

Linnaeus University

1DV532 – Starting out with Java

Assignment 3 Report

Student: Evan Huynh

Student ID: eh223im@student.lnu.se



Table of Contents

[Report 3](#_Toc44587025)

[Exercise 1: Dice 3](#_Toc44587026)

[Exercise 2: Person 3](#_Toc44587027)

[Exercise 3: Message 3](#_Toc44587028)

[Exercise 4: Number 3](#_Toc44587029)

[Exercise 5: Name 3](#_Toc44587030)

[Source code 4](#_Toc44587031)

[Bibliography 13](#_Toc44587032)

# Report

## Exercise 1: Dice

In this exercise, the main idea is to create two variables for two dice then another variable to sum them up. After each turn, we add 1 into each value of the array recorded result and export it in the appropriate form.

## Exercise 2: Person

This exercise requires a lot of classes and inheritances. For each class we make two constructors, a no-argument and a full-argument constructor. For each of the parent, there will be a special method to export to all parent’s field to ArrayList (namely, *callMeWhenYouNeedSomeHelp* and *callMeWhenYouNeedSomeMoreHelp*). All *toString* methods have similar algorithm: call the parents’ arraylist, add their own fields and export the arraylist to String using its’ own *toString* method. This way we can keep exporting all the fields simple and avoid rewriting multiple lines of code.

For the PersonMain class, it is self-explanatory.

## Exercise 3: Message

A

## Exercise 4: Number

A

## Exercise 5: Name

A

## Note

# Source code

Here is my source code for all the exercise.

|  |
| --- |
| 1 |
| Dice.java  package eh223im\_assign3;  import java.util.Random;  public class Dices {  public static void main(String[] args) {  int a1, a2, a3;  Random r = new Random();  int[][] b = new int[11][2];  for (int i = 0; i<b.length;i++) {  b[i][0] = i+2;  }   for (int i = 0; i<10000; i++) {  a1 = r.nextInt(6) + 1;  a2 = r.nextInt(6) + 1;  a3 = a1 + a2;  b[a3 - 2][1] += 1;  }   for (int i = 0; i<b.length;i++) {  System.*out*.println(b[i][0]+"\t"+b[i][1]);  }  } } |
| 2 |
| Person.java  package eh223im\_assign3;  import java.util.ArrayList;  public class Person {  private String name;  private String address;  private String phonenumber;  private String emailaddress;   public Person(String name, String address, String phonenumber, String emailaddress) {  this.name = name;  this.address = address;  this.phonenumber = phonenumber;  this.emailaddress = emailaddress;  }   public Person() {   }   public String getName() {  return name;  }   public void setName(String name) {  this.name = name;  }   public String getAddress() {  return address;  }   public void setAddress(String address) {  this.address = address;  }   public String getPhonenumber() {  return phonenumber;  }   public void setPhonenumber(String phonenumber) {  this.phonenumber = phonenumber;  }   public String getEmailaddress() {  return emailaddress;  }   public void setEmailaddress(String emailaddress) {  this.emailaddress = emailaddress;  }   ArrayList callMeWhenYouNeedSomeHelp() {  ArrayList al = new ArrayList();  al.add(getName());  al.add(getAddress());  al.add(getPhonenumber());  al.add(getEmailaddress());  return al;  }   public String toString() {  return callMeWhenYouNeedSomeHelp().toString();  } }  class Student extends Person {  private String classStatus;   public Student (String name, String address, String phonenumber, String emailaddress, String classStatus) {  super(name, address, phonenumber, emailaddress);  this.classStatus = classStatus;  }   public Student() {   }   public String getClassStatus() {  return classStatus;  }   public void setClassStatus(String classStatus) {  this.classStatus = classStatus;  }   public String toString() {  ArrayList<String> al = callMeWhenYouNeedSomeHelp();  al.add(classStatus);  return al.toString();  } }  class Employee extends Person {  private String dateHired;  private int salary;   public Employee (String name, String address, String phonenumber, String emailaddress, String dateHired, int salary) {  super (name, address, phonenumber, emailaddress);  this.dateHired = dateHired;  this.salary = salary;  }   public Employee() {   }   public String getDateHired() {  return dateHired;  }   public void setDateHired(String dateHired) {  this.dateHired = dateHired;  }   public int getSalary() {  return salary;  }   public void setSalary(int salary) {  this.salary = salary;  }   ArrayList callMeWhenYouNeedSomeMoreHelp() {  ArrayList al = callMeWhenYouNeedSomeHelp();  al.add(getDateHired());  al.add(getSalary());  return al;  }   public String toString() {  ArrayList al = callMeWhenYouNeedSomeMoreHelp();  return al.toString();  } }  class Faculty extends Employee {  private String rank;  private String officeHour;   public Faculty(String name, String address, String phonenumber, String emailaddress, String dateHired, int salary, String rank, String officeHour) {  super(name, address, phonenumber, emailaddress, dateHired, salary);  this.rank = rank;  this.officeHour = officeHour;  }   public Faculty() {   }   public String getRank() {  return rank;  }   public void setRank(String rank) {  this.rank = rank;  }   public String getOfficeHour() {  return officeHour;  }   public void setOfficeHour(String officeHour) {  this.officeHour = officeHour;  }   public String toString() {  ArrayList al = callMeWhenYouNeedSomeMoreHelp();  al.add(rank);  al.add(officeHour);  return al.toString();  } }  class Staff extends Employee {  private String title;   public Staff(String name, String address, String phonenumber, String emailaddress, String dateHired, int salary, String title) {  super(name, address, phonenumber, emailaddress, dateHired, salary);  this.title = title;  }   public Staff() {   }   public String getTitle() {  return title;  }   public void setTitle(String title) {  this.title = title;  }   public String toString() {  ArrayList al = callMeWhenYouNeedSomeMoreHelp();  al.add(title);  return al.toString();  } } |
| PersonMain.java  package eh223im\_assign3;  public class PersonMain {  public static void main(String[] args) {  Person person = new Person("John","Los Angeles","0123456789","john@wwe.com");  Student student = new Student("Cena","New York","0518123456","cena@newyork.edu","freshmen");  Employee employee = new Employee("Simeon","Los Santos","0123456789","sy@pms.com","20130917",150000000);  Staff staff = new Staff("Franklin","Los Santos","0123456789","franklin@pms.com","20130917",10000000,"CEO");  Faculty faculty = new Faculty("Lamar","Los Santos","0123456789","lamar@pms.com","20130917",150000,"Vice President","0800-0900");  System.*out*.println(person.toString());  System.*out*.println(student.toString());  System.*out*.println(employee.toString());  System.*out*.println(staff.toString());  System.*out*.println(faculty.toString());  } } |
| 3 |
| Message.java  package eh223im\_assign3;  import java.util.ArrayList; import java.util.Arrays; import java.util.Collections;  public class Message {  private String text;   public Message(String text) {  this.text = text;  }   public String callMeWhenYouNeedSomeHelp() {  return text;  }   public String encode() {  StringBuilder sb = new StringBuilder();  char[] temp1 = "abcdefghijklmnopqrstuvwxyz".toCharArray();  char[] temp2 = "ABCDEFGHIJKLMNOPQRSTUVWXYZ".toCharArray();  char[] temp3 = text.toCharArray();   ArrayList<Character> al1 = new ArrayList<>();  for (char i:temp1) {  al1.add(i);  }   ArrayList<Character> al2 = new ArrayList<>();  for (char i:temp2) {  al2.add(i);  }   ArrayList<Character> al3 = new ArrayList<>();  for (char i:temp3) {  al3.add(i);  }   for (int i = 0; i< al3.size(); i++) {  char j = al3.get(i);  if (al1.contains(j)) {  j = al1.get( (al1.indexOf(j) + 1) % 26);  } else if (al2.contains(j)) {  j = al2.get( (al2.indexOf(j) + 1) % 26);  }  al3.set(i,j);  }   for (Character character : al3) {  sb.append(character);  }   return sb.toString();  }   public void setText(String text) {  this.text = text;  }   public String getText() {  return text;  } }  class SMS extends Message {  private String recipientContactNo;   public SMS(String recipientContactNo,String text) {  super(text);  this.recipientContactNo = recipientContactNo;  }   public String getRecipientContactNo() {  return recipientContactNo;  }   public void setRecipientContactNo(String recipientContactNo) {  this.recipientContactNo = recipientContactNo;  }   public String toString() {  ArrayList<String> al = new ArrayList<String>();  al.add(recipientContactNo);  al.add(callMeWhenYouNeedSomeHelp());  return al.toString();  } }  class Email extends Message {  private String sender;  private String receiver;  private String subject;   public Email(String sender, String receiver, String subject, String text) {  super(text);  this.sender=sender;  this.receiver=receiver;  this.subject=subject;  }   public String toString() {  ArrayList<String> al = new ArrayList<String>();  al.add(sender);  al.add(receiver);  al.add(subject);  al.add(callMeWhenYouNeedSomeHelp());  return al.toString();  }   public String getSender() {  return sender;  }   public void setSender(String sender) {  this.sender = sender;  }   public String getReceiver() {  return receiver;  }   public void setReceiver(String receiver) {  this.receiver = receiver;  }   public String getSubject() {  return subject;  }   public void setSubject(String subject) {  this.subject = subject;  } } |
| MessageMain.java  package eh223im\_assign3;  public class MessageMain {  public static void main(String[] args) {  Message m = new Message("Hello World");  SMS sms = new SMS("0123456789",m.getText()+" from SMS.");  System.*out*.println(sms.toString());  System.*out*.println(sms.encode());  Email e = new Email("alice@gmail.com","bob@gmail.com","Hello Bob",m.getText()+" from email.");  System.*out*.println(e.toString());  System.*out*.println(e.encode());  } } |
| 4 |
| Numbers.java  package eh223im\_assign3;  import java.io.FileInputStream; import java.io.FileOutputStream; import java.io.PrintWriter; import java.util.Scanner;  public class Numbers {  public static void main(String[] args) throws Exception {  String dir = System.*getProperty*("user.dir")+"/src/eh223im\_assign3";  FileInputStream fis = new FileInputStream(dir+"/numbers.txt");  Scanner s = new Scanner(fis);  int[] a = new int[0];  while (s.hasNext()) {  int[] b = new int[a.length+1];  System.*arraycopy*(a,0,b,0,a.length);  a=b;  a[a.length-1] = s.nextInt();  }   int c = 0;  for (int i = 0; i < a.length; i++) {  c+=a[i];  }  double d = (double) c/a.length;   FileOutputStream fos = new FileOutputStream(dir+"/analysis.txt");  PrintWriter pw = new PrintWriter(fos);  String o1 = "Average: "+d;  pw.println(o1);  double e = 0;   for (int i = 0; i < a.length; i++) {  e += Math.*pow*((a[i] - d),2);  }  e = Math.*sqrt*(e);  String o2 = "Standard deviation: "+e;  pw.println(o2);   System.*out*.println(o1);  System.*out*.println(o2);   s.close();  fis.close();  pw.close();  fos.close();  } } |
| 5 |
| Names.java  package eh223im\_assign3;  import java.io.FileInputStream; import java.util.Objects; import java.util.Scanner;  public class Names {  public static void main(String[] args) throws Exception {  // Idea for getting the current working directory: https://stackoverflow.com/questions/4871051/how-to-get-the-current-working-directory-in-java  String dir = System.*getProperty*("user.dir")+"/src/eh223im\_assign3";  FileInputStream fisB = new FileInputStream(dir+"/boynames.txt");  Scanner sB = new Scanner(fisB);  Object[][] a = new Object[0][2];  while (sB.hasNext()) {  Object[][] b = new Object[a.length + 1][2];  System.*arraycopy*(a, 0, b, 0, a.length);  a = b;  a[a.length-1][0] = sB.next();  a[a.length-1][1] = sB.nextInt();  }   FileInputStream fisG = new FileInputStream(dir+"/girlnames.txt");  Scanner sG = new Scanner(fisG);  Object[][] c = new Object[0][2];  while (sG.hasNext()) {  Object[][] d = new Object[c.length + 1][2];  System.*arraycopy*(c, 0, d, 0, c.length);  c = d;  c[c.length-1][0] = sG.next();  c[c.length-1][1] = sG.nextInt();  }  sB.close();  fisB.close();  sG.close();  fisG.close();   String[] a0 = new String[a.length];  for (int i = 0; i< a0.length; i++) {  a0[i] = Objects.*toString*(a[i][0]);  }  int[] a1 = new int[a.length];  for (int i = 0; i< a1.length; i++) {  a1[i] = Integer.*parseInt*(Objects.*toString*(a[i][1]));  }  String[] c0 = new String[c.length];  for (int i = 0; i< c0.length; i++) {  c0[i] = Objects.*toString*(c[i][0]);  }  int[] c1 = new int[c.length];  for (int i = 0; i< c1.length; i++) {  c1[i] = Integer.*parseInt*(Objects.*toString*(c[i][1]));  }   Scanner s = new Scanner(System.*in*);  System.*out*.print("Enter name: ");  String ss = s.next();  int rB = -1;  int rG = -1;  for (int i = 0; i<a0.length; i++) {  if (ss.equals(a0[i])) {  rB = i+1;  }  }  for (int i = 0; i<c0.length; i++) {  if (ss.equals(c0[i])) {  rG = i+1;  }  }  if (rB == -1) {  System.*out*.println(ss + " is not ranked among the top 1000 boy names.");  } else {  System.*out*.println(ss + " is ranked "+rB+" in popularity among boys with "+c1[rB]+" naming.");  }  if (rG == -1) {  System.*out*.println(ss + " is not ranked among the top 1000 girl names.");  } else {  System.*out*.println(ss + " is ranked "+rG+" in popularity among girls with "+c1[rG]+" naming.");  }  } } |

# Bibliography

Brilliant.org. (2020, June 16). *Finding The Number of Digits*. Retrieved from https://brilliant.org/wiki/finding-digits-of-a-number/