JAVA LAB – 9
FILE IO , Collections and Serialization

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Question>

Write a java IO and collection program to

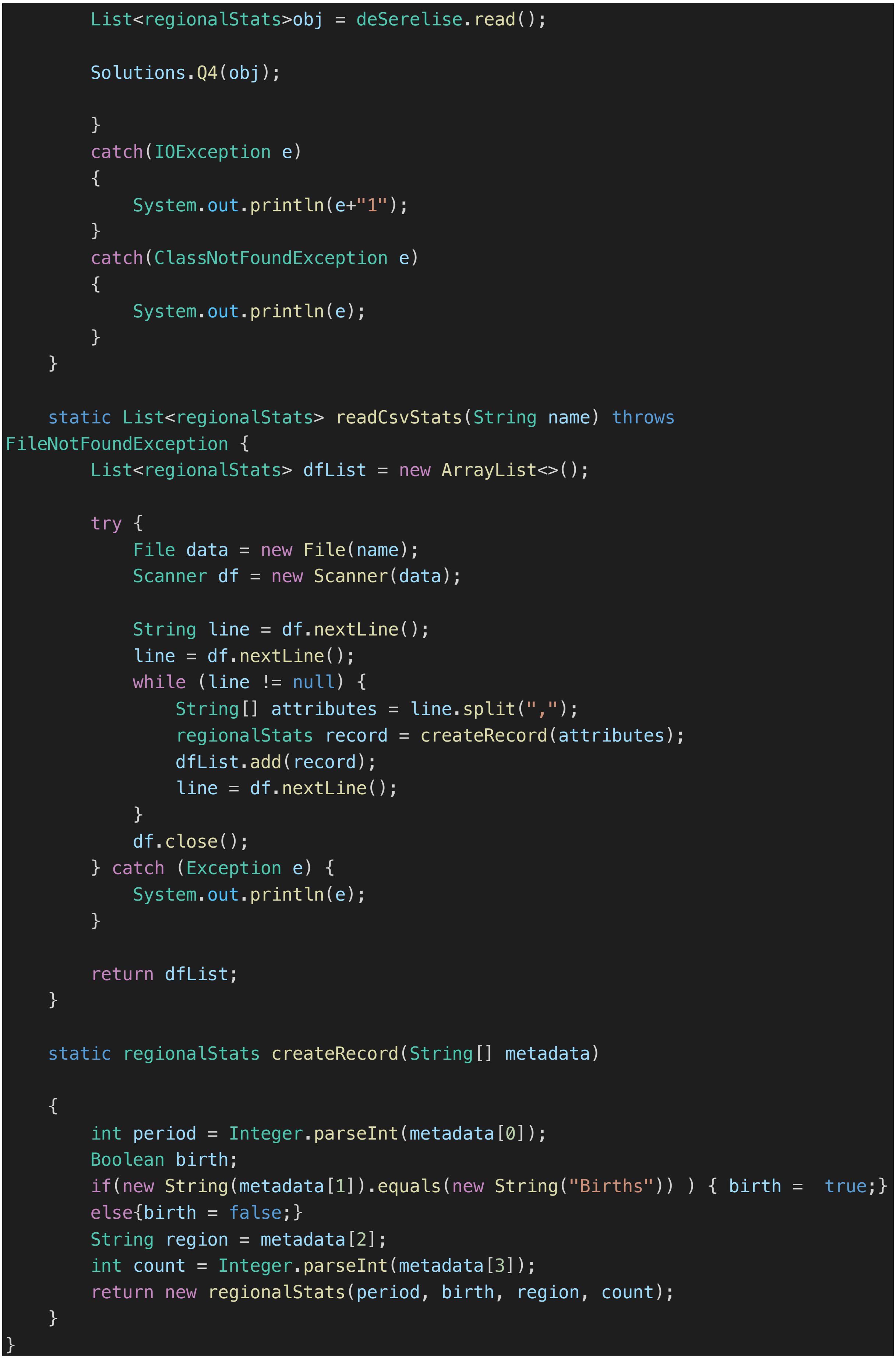
- Identify the numbers of births in particular region from the given input file named "births-deaths-by-region".
- identify the number of death during the period 2020.
- Identify the total umber of regions
- Identify the year which has more birth counts

Save the object of your class as "lab9.dat" and perform deserialization

Solution>

Dataread.java

```
import java.io.*;
import java.util.ArrayList;
import java.util.List;
import java.util.*;

public class DataRead {
    public static void main(String[] args)   {
        String data = ("/Users/yashtripathi/Documents/OneDrive/yash
docs/Work/Collage/Semister 5/Java Lab/LAB_10/data.csv");
        try{
        List<regionalStats> df= readCsvStats(data);

        staticMethods Solutions = new staticMethods();

        Solutions.Q1(df);

        Solutions.Q2(df);

        Solutions.Q3(df);

        Solutions.Q4(df);


        System.out.println("Saving the ARRAY of custom objects using seriisation
reading it again to solve question ");

        serelise.save(df);
```



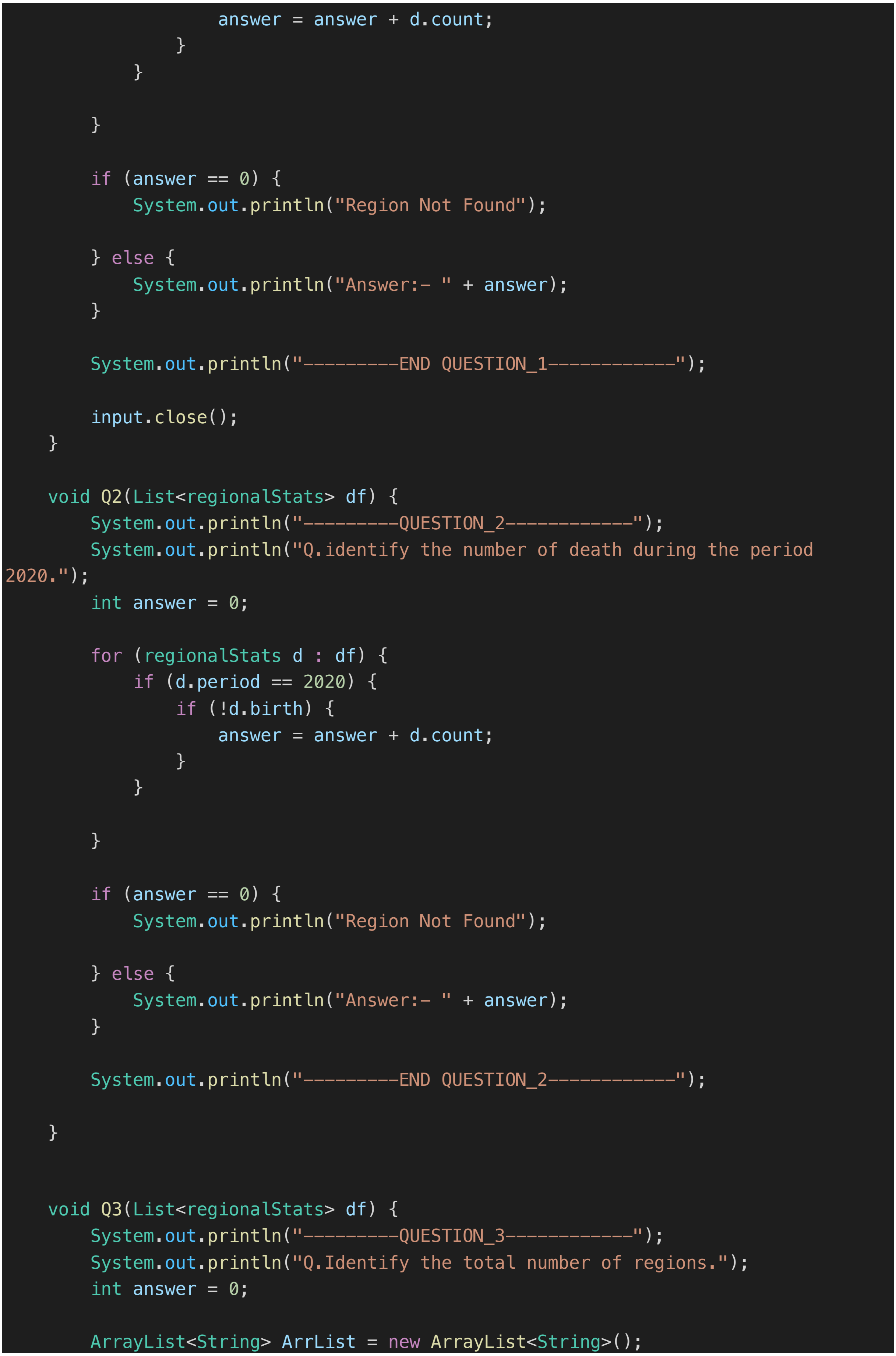
```
        List<regionalStats>obj = deSerelise.read();

        Solutions.Q4(obj);

        }
        catch(IOException e)
        {
            System.out.println(e+"1");
        }
        catch(ClassNotFoundException e)
        {
            System.out.println(e);
        }
    }

    static List<regionalStats> readCsvStats(String name) throws
FileNotFoundException {
        List<regionalStats> dfList = new ArrayList<>();

        try {
            File data = new File(name);
            Scanner df = new Scanner(data);

            String line = df.nextLine();
            line = df.nextLine();
            while (line != null) {
                String[] attributes = line.split(",");
                regionalStats record = createRecord(attributes);
                dfList.add(record);
                line = df.nextLine();
            }
            df.close();
        } catch (Exception e) {
            System.out.println(e);
        }

        return dfList;
    }

    static regionalStats createRecord(String[] metadata)

    {
        int period = Integer.parseInt(metadata[0]);
        Boolean birth;
        if(new String(metadata[1]).equals(new String("Births")) ) { birth =  true;}
        else{birth = false;}
        String region = metadata[2];
        int count = Integer.parseInt(metadata[3]);
        return new regionalStats(period, birth, region, count);
    }
}
```

RegionalStats.java

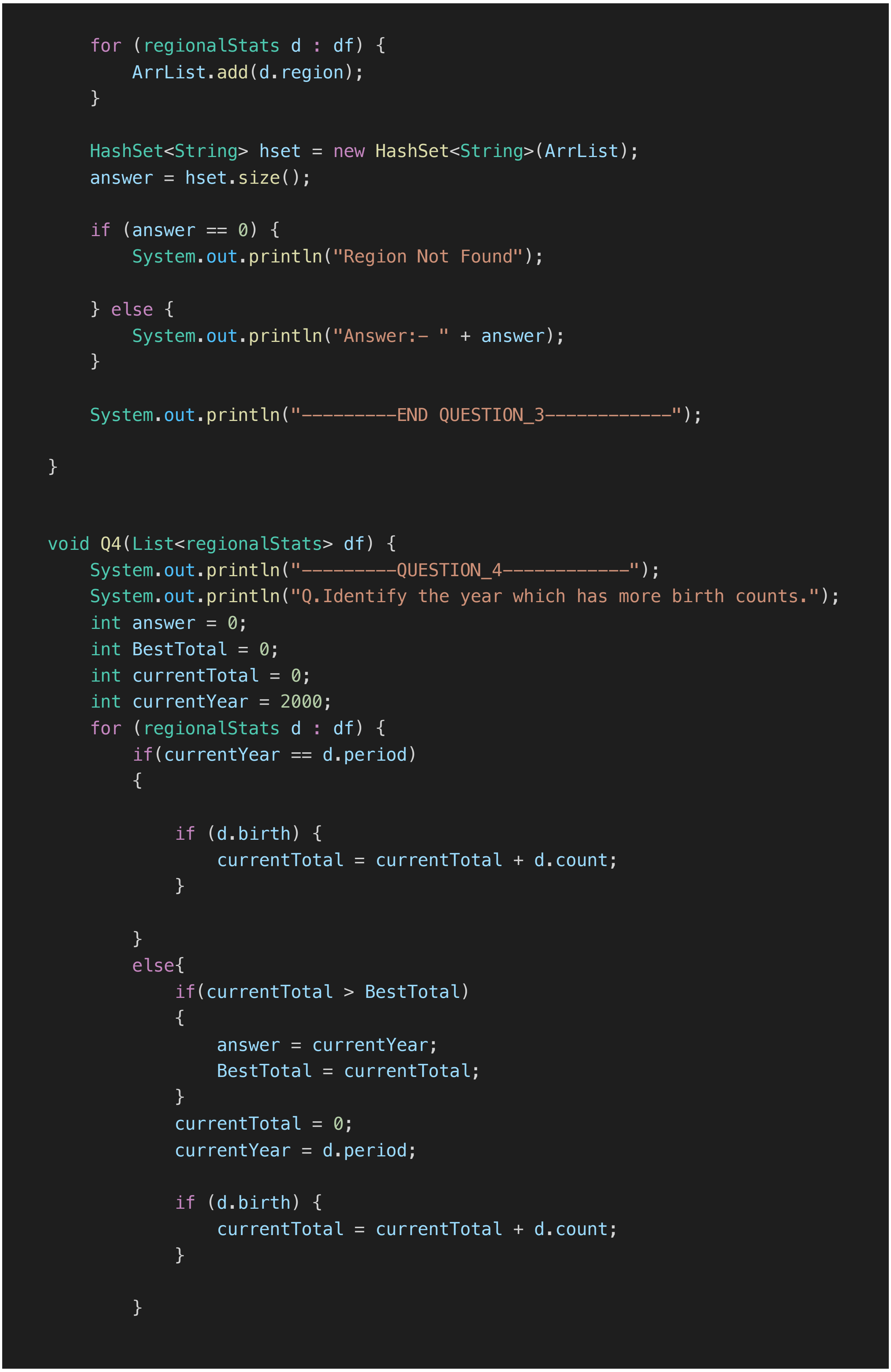
```
import java.io.Serializable;

public class regionalStats implements Serializable {
    int period;
    Boolean birth;
    String region;
    int count;

    regionalStats(
                    int period,
                    Boolean birth,
                    String region,
                    int count
                )
    {
        this.period = period;
        this.birth = birth;
        this.region = region;
        this.count = count;
    }
    @Override public String toString() { return "Record [period=" + period + ", 
birth=" + birth + ", region=" + region + ", count="+count+"]"; }

}
```

StaticMeathods.java

```
import java.util.ArrayList;
import java.util.HashSet;
import java.util.List;
import java.util.Scanner;

public class staticMethods {
    void Q1(List<regionalStats> df) {
        System.out.println("---------QUESTION_1------------");
        System.out.println(
                "Q.Identify the numbers of births in particular region from the 
given input file named \"births-deaths-by-region\".");
        int answer = 0;

        Scanner input = new Scanner(System.in);

        System.out.println("Enter Region name:- ");
        String Region = input.nextLine();
        for (regionalStats d : df) {
            if (d.region.equals(Region)) {
                if (d.birth) {
```



```
                    answer = answer + d.count;
                }
            }

        }

        if (answer == 0) {
            System.out.println("Region Not Found");

        } else {
            System.out.println("Answer:- " + answer);
        }

        System.out.println("----------END QUESTION_1------------");

        input.close();
    }

    void Q2(List<regionalStats> df) {
        System.out.println("----------QUESTION_2------------");
        System.out.println("Q.identify the number of death during the period
2020.");
        int answer = 0;

        for (regionalStats d : df) {
            if (d.period == 2020) {
                if (!d.birth) {
                    answer = answer + d.count;
                }
            }

        }

        if (answer == 0) {
            System.out.println("Region Not Found");

        } else {
            System.out.println("Answer:- " + answer);
        }

        System.out.println("----------END QUESTION_2------------");

    }


    void Q3(List<regionalStats> df) {
        System.out.println("----------QUESTION_3------------");
        System.out.println("Q.Identify the total number of regions.");
        int answer = 0;

        ArrayList<String> ArrList = new ArrayList<String>();
```



```
        for (regionalStats d : df) {
            ArrList.add(d.region);
        }

        HashSet<String> hset = new HashSet<String>(ArrList);
        answer = hset.size();

        if (answer == 0) {
            System.out.println("Region Not Found");

        } else {
            System.out.println("Answer:- " + answer);
        }

        System.out.println("---------END QUESTION_3------------");

    }


    void Q4(List<regionalStats> df) {
        System.out.println("---------QUESTION_4------------");
        System.out.println("Q.Identify the year which has more birth counts.");
        int answer = 0;
        int BestTotal = 0;
        int currentTotal = 0;
        int currentYear = 2000;
        for (regionalStats d : df) {
            if(currentYear == d.period)
            {

                if (d.birth) {
                    currentTotal = currentTotal + d.count;
                }

            }
            else{
                if(currentTotal > BestTotal)
                {
                    answer = currentYear;
                    BestTotal = currentTotal;
                }
                currentTotal = 0;
                currentYear = d.period;

                if (d.birth) {
                    currentTotal = currentTotal + d.count;
                }

            }
        }

            System.out.println("Answer:- " + answer);


        System.out.println("---------END QUESTION_4------------");

    }
}
```

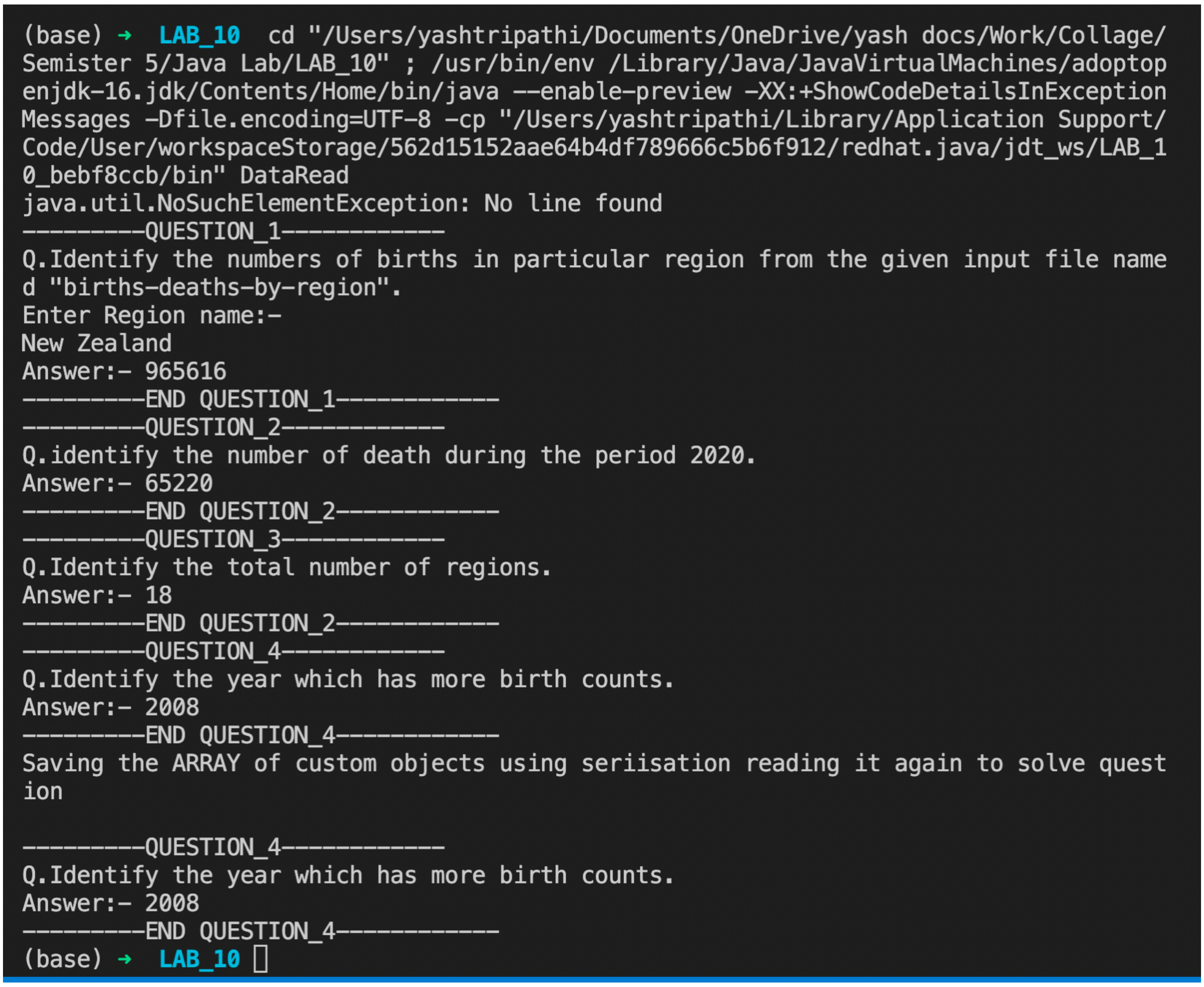
Serilise.java

```
import java.io.FileNotFoundException;
import java.io.FileOutputStream;
import java.io.IOException;
import java.io.ObjectOutputStream;
import java.util.List;

public class serelise {
public static void save(List<regionalStats> obj) throws FileNotFoundException,
IOException {
    ObjectOutputStream out = new ObjectOutputStream(new
FileOutputStream("lab9.ser"));
    // regionalStats new1 = new regionalStats(2005, true, "Calcutta", 2314);
    out.writeObject(obj);
    out.close();

}

}
```

Deserilise.java

```
import java.io.FileInputStream;
import java.io.FileNotFoundException;
import java.io.IOException;
import java.io.ObjectInputStream;
import java.util.List;

public class deSerelise {

    public static List<regionalStats> read() throws FileNotFoundException,
IOException, ClassNotFoundException {
        ObjectInputStream in = new ObjectInputStream(new
FileInputStream("lab9.ser"));

        System.out.println();
        List<regionalStats> data = (List<regionalStats>)in.readObject();
        in.close();
        return data;
    }

}
```

Screenshots>



```
(base) ➜  LAB_10  cd "/Users/yashtripathi/Documents/OneDrive/yash docs/Work/Collage/
Semister 5/Java Lab/LAB_10" ; /usr/bin/env /Library/Java/JavaVirtualMachines/adoptop
enjdk-16.jdk/Contents/Home/bin/java --enable-preview -XX:+ShowCodeDetailsInException
Messages -Dfile.encoding=UTF-8 -cp "/Users/yashtripathi/Library/Application Support/
Code/User/workspaceStorage/562d15152aae64b4df789666c5b6f912/redhat.java/jdt_ws/LAB_1
0_bebf8ccb/bin" DataRead
java.util.NoSuchElementException: No line found
---------QUESTION_1------------
Q.Identify the numbers of births in particular region from the given input file name
d "births-deaths-by-region".
Enter Region name:-
New Zealand
Answer:- 965616
---------END QUESTION_1------------
---------QUESTION_2------------
Q.identify the number of death during the period 2020.
Answer:- 65220
---------END QUESTION_2------------
---------QUESTION_3------------
Q.Identify the total number of regions.
Answer:- 18
---------END QUESTION_2------------
---------QUESTION_4------------
Q.Identify the year which has more birth counts.
Answer:- 2008
---------END QUESTION_4------------
Saving the ARRAY of custom objects using seriisation reading it again to solve quest
ion

---------QUESTION_4------------
Q.Identify the year which has more birth counts.
Answer:- 2008
---------END QUESTION_4------------
(base) ➜  LAB_10 
```