

JAVA PROGRAMMING II

Module 3: **java.io** package Lab Guide for Lab3

Session Objectives

In this session, you will be practicing with

- InputStream class and its subclasses
- OutputStream class and its subclasses
- File class
- Buffered Streams

Part 1 – Getting started (30 minutes)

1. Using streams to read data from a file.

The following program reads a text file and displays data on the screen. Create ReadWriteFile.java file. Scan the code first, type the code, compile and run the program.

```
import java.io.File;
import java.io.BufferedReader;
import java.io.FileReader;
import java.io.IOException;
import java.io.FileNotFoundException;

public class ReadWriteFile {

    public void readData() {
        try {
            File f = new File("test.txt");
            FileInputStream fis = new FileInputStream(f);
            BufferedInputStream bis = new BufferedInputStream(fis);
            int i;
            while ((i = bis.read()) != -1) {
                System.out.print((char) i);
            }
            System.out.println("");
            fis.close();
        } catch (Exception ex) {
            ex.printStackTrace();
        }
    }

    public void writeData(String str) {
```

```
//chuyen chuoi thanh byte
byte[] b = str.getBytes();
try {
    FileOutputStream fos = new FileOutputStream("test.txt");
    fos.write(b);
    fos.flush();
    fos.close();
} catch (Exception ex) {
    ex.printStackTrace();
}

public static void main(String[] args) {
    ReadWriteFile d = new ReadWriteFile();
    d.readData();
    d.writeData("hom nay hoc java.io");
}
}
```

Questions:

- How to copy data from one file to another? Hint: using `BufferedWriter`.
- 2. Listing the contents of a directory (in a file system).

Copy the code, compile and run the program.

```
import java.io.File;

public class Dir {
    static void listPath(File path) {
        // get all files (or directories) in File path
        File[] files = path.listFiles();
        for (int i = 0, i < files.length; i++) {
            System.out.println(files[i].toString());
        }
    }

    public static void main(String args[]) {
        listPath(new File("C:\\\\WINDOWS"));
    }
}
```

Questions:

- How to get all files in subdirectories of root Directory? Hint: using a recursive method.

Part 2 – Workshops (30 minutes)

- Quickly look at Module 3’s workshops for reviewing basic steps for using byte streams, writing and reading data from a file.
- Try to compile, run and observe the output of sample code provided for related workshops. Discuss with your class-mate and your instructor if needed.

Part 3– Do it yourself

Exercise 1. Write a program to read a text file and encrypt it by shifting every character forward (in the ASCII table): all characters ‘a’ replaced by ‘d’, ‘b’ replaced by ‘e’, ‘c’ replaced by ‘f’, and so on. Save the encrypted content to an output text file.

Exercise 2. Creating a class Student includes name, age, mark and necessary methods. Using *FileOutputStream*, *FileInputStream* and *BufferedInputStream*, *BufferedOutputStream* to write a program that has functional menu:

```
Menu
-----
1.    Add a list of Students and save to File
2.    Loading list of Students from a File
3.    Exit
Your choice: _
```

- + Save to File: input information of several students and write that information into a text file, each student in a line (use tabs to separate the fields)
- + Read File: read and display information of students

Exercise 3. Write a program to imitate the “dir” program. The path of the directory is a parameter input from the keyboard. List all files and subdirectories with details as below figure.

```
C:\Documents and Settings>dir C:\Inetpub\wwwroot
Volume in drive C has no label.
Volume Serial Number is 9C78-3571

Directory of C:\Inetpub\wwwroot

09/05/2010  01:14 PM    <DIR>          .
09/05/2010  01:14 PM    <DIR>          ..
07/07/2010  10:15 AM    <DIR>          aspnet_client
07/21/2001  02:22 PM                342 help.gif
07/21/2001  02:22 PM            2,048 iisstart.asp
07/21/2001  02:22 PM          10,030 localstart.asp
07/21/2001  02:22 PM                356 mmc.gif
07/21/2001  02:22 PM            2,806 pagererror.gif
07/21/2001  02:22 PM            1,046 print.gif
07/21/2001  02:22 PM            1,577 warning.gif
07/21/2001  02:22 PM            1,182 web.gif
07/21/2001  02:22 PM          11,946 winxp.gif
               9 File(s)              31,333 bytes
               3 Dir(s)      1,590,009,856 bytes free
```