**Tutorial 8**

Write a Java multithreaded program consisting of two threads in which a file is read into a buffer by one thread and written out to another file by another thread.

To make the problem interesting we will assume a case. For example, the data stored in a file (plain text) is some information such as the Name, Department, and the Unique Id. This data is added by one thread into the file, read in to a vector by another thread. The implementation is done using java threads. There are in all four java files.

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| /\* Main.java \*/  import java.util.\*;  import java.lang.\*;  import java.io.\*;  /\* this application starts two threads, one File\_Readerthread, which reads from the file  and stores the objects into the linked list (Vector), and another File\_WriterThread which  reads from the file and stores in to another file Data \*/  public class Main  {  public static void main(String [] args)  {  try{  String filename = null;  DataInputStream dis = new DataInputStream(System.in);  System.out.println("Enter the name of the file");  while((filename = dis.readLine())== null);  File\_Readerthread frt = new File\_Readerthread(filename);  File\_Writerthread fwt = new File\_Writerthread(filename, "DATA");  frt.start();  fwt.start();  }catch(Exception e){System.out.println(e.getMessage());}  }  } //end class Main |

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| /\* Class File\_Readerthread \*/  import java.util.\*;  import java.io.\*;  import java.lang.\*;  import java.util.zip.\*;  /\* This particular class reads the data fom the file and stores in to the vector \*/  public class File\_Readerthread extends Thread  {  private String \_filename;  private FileInputStream fis;  private File f;  private StreamTokenizer stk;  private Vector v\_data;  String [] name\_dept;  Datastore de;  String [] id\_val;  public File\_Readerthread(String filename)  {  try{  \_filename = filename;  f = new File(\_filename);  fis = new FileInputStream(f);  stk = new StreamTokenizer(fis);  v\_data = new Vector();  id\_val = new String[100];  name\_dept = new String[100];  }catch(Exception e){System.out.println(e.getMessage());}  }  public void run()  {  double p ;  int no\_access =0;  String buffer, type;  int no\_of\_times =0;  int pi =0;  try  {  int next = stk.nextToken();  while(next != stk.TT\_EOF )  {  if (stk.ttype == stk.TT\_NUMBER)  {  p = stk.nval;  type = new Integer((int)p).toString();  no\_access = ((no\_of\_times/2)-1);  System.out.println(no\_access);  id\_val[no\_access] = type;  System.out.println(id\_val[no\_access]);  }  else  {  buffer = stk.sval;  name\_dept[no\_of\_times] = buffer;  no\_of\_times++;  }  next = stk.nextToken();  }  for(int i=0; i< no\_of\_times ; i = i+2)  {  de = new Datastore();  de.name = name\_dept[i];  de.dept = name\_dept[i+1];  no\_access = (i/2);  de.id = id\_val[no\_access];  System.out.println(de.name);  System.out.println(de.dept);  System.out.println(de.id);  v\_data.addElement(de);  }  } //end try  catch(Exception e)  {  System.out.println(e.getMessage());  }  } //end run  } //end class |

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| /\* Class File\_Writerthread.java \*/  import java.io.\*;  import java.util.\*;  import java.lang.\*;  /\* This class reads the data from the file and stores in to another file \*/  public class File\_Writerthread extends Thread  {  private String \_filename;  private String \_towrite;  private FileInputStream fis;  private FileOutputStream fws;  private File f, fw;  private PrintStream ps;  private StreamTokenizer stk;  private Vector v\_data;  String [] name\_dept ;  String [] id\_val;  public File\_Writerthread(String filename, String towrite)  {  try {  \_filename = filename;  \_towrite = towrite;  f = new File(\_filename);  fw = new File(\_towrite);  fis = new FileInputStream(f);  fws = new FileOutputStream(fw);  stk = new StreamTokenizer(fis);  ps = new PrintStream(fws);  name\_dept = new String[100];  id\_val = new String[100];  v\_data = new Vector();  }catch(Exception e){System.out.println(e.getMessage());}  }  public void run()  {  double p ;  int no\_access =0;  String buffer, type;  int no\_of\_times =0;  int pi =0;  try  {  int next = stk.nextToken();  while(next != stk.TT\_EOF )  {  if (stk.ttype == stk.TT\_NUMBER)  {  p = stk.nval;  type = new Integer((int)p).toString();  no\_access = ((no\_of\_times/2)-1);  System.out.println(no\_access);  id\_val[no\_access] = type;  System.out.println(id\_val[no\_access]);  }  else  {  buffer = stk.sval;  name\_dept[no\_of\_times] = buffer;  no\_of\_times++;  }  next = stk.nextToken();  }  for(int i=0; i< no\_of\_times ; i = i+2)  {  ps.print(name\_dept[i]);  ps.print(" ");  ps.print(name\_dept[i+1]);  ps.print(" ");  ps.print(id\_val[i/2]);  ps.print("\n");  }  } //end try  catch(Exception e){System.out.println(e.getMessage());}  } //end method run  } //end class |

Create an input.txt with the following content:

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| Ho  ITSD  100001  Ekko  MMU-FCI  180003  Najmur  MMU-FOE  170002 |

**Exercise**: Figure out the remaining code for Datastore.java, to produce the following input, and output:

F:\>**cd** F:\YourName\Tut08

F:\YourName\Tut08>**javac Main.java**

F:\YourName\Tut08>**java Main**

Enter the name of the file

input.txt

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| Sample Guide:  /\* Class Datastore.java \*/  /\* This is the basic data structure \*/  import java.awt.\*;  import java.io.\*;  public class Datastore  {  String name ;  String dept ;  String id;  } |

Have fun!