

eclipse-workspace - Assembler1/src/Pass1.java - Eclipse IDE

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Obj.java Pass1.java Pooltable.java Output.txt Sample.txt

```
3 import java.io.*;
4 import java.util.*;
5 class Pass1
6 {
7     public static void main(String args[]) throws NullPointerException, FileNotFoundException
8     {
9         String REG[] = {"ax", "bx", "cx", "dx"};
10        String IS[]={ "stop", "add", "sub", "mult", "mover", "movem", "comp", "bc", "div", "read"};
11        String DL[]={ "ds", "dc"};
12        int temp1=0;
13        int f = 0;
14        Obj[] literal_table = new Obj[10];
15        Obj[] symb_table = new Obj[10];
16        Obj[] optab =new Obj[60];
17        Pooltable[] pooltab=new Pooltable[5];
18        String line;
19        try{
20            BufferedReader br=new BufferedReader(new FileReader("C:\\Users\\SHARAD\\eclipse-workspace\\Assembler1\\src\\Sample.txt"))
21            BufferedWriter bw=new BufferedWriter(new FileWriter("C:\\Users\\SHARAD\\eclipse-workspace\\Assembler1\\src\\Output.txt"))
22
23            Boolean start=false;
24            Boolean end=false,fill_addr=false,ltorg=false;
25
26            int total_symb=0,total_ltr=0,optab_cnt=0,pooltab_cnt=0,loc=0,temp,pos;
27
28            while((line=br.readLine())!=null&&!end)
29            {
30                String tokens[]=line.split(" ",4);
31                if(loc!=0 && !ltorg)
32                {
33                    if(f==1)
34                    {
35                        ltorg=false;
36                        loc=loc+temp1-1;
```

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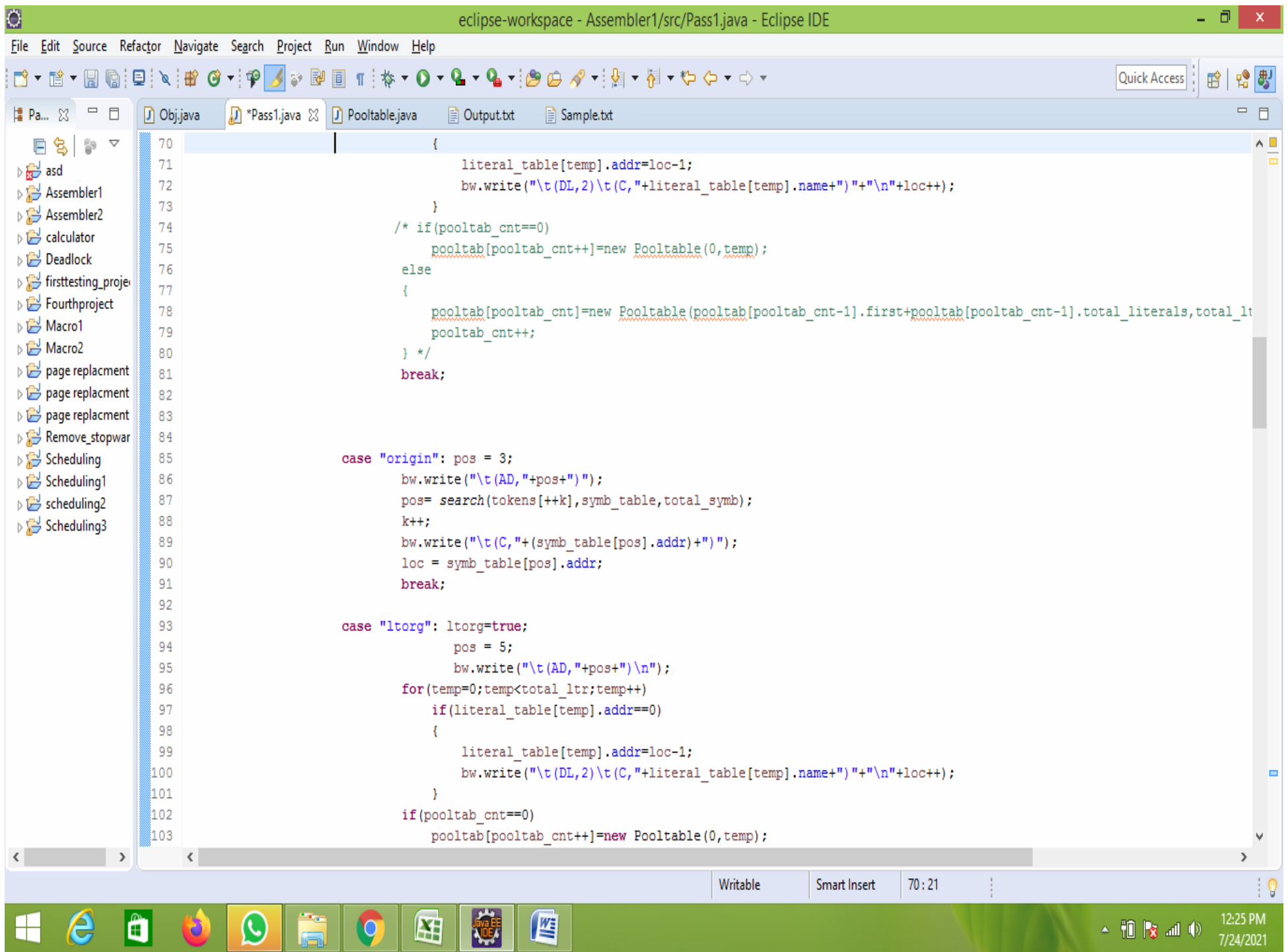
Quick Access

Objjava \*Pass1.java Pooltable.java Output.txt Sample.txt

37 bw.write("\n"+String.valueOf(loc));  
38 f=0;  
39 loc++;  
40 }  
41 else  
42 {  
43 bw.write("\n"+String.valueOf(loc));  
44 ltorg=false;  
45 loc++;  
46 }  
47 }  
48  
49 ltorg=fill\_addr=false;  
50 for(int k=0;k<tokens.length;k++)  
51 {  
52 pos = -1;  
53 if(start==true)  
54 {  
55 loc=Integer.parseInt(tokens[k]);  
56 start=false;  
57 }  
58  
59 switch(tokens[k])  
60 {  
61 case "start" : start = true;  
62 pos = 1;  
63 bw.write("\t(AD, "+pos+" )");  
64 break;  
65 case "end": end=true;  
66 pos = 2;  
67 bw.write("\t(AD, "+pos+" )\n");  
68 for(temp=0;temp<total\_ltr;temp++)  
69 if(literal\_table[temp].addr==0)  
70 {

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Quick Access

Pa... Obj.java \*Pass1.java Pooltable.java Output.txt Sample.txt

104  
105  
106  
107  
108  
109  
110  
111  
112  
113  
114  
115  
116  
117  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127  
128  
129  
130  
131  
132  
133  
134  
135  
136  
137

```
else
{
    pooltab[pooltab_cnt]=new Pooltable(pooltab[pooltab_cnt-1].first+pooltab[pooltab_cnt-1].total_literals,
    total_ltr-pooltab[pooltab_cnt-1].first-1);
    pooltab_cnt++;
}
break;

case "equ": pos = 4;
    bw.write("\t(AD,"+pos+")");
    String prev_token=tokens[k-1];
    int pos1 = search(prev_token,symb_table,total_symb);
    pos = search(tokens[++k],symb_table,total_symb);
    symb_table[pos1].addr = symb_table[pos].addr;
    bw.write("\t(S,"+(pos+1)+")");
    break;
}
if(pos == -1)
{
    pos=search(tokens[k], IS);
    if(pos != -1)
    {
        bw.write("\t(IS,"+(pos)+")");
        optab[optab_cnt++]=new Obj(tokens[k], pos);
    }
    else
    {
        pos=search(tokens[k], DL); // DC/DS
        if(pos != -1)
        {
            if(pos==0)
                f=1;
            bw.write("\t(DL,"+(pos+1)+")");
            optab[optab_cnt++]=new Obj(tokens[k], pos);
        }
    }
}
```

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Quick Access

Obj.java \*Pass1.java Pooltable.java Output.txt Sample.txt

```
138         fill_addr=true;
139
140     }
141     else if(tokens[k].matches("[a-zA-Z]+:"))//label
142     {
143         pos = search(tokens[k], symb_table,total_symb);
144         if(pos == -1)
145         {
146             symb_table[total_symb++]=new Obj(tokens[k].substring(0,tokens[k].length()-1),loc-1);
147             bw.write("\t(S,"+total_symb+"");
148             pos=total_symb;
149         }
150     }
151 }
152 }
153 if(pos == -1)
154 {
155     pos=search(tokens[k], REG);
156     if(pos!=-1)
157         bw.write("\t(RG,"+(pos+1)+")");//register
158     else
159     {
160         if(tokens[k].matches("'\\d+'"))//literal
161         {
162             String s=tokens[k].substring(2, 3);
163
164             literal_table[total_ltr++]=new Obj(s, 0);
165             bw.write("\t(L,"+total_ltr+"");
166         }
167         else if(tokens[k].matches("\\d+") || tokens[k].matches("\\d+H") || tokens[k].matches("\\d+h") ||
168             tokens[k].matches("\\d+D") || tokens[k].matches("\\d+d"))//constant
169         { bw.write("\t(C,"+tokens[k]+")");
170             temp1=Integer.parseInt(tokens[k]);
171         }
```

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```
171     }
172     else
173     {
174         pos = search(tokens[k], symb_table, total_symb);
175         if(fill_addr && pos!=-1)
176         {
177             symb_table[pos].addr=loc-1;
178             fill_addr=false;
179         }
180         else if(pos==-1)
181         {
182             symb_table[total_symb++]=new Obj(tokens[k],0);
183             bw.write("\t(S," + total_symb + ")");
184         }
185         else
186             bw.write("\t(S," + pos + ")");
187     }
188 }
189 }
190 }
191 }
192 System.out.println("\n*****SYMBOL TABLE*****");
193 System.out.println("\nSYMBOL\tADDRESS");
194 for(int i=0;i<total_symb;i++)
195     System.out.println(symb_table[i].name+"\t"+symb_table[i].addr);
196
197 pooltab[pooltab_cnt]=new Pooltable(pooltab[pooltab_cnt-1].first+pooltab[pooltab_cnt-1].total_literals,
198     total_ltr-pooltab[pooltab_cnt-1].first-2);
199 pooltab_cnt++;
200
201 System.out.println("\n*****POOL TABLE*****");
202 System.out.println("\nPOOL\tTOTAL LITERALS");
203
204 for(int i=0;i<pooltab_cnt;i++)
```

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Quick Access

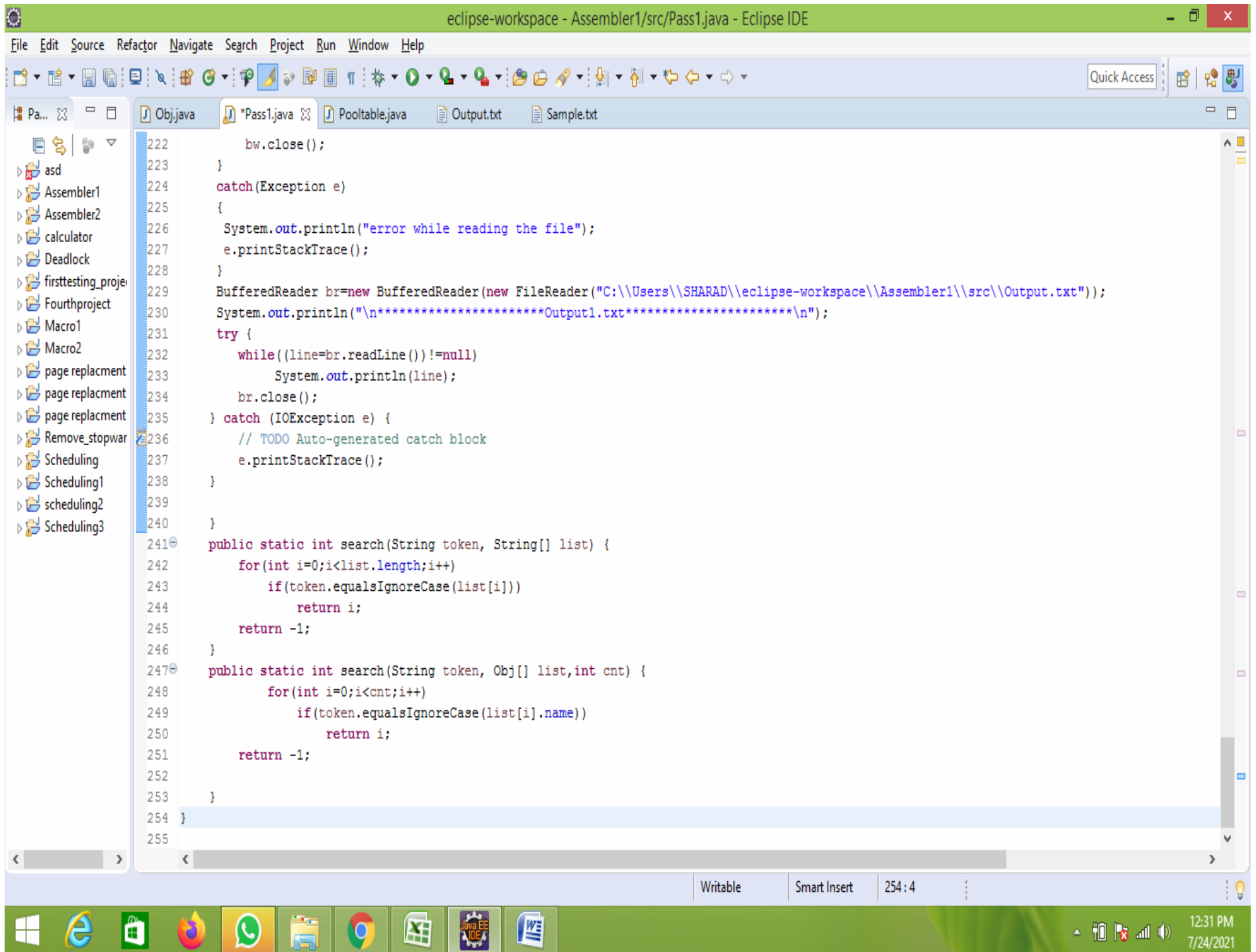
Pa... Obj.java \*Pass1.java Pooltable.java Output.txt Sample.txt

```
205     System.out.println(pooltab[i].first+"\t"+pooltab[i].total_literals);
206
207     System.out.println("\n*****LITERAL TABLE*****");
208     System.out.println("\nIndex\tLITERAL\tADDRESS");
209     for(int i=0;i<total_ltr;i++)
210     {
211         if(literal_table[i].addr==0)
212             literal_table[i].addr=loc++;
213         System.out.println((i) + "\t"+literal_table[i].name+"\t"+literal_table[i].addr);
214     }
215
216     System.out.println("\n*****OPTABLE*****");
217     System.out.println("\nMnemonic\tOPCODE");
218     for(int i=0;i<IS.length;i++)
219         System.out.println(IS[i]+" \t\t"+i);
220
221     br.close();
222     bw.close();
223 }
224 catch(Exception e)
225 {
226     System.out.println("error while reading the file");
227     e.printStackTrace();
228 }
229 BufferedReader br=new BufferedReader(new FileReader("C:\\Users\\SHARAD\\eclipse-workspace\\Assembler1\\src\\Output.txt"));
230 System.out.println("\n*****Output1.txt*****\n");
231 try {
232     while((line=br.readLine())!=null)
233         System.out.println(line);
234     br.close();
235 } catch (IOException e) {
236     // TODO Auto-generated catch block
237     e.printStackTrace();
238 }
```

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## Obj.java

```
public class Obj {
    String name;
    int addr;
    Obj(String nm, int address)
    {
        this.name=nm;
        this.addr=address;
    }
}
```

---

## Pooltable.java

```
public class Pooltable {
    int first,total_literals;
    public Pooltable(int f, int l) {
        // TODO Auto-generated constructor stub
        this.first=f;
        this.total_literals=l;
    }
}
```

---

## Input file :sample.txt

```
start 100
mover ax 05
mover bx 10
up: add ax bx
movem a ='5'
mult ax a
origin up
ltorg
movem b ='8'
movem c ='8'
ltorg
movem b ='7'
movem c ='8'
ds a 02
dc b 10
ds c 09
next equ up
end
```