

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

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Package Explorer X Obj.java Pass1.java X 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 templ=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+templ-1;
```

Writable Smart Insert 36:5

Windows Internet Explorer Microsoft Edge WhatsApp Google Chrome Java IDE

12:18 PM 7/24/2021

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

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Obj.java *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     }

        ltorg=fill_addr=false;
        for(int k=0;k<tokens.length;k++)
        {
            pos = -1;
            if(start==true)
            {
                loc=Integer.parseInt(tokens[k]);
                start=false;
            }

            switch(tokens[k])
            {
                case "start" : start = true;
                pos = 1;
                bw.write("\t(AD,"+pos+" )");
                break;
                case "end": end=true;
                pos = 2;
                bw.write("\t(AD,"+pos+"\n");
                for(temp=0;temp<total_ltr;temp++)
                    if(literal_table[temp].addr==0)
                {

```

Writable Smart Insert 70:21

Windows Internet Explorer Microsoft Edge Mozilla Firefox WhatsApp Google Chrome JavaEE IDEA

12:24 PM 7/24/2021

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

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

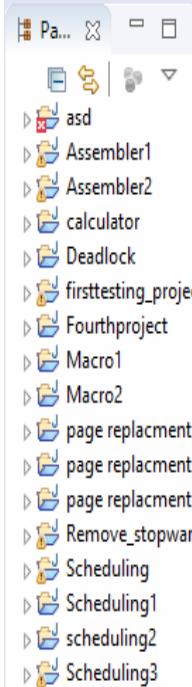
Obj.java *Pass1.java Pooldable.java Output.txt Sample.txt

70 {
71 literal_table[temp].addr=loc-1;
72 bw.write("\t(DL,2)\t(C,"+literal_table[temp].name+")"+'\n'+loc++);
73 }
74 /* if(pooldab_cnt==0)
75 pooldab[pooldab_cnt++]=new Pooldable(0,temp);
76 else
77 {
78 pooldab[pooldab_cnt]=new Pooldable(pooldab[pooldab_cnt-1].first+pooldab[pooldab_cnt-1].total_literals,total_lit
79 pooldab_cnt++;
80 } */
81 break;
82
83
84
85 case "origin": pos = 3;
86 bw.write("\t(AD,"+pos+");");
87 pos= search(tokens[++k],symb_table,total_symb);
88 k++;
89 bw.write("\t(C,"+(symb_table[pos].addr)+");");
90 loc = symb_table[pos].addr;
91 break;
92
93 case "ltorg": ltorg=true;
94 pos = 5;
95 bw.write("\t(AD,"+pos+)\n");
96 for(temp=0;temp<total_ltr;temp++)
97 {
98 if(literal_table[temp].addr==0)
99 {
100 literal_table[temp].addr=loc-1;
101 bw.write("\t(DL,2)\t(C,"+literal_table[temp].name+")"+'\n'+loc++);
102 }
103 if(pooldab_cnt==0)
104 pooldab[pooldab_cnt++]=new Pooldable(0,temp);
105 }

Writable Smart Insert 70:21

Windows Internet Explorer Microsoft Edge Firefox WhatsApp Google Chrome Java EE IDE Microsoft Word

12:25 PM 7/24/2021



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

```
        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);
        }
    }
}
```



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

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Obj.java *Pass1.java Poolable.java Output.txt Sample.txt

138 fill_addr=true;

139 }
140 else if(tokens[k].matches("[a-zA-Z]+:"))//label
141 {
142 pos = search(tokens[k], symb_table,total_symb);
143 if(pos == -1)
144 {
145 symb_table[total_symb++]=new Obj(tokens[k].substring(0,tokens[k].length()-1),loc-1);
146 bw.write("\t\$,"+total_symb+"");
147 pos=total_symb;
148 }
149 }
150 }
151 }
152 }
153 if(pos == -1)
154 {
155 pos=search(tokens[k], REG);
156 if(pos!=-1)
157 bw.write("\tRG,"+(pos+1)+"");//register
158 else
159 {
160 if(tokens[k].matches("=\\"d+"))//literal
161 {
162 String s=tokens[k].substring(2, 3);
163 literal_table[total_ltr++]=new Obj(s, 0);
164 bw.write("\tL,"+total_ltr+"");
165 }
166 else if(tokens[k].matches("\\d+")||tokens[k].matches("\\dH")||tokens[k].matches("\\d+h")||
167 tokens[k].matches("\\dD")||tokens[k].matches("\\d+d"))//constant
168 { bw.write("\tC,"+tokens[k]+"");
169 temp1=Integer.parseInt(tokens[k]);
170 }
171 }

Writable Smart Insert 168:34

Windows Taskbar icons: File Explorer, Edge, Microsoft Store, Firefox, WhatsApp, File Manager, Google Chrome, Java EE IDE, Microsoft Word.

System tray: Battery, Signal, Volume, 12:28 PM, 7/24/2021



```
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++)
```

Writable

Smart Insert

198:18



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

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Obj.java *Pass1.java Poolable.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 }
```



Writable

Smart Insert

198:18

12:30 PM
7/24/2021

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

File Edit Source Refactor Navigate Search Project Run Window Help

Quick Access

Obj.java *Pass1.java X Poolable.java Output.txt Sample.txt

```
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     }
239 }
240
241 public static int search(String token, String[] list) {
242     for(int i=0;i<list.length;i++)
243         if(token.equalsIgnoreCase(list[i]))
244             return i;
245     return -1;
246 }
247 public static int search(String token, Obj[] list,int cnt) {
248     for(int i=0;i<cnt;i++)
249         if(token.equalsIgnoreCase(list[i].name))
250             return i;
251     return -1;
252 }
253 }
254 }
```

Writable Smart Insert 254:4

Windows Internet Explorer Microsoft Edge WhatsApp Google Chrome Java EE IDE

12:31 PM 7/24/2021

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
```