WIX1002 Fundamentals of Programming
Tutorial 7 File Input and Output

1. Write statements for each of the following
   a. Store ten random integers within 0 to 1000 to a text file name integer.txt

```
import java.io.*;
import java.util.Random;

Random random = new Random();

try {
   PrintWriter out = new PrintWriter(new FileOutputStream("src/integer.txt"));
   for (int i = 0; i < 10; i++)
      out.println(random.next(1001));
   out.close();
} catch (IOException e) {
   System.out.println("Error with the file output");
}
```

   b. Read from the text file generated in a. Display all the integer and the largest integer.

```
import java.io.*;

int minimum = 100;
int maximum = 0;

try {
   Scanner in = new Scanner(new FileInputStream("src/integer.txt"));
   while(in.hasNextLine()){
      int number = in.nextInt();
      if(number < minimum)
         minimum = number;
      if(number > maximum)
         maximum = number;
   }
   in.close();
} catch(IOException e){
   System.out.println("Problem with file input");
}
System.out.println("Maximum : " + maximum);
System.out.println("Minimum : " + minimum);
```

c. Store ten random integers within 0 to 1000 to a binary file name integer.dat.

```
import java.io.*;
import java.util.Random;

Random random = new Random();

try {
   ObjectOutputStream out = new ObjectOutputStream(new
FileOutputStream("src/integer.dat"));
   for (int i = 0; i < 10; i++)
      out.writeInt(random.next(1001));
   out.close();
} catch (IOException e) {
   System.out.println("Error with the file output");
}
```

d. Read from the binary file generated in a c. Display all the integers and the average.

```
import java.io.*;

int total = 0;
int ct = 0;

try {
   ObjectInputStream in = new ObjectInputStream(new
FileInputStream("src/integer.dat"));
   try {
      while(true){
         int number = in.readInt();
         total += number;
         ct++;
         System.out.println(number);
      }

   } catch (EOFException e) {
      break
   }

   out.close();
} catch (IOException e) {
   System.out.println("Error with the file output");
}
double average = (double) total / ct;
System.out.printf("Average: %.2f%n",average);
```

2. Correct the error for the following statements.
   a. PrintWriter out = new PrintWriter(new FileOutputStream ("d:\data\matrix.txt"));

```
PrintWriter out = new PrintWriter(new
FileOutputStream("d:\\data\\matrix.txt"));
```

   b.

```
try {
  PrintWriter out = new PrintWriter(new FileOutputStream("data.txt"));
  out.close();
} catch (FileNotFoundException e) {
  System.out.println("Problem with file output");
}
```

```
try {
   PrintWriter out = new PrintWriter(new FileOutputStream("data.txt"));
   out.close();
} catch (IOException e) {
   System.out.println("Problem with file output");
}
```

   c.

```
int num;
Scanner a = new Scanner(new FileInputStream("data.dat"));
num = a.readInt();
a.close();
```

```
int num;
ObjectInputStream a = new ObjectInputStream(new
FileInputStream("data.dat"));
num = a.readInt();
a.close();
```

   d.

```
ObjectOutputStream o = new ObjectOutputStream (new
FileOutputStream("data.dat"));
o.print('A');
o.close();
```

```
ObjectOutputStream o = new ObjectOutputStream (new
```

```
FileOutputStream("data.dat"));
o.writeUTF("A");
o.close();
```

3. Write a program that converts a sentence into binary number (ASCII code 8 bit) and store it in a text file named data.txt. Then, read from the text file and display the sentence.

```
import java.io.*;
import java.util.Scanner;

Scanner inputSentence = new Scanner(System.in);

try {
   PrintWriter w = new PrintWriter(new FileOutputStream("data.txt"));
   String sentence = "Hi";
   String ascii = "";

   for (int i = 0; i < sentence.length(); i++) {
      char letter = sentence.charAt(i);
      ascii += String.format("%08d", Integer.parseInt(Integer.toBinaryString(letter)));
   }

   w.print(ascii);
   w.close();
} catch(IOException e){
   System.out.println("The file cannot be written.");
}

try{
   Scanner scanner = new Scanner(new FileInputStream("data.txt"));

   int code = 0;
   String num = "";

   while(scanner.hasNextLine()){

      num += scanner.next();
   }

   System.out.println(num);
   String wholeSentence = "";
   for(int i = 0; i<num.length(); i+=8) {
      code = 0;
     for(int j = i, z = 7; j<i+8; j++, z--){
        code+=Integer.parseInt(String.valueOf(num.charAt(j))) * Math.pow(2, z);
     }
```

```
        char print = (char)code;
        wholeSentence += print;
    }

    System.out.println(wholeSentence);

    scanner.close();
}catch(IOException e){
    System.out.println("File is not available");
}
```