Mpass1.java

```
import java.io.*;
public class MPass1 {


   public static void main(String[] args) throws IOException {
      BufferedReader br1 = new BufferedReader (new
FileReader("C:\\Users\\Vishal\\OneDrive\\Desktop\\SPOS\\Mpass1\\src\\input.txt"));
      String line;
      mdt[] MDT = new mdt[20];
      mnt[] MNT = new mnt[4];
      arglist[] ARGLIST = new arglist[10];
      boolean macro_start = false, macro_end = false, fill_arglist = false;
      int mdt_cnt = 0, mnt_cnt = 0, arglist_cnt = 0;
      while((line = br1.readLine())!=null)
      {
         line = line.replaceAll(",",  " ");
         String[] tokens = line.split("\\s+");
         MDT[mdt_cnt] = new mdt();
         String stmnt = " ";
         for(int i = 0; i<tokens.length ; i++)
         {
                  if(tokens[i].equalsIgnoreCase("mend"))
                  {
                     MDT[mdt_cnt++].stmnt = "\t"+tokens[i];
                     macro_end = true;
                  }
                  if (tokens[i].equalsIgnoreCase("macro"))
                  {
                     macro_start = true;
                     macro_end = false;
                  }
```

```
        else if(!macro_end)
        {
            if(macro_start)
            {
                MNT[mnt_cnt++] = new mnt(tokens[i], mdt_cnt);
                macro_start = false;
                fill_arglist  = true;
            }
            if(fill_arglist)
            {
                while(i<tokens.length)
                {
                    MDT[mdt_cnt].stmnt = MDT[mdt_cnt].stmnt+"\t"+tokens[i];
                    stmnt = stmnt + "\t" + tokens[i];
                    if(tokens[i].matches("&[a-zA-Z]+")||tokens[i].matches("&[a-zA-Z]+[0-9]+"))
                        ARGLIST[arglist_cnt++] = new arglist(tokens[i]);
                    i++;
                }
                fill_arglist = false;
            }
            else
            {
                if(tokens[i].matches("[a-zA-Z]+")||tokens[i].matches("[a-zA-Z]+[0-
9]+")||tokens[i].matches("[0-9]+"))
                {
                    MDT[mdt_cnt].stmnt = MDT[mdt_cnt].stmnt+"\t"+tokens[i];
                    stmnt = stmnt +"\t" + tokens[i];
                }
                if(tokens[i].matches("&[a-zA-Z]+")||tokens[i].matches("&[a-zA-Z]+[0-9]+"))
                {
                    for(int j = 0; j<arglist_cnt; j++)
```

```
                        if(tokens[i].equals(ARGLIST[j].argname))
                        {
                           MDT[mdt_cnt].stmnt = MDT[mdt_cnt].stmnt + "\t#" + (j+1);
                           stmnt = stmnt + "\t#" + (j+1);
                        }
                     }
                  }
               }
            }

         if(stmnt!= "" && !macro_end)
            mdt_cnt++;
      }
      br1.close();

      BufferedWriter bw1 = new BufferedWriter(new
FileWriter("C:\\Users\\Vishal\\OneDrive\\Desktop\\SPOS\\Mpass1\\src\\mnt.java"));
      System.out.println("\n\t***************Macro Name Table********");
      System.out.println("\n\tINDEX\tNAME\tADDRESS");
      for(int i=0 ; i<mnt_cnt ; i++) {
         System.out.println("\t" + i + "\t" + MNT[i].name+"\t"+MNT[i].addr);
         bw1.write(MNT[i].name+"\t"+MNT[i].addr+"\n");
      }
      bw1.close();

      bw1 = new BufferedWriter(new
FileWriter("C:\\Users\\Vishal\\OneDrive\\Desktop\\SPOS\\Mpass1\\src\\arglist.java"));
      System.out.println("\n\n\t**********Argument List***********");
      System.out.println("\n\tINDEX\tNAME");
      for(int i=0; i<arglist_cnt; i++)
      {
```

```
            System.out.println("\t"+i+"\t"+ARGLIST[i].argname);
            bw1.write(ARGLIST[i].argname+"\n");
        }
        bw1.close();

        System.out.println("\n\t*****Macro definition Table**********");
        System.out.println("\n\tINDEX\t\tSTATEMENT");

        bw1 = new BufferedWriter(new
FileWriter("C:\\Users\\Vishal\\OneDrive\\Desktop\\SPOS\\Mpass1\\src\\mdt.java"));
        for(int i=0; i<mdt_cnt; i++) {
            System.out.println("\t"+i+"\t"+MDT[i].stmnt);
            bw1.write(MDT[i].stmnt+"\n");
        }
        bw1.close();
}
}
```

Mdt.java

```
public class mdt {
   String stmnt;
   public mdt() {
      stmnt = "";
   }
}
```

Mnt.java

```
public class mnt {
   String name;
   int addr;
   int arg_cnt;
   mnt(String nm, int address)
   {
```

```
        this.name = nm;
        this.addr = address;
        this.arg_cnt = 0;
    }
}
```

Arglist.java

```
public class arglist {
    String argname;
    arglist(String argument){
        this.argname = argument;
    }
}
```

Input.txt

```
MACRO
INCR &X, &Y, &REG1 = AREG
MOVER &REG1, &X
ADD &REG1, &Y
MOVEM &REG1, &X
MEND
MACRO
DECR &A, &B, &REG2 = BREG
MOVER &REG2 ,&A
SUB &REG2, &B
MOVEM &REG2, &A
MEND
START 100
READ N1
READ N2
DECR N1, N2
INCR N1, N2
```

STOP

N1 DS 1

N2 DS 2

END

//no need to create output file

Final output:

**********Macro Name Table********

INDEX	NAME	ADDRESS
0	INCR	1
1	DECR	7

**********Argument List**********

INDEX	NAME
0	&X
1	&Y
2	&REG1
3	&A
4	&B
5	&REG2

*****Macro definition Table**********

INDEX	STATEMENT				
0					
1	INCR	&X	&Y	&REG1 =	AREG
2	MOVER	#3	#1		
3	ADD	#3	#2		
4	MOVEM		#3	#1	

```
5           MEND
6
7           DECR  &A    &B    &REG2 =     BREG
8           MOVER #6    #4
9           SUB   #6    #5
10          MOVEM       #6    #4
11          MEND
```