**1.package** AddressBook;

**import** java.io.\*;

**import** java.util.ArrayList;

**import** java.util.List;

**import** java.util.Scanner;

**public** **class** Main {

**private** **static** Scanner *in* = **new** Scanner(System.***in***);

**private** **static** File *file* = **new** File("Addresses.txt");

**static** List<Person> *people* = **new** ArrayList<>();

**public** **static** **void** main(String[] args) **throws** IOException {

*readPeopleFromFile*();

*showMainMenu*();

}

**private** **static** **void** findPerson() **throws** IOException {

System.***out***.println("1. Find with name");

System.***out***.println("2. Find with surname");

String choice;

**do** {

choice = *in*.nextLine();

**switch** (choice) {

**case** "1":

*findByName*();

**break**;

**case** "2":

*findBySurname*();

**break**;

**default**:

System.***out***.print("Choose 1 or 2: ");

}

} **while** (!choice.equals("1") && !choice.equals("2"));

System.***out***.println();

*showMainMenu*();

}

**private** **static** **void** findBySurname() {

System.***out***.print("Enter surname: ");

String surnameToFind = *in*.nextLine();

**int** matches = 0;

**for**(Person person : *people*) {

**if**(person.getSurname().equals(surnameToFind)) {

System.***out***.println(person);

matches++;

}

}

**if**(matches<=0) {

System.***out***.println("There is no person with this surname");

}

}

**private** **static** **void** findByName() {

System.***out***.print("Enter name: ");

String nameToFind = *in*.nextLine();

**int** matches = 0;

**for**(Person person : *people*) {

**if**(person.getName().equals(nameToFind)) {

System.***out***.println(person);

matches++;

}

}

**if**(matches<=0) {

System.***out***.println("There is no person with this name ");

}

}

**private** **static** **void** addPerson() **throws** IOException {

System.***out***.println("Enter name: ");

String name = *in*.nextLine();

System.***out***.println("Enter surname: ");

String surname = *in*.nextLine();

System.***out***.println("Enter phone number: ");

String phoneNumber = *in*.nextLine();

System.***out***.println("Enter email: ");

String email = *in*.nextLine();

System.***out***.println("Enter addres: ");

String address = *in*.nextLine();

Person person = **new** Person(name, surname, phoneNumber, email, address);

*addToFile*(person);

*people*.add(person);

System.***out***.println("Added person number: " + phoneNumber + person);

System.***out***.println();

*showMainMenu*();

}

**private** **static** **void** addToFile(Person person) {

**try**(BufferedWriter writer = **new** BufferedWriter(**new** FileWriter(*file*, **true**))) {

writer.write(person.getName()+"\r\n" + person.getSurname() + "\r\n" + person.getPhoneNumber() + "\r\n" + person.getEmail() +

"\r\n" + person.getAddress() + "\r\n\r\n");

} **catch**(IOException e) {

System.***out***.println(e);

}

}

**private** **static** **boolean** readPeopleFromFile() **throws** IOException {

**try**(BufferedReader reader = **new** BufferedReader(**new** FileReader(*file*))) {

String name = **null**;

**while**((name = reader.readLine()) != **null**) {

Person person = **new** Person(name, reader.readLine(), reader.readLine(), reader.readLine(), reader.readLine());

*people*.add(person); //adds person to the list

reader.readLine();

}

**return** **true**;

}

**catch** ( IOException e) {

System.***out***.println(e);

}

**return** **false**;

}

**private** **static** **void** showMainMenu() **throws** IOException {

System.***out***.println("1. Add person");

System.***out***.println("2. Find person");

System.***out***.println("3. Show all contacts");

System.***out***.println("4. Close program");

String choice;

**do** {

choice = *in*.nextLine();

**switch** (choice) {

**case** "1":

*addPerson*();

**break**;

**case** "2":

*findPerson*();

**break**;

**case** "3":

System.***out***.println(*people*);

System.***out***.println();

*showMainMenu*();

**break**;

**case** "4":

System.*exit*(0);

**break**;

**default**:

System.***out***.println("Enter numer from 1 to 4");

}

}**while**(!choice.equals("4"));

}

}

**2.package** AddressBook;

**import** java.io.BufferedReader;

**import** java.io.BufferedWriter;

**import** java.io.File;

**import** java.io.FileReader;

**import** java.io.FileWriter;

**import** java.io.IOException;

**import** java.util.ArrayList;

**import** java.util.List;

/\*public class DataFile {

\*/

**public** **class** DataFile {

**private** File file;

**public** DataFile(String fileName) {

**this**.file = **new** File(fileName);

}

**public** DataFile(File file) {

**this**.file = file;

}

**public** **void** save(Person person) {

**try**(BufferedWriter writer = **new** BufferedWriter(**new** FileWriter(file, **true**))) {

writer.write(person.getName()+"\r\n" + person.getSurname() + "\r\n" + person.getPhoneNumber() + "\r\n" + person.getEmail() +

"\r\n" + person.getAddress() + "\r\n\r\n");

} **catch**(IOException e) {

System.***out***.println(e);

}

}

**public** List<Person> loadAll() **throws** IOException {

List<Person> people = **new** ArrayList<Person>();

**try**(BufferedReader reader = **new** BufferedReader(**new** FileReader(file))) {

String name = **null**;

**while**((name = reader.readLine()) != **null**) {

Person person = **new** Person(name, reader.readLine(), reader.readLine(), reader.readLine(), reader.readLine());

people.add(person);

reader.readLine();

}

}

**catch** ( IOException e) {

System.***out***.println(e);

}

**return** people;

}

}

**3.package** AddressBook;

**import** java.io.File;

**import** java.io.IOException;

**import** java.util.ArrayList;

**import** java.util.List;

**import** java.util.Scanner;

**import** java.util.stream.Collectors;

**public** **class** AddressBookController {

/\*public class AddressBookController {\*/

**private** **enum** Action {

***ADD\_PERSON***,

***FIND\_PERSON***,

***DISPLAY\_ALL***,

***EXIT***

}

**private** **enum** FilterOption {

***FIRST\_NAME***,

***SURNAME***

}

**private** DataFile dataFile;

**private** Scanner in;

**private** List<Person> people;

**public** AddressBookController(DataFile dataFile) {

in = **new** Scanner(System.***in***);

**this**.dataFile = dataFile;

**try** {

people = dataFile.loadAll();

} **catch** (IOException e) {

e.printStackTrace();

}

}

**public** AddressBookController(String fileName) {

**this**(**new** DataFile(fileName));

}

**public** AddressBookController(File file) {

**this**(**new** DataFile(file));

}

**private** List<Person> findPerson(String searchString, FilterOption filter) {

**switch** (filter) {

**case** ***FIRST\_NAME***: **return** people.stream().filter(person -> person.getSurname().equals(searchString)).collect(Collectors.*toList*());

**case** ***SURNAME***: **return** people.stream().filter(person -> person.getName().equals(searchString)).collect(Collectors.*toList*());

**default**:

System.***out***.println("Invalid filter option");

**return** **new** ArrayList<>();

}

}

**public** **void** run() {

**while**(**true**) {

Action action = showMainMenuAndGetSelection();

**switch** (action) {

**case** ***ADD\_PERSON***:

Person person = getPersonInformation();

dataFile.save(person);

people.add(person);

**break**;

**case** ***FIND\_PERSON***:

FilterOption selectedFilter = showFindPersonFilterOptionsAndGetSelection();

System.***out***.print("Enter name: ");

String searchString = in.nextLine();

List<Person> filteredPeople = findPerson(searchString, selectedFilter);

**if** (filteredPeople.size() == 0) {

System.***out***.println("No matches");

} **else** {

**for** (Person p : filteredPeople)

System.***out***.println(p);

}

**break**;

**case** ***DISPLAY\_ALL***:

System.***out***.println(**this**.people);

System.***out***.println();

**break**;

**case** ***EXIT***:

System.***out***.println("Exiting Program");

System.*exit*(0);

**break**;

}

}

}

**private** Action showMainMenuAndGetSelection() {

System.***out***.println("1. Add person");

System.***out***.println("2. Find person");

System.***out***.println("3. Show all contacts");

System.***out***.println("4. Close program");

String choice;

**do** {

choice = in.nextLine();

**switch** (choice) {

**case** "1": **return** Action.***ADD\_PERSON***;

**case** "2": **return** Action.***FIND\_PERSON***;

**case** "3": **return** Action.***DISPLAY\_ALL***;

**case** "4": **return** Action.***EXIT***;

**default**: System.***out***.println("Enter a number from 1 to 4");

}

} **while** (!choice.equals("4"));

**return** **null**; //should never reach here

}

**private** Person getPersonInformation() {

System.***out***.println("Enter first name: ");

String firstName = in.nextLine();

System.***out***.println("Enter surname: ");

String surname = in.nextLine();

System.***out***.println("Enter phone number: ");

String phoneNumber = in.nextLine();

System.***out***.println("Enter email: ");

String email = in.nextLine();

System.***out***.println("Enter addres: ");

String address = in.nextLine();

**return** **new** Person(firstName, surname, phoneNumber, email, address);

}

**private** FilterOption showFindPersonFilterOptionsAndGetSelection() {

System.***out***.println("1. Find with name");

System.***out***.println("2. Find with surname");

System.***out***.println();

String choice;

**do** {

choice = in.nextLine();

**switch** (choice) {

**case** "1": **return** FilterOption.***FIRST\_NAME***;

**case** "2": **return** FilterOption.***SURNAME***;

**default**: System.***out***.print("Choose 1 or 2");

}

} **while** (!choice.equals("1") && !choice.equals("2"));

**return** **null**; //should never reach here

}

}

**4.**

**package** AddressBook;

**public** **class** Person {

**static** **int** *id* = Main.*people*.size();

**private** String name;

**private** String surname;

**private** String phoneNumber;

**private** String email;

**private** String address;

Person(String name, String surname, String phoneNumber, String email, String address) {

**this**.name = name;

**this**.surname = surname;

**this**.phoneNumber = phoneNumber;

**this**.email = email;

**this**.address = address;

*id*++;

}

String getName() {

**return** name;

}

String getSurname() {

**return** surname;

}

String getPhoneNumber() {

**return** phoneNumber;

}

String getEmail() {

**return** email;

}

String getAddress() {

**return** address;

}

@Override

**public** String toString() {

**return** "\n\nName: " + getName() + "\nSurname: " + getSurname() + "\nPhone number: " + getPhoneNumber() + "\nEmail: " +

getEmail() + "\nAddress: " + getAddress();

}

}

Output:

1. Add person

2. Find person

3. Show all contacts

4. Close program

1

Enter name:

Nitanjali

Enter surname:

Gaykar

Enter phone number:

7083155622

Enter email:

nitanjali3oct@gmail.com

Enter addres:

Pune

Added person number: 7083155622

Name: Nitanjali

Surname: Gaykar

Phone number: 7083155622

Email: nitanjali3oct@gmail.com

Address: Pune

1. Add person

2. Find person

3. Show all contacts

4. Close program

2

1. Find with name

2. Find with surname

1

Enter name: Nitanjali

Name: Nitanjali

Surname: Gaykar

Phone number: 7083155622

Email: nitanjali3oct@gmail.com

Address:Pune

1. Add person

2. Find person

3. Show all contacts

4. Close program

1. Add person

2. Find person

3. Show all contacts

4. Close program

2

1. Find with name

2. Find with surname

1

Enter name: cdf

There is no person with this name

1. Add person

2. Find person

3. Show all contacts

4. Close program

3

Name: 2

Surname:

Phone number: 87678987

Email: miabc@gmail.com

Address: abc,

Name: Nitanjali

Surname: Gaykar

Phone number: 7083155622

Email: nitanjali3oct@gmail.com

Address:Pune

Name: Nitanjali

Surname: Gaykar

Phone number: 7083155622

Email: nitanjali3oct@gmail.com

Address: Pune

Name:Nitanjali

Surname: Gaykar

Phone number: 7083155622

Email:nitanjali3oct@gmail.com

Address: Pune

1. Add person

2. Find person

3. Show all contacts

4. Close program

1. Add person

2. Find person

3. Show all contacts

4. Close program

4