CODE:

```
import java.util.*;
import java.io.*;
import java.text.DecimalFormat;

class As2
{
	public static void main(String[] args) throws IOException
	{
		ArrayList<String[]> sym_tab = new ArrayList<String[]>();
		ArrayList<String[]> lit_tab = new ArrayList<String[]>();

		File input = new File("intermediate.asm");
		input.createNewFile();
		File output = new File("output.asm");
		output.createNewFile();
		File tables = new File("tables.asm");
		tables.createNewFile();
		String[] tokens;

		//Reading tables from Pass 1
		Scanner fileReader = new Scanner(tables);
		String buffer="";
		int tableFlag = 0;
		int counter = 0;
		String[] a = new String[4];
		while(fileReader.hasNextLine())
		{
			String i_str = fileReader.nextLine();
			tokens = i_str.split("[ \\n]");
			counter = 0;
			for(String str : tokens)
			{
				if(str.equals("[SYMBOL_TABLE]"))
				{
					tableFlag = 1;
					break;
				}
				else if(str.equals("[LITERAL_TABLE]"))
				{
					tableFlag = 2;
					break;
				}
				switch(tableFlag)
				{
				case 1:
					a[counter++] = str;
					if(counter == 4)
					{
						sym_tab.add(new String[] {a[0],a[1],a[2],a[3]});
						counter = 0;
					}
					break;
				case 2:
					a[counter++] = str;
					if(counter == 3)
					{
						lit_tab.add(new String[] {a[0],a[1],a[2]});
						counter = 0;
					}
```

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                        break;
                    }
                }
            }
            fileReader.close();

            System.out.println("SYMBOL TABLE: ");
            for(String[] arr : sym_tab)
                System.out.println(Arrays.toString(arr));
            System.out.println("\nLITERAL TABLE: ");
            for(String[] arr : lit_tab)
                System.out.println(Arrays.toString(arr));

            //Tokenizer
            fileReader = new Scanner(input);
            String i_str = "";
            FileWriter fw = new FileWriter("output.asm");
            BufferedWriter bw = new BufferedWriter(fw);
            DecimalFormat formater = new DecimalFormat("000");
            int num;
            String num_formated;
            boolean skip_flag=false;
            while(fileReader.hasNextLine())
            {
                i_str = fileReader.nextLine();
                tokens = i_str.split("[ \\n\\t]");
                //Assembler Pass II
                counter = 0;
                buffer = buffer.concat(tokens[0]);
                if(tokens[0]!="")
                    buffer = buffer+"\t";
                for(String str : tokens)
                {
                    str = str.trim();
                    skip_flag=false;
                    if(str=="")
                        continue;
                    if(str.substring(1,3).equals("AD")|| str.equals("(DL,02)"))
                    {
                        skip_flag=true;
                        buffer = "";
                        break;
                    }
                    if(str.equals("(DL,01)")) //For LTORG and it's operand 1
                        buffer = buffer.concat("(00) ");
                    else if(counter==2)
                    {
                        if(str.charAt(0)=='(' && str.charAt(2)==')') //If Register
Mnemonic
                            buffer = buffer.concat("(0"+str.charAt(1)+") ");
                        else
                            buffer = buffer.concat("(00) ");
                    }
                    if(str.charAt(1)=='S') //For Symbol
                    {
                        num =
Integer.parseInt(str.substring(str.indexOf(',')+1,str.indexOf(')')));
                        buffer = buffer.concat("("+sym_tab.get(num-1)[2]+") ");
                    }
                    else if(str.charAt(1)=='L') //For Literal
                    {
```

```
                                        num = 
Integer.parseInt(str.substring(str.indexOf(',')+1,str.indexOf(')')));
                                        buffer = buffer.concat("("+lit_tab.get(num-1)[2]+") ");
                                }
                                else if(str.charAt(1)=='C') //For Constant
                                {
                                        num = 
Integer.parseInt(str.substring(str.indexOf(',')+1,str.indexOf(')')));
                                        num_formated = formater.format(num);
                                        buffer = buffer.concat("("+num_formated+") ");
                                }
                                else if(str.substring(1,3).equals("IS")) //For Imperative Statements
                                        buffer = buffer.concat("("+str.substring(4,6)+") ");
                                counter++;
                        }
                        if(skip_flag==false)
                        {
                                bw.write(buffer + "\n");
                                buffer = "";
                        }
                }
                bw.close();
                fw.close();
                fileReader.close();

                fileReader = new Scanner(output);
                System.out.println("\n\nAssembly Code:");
                while(fileReader.hasNextLine())
                {
                        System.out.println(fileReader.nextLine());
                }
                fileReader.close();
        }
}
```

INPUT:

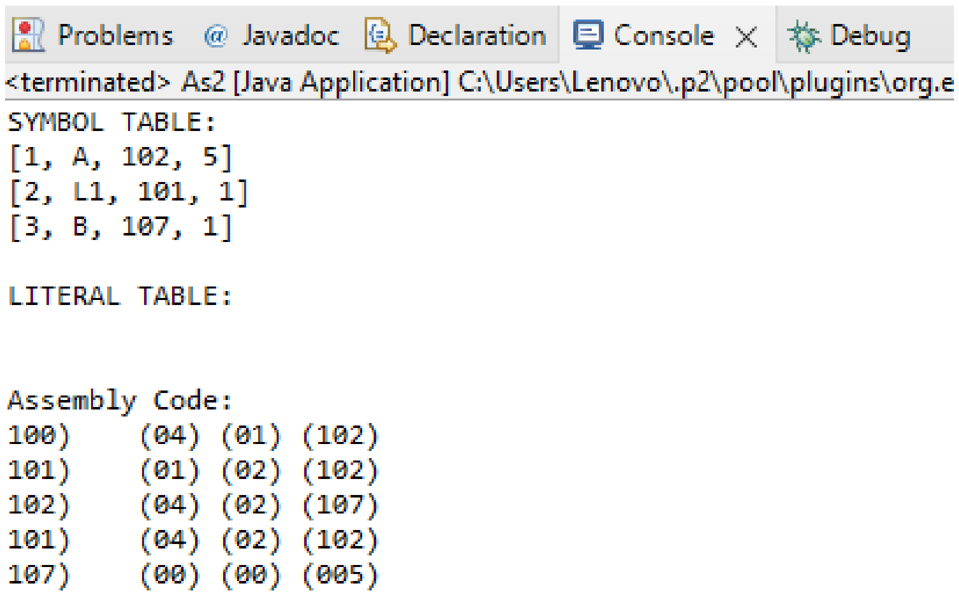
Intermediate.asm

```
                (AD,01) (C,100)
   100)         (IS,04) (1) (S,1)
   101)         (IS,01) (2) (S,1)
   102)         (IS,04) (2) (S,3)
                (AD,03) (S,2)
   101)         (IS,04) (2) (S,1)
   102)         (DL,02) (C,5)
   107)         (DL,01) (C,5)
                (AD,02)
```

tables.asm

```
        [SYMBOL_TABLE]
        1 A 102 5
        2 L1 101 1
        3 B 107 1
        [LITERAL_TABLE]
```

OUTPUT:



```
<terminated> As2 [Java Application] C:\Users\Lenovo\.p2\pool\plugins\org.e
SYMBOL TABLE:
[1, A, 102, 5]
[2, L1, 101, 1]
[3, B, 107, 1]

LITERAL TABLE:


Assembly Code:
100)    (04) (01) (102)
101)    (01) (02) (102)
102)    (04) (02) (107)
101)    (04) (02) (102)
107)    (00) (00) (005)
```