Assignment No. 03

Program :

```
import java.util.*;
import java.io.*;
class MACRO
{
static String mnt[][]=new String[5][3];

static String ala[][]=new String[10][2];

static String mdt[][]=new String[20][1];

static int mntc=0,mdtc=0,alac=0;
public static void main(String args[])
{
pass1();
System.out.println("\n*********PASS-1 MACROPROCESSOR**********\n");
System.out.println("MACRO NAME TABLE (MNT)\n");
System.out.println("i macro loc\n");
display(mnt,mntc,3);
System.out.println("\n");
System.out.println("ARGUMENT LIST ARRAY(ALA) for Pass1\n");
display(ala,alac,2);
System.out.println("\n");
System.out.println("MACRO DEFINITION TABLE (MDT)\n");
display(mdt,mdtc,1);
System.out.println("\n");
}
```

```
static void pass1()
{
int index=0,i;
String s,prev="",substring;
try
{
BufferedReader inp = new BufferedReader(new FileReader("input.txt"));
File op = new File("pass1_output.txt");
if (!op.exists())
op.createNewFile();
BufferedWriter output = new BufferedWriter(new
FileWriter(op.getAbsoluteFile()));
while((s=inp.readLine())!=null)
{
if(s.equalsIgnoreCase("MACRO"))
{
prev=s;
for(;!(s=inp.readLine()).equalsIgnoreCase("MEND");mdtc++,prev=s)
{
   if(prev.equalsIgnoreCase("MACRO"))
{
StringTokenizer st=new StringTokenizer(s);
String str[]=new String[st.countTokens()];
for(i=0;i<str.length;i++)
str[i]=st.nextToken();
mnt[mntc][0]=(mntc+1)+""; //mnt formation
mnt[mntc][1]=str[0];
mnt[mntc++][2]=(++mdtc)+"";
st=new StringTokenizer(str[1],","); //tokenizing the arguments
```

```
String string[]=new String[st.countTokens()];
for(i=0;i<string.length;i++)
{
string[i]=st.nextToken();
ala[alac][0]=alac+""; //ala table formation
index=string[i].indexOf("=");
if(index!=-1)
ala[alac++][1]=string[i].substring(0,index);
else
ala[alac++][1]=string[i];
}
}
else //automatically eliminates tagging of arguments in definition
{ //mdt formation
index=s.indexOf("&");
substring=s.substring(index);
for(i=0;i<alac;i++)
if(ala[i][1].equals(substring))
s=s.replaceAll(substring,"#"+ala[i][0]);
}
mdt[mdtc-1][0]=s;
}
mdt[mdtc-1][0]=s;
}
else
{
output.write(s);
output.newLine();
}
```

```
}
output.close();
}
catch(FileNotFoundException ex)
{
System.out.println("UNABLE TO END FILE ");
}
catch(IOException e)
{
   e.printStackTrace();
}
}
static void display(String a[][],int n,int m)
{
int i,j;
for(i=0;i<n;i++)
{
for(j=0;j<m;j++)
System.out.print(a[i][j]+" ");
System.out.println();
}
}
}
```

Input : (input.txt)

```
START
MACRO
INCR &ARG3 &ARG2
ADD AREG &ARG1
MOVER BREG &ARG1
```

MEND

MACRO

PVG &ARG2 &ARG1

SUB AREG &ARG2

MOVER CREG & ARG1

MEND

INCR DECR DATA2

END

Output :

```
PS C:\Users\rohan>  & 'C:\Program Files\Java\jdk-21\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\rohan\AppData\Local\Temp\vscodesws_e7788\jdt_ws\jdt.ls-java-project\bin' 'MACRO'

*********PASS-1 MACROPROCESSOR**********

MACRO NAME TABLE (MNT)

i macro loc

1 INCR 1
2 PVG 5


ARGUMENT LIST ARRAY(ALA) for Pass1

0 &ARG3
1 &ARG2


MACRO DEFINITION TABLE (MDT)

INCR &ARG3 &ARG2
ADD AREG &ARG1
MOVER BREG &ARG1
MEND
PVG &ARG2 &ARG1
SUB AREG #1
MOVER CREG & ARG1
MEND


PS C:\Users\rohan>
```