulseAsia();
                        break;
                  case 4:
                        manilaBulletin();
                        break;
                  case 5:
                        Kalye();
                        break;
                  case 6:
                        mainmenu();
                        break;
                  case 7:
                        goodbye();
                        exit(0);
                        break;
                  default:
                        error();
                        goto SURVEYS;
```

This cpp file contains the summarized version of all the surveys and polls gathered and used by the group. As mentioned earlier, this covers the results from the Pulse Asia survey, Manila Bulletin Polls (Facebook, Twitter, Website) and finally, "Kalye" or street surveys. It also cover percentages of winning for Facebook and Twitter.