



K. J. Somaiya College of Engineering, Mumbai-77

Batch: A3 Roll No.: 1911034

Experiment / assignment / tutorial No. 10

Grade: AA / AB / BB / BC / CC / CD / DD

Signature of the Staff In-charge with date

TITLE :File Handling in Java

AIM: Write a program that ask the user to enter the name of the file, and then asks the user to enter a character. The program should count and display the number of times that the specified character appears in the file

Expected OUTCOME of Experiment:

CO4: Explore the interface, exceptions, multithreading, packages.

Books/ Journals/ Websites referred:

1. Ralph Bravaco , Shai Simoson , “Java Programing From the Group Up” Tata McGraw-Hill.

2.Grady Booch, Object Oriented Analysis and Design .

Pre Lab/ Prior Concepts:

File Handling In Java:

File Handling in Java permits us to create, read, update, and delete the files, which are stored on the local file system. There are two types of File handling in Java – FileWriter, and FileReader, which can perform all the file operations in Java Program.

Types of File Handling in Java

FileWriter and FileReader classes are very frequently used to write and read data from



K. J. Somaiya College of Engineering, Mumbai-77

text files (they are character stream classes).

Java FileWriter:

FileWriter in Java is very useful in creating a file writing character

This class inherits from the OutputStream class.

The constructors of the class FileWriter usually assume that the byte-buffer size and default character encoding is acceptable.

To declare them by oneself we need to construct OutputStreamWriter on a FileOutputStream. Java FileWriter is meant for writing streams of characters.

- **FileWriter(File file)** – This constructor constructs a FileWriter object when a file object is given.
- **FileWriter (File file, boolean append)** – Constructs a FileWriter object.
- **FileWriter (FileDescriptor fd)** – Constructs a FileWriter object associated using a file descriptor.
- **public void write (int c) throws IOException** – Writes a single character.
- **FileWriter (String fileName)** – Constructs a FileWriter object when a file name is given.
- **public void write (char [] str) throws IOException** – Writes an array of characters.
- **public void write(String str) throws IOException** – Writes a [string in Java](#).
- **FileWriter (String fileName, Boolean append)** – Constructs a FileWriter object when a file name is given with a Boolean to decide whether it append or not.
- **public void write(String str, int off, int len) throws IOException** – Writes a portion of a string.

Java FileReader:

FileReader (File Handling in Java) uses for reading the data, which are in the form of characters, and it is done from a 'text' file. This class inherits from the InputStreamReader Class.

The constructors of this class are assuming that the default character encoding and the default byte are appropriate. To confirm these values by your own, construct an InputStreamReader on a FileInputStream.

Java FileReader uses for particularly reading streams of character. For reading streams of raw bytes, FileInputStream can use.

- **FileReader(File file)** – This constructor creates a FileReader only when there is File to read from.



K. J. Somaiya College of Engineering, Mumbai-77

- **FileReader(FileDescriptor fd)** – Creates a new FileReader when there is a FileDescriptor from which it can read from.
- **FileReader(String fileName)** – Creates a new FileReader.

Methods:

- **public int read () throws IOException** – This method reads a single character and also blocks one until another one is available, i.e. an input/output error occurs.
- **public int read(char[] cbuff) throws IOException** – Reads characters into an array. It will block until a character is available.
- **public abstract int read(char[] buff, int off, int len) which throws an IOException** – Use to read characters into a portion of an array. It will block the process until the input is available or an error occurs in input and output, or the stream end reach.

Class Diagram:

public class Exp10
Method : public static void main(String args[])
Variables : char n; int c int i, int count=0; String name;



K. J. Somaiya College of Engineering, Mumbai-77

Implementation details:

Code :

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

public class Exp10
{

    public static void main(String args[])
    {
        char n;
        int c,i, count=0;
        String name;
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the name of the file");
        name = sc.next();
        try
        {
            File obj = new File(name + ".txt");
            if(!obj.exists()){
                throw new FileNotFoundException ("File Not found");
            }
        }
```



K. J. Somaiya College of Engineering, Mumbai-77

```
else
{

Scanner obj1=new Scanner(obj);
System.out.println("Enter the character whose count you want to find");
n = sc.next().charAt(0);
while(obj1.hasNextLine())
{
String line = obj1.nextLine(); /*as obj1 belongs to scanner class we are
using the hasNextLine method of scanner class.*/
for(i=0;i<line.length();i++)
{
if(line.charAt(i)==n)
{
count = count+1;
}
}
}
obj1.close();
System.out.println("The character "+n+" is found "+count+" number of
times");
}

}
catch(FileNotFoundException e)
{
System.out.println("Some error occurred");
e.printStackTrace();
}
}
}
```



K. J. Somaiya College of Engineering, Mumbai-77

Text file used in executing the above code :

```
File Edit Format View Help
And you, Cinderella," he said, "what do you want?"
"Father, break off for me the first twig that brushes against your hat on your way home."
So he bought beautiful dresses, pearls, and jewels for his two stepdaughters. On his way home,
as he was riding through a green thicket, a hazel twig brushed against him and knocked off his hat.
Then he broke off the twig and took it with him. Arriving home, he gave his stepdaughters the things
that they had asked for, and he gave Cinderella the twig from the hazel bush.
Cinderella thanked him, went to her mother's grave, and planted the branch on it,
and she wept so much that her tears fell upon it and watered it. It grew and became a beautiful tree.
Cinderella went to this tree three times every day, and beneath it she wept and prayed. A white bird
came to the tree every time, and whenever she expressed a wish, the bird would throw down to her what she had wished for.
Now it happened that the king proclaimed a festival that was to last three days. All the beautiful young girls in the land
were invited, so that his son could select a bride for himself. When the two stepsisters heard that they too had been invited, they were in high spirits.
They called Cinderella, saying, "Comb our hair for us. Brush our shoes and fasten our buckles. We are going to the festival
at the king's castle."
Cinderella obeyed, but wept, because she too would have liked to go to the dance with them. She begged her stepmother
to allow her to go.
"You, Cinderella?" she said. "You, all covered with dust and dirt, and you want to go to the festival?
You have neither clothes nor shoes, and yet you want to dance!"
However, because Cinderella kept asking, the stepmother finally said, "I have scattered a bowl of lentils into
the ashes for you. If you can pick them out again in two hours, then you may go with us."
The girl went through the back door into the garden, and called out, "You tame pigeons, you turtledoves, and all you birds beneath the sky,
come and help me to gather:
The good ones go into the pot,
The bad ones go into your crop."
Two white pigeons came in through the kitchen window, and then the turtledoves, and finally all the birds beneath the sky came whirring and swarming in,
and lit around the ashes. The pigeons nodded their heads and began to pick, pick, pick, pick. And the others also began to pick, pick, pick, pick.
They gathered all the good grains into the bowl. Hardly one hour had passed before they were finished, and they all flew out again.
```

Output:

Case when the file is found :



K. J. Somaiya College of Engineering, Mumbai-77

```
C:\Users\arvin\Desktop>javac Exp10.java

C:\Users\arvin\Desktop>java Exp10
Enter the name of the file
Cinderella
Enter the character whose count you want to find
t
The character t is found 187 number of times

C:\Users\arvin\Desktop>java Exp10
Enter the name of the file
Cinderella
Enter the character whose count you want to find
f
The character f is found 31 number of times
```

When the filename specified does not exist (execution of catch block occurs)

```
C:\Users\arvin\Desktop>java Exp10
Enter the name of the file
Aditi
Some error occurred
java.io.FileNotFoundException: File Not found
    at Exp10.main(Exp10.java:19)

C:\Users\arvin\Desktop>_
```

Conclusion: In this experiment , we have learnt the use of various classes in InputStream as well as OutputStream , for writing and reading bytes of data , as well as the classes FileReader and FileWriter which allow us to read and write character data



K. J. Somaiya College of Engineering, Mumbai-77

into files. We have also been able to execute a program for the implementation of the same.

Post Lab Descriptive Questions

Q.1 How do you write to a file using FileWriter class?

The Java FileWriter Class inherits the output stream class , it is used for writing streams of characters onto files.

The FileWriter object creates the output file , if it is not present already.

Example of using FileWriter class is as follows :

```
import java.io.*;
public class Main {

    public static void main(String args[])throws IOException {
        File infile = new File("Hello.txt");

        // creates the file
        infile.createNewFile();

        // creates a FileWriter Object
        FileWriter w = new FileWriter(infile);

        // Writes the content to the file
        w.write("Java is an Object Oriented Programming Language");
        w.flush();
        w.close();

        // Creates a FileReader Object
        FileReader fr = new FileReader(infile);
        char [] a = new char[50];
        fr.read(a);    // reads the content to the array

        for(char c : a)
            System.out.print(c);    // prints the characters one by one
        fr.close();
    }
}
```

Output of the above program will be as follows :



K. J. Somaiya College of Engineering, Mumbai-77

```
❖ javac -classpath ./run_dir/junit-4.12.jar:target/dependencies/* -d . Main.java
❖ java -classpath ./run_dir/junit-4.12.jar:target/dependencies/* Main
Java is an Object Oriented Programming Language❖
```

Q.2 What is the use of PrintWriter class?

The **Java.io.PrintWriter** class prints formatted representations of objects to a text-output stream.

Following are the fields for **Java.io.PrintWriter** class –

- **protected Writer out** – This is the character-output stream of this PrintWriter.
- **protected Object lock** – This is the object used to synchronize operations on this stream.

Date:

Signature of faculty in-charge



K. J. Somaiya College of Engineering, Mumbai-77