St Francis Institute of Technology, Mumbai-400 103

Class: SE-ITA/ITB Semester: III; A.Y. 2020-2021
Subject: Java Labs

Title-8: Java Program to implement IO Streams.

1. **Aim:**
   i. You have been given the list of the names of the files in your directory. You have to select Java files from them. A file is a Java file if it's name ends with ".java".

2. **Prerequisite:** Knowledge of Input Output Streams in Java.

3. **Requirements:** Personal Computer (PC), Windows Operating System, Net beans 8.0.

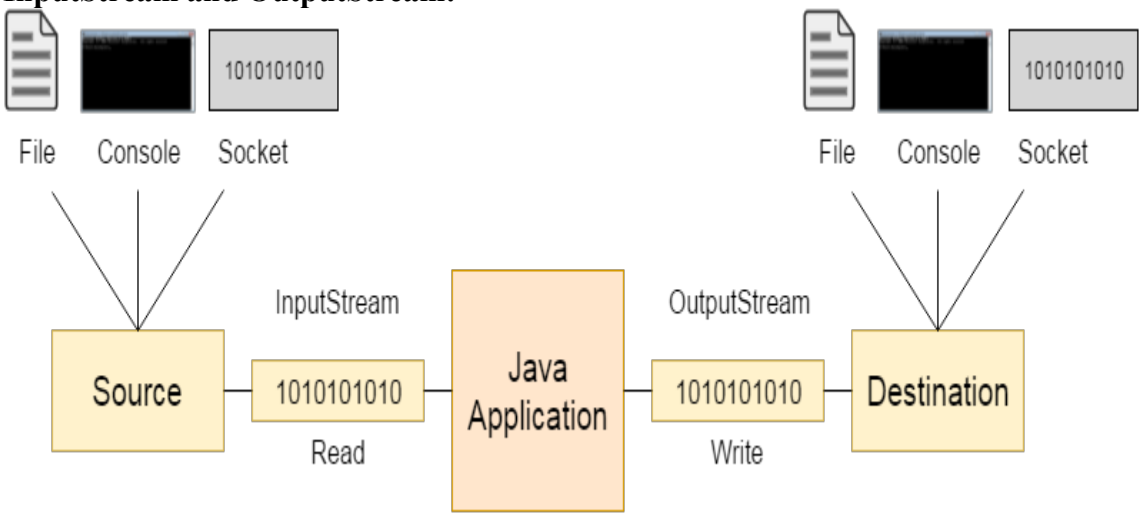
4. **Pre-Experiment Exercise:**
   Theory:

   a. **I/O Streams:**

   Java uses the concept of a stream to make I/O operation fast. The java.io package contains all the classes required for input and output operations. We can perform **file handling in Java** by Java I/O API. In Java, 3 streams are created for us automatically. All these streams are attached with the console.

   1) System.out: standard output stream
   2) System.in: standard input stream
   3) System.err: standard error stream

   b. **InputStream and OutputStream:**



5. Laboratory Exercise

A. Procedure

i. Open Net beans for Java.
ii. Open File and Create New Java Project.
iii. Inside the Java Project rename give name to your Java Class.
iv. Click on Finish.
v. Type the Java Code in the opened class.
vi. Save the code by pressing Ctrl+S.
vii. Run the code by pressing Shift+F6.

B. Program code with comments:

Write and execute your program code to achieve the given aim and attach it **with your own comments with neat indentation**.

6. Post-Experiments Exercise

A. Extended Theory:

1. Explain various Java File operation methods.

B. Results/Observations/Program output:

Present the program input/output results and comment on the same.

C. Questions/Programs:

1. Write a Java program to read a File using FileReader.
2. Write a Java program to write a File using FileWriter.

D. Conclusion:

1. Write what was performed in the experiment/program.
2. What is the significance of experiment/program?
3. Mention few applications of what was studied.

E. References

1. Balguruswamy, “Programming with java A primer”, Fifth edition, Tata McGraw Hill Publication.
2. Let Us Java-Yashwant Kanetkar.
3. Learn to Master JAVA, from Star EDU solutions , by ScriptDemics.
4. Java 8 Programming-Black Book,by-Dreamtech Publications.
5. www.programmingsimplified.com
6. www.javatpoint.com

Program 1:

```java
//You have been given the list of the names of the files in your directory. You
//have to select Java files from them. A file is a Java file if it’s name ends
with
//".java".

import java.io.File;
import java.io.FilenameFilter;
import java.io.IOException;

public class Exp8_1 {
   public static void main(String args[]) throws IOException {
      //Creating a File object for directory
      File directoryPath = new File("D:\\College\\Java\\Experiments\\Exp1");
      FilenameFilter textFilefilter = new FilenameFilter(){
         public boolean accept(File dir, String name) {
            String lowercaseName = name.toLowerCase();
            if (lowercaseName.endsWith(".java")) {
               return true;
            } else {
               return false;
            }
         }
      };
      //List of all the text files
      String filesList[] = directoryPath.list(textFilefilter);
      System.out.println("List of the text files in the specified directory:");
      for(String fileName : filesList) {
         System.out.println(fileName);
      }
   }
}
```

Output:

```
D:\College\JAVA\Experiments\Exp8>javac Exp8_1.java

D:\College\JAVA\Experiments\Exp8>java Exp8_1
List of the text files in the specified directory:
Exp1_1.java
Exp1_2.java
Q1.java
Q2.java

D:\College\JAVA\Experiments\Exp8>
```

Questions:

Question 1:

```java
//Write a Java program to read a File using FileReader.

import java.io.FileReader;

class Read {
  public static void main(String[] args) {

    char[] array = new char[150];
    try {
      // Creates a reader using the FileReader
      FileReader input = new FileReader("Hello.txt");

      // Reads characters
      input.read(array);
      System.out.println("Data in the file:");
      System.out.println(array);
      // Closes the reader
      input.close();
    }
    catch(Exception e) {
      e.printStackTrace();
    }
  }
}
```

Output:

```
D:\College\JAVA\Experiments\Exp8>javac Read.java

D:\College\JAVA\Experiments\Exp8>java Read
Data in the file:
Hello,
This is a sample text file for experiment 8 of Java Labs
This file was created by Yash Mahajan of SE IT B.

D:\College\JAVA\Experiments\Exp8>
```

Question 2:

```java
//Write a Java program to write a File using FileWriter.

import java.io.IOException;
import java.io.InputStreamReader;
import java.io.BufferedReader;
import java.io.FileWriter;

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

     String data;
     InputStreamReader ir=new InputStreamReader(System.in);
     BufferedReader br=new BufferedReader(ir);
     data=br.readLine();
     try {
       // Creates a Writer using FileWriter
       FileWriter output = new FileWriter("filewrite.txt");

       // Writes string to the file
       output.write(data);
       System.out.println("Data is written to the file.");

       // Closes the writer
       output.close();
```

```
    }
    catch (Exception e) {
      e.printStackTrace();
    }
  }
}
```

Output:

```
D:\College\JAVA\Experiments\Exp8>javac Write.java

D:\College\JAVA\Experiments\Exp8>java Write
Hello world from Java Language and Yash.
Data is written to the file.

D:\College\JAVA\Experiments\Exp8>
```

filewrite.txt

```
filewrite.txt
1    Hello world from Java Language and Yash.
```

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6. Post Experiment Exercise.

A) Extended Theory :-

1. Explain various java file operations

① To create file :-
To create a new file, we can use the createNewFile() method. It returns true if a new file is created or false if the file is already existing in specific location.
The package used is java.io.file.
The file object is linked with the specific filepath. File file = new File("newfile.text");

② To read file :-
To read data from the file we can use subclass of either InputStream or Reader. The package used is java.io.FileReader. Suppose we have a file input.txt then we have to create an object of FileReader named input which will be linked with input.txt file and the content in the file will be displayed.

③ To write file :-
To write data to the file, we can use subclasses of either output stream or writer. The package used is java.io.FileWriter. To write data

to the file we have used the write() method.
Eg: If we have created a file named output.txt
We use FileWriter class to link with output.txt.
FileWriter output = new FileWriter("output.txt");

(4) To delete a file:-
We can use the delete() method of the file class to delete the specific file or directory
It returns true if the file is deleted or false if the file does not exist.

D] Conclusion:-

In this experiment we have studied the concept of I/O Streams and we have written program to implement file reading and writing.
The java.io package contains almost all the classes one might ever require.
All the streams represent and input/output source and destination.
Files are important when it comes to storing data. File handling provids a mechanism to perform various operations on a file.