

Assignment 2: AI Survey Program

Sarah Gillard

CS 311: Introduction to Artificial Intelligence

May 17, 2024

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import java.io.FileWriter;

import java.io.IOException;

import java.util.HashMap;

import java.util.Map;

import java.util.Scanner;


public class PoliticalPartySurvey {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        /*Many questions are taken from or based on questions from the
ISideWith 2024 Political Quiz. https://www.isidewith.com/political-quiz*/

        //Questions stored in multidimensional array

        String[][] surveyQuestions = {

            {"Should the government invest in programs to reduce food
waste?",

                "A. Yes.", "B. No.", "C. No and don't tax me for
this!", "D. Yes and this issue is very important to me."},

            {"Should the government provide subsidies for companies
developing carbon capture technologies?",

                "A. Yes.", "B. No.", "C. No and don't tax me for
this.", "D. Yes and this issue is very important to me."},

            {"Do you support single-payer healthcare system?",

                "A. Yes.", "B. No.", "C. No, I do NOT want to be
taxed for this.", "D. Yes and this issue is very important to me."},

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    {"Should the federal government increase funding of health
care for low income individuals (Medicaid)?",
    "A. Yes.", "B. No.", "C. No, I do NOT want to be
taxed for this.", "D. Yes and this issue is very important to me."},
    {"Should the government provide subsidies for first-time
homebuyers?",
    "A. Yes.", "B. No.", "C. No, I do NOT want to be
taxed for this.", "D. Yes and this issue is very important to me."},
    {"Should there be more restrictions on the current process
of purchasing a gun?",
    "A. Yes.", "B. No.", "C. No, there should be
none.", "D. Yes and this issue is very important to me."},
    {"Should teachers be allowed to carry guns at school?",
    "A. No.", "B. Yes.", "C. Yes, if that is their
choice to do so.", "D. No, guns have no place in schools."},
    {"Do you support workers' unions?",
    "A. Yes.", "B. No.", "C. No, but there should not
be laws against them.", "D. Yes, and this issue is very important to
me."},
    {"Should foreigners, currently residing in the United
States, have the right to vote?",
    "A. Yes.", "B. No.", "C. No, citizens only.", "D.
Yes, and this issue is very important to me."},
    {"Should the government raise taxes on the rich?",
    "A. Yes.", "B. No.", "C. No, get rid of taxes.",
"D. Yes, and this issue is very important to me."},
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    {"Should the federal government pay for tuition at
four-year colleges and universities?",
    "A. Yes.", "B. No.", "C. No, to each their own. Do
not tax me for this!", "D. Yes, and this issue is very important to me."},
    {"Are you pro-life or pro-choice?",
    "A. Pro-choice.", "B. Pro-life.", "C. Government
should be kept out of this personal matter.", "D. Pro-choice and this
issue is very important to me."},
    {"Should the U.S. build a wall at the Mexican border?",
    "A. No.", "B. Yes, build the wall.", "C. I don't
want to fund this with my taxes.", "D. Absolutely not and this issue is
very important to me."},
    {"Should prayer be required in public schools?",
    "A. No.", "B. Yes.", "C. Government and religion
should be separate.", "D. Absolutely not and this issue is very important
to me."},
    {"Should marijuana be decriminalized in every state?",
    "A. Yes.", "B. No.", "C. Yes, it's a personal
choice and the government should have no say in what people want to put
into their bodies.", "D. Yes and this issue is very important to me."},
    {"Do you support the U.S. supplying weapons to Israel?",
    "A. Yes, but the U.S. needs to better monitor their
use.", "B. Yes, I support the Israeli government.", "C. No, the U.S.
should not spend my tax dollars in any other country.", "D. No, the
weapons are killing innocent civilians."},
    {"Do you support prison reform?",
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        "A. Yes.", "B. No.", "C. Yes, some people are in
prison because the government has too much power over silly things.", "D.
Yes, people should never be locked up for minor things."},

        {"What political party do you affiliate with?",

        "A. Democrat.", "B. Republican.", "C.
Libertarian.", "D. Green-Rainbow."}

    };

    // Array to store the party scores

    int[] partyScores = new int[4];

    //Create hashmap for party responses
    Map<String, StringBuilder> partyResponses = new HashMap<>();

    //Loop through questions to collect user input and calculate party
scores

    for (String[] question : surveyQuestions) {

        System.out.println(question[0]);

        for (int j = 1; j < question.length; j++) {

            System.out.println(question[j]);

        }

        //Store the user's choice in option variable

        char option;

        while (true) {

            option = Character.toUpperCase(scanner.next().charAt(0));

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        if (option == 'A' || option == 'B' || option == 'C' ||
option == 'D') {

            break; //Exit loop for valid input

        } else { //Prompt user to enter valid input

            System.out.println("Invalid choice. Enter A, B, C, or
D.");

        }

    }

    //Increment the corresponding party score based on the user's
response

    switch (option) {

        case 'A' -> partyScores[0]++;

        case 'B' -> partyScores[1]++;

        case 'C' -> partyScores[2]++;

        case 'D' -> partyScores[3]++;

    }

    //Create string for user response then append response to
corresponding party StringBuilder in partyResponses

    String response = "User's Response: " + option;

    String partyAffiliation = question[1].split("\\.")[1].trim();

    partyResponses.computeIfAbsent(partyAffiliation, k -> new
StringBuilder()).append(response).append("\n");

}

//Determine the party with the highest score

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    int maxIndex = 0;

    for (int i = 1; i < partyScores.length; i++) {

        if (partyScores[i] > partyScores[maxIndex]) {

            maxIndex = i;

        }

    }

    //Array to store the party affiliations based on scores

    String[] partyAffiliations = {"Democrat", "Republican",
"Libertarian", "Green-Rainbow"};

    //Provide the predicted party alignment to the user

    System.out.println("Thank you for participating in this survey.
Your assumed political party alignment is: " +
partyAffiliations[maxIndex]);

    //Save the user's responses to a text file based on the party
affiliation

    saveResponsesToFile(partyAffiliations[maxIndex], partyResponses);

}

//Store responses in a text file

private static void saveResponsesToFile(String partyAffiliation,
Map<String, StringBuilder> partyResponses) {

    try {

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        //Open a file writer to add to the text file or create the file
        if it doesn't exist yet

        //Create four files: one for each of the 4 political parties
        surveyed

        FileWriter writer = new FileWriter(partyAffiliation +
        "_Responses.txt");

        for (StringBuilder response : partyResponses.values()) {
            //Add user's response to the file for training purposes
            writer.write(response.toString());
        }

        //Close the file writer
        writer.close();

        System.out.println("User responses saved to " +
        partyAffiliation + "_Responses.txt");

    } catch (IOException e) {
        //Handle any errors that occur during file writing
        System.out.println("An error occurred while saving user
        responses.");
    }
}
}

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