

1) Macro Pass-1

-----arglist.java-----

```
package macroPass1;

public class arglist {

String argname;

arglist(String argument) {

// TODO Auto-generated constructor stub

this.argname=argument;

}

}
```

-----mdt.java-----

```
package macroPass1;

public class mdt {

String stmnt;

public mdt() {

// TODO Auto-generated constructor stub

stmnt="";

}

}
```

-----mnt.java-----

```
package macroPass1;

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;
}
}
```

-----macroPass1.java-----

```
package macroPass1;
import java.io.BufferedReader;
import java.io.BufferedWriter;
import java.io.FileReader;
import java.io.FileWriter;
import java.io.IOException;
public class macroPass1 {
public static void main(String[] args) throws IOException {
// TODO Auto-generated method stub
BufferedReader br1=new BufferedReader(new FileReader("C:\\Users\\Admin\\eclipse-
workspace\\macroPass1\\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\\Admin\\eclipse-
workspace\\macroPass1\\src\\mnt.txt"));

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\\Admin\\eclipse-
workspace\\macroPass1\\src\\arglist.txt"));

System.out.println("\n\n\t*****ARGUMENT LIST*****");

System.out.println("\n\tINDEX\tNAME\tADDRESS");

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\\Admin\\eclipse-
workspace\\macroPass1\\src\\mdt.txt"));

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();

}

}

```

-----input.txt-----

MACRO

INCR &X,&Y,®1 = AREG

MOVER ®1,&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
```

Output

arglist.txt

```
&X
&Y
&REG1
&A
&B
&REG2
```

-----mdt.txt-----

```
INCR  &X    &Y    &REG1 =    AREG
MOVER #3    #1
ADD   #3    #2
MOVEM      #3    #1
MEND
DECR  &A    &B    &REG2 =    BREG
MOVER #6    #4
SUB   #6    #5
MOVEM      #6    #4
MEND
```

-----mnt.txt-----

```
INCR  0
DECR  5
```